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Good and Beautiful


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O Read to the child: In each unit of this course, we are going to expand our knowledge and have fun as we visit different countries. During the first half of this unit, we will be learning math as we explore China.

Two siblings, 12-year-old Bo and his 10 -year-old sister Chun, are helping their town hang up lanterns for the Lunar New Year celebration, which lasts for 15 days. Chun hangs up the 987th lantern. Look at the number 987 on the place value chart here. The digit
 9 in the hundreds place represents
900 . The digit 8 in the tens place represents 80 , and the digit 7 in the ones place represents 7 . Writing a number in expanded form means we show the value of each digit using addition. Read aloud the expanded form of 987 :

```
900 + 80 + 7
```

Bo hangs up more lanterns and soon reaches number 999 . What number comes after 999 ? $[1,000]$ Look at the place value chart in the next column. What digit is in the thousands place? [1] What digit is in the hundreds, tens, and ones places? [0]

Notice how there is a comma after the 1 in the number 1,000 . Most English-speaking countries and China put a comma between the thousands and hundreds places.

Let's look at the number 1,547 and write it using expanded form. With
 expanded form, we start with the digit with the largest place value. The digit 1 is in the thousands place, so it is 1,000 . The digit 5 is in the hundreds place, so we add 5 hundreds, which is 500 . The digit 4 is in the tens place, so we add 4 tens, which is 40. The digit 7 is in the ones place, so we finish by adding 7. Read aloud the expanded form for 1,547:

$$
1,000+500+40+7
$$

O Dictate (read aloud) the following numbers to the child. Have the child write the numbers and their expanded forms on the whiteboard, remembering the commas.

- Seven hundred ninety-three $793 / 700+90+3$
- Three thousand, eight hundred forty-one
- Five thousand, one hundred twenty-three $3, / 3,000+800+40+$


MATH 3
Read to the child: On the whiteboard write the number that comes after 9 . Write the number that comes after 99. Write the number that comes after 999. What number would come after 9,999? Ten thousands is the next place value to the left of the thousands place. This chart shows how we write 10,000 . Notice the comma after the thousands place. The digits
 before the comma are read together-the 1 and 0 represent 10 . In the number 57,000 , the 5 and 7 are read together to make 57 .

Create a number: Take the 10 -sided and 6 -sided dice from the math box. Roll both dice and write the numbers in the spaces below. Continue rolling until you have two 5 -digit numbers. If you roll a 10 , then roll again. (Do not use 0.) Now read your numbers aloud. Then write each number in expanded form on the whiteboard.
Answers will vary. (2a)Hzan Mountain Climbers
Let's explore some mountains around Asia. Start at Mt. Elbrus and read the number next to the mountain that shows how high it is in feet. Remember to say THOUSAND at the comma and not to say the word "and" between any numbers. Then roll the 6 -sided dice to see what activity to do to climb the mountain. Follow the path from peak to peak, repeating the above instructions with each peak until you have climbed all the mountains.
What did you roll?
1-Do 5 jumping jacks.
2-Hop on your right foot 5 times.
3-Reach your arms as high as you can, and then touch your toes 3 times.

4 -Hop on your left foot 5 times.
5-Jog in place for 10 seconds.
6-Do 5 knee bends (squats).


- MATH


Parent/Teacher Note: The Lesson Practice section is designed to be done independently by the child in this course. However, if the child struggles with reading, consider reading the instructions aloud for the child.
For each number, circle the matching number word.

| 46,152 ara. Four six thousand, one hundred fifty-two <br> 51,316 <br> 62,146 <br> a. Forty-six thousand, one hundred fifty-two hundred thirteen thousand, sixty <br> a. Sixty-two thousand, one hundred forty-six <br> b. Six thousand, one hundred fourteen six |
| :--- |
| a. Sixty thousand, nine hundred eighty twelve |
| h. Sixty-nine thousand, eight hundred twelve |

Write the number shown by the expanded form. Remember the comma after the thousands place.

$$
\begin{aligned}
& 40,000+3,000+600+50+8 \\
& \begin{array}{|l|l|l|l|l|}
\hline 4 & 3, & 6 & 5 & 8 \\
\hline
\end{array} 0,000+2,000+400+30+5 \\
& \begin{array}{|l|l|l|l|l|}
\hline 5 & 2, & 4 & 3 & 5 \\
\hline 70,000 & +4,000+100+60+3
\end{array} \\
& \begin{array}{|l|l|l|l|}
7 & 4, & 1 & 6 \\
\hline
\end{array}
\end{aligned}
$$



China has at least one thousand,
three hundred seventeen species of butterflies. Write the number below.


About thirty thousand, one hundred species of plants are native to China Write the number below.


- Jenny Phillips

$$
\text { MATH } 3
$$

| R |
| :--- | :--- |


$\bigcirc$ Read to the child: Right outside of Bo and Chun's village is a small bamboo forest and a little lake. One day the siblings went on a picnic. As they walked through the bamboo forest toward the lake, they decided to count all the insects they could find. Because they found some flowering bamboo with many bees, they both counted a lot of insects. Bo counted 468 , and Chun counted 524 . Let's practice addition with regrouping to find out how many insects they found together.


O On the whiteboard have the child write the addition problem for the number of insects Bo and Chun found. Guide the child through this addition problem (using the images to the right) as you read the following text aloud:

Remember to start on the right-hand side in the ones column and work to the left. First, add the numbers in the ones column $[8+4=12]$. Write the 2 below the line in the ones column and carry the extra ten over to the tens column by writing a 1 on top of the column.


Next, add the numbers in the tens column [1+ $6+2=9]$. Write the 9 below the line. Then add the numbers in the hundreds place [ $4+5=9$ ]. Write the 9 below the line. Read the answer aloud. Bo and Chun found 992 insects!

| 1 |
| ---: |
| 468 |
| $+\quad 524$ |
| 992 |

O Have the child complete the following problems, including writing the commas. Then have the child read the answer to each problem aloud.

$$
\begin{aligned}
& \begin{array}{llll}
1,324 & 5,478 & 6,462 & 7,345
\end{array} \\
& \frac{+1,437}{2,761}+\frac{4,418}{9,896}+\frac{3,239}{9,701}+\frac{1,548}{8,893}
\end{aligned}
$$

Read to the child: Zero has no value on its own, but it acts as a place holder for other digits in a number. Write 502 on the whiteboard. For example, if we took the 0 out of 502 , we would have 52 , which is a different number. Read the following numbers aloud, noticing how zeros act as placeholders. Say THOUSAND each time you see the comma.

| 10,506 | 17,280 | 58,071 | 90,310 | 82,900 |
| :--- | :--- | :--- | :--- | :--- |

On the whiteboard write the number shown by the expanded form. When no value is given for a place value, use a zero in that place.

\section*{| $500+7$ | $70,000+4,000+90$ | $3,000+60+8$ |
| :---: | :---: | :---: |
| 507 | 74,090 | 3,068 |}

```
& Math }
    & LESSONPRACTICE %
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Which insect is commonly eaten in China? Complete the problems, remembering to include the comma. Find the problem with the greatest sum to find the insect that is eaten. Circle it.


Write the numbers shown in their expanded form using zeros as placeholders. In the first number, notice that there are no tens, so write 0 in the tens place. Remember to include commas.
$80,000+3,000+100+2$


Write the number on each chart. Remember to include the comma.
I. Three thousand, four hundred two

2. Sixty-seven thousand, twenty-one

3. Thirty thousand, ninety-seven


Write the 5 -digit number that has 3 in the ten thousands place, 4 in the hundreds place, and 0 in all other places.


Some bamboo can grow as fast as 35 inches a day. Write a problem to figure out how much the bamboo could grow in two days by adding 35 to 35 . Then complete the problem.


Bo and Chun's dad needs 148 pieces of bamboo to build a boat and 228 pieces to build a bridge. Write a problem adding those numbers together to figure out how much bamboo he needs to build both items. Then complete the problem.



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O Read to the child: Every Thursday night Bo and Chun's family goes to the outdoor street market to sell flowers, fruits, and vegetables from their garden. So far Bo has earned $\$ 58$ selling his vegetables. Chun has earned $\$ 51$ selling flowers, and their mother, Lee, has earned $\$ 65$ selling pomegranates. When their father asked how much they had earned, everyone rounded their earnings to the nearest ten.


Sometimes when dealing with a lot of numbers or very high numbers, it helps to get an estimate of the numbers first. We call this rounding Rounding is replacing a number with a number close in value but easier to work with.

O Read to the child: Let's review rounding to the nearest ten. Look at the number line below. The number 51 is between 50 and 60 . It is closer to 50 than 60 , so 51 becomes 50 when rounded to the nearest ten. Is 58 closer to 50 or 60 ? So 58 rounds up to 60 when rounded to the nearest ten.


Which way should you round a number that is halfway between two tens? The number 65 is halfway between 60 and 70 . When halfway, always round up to the larger number, so 65 rounds up to 70 when rounding to the nearest ten.


If the digit to the right of the place you are rounding to is $0,1,2,3$, or 4 , round down.

If it is $5,6,7,8$, or 9 , round up.
Read to the child: Practice rounding the numbers to the nearest ten. First, circle the digit in the ones place, which is the place to the right of the tens place. If the digit is $0,1,2,3$, or 4 , then the digit in the tens place stays the same. If the digit in the ones place is $5,6,7,8$, or 9 , then raise the digit in the tens place by one to round up. Draw a line to the box with the answer.


Read to the child: Bo and Chun rounded more numbers at the market. They counted 269 customers who walked past their stand. This time they rounded to the nearest hundred. Look at the number line below. Is 269 closer to 200 or 300 ? Circle the correct answer.


269
Some of the customers went home, and only 238 remained. Round to the nearest hundred again. Is 238 closer to 200 or 300?


When we round to the nearest hundred, we look at different place values because we always look at the digit to the right of the one we want to round to. Which place value do you need to look at when you round to the hundreds? [tens place]

First, circle the digit in the tens place, which is the place to the right of the hundreds place. If the digit is $0,1,2$, 3 , or 4 , then the digit in the hundreds
 place stays the same.

If the digit in the tens place is 5,6 , 7,8 , or 9 , then raise the digit in the hundreds place by one to round up.
 Write zeros in all the places to the right of the hundreds.

With rounding, it does not matter how many digits are to the left of that place value you are rounding to. They always stay the same. Round the numbers to the nearest hundred and circle the correct answer below.


## Rounding Relay

O Game-Rounding Relay: Take the 10 -sided and 6 -sided dice from the math box. Read to the child: Roll both dice to create a number. For example, if you roll a 7 and a 2 , you can choose to create the number 72 or 27. Round the number to the nearest TEN and claim the space below with the answer by writing an X in the space. Then it's my turn. I'll follow the same steps, but write an O to claim a space. If the correct answer is already claimed, then you do not get to mark a space. The person to capture the most spaces wins. If you roll a 10, treat it like a zero.

| 60 | 20 | 70 |
| :--- | :--- | :--- |
| 40 | 10 | 50 |
| 90 | 30 | 80 |



- MATH 3

LESSON PRACTICE
Round each number to the nearest ten. Circle the answer.


Round each number to the nearest hundred. Circle the answer.


After the market closed, Bo and Chun walked home, counting their steps as they went. They counted 254 steps. Circle the correct answers.


Round each number to the nearest ten. Write the answer in the box.

| 323 | 257 |
| :---: | :---: |
| 320 | 260 <br> 85 <br> 90 |
| 138 |  |

Round each number to the nearest hundred. Write the answer in the box.

| 586 | 915 |
| :---: | :---: |
| 600 | 900 |
| 355 | 537 |
| 400 | 500 |
| 1,347 | 2,736 |
| 1,300 | 2,700 |

12

The pomegranate is such a common fruit in China that it is sometimes called the Chinese apple. Pomegranates can have up to 1,400


Chun's pomegranate had 857 seeds Round 857 to the nearest hundred and write the answer in the box.

$$
900
$$

Bo's pomegranate had 742 seeds Round 742 to the nearest hundred and write the answer in the box.

## 700

About how many pomegranate seeds did Chun and Bo have altogether? Add the rounded numbers from the other green boxes to find the answer and write the answer in the box.


## Flower Logic

There is a type of flower that is common in China. It ranges in color from white to pink. Each blossom closes at night and opens in the morning.


To figure out the name of the flower, complete the skip counting pattern. Then use the key to find the letters and decode the name of the flower.


For each addition problem, write the number shown in expanded form in the green box and then add. Remember to use zeros as placeholders and to include commas in the answers.

| $4,000+70+7$ | $5,000+400+2$ | $3,000+30+9$ |
| :---: | :---: | ---: |
| 11 | 5,402 | 3,039 |
| $+4,077$ | $+4,238$ | $+5,349$ |
| 7,514 | 9,640 |  |
| 3,437 |  |  | that represents the story problem.


| Chun had three vases <br> of flowers to sell <br> at the market. She <br> counted the petals in <br> each vase. The first <br> vase had 45 petals. <br> The second vase had <br> 75 petals. The third |  |
| :--- | :--- |
| vase had 50 petals. <br> Write 45, 75, and <br> 50 in the boxes and <br> add these numbers <br> together. |  |
| How many petals does <br> she have altogether? |  |



Circle all the odd numbers. Remember that odd numbers always end with 1, 3, 5,7 , or 9 .



Read to the child: During their summer vacation last year, Chun and Bo enjoyed strolling up and down the beach collecting the most beautiful seashells. They were amazed at how God created each shell with a unique pattern. Chun set out all of her seashells along the sand and noticed that there were 3 groups of 4 seashells.


To find the total number of seashells Chun found, you can count all the seashells one by one, or you can add $4+4+4$. You can even skip count by 4 s three times. How many total seashells did Chun find?
Have you heard of multiplication? Let's learn more about how multiplication can help us complete problems quickly. Multiplication means we add equal groups many times. For example, Chun's seashells are in equal groups of 4 . Since she has 3 groups, we can add 4 seashells 3 times or multiply 3 times 4 , as in this problem shown here. Read the problem aloud with the child, pointing to each part. Say "times" for the multiplication symbol. groups $\begin{aligned} & \text { seashells in } \\ & \text { each group }\end{aligned} \quad$ total seashells in equal groups of 4 . Since she has 3 groups, we can add 4 seashell

Give the child 30 cereal pieces, dry beans, or raisins. Bo found 6 groups of 3 seashells. Let's find out how many total seashells he found by placing 3 items (such as cereal pieces, dry beans, or raisins) into each of the 6 circles below.


How many seashells did he find? Fill in the box with the correct answer.

$$
\bigcirc_{\text {groups }} \times \underset{\substack{\text { seashells in } \\ \text { each group }}}{3}=\frac{18}{\text { total seashells }}
$$

Fill in the blanks by skip counting 6 times by 3 s .

$$
\mathfrak{3 , 6 , \frac { 9 } { 6 \text { groups } } , 1 2 , 1 5 , 1 8}
$$

Parent/Teacher Note: This method of modeling can be used with any multiplication problem to build understanding and mastery of this concept. If necessary, continue practicing this with the child by having him or her model $4 \times 6,7 \times 2$, and $8 \times 3$. Additional sand frames with 4,7 , and 8 groups of circles can be found on the Lesson 4 page of the Appendix. Then have the child skip count by the number of items in each group, pointing to each group while counting to find the total number.

## \&

Use your small manipulative pieces from the lesson to create groups and solve each multiplication problem below.

$\triangle$ MATH $^{3}$

$\qquad$
Math 3 Answer Key



Read to the child: The next week on Thursday morning, Bo, Chun, and their mom prepare for the market. Bo sells eggplants, a vegetable that has been eaten in China for more than 2,000 years. He places 2 eggplants in each bag. Chun sells lotus flowers in bunches of 10 . Their mom sells pomegranates in boxes of 5 . Help them count how many of each item they have to sell at the market today. Have the child circle


We can multiply the number of groups by the number of eggplants in each group:

7 groups of 2 eggplants in each group is 14 eggplants.

$$
7 \times 2=14
$$

We can think of multiplication as the number of groups times the number of items in each group.


We can multiply the number of bunches by the number of flowers in each bunch:

7 bunches $\times 10$ flowers in each bunch $=70$ flowers


We can multiply the number of boxes by the number of pomegranates in each box:

7 boxes $\times 5$ pomegranates in each box $=35$ pomegranates
Read to the child: At the market later that day, Chun saw some beautiful vases on shelves. Three vases were on each shelf. How many vases total were on the shelves? Add each shelf of vases to the previous shelves by adding the numbers in the boxes.

5 shelves $\times 3$ vases on each shelf $=$ 15 vases
Cover the vases with your hand and read: If someone bought all the vases and there were zero groups of 3 , how many vases would you have? [0] Zero multiplied by any number always equals zero.


## LESSON PRACTICE *

How many items are there? Use skip counting or repeated addition to help complete the problems.


4 groups of 5 vases $4 \times 5=20$


3 groups of 10 flowers $3 \times 10=30$

Draw a line to match the problem with the correct image. Then use skip counting or repeated addition to solve the problems.


Write a multiplication problem for each question and complete it.

1. Chun sold 7 bunches of 10 flowers. How many flowers did she sell?

2. Bo sold 5 bags of eggplants with 2 in each bag. How many eggplants did he sell?

3. If each eggplant can feed 3 people, how many people can you feed with 5 eggplants?



Math 3 Answer Key


O Read to the child: Any number multiplied by 0 is always 0 . For example, if I have 0 groups of 2 chopsticks, I have 0 chopsticks. Tell me the answers aloud to the following problems: $0 \times 9,0 \times 35,0 \times 0,0 \times 100$. [all $=0$ ]

Let's talk about how to multiply by 1 . If I have one group of 10 chopsticks, how many do I have? [10] Any number multiplied by 1 equals that same number. Tell me the answers aloud to the following problems: $1 \times 17,1 \times 45,1 \times 1,1 \times 23$. [17, 45, 1, 23]

Multiplying a number by 2 is the same as doubling the number. $4+4$ is the same as $2 \times 4$ because there are 2 groups of 4 . Tell me the answers aloud to the following problems: $2 \times 3,2 \times 5,2 \times 6$. $[6,10,12]$

When you multiply a number by 10 , it is similar to multiplying by 1 , except that you write a zero after the number. For example, if I have $10 \times$ $4, I$ can think of $1 \times 4$, which is 4 . Then I can write a zero at the end to get 40 . Tell me the answers aloud to the following problems: $10 \times 2,10 \times 5$, $10 \times 7,10 \times 1,10 \times 3,10 \times 6 .[20,50,70,10,30,60]$

O Game-The Path to Grandma's House: Take the 6 -sided dice and game pawns from the math box. Let's see how many rolls it takes to get Bo and Chun to Grandma's house. First, you will roll the dice. Multiply the number on the dice by the number in the first spot. Say the answer aloud and move your game piece forward that many spaces. Then it will be my turn, and I'll follow the same steps. We'll continue taking turns until someone gets to Grandma's house. Play the game two or more times.

MATH 3


O Read to the child: Memorizing multiplication facts is an important part of this course. Knowing the answers to multiplication problems instantly makes many math concepts much easier to teach and to learn. Many math concepts, like division, use multiplication. Memorizing the multiplication facts will give you confidence and success as you learn new principles of math that use multiplication.

Read aloud if the child does not have all multiplication facts memorized. (If the child has memorized all facts, skip this box and go to the green box.) You will work on memorizing one set of multiplication facts during each unit of this course. We will use the chart on page viii to keep track of your progress. The course will tell me when to quiz you on mastery and use the chart. Show the child the Mastery Chart on page viii. In mos independent practice sections, the course will instruct you to work for 10 minutes or more on multiplication facts. Discuss with the child which of the resources or combination of resources you will be using: Musical Multiplication, flash cards, and/or multiplication practice sheets. Prepare the resources. Help the child understand the instructions and how to access the resources each day. You will be practicing Set A in this unit, beginning with the next lesson.

Read aloud if the child already has all multiplication facts memorized: You already have your multiplication facts memorized, but we will use the chart on page viii to double-check your mastery. Show the child the Mastery Chart on page viii. The course will tell us when to quiz you on mastery and use the chart. In most independent practice sections, you will see a box like the one below. You do not need to complete the 10 minutes or more of math fact practice, but you should write the answers to the problems you see. This will help you review and retain the facts you have already learned.


$$
\text { Multiplication Fact Practice } \Delta
$$

\[\)|  Put a check mark in the green box after you have practiced the Set A  |
| :--- |
|  multiplication facts for  10  minutes or more by doing Musical Multiplication,  |
|  flash cards, or multiplication practice sheets. Then complete the problems  |
|  in this section.  |

\]

Round each number to the nearest ten. Write the answer in the box

| 672 | 83 |
| :---: | :---: |
| 670 | $\square 80$ |
| 294 | 1,129 <br> 290 |

Round each number to the nearest hundred. Write the answer in the box.

| 2,462 | 3,478 |
| :--- | :--- |
| 2,500 | 3,500 |

Complete the problems

| 76 | 55 | 88 |
| ---: | ---: | ---: |
| -35 | -23 | -43 |
| 41 | 32 | 45 |

Write the number shown in expanded form in the green box and then add. Remember to use zeros as placeholders and to include commas in the answers.
$2,000+30+8$
$8,000+200+4$

| 2,038 |
| ---: |
| $+2,436$ |
| 4,474 |
| $+6,333$ |
| 14,537 |

A small rice paddy field produced 6,824 pounds of rice last year. This year it produced 7,185 pounds of rice. How much rice did it produce for both years combined?


Draw the hands on each clock to represent the time shown. The hour hand moves closer and closer to the next number as the minutes go by.


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## SUBTRACTION WITH REGROUPING REVIEW

## Skip Counting

Practice these items with the child.

- Skip count by 2 s from 20 to $60.20,22,24,26$, etc
- Skip count backward by IOs from I,000 to 800. $1,000,990,980,970$, etc

O Read to the child: In the tall mountains beyond Bo and Chun's village are cool, wet bamboo forests where giant pandas live. Giant pandas love to eat bamboo and spend most of their day chewing on sticks and leaves. Let's suppose that the panda in this photo has 964 bamboo sticks in his favorite part of the forest. In one month he ate 475 bamboo sticks. Let's practice subtraction with regrouping to find out how many bamboo sticks are remaining in his favorite part of the forest.


On a whiteboard or scratch paper, have the child write the subtraction problem to find how many bamboo sticks are left. Guide the child through this subtraction problem (using the images to the right) as you read the following text aloud:

Start on the right-hand side in the ones column. Can you subtract 5 from 4? [no] You don't have enough ones, so you need to borrow from the tens place. We can trade 1 ten for 10 ones. This is called regrouping. Cross out the 6 and change it to 5 to show you took away a ten. Add the ten to the ones place by writing a 1 next to the 4 .
 Now you have 14 ones. Subtract $14-5=9$.

Move to the tens place. Can you subtract 7 from 5 ? [no] You cannot because you don't have enough tens, so you need to borrow from the hundreds place. We can trade 1 hundred for
 10 tens. Cross out the 9 and change it to 8 to show you took away a hundred. Add the 10 tens you borrowed to the tens place by writing a 1 next to the 5 to show that you have 15 tens. Subtract $15-7=8$. Move to the hundreds place and subtract $8-4=$ 4. How many total bamboo shoots are left?

O Have the child complete the following problems. Remind the child to include the commas and read the answer to each problem aloud.

O Read to the child: In subtraction problems, you often start with the total amount and subtract the smaller part. If 5 pandas were eating near a lake and 3 walked away, how would you find the number of pandas remaining? Write the total number that were at the lake at the beginning, and then subtract the number that went away. Write an equation for this story.


Complete the problems. Remember to include the comma.


Complete the story problems below and to the right

A female giant panda can weigh up to 220 pounds. Bo weighs only 110 pounds. How much less does Bo weigh than the giant panda? (Hint: write the greater weight first and subtract the lesser weight.)

## arn

In 1975, there were 2,459 pandas living in the forests of China. By 2014 there were only 1,864 pandas living in the forests of China. How many fewer pandas were there in 2014 ? (Hint: Write the larger number of pandas first and subtract the smaller number to find the difference.)


Take the 10 -sided and 6 -sided dice from the math box. Roll both dice and fill in the boxes with the numbers you roll. Then complete the problems. If you roll a 10 , write the digit 0 in the blank.

Roll both dice from the math box. Subtract the lesser number from the greater number. Cross off the answers below until you get three in a row. If your answer is zero or you already crossed off the number that matches your answer, roll again.

| 7 | 4 | 9 |
| :---: | :---: | :---: |
| 1 | 6 | 5 |
| 8 | 2 | 3 |

This mother panda had 135 shoots of bamboo. She gave 56 shoots to her cub. How many shoots did she have left for herself?

| $10^{2} 5$ |
| :---: |
| 185 shoots |
| -56 shoots |
| 79 shoots |



Panda cubs are cared for by their mothers for about 498 days. This mothers for about 498 days. This
panda cub is 372 days old. How many days does he have left until he is old enough to live on his own?


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MATH 3
8

* REVIEW \& ACTIVITIES
How many Chinese coins are there? If needed, use skip counting or
repeated addition to help solve the problem.

Draw a line to match the problem with the correct image. If needed, use skip counting or repeated addition to solve the problems.


## $\diamond$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box after you have practiced the Set A multiplication facts for 10 minutes or more by doing Musical Multiplication, flash cards, or multiplication practice sheets. Then complete the problems, which review multiplying by $0,1,2$, and 10.

$$
\begin{array}{r}
1 \\
\times 3 \\
\times 3 \\
\hline 16 \\
\hline 14 \\
\hline 14 \\
\hline 9
\end{array} \begin{array}{r}
2 \\
\times 9 \\
\hline 18
\end{array} \begin{array}{r}
10 \\
\hline 20
\end{array}
$$



O Read to the child: Lunar New Year is a time in China when friends and family exchange good wishes and gifts for the coming year. In Chinese culture it is customary to give and receive gifts using two hands, which is a sign of respect and appreciation. Bo, Chun, and their parents are buying gifts to give during Lunar New Year. Let's help them by solving the problems using addition and subtraction. Parent/Teacher Note: If the child struggles with reading, please read the problems in this Lesson Practice aloud.

Story problems will give you information that you need to answer a question or complete a problem. We will use the strategy of circling the information and underlining the questions to help us complete problems.


1. Chun had \$38. Then she bought a fan for \$21. How much money does she have lett?

First, you find the information that is given and circle it. In this problem, we have circled "\$38" and "\$21." Next, you underline the question that needs to be answered: "How much money does she have left?" In this problem we know how much money Chun had (the total) and how much she spent (part of the total). That means we need to subtract the amount she spent from the total she had to find what she has left.


$$
\$ 38-\$ 21=\$ 17
$$

2. Bo bought a lantern for \$10.) a kite fo $\$ 8$, and a drum fo $\$ 5$. How much money did he spend altogether?

Start by circling what you know and underlining the question you need to answer. This question wants you to find a total amount. That means you will need to use addition and add all the amounts together.

Total money he spent?
Total money he spent?

| Lantern $=\$ 10 \quad$ Kite $=\$ 8 \quad$ Drum $=\$ 5$ |
| :--- |
| lantern kite drum |
| $\$ 10+\$ 8+\$ 5=\$ 23_{\text {total }} \$$ spent |

Complete the following story problems on your whiteboard. Circle what you know and underline the question. Then decide if you need to add the amounts together to find a total or to subtract the smaller one from the total amount.

1. Their mother, Lee, had \$42. Then she bought a vase for \$23. How much money does she have left?
$\$ 19$
2. Their father, Zhang, bought a doll for \$17, a lantern for \$10, and a vase for \$23. How much money did he spend altogether? $\$ 50$
3. Chun wants to buy another fan for \$21, but she only has \$17. How many more dollars does she need? Use subtraction. $\$ 4$

## $\therefore$ MATH 3

LESSONPRACTICE
Use the prices for each item to help you complete the problems.


Circle the correct answer.

1. To find the difference, you need to . .

ADD SUBTRACT
2. To find the sum, you need to .

## ADD I SUBTRACT



数 REVIEW \& ACTIVITIES

## E.x.p.a.n.d.e.d

Mount Everest is the highest mountain in China and the world. It rises to $\mathbf{2 9 , 0 3 2}$ feet. Write this number in expanded form.
$20,000+9,000+$
$30+2$


The Yangtze River in China is $\mathbf{3 , 9 1 5}$ miles long. Write this number in expanded form.

$$
3,000+900+10+5
$$





Fill in each empty box with a number so that no matter which way you add three numbers (across, down, or diagonally), the sum of the three numbers equals the same number. The digits 2-10 may be used only once each to complete this square.

| 7 | 8 | 3 |
| :---: | :---: | :---: |
| 2 | 6 | 10 |
| 9 | 4 | 5 |
|  | $\mathbf{5}$ |  |



Read to the child: One day while walking in the bamboo forest, Bo and Chun found some wildflowers. Chun picked 8 bjuquets of purple flowers and 7 bouquets of yellow flowers to sell at the market. Then she decided to glfe 4 f the bouquets to her friends instead of selling them. How many bouquets did she have left to sell?

This story problem has two parts, which means you'll need to complete two problems to get the final answer. You can use the strategies you learned in the last lesson to help you. Circle what you know and underline the question to answer.


Step A: Find the total number of bouquets gathered: $\qquad$
8 purple bouquets +7 yellow bouquets $=15$
Step B: Subtract the number she plans to give to friends from the total number. (Cross out 4 bouquets in the image above.)

1. Bo spotte 11 birds while he was helping Chun pick flowers. The 6 flew away. A few minutes later, he spotte 3 new birds. How many birds are there now? Circle what you know and underline the question to answer


Step A: Subtract the birds that went away. (Cross out 6 brown birds in the image.)


Step B: Add the 3 new birds to the number remaining to find how many there are now.
2. Back at home, Chun helped her father pick fruit from their lychee tree. On one branch of the tree, there were 127) pieces of fruit. Birds at 19 dieces of fruit. Bugs got int 23 pieces and ruined them. How many good lychee fruits were left on the branch for Chun to pick?


There is more than one way to solve this problem. Let's explore two options. First circle what you know and underline the question.

## Option 1

 or ruined fruit

Step B: Subtract the number of ruined fruit total fruit total ruined from the total amount of fruit that grew.
 85
Option 2
On a whiteboard, have the child figure out another way to solve the problem. [Example—Step A: Subtract the 19 from 127; Step B: Subtract 23 more]

Then have the child solve the next problem using one option from problem \#2:
3. Bo's tomato plant produced 87 tomatoes. The birds ate 13 tomatoes and the bugs ruined 26 tomatoes. How many good tomatoes were left? 48

LESSON PRACTICE
Complete the problems
Chun takes the flowers to school to share with friends When she arrives, 12 children are playing tag and 9 children are swinging. Then 7 more children arrive at school. How many children does she see at school now?


In China all the children help clean the school. There are 96 desks in their school. Chun and her friends cleaned 24 desks. Bo and his friends cleaned 31 desks. How many more desks need to be cleaned?


How do children in China get to school? Some walk while others ride bicycles. In large cities older children can ride public transportation. School buses are not available to all children.

\section*{In Bo and Chun's town, 58 children walked to school and 61 children rode bicycles. How many went to school? <br> | 58 |
| ---: |
| $+\quad 61$ |
| 119 |}

Of the 61 bicycles, 14 were green and 25 were red. The rest of the bicycles were blue. How many blue bicycles were there?

## Option A

$61-14-25=22$
Option B

$$
\begin{aligned}
& 14+25=39 \\
& 61-39=22
\end{aligned}
$$

Take the 10 -sided dice from the math box. Roll the dice and fill in the blanks for the following problems. Then complete the problems. If you roll a 10 , write 0 in the box.

$$
\begin{gathered}
36 \\
-22 \\
\hline \text { Answers will vary? } \\
\hline
\end{gathered}
$$

There are 32 children in Chun's class 12 ate dumplings and steamed buns for lunch, and 16 ate noodles and veggies. The rest ate boiled chicken and rice. How many ate boiled chicken and rice?

| Option $\mathbf{A}$ |
| :--- |
| $32-12-16=4$ |
| Option B |
| $12+16=28$ |
| $32-28=4$ |



Did you know that in Bo and Chun's language (Mandarin Chinese), people sometimes write numbers with symbols? These symbols can be used for 1,2 , and 3 :

| - | - | - |
| :--- | :--- | :--- |
| "Ye" | "Er" | "Sahn" |

Write the Chinese symbols in the box.




O Read to the child: Bo loves animals. At the library he checked out a book about Asian elephants and read some interesting facts. For example, he learned that Asian elephants love marula fruit. He also learned that they can eat up to 300 pounds of food in a single day. If 4 elephants ate 2 marula fruits each, how could you find the total number of marulas the elephants ate using addition?

#  

Write an addition problem on the whiteboard for this problem and complete it. $2+2+2+2=8$
We call this method repeated addition. Do you remember another way to solve repeated addition problems with equal groups? [multiplication] In a multiplication problem, the numbers you multiply are called factors. The first factor is often the number of groups, and the second factor is usually the number of items in each group. The answer is called the product.

Fill in the blank boxes with the correct numbers to solve this story problem. Four elephants each ate 2 marulas. How many total fruits did they eat? 8


Read to the child: Let's try another one! Fill in the blank boxes with the correct numbers to solve this story problem. Elephants aren't the only ones who love marula fruit. At dinner all 4 members of the family (Bo, Chun, Mom, and Dad) ate 4 marula fruits each. How many total fruits did they eat? Have the child point to the two factors and the product and name them.


Let's try another problem with pictures of marula fruit. Using the fruit below, circle 4 groups with 5 fruits in each group using a red colored pencil. Then write a multiplication problem and solve it.

blue colored pencil. Now write a multiplication problem showing 5 groups of 4 fruits and solve it. Did you get the same answer as before?

## ELEPHANT Multiplication

 Bo read in his book that Asian elephants are some of the earth's most intelligent animals. They are so skilled with their trunks that they use them to tear down trees or pick a single blade of grass. Let's play a matching game using pictures of Asian elephants.Using your pencil and a paper clip, make a spinner and place it on the circle between the elephants. Take turns spinning the paper clip and finding a multiplication problem that matches the image. Read the problem aloud and solve it to win that problem. If the answer is incorrect, the problem can be won by the other player if he or she gives the correct answer. Try to collect a problem in all three colors (purple, blue, and green). For additional practice, keep spinning and matching until all problems have been solved.



Math 3 Answer Key


Read to the child: We will begin this lesson by doing a quick exercise When I say, "Go!" I will start the stopwatch. We'll see how long it takes you to do 10 jumping jacks. Ready? Go! Show the child the time and have him or her write the number of seconds below.
It took
$\qquad$ seconds to do 10 jumping jacks.

Some activities, such as jumping jacks, take only seconds, while others take minutes, and some even take hours! Look at the list below and circle the most reasonable amount of time it takes to do each activity.

1. Open and close my mouth
2. Dance to a song minutes mours

O Point to the clock: On an analog clock like this, hours and minutes are indicated by hands that point to the numbers. There is always a long hand and a short hand. What does the short hand tell us? Have the child write an " H " for hours next to the short hand. What does the long hand tell us? Have the child write an " M " for minutes next to the long minute hand.
i Notice that the hour hand is pointing between the 7 and 8 . This means that the time is past 7 o'clock but not yet 8 o'clock. Have the child write a " 7 " on the orange line below. We always write the hours on the left side of the colon when writing out time.

## Now let's look at

 the minute hand. Remember that each number on the clock face represents a multiple of 5 minutesPoint to each number, beginning with 1 , and skip count by $5 s$ all the way around the clock. How many minutes are in an hour? Each tick mark 60 going around the clock represents one minute.

This minute hand is pointing to the second tick mark past the 2 . Since the 2 represents 10 minutes, the first tick mark past the 2 represents 11 minutes, and the second tick mark represents 12 minutes. Have the child write " 12 " on the blue line above. Minutes are always written on the right side of the colon. The time shown on this clock is seven twelve.

O Point to the image of food. On special occasions, Bo and Chun's family enjoys eating the tiny, bite-size breakfast dishes called dim sum at the village restaurant. Bo always looks forward to savoring the small tasty dishes.

$\Rightarrow$ MATH 3
When they arrived at the restaurant early this morning, Bo checked his watch. What time was it? Find the hour first, and then count by 5 s until you reach the 10 . Then count on by 1 s until reaching the minute hand. Say the time aloud and write it below.


What time did Bo's family leave the restaurant?
 $: 34$ - AM

One day Bo got a new watch and checked it each time he started a new task. Let's see if we can figure out in what order he did these things. Set out the AM and PM clocks from the Lesson 11 page of the Appendix. Help the child put the clocks in order from earliest time (starting with the AM clocks) to latest time. Have the child say the time on each clock aloud.



Math 3 Answer Key




O Take the mini measuring tape from the math box. Read to the child: Bo and Chun's grandfather is a penjing [penJEENG] master, which is the art of designing miniature trees. One day he taught Bo and Chun all about how he trims and prunes penjing trees so that they grow in certain shapes. He showed them how he puts them in shallow pots so their roots cannot grow large, and thus the trees remain miniature.

Their grandfather asked which penjing tree is their favorite. Bo's favorite tree is about 6 inches tall. Chun's favorite tree is about 13 centimeters tall. You will use the measuring tape to identify which trees are Bo's and Chun's favorites. One side of the tape is labeled in inches, and the other is labeled in centimeters. Measure the height of each penjing tree to the nearest inch and also to the nearest centimeter. Line up the end of the tape so the 0 is on the blue line. Write the answers in the boxes using the abbreviated labels. Here is how we write inches and centimeters and their abbreviated forms:



$\bigcirc$ Punch out the pieces on the Lesson 13 page of the Appendix. Tape the ends of the ruler together to make a yardstick. Take the measuring tape from the math box. Read to the child: The Great Wall of China, one of the most awe-inspiring sights in the country, attracts millions of visitors every year. Some sections of the wall are nearly 2,300 years old! When Bo and Chun visited the Great Wall during their summer vacation, they learned some interesting facts about it. Listen closely for the different units of measurement. The Wall is 13,170 miles long! The average height of the Wall is 8 yards (or 24 feet), and an average brick in the wall measures 15 inches long. What were some of the measurement units you just heard? [miles, yards, feet, inches]

Read to the child: All of these measurements are part of a system used in the United States called the US customary system. How can you know which measurement is best to use? [It depends on the size of what is being measured.] You have measured items using inches. Inches are very small, and they are best for measuring very short lengths. What are some things you could measure in inches? [Examples: paper, pencil, etc.]
Measure the length of this math book in inches: $\qquad$ 1 i in Measure the length of your pencil in inches: $\qquad$ in Answers will vary

Look at your measuring tape. How many inches are in 1 foot? What are some things you could measure using feet? [Examples: height of a door, 12 in length of a table, etc.] The abbreviation for feet is ft .

Measure the width of a door in feet: $\qquad$ ft Answers will vary.

Show the child the yardstick. This is called a yardstick. How many feet can you count in this yardstick? What could you measure using yards? 3 ft [Examples: the length of a playground, the length of a football field, etc.] The abbreviation for yards is yd

Measure the length of this room in yards: $\qquad$ yd Answers will vary

Help the child measure 1 yard and mark the spot. Then move the yardstick and line up the zero end with the 1 -yard mark to continue measuring.

The largest unit of measurement for length in the US customary system is a mile, abbreviated with mi , and is the same as 5,280 feet. It would take about 20 minutes for you to walk a mile. We use miles to measure very long distances, such as the distance from one city to another. Let's practice matching items to the most reasonable unit of measurement.


Take the 6 -sided dice and game pieces from the math box. Read the instructions to the child: Take turns rolling the dice and moving forward that number of spaces. Draw a line to match the item in the space where you land with the most reasonable unit of measurement for measuring its length or height. For orange tag items, choose between feet and miles; for purple tag items, choose between yards and inches. Continue moving clockwise around the game board. The first player to find items matching to all four unit labels is the winner. If you land on a space that has already been matched to a unit label, then roll again. Optionally, continue playing until all items have been matched.


44
Math 3 Answer Key

## 路 LESSONPRACTICE

Circle the unit that would work best for measuring each object.

| The height of a water tower yards I inches | The height of a tall tree <br> miles <br> feet <br> inches |
| :---: | :---: |
| The length of a spoon | The distance across the Atlantic Ocean |
| inches I feet | inches \| miles | yards |
| The height of a stop sign | The length of a goldfish |
| miles feet | feet \| inches | yards |
| The length of a colored pencil | The length of your thumb |
| inches \| yards | feet \| yards I inches |
| The length around the neighborhood | The length of the Great Wall of China |
| yards I inches | feet 1 yards I miles |

```
Choose the best unit to measure each item and write it in the blank.
\[
\text { inches | feet | yards } \mid \text { miles }
\]
1. The height of a door is about 7 feet
2. The length of a pencil is about 7 inches
3. The height of a two-story house is about 7 yards
4. The distance of a hike to the top of a mountain is about 7
miles
```

Measure the following items using the yardstick. Use the best unit for the item.

| Your foot | Answers will vary. |
| :--- | :--- |
| A table | Answers will vary. |

Draw a line to connect the measurement to its abbreviation.


## * REVIEW \& ACTIVITIES

Write a multiplication problem for the groups of lanterns and complete it.

$\qquad$ $=$

Write the numerals shown in expanded form in the green box and complete the addition or subtraction problems

| $8.000+300+3$ | 2,000 |
| :---: | :---: |
| $\stackrel{1}{8.303}$ | 2,064 |
| + 1,908 | + 5,791 |
| 10,211 | 7,855 |
| $5.000+400+8$ | $9.000+70+1$ |
| 5,408 | 9,071 |
| + 4,352 | + 6,284 |
| 9,760 | 15,355 |

Circle the lantern that is to the LEFT of the purple one. Cross out the lantern that is to the RIGHT of the red one.



Circle the most reasonable measurement for the line segments.


Write the answers. Remember 10s times tables are like 1s, but shift the answer to the tens place and put a 0 in the ones place.

| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $\times 2$ | $\times 4$ |  |  |  |  |  |  |
| 20 | $\frac{\times 3}{40}$ | $\frac{\times 6}{60}$ | $\frac{\times 7}{70}$ | $\frac{\times 9}{90}$ | $\frac{\times 8}{80}$ | $\frac{\times 5}{50}$ |  |



## $\diamond$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set A for 10 minutes or more. Then complete the problems in this section.

| 4 |
| ---: |
| $\times 6$ |
| $\times 6$ |
| 24 |
| 15 |



O Read to the child: Every Lunar New Year, families give out red envelopes, called hóngbāo [hong-BAW], filled with money to the younger generations. The red color of the envelope symbolizes good wishes for the new year. In preparation for this celebration, factories in China produce red envelopes in quantities of hundreds, thousands, and ten thousands. We can use skip counting or multiplication to complete the following problems.


- Jenny Phillip:
$\Rightarrow$ MATH 3
Did you notice a pattern? Pause for response. When multiplying by 100 , you wrote 2 zeros behind the number of groups. When multiplying by 1,000 , you wrote 3 zeros behind the number of groups. When multiplying by 10,000 , you wrote 4 zeros behind the number of groups. Using this strategy, fill in the boxes below with the products.

* LESSON PRACTICE

For Lunar New Year, Bo received 3 red envelopes with 100 renminbi (Chinese money) in each one. How much money did he receive? Write a problem and complete it to find the answer.

$$
3 \times 100=300
$$

Chun received 5 red envelopes with 100 renminbi in each one. How much money did she receive? Write a problem and complete it to find the answer.

$$
5 \times 100=500
$$



Complete the problems.
$3 \times 1,000=3,0008 \times 10,000=80,0004 \times 100=400$
$6 \times 1,000=6,0009 \times 10,000=90,0008 \times 100=800$

## Fact Family Search

Complete the problems, and then find and circle the fact families in the puzzle. Write a + and $=$ sign in the correct place. The first one is done for you.


## $\diamond$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set A for 10 minutes or more by doing Musical Multiplication, flash cards, or multiplication practice sheets. Then complete the problems in this section.

| 3 | 3 | 6 | 4 | 8 |
| ---: | ---: | ---: | ---: | ---: |
| $\times 5$ |  |  |  |  |
| 15 | $\times 4$ |  |  |  |
| 12 | $\times 4$ |  |  |  |
| 24 | $\times 8$ |  |  |  |
| 32 | $\times 8$ |  |  |  |
| 64 | $\frac{5}{25}$ |  |  |  |

Take the 10 -sided dice from the math box and roll it. Write a number in each blank. Then complete the problems. Remember 10 s times tables are like 1 s , but shift the answer to the tens place and put a 0 in the ones place.


Answers will vary


O Read to the child: You have learned how to measure length using the US customary system, which uses units such as inches, feet, yards, and miles. Today, you will learn how to measure length using the metric system. Metric units are used in most countries around the world.

Look at the four metric units used to measure length. Allow the child time to observe. Which unit is the smallest and which is the largest? $\mathrm{mm}, 1 \mathrm{~km}$ There are abbreviations for each unit. Write " mm " next to millimeter,


The Chinese people are known for weaving beautiful silk fabric, made from the threads of silkworm cocoons. Let's suppose Lee wants to buy enough fabric to make another traditional Chinese qípáo [tsee-pow] gown. If she tells the seller, "I would like to purchase 5 of the pink fabric,"
 the seller would ask her to be more specific. Circle the best measurement

$$
5 \mathrm{~mm}|5 \mathrm{~cm}| 5 \mathrm{~m} \mid 5 \mathrm{~km}
$$

Look at the ruler below. Notice that some of the lines are longer than others. The longer lines represent centimeters while the shorter lines represent millimeters. Count the number of millimeters that are between 0 and 1. Fill in the blank with the correct conversion.


Later, Lee will mark where to cut the fabric using a colored pencil. How long is the pencil in centimeters and millimeters? Count by 10 s to find the number of millimeters, or multiply the number of centimeters by 10 .


This is a picture of a meterstick. A real one is a little longer than a yardstick, like the one you used in Lesson 13. This ruler also shows centimeters and millimeters. Fill in the blank with the number of centimeters in one meter. The prefix centi- means hundred, so the word centimeter means "a hundredth of a meter."



The prefix kilo- means thousand, so the word kilometer means "a thousand meters." How many meters are in one kilometer?


Kilometers are best for measuring very long distances. What are some distances you could measure using kilometers? (Examples: the distance an airplane flies, the length of a river, etc.) If the trail that Bo and Chun take through the bamboo forest is 3 kilometers long, how many meters is that? (Hint: Skip count by 1,000 s or multiply 3 by 1,000 .)

$$
3 \mathrm{~km}=3,000 \mathrm{~m}
$$



- The length of a piece of popcorn

$$
25 \mathrm{~mm}|25 \mathrm{~cm}| 25 \mathrm{~m}
$$

- The width of a forest
$16 \mathrm{~cm}|16 \mathrm{~m}| 16 \mathrm{~km}$

- The distance across (diameter of) a penny 20 mm | 20 cm | 20 m

The silk fabric for Lee's new dress was made by many tiny silkworms. A silkworm's cocoon is made from a single thread between 300 and 900 meters long. Each thread is very thin so it takes between 2,000 and 5,000 cocoons to make one pound of silk fabric.

Write the measurements for the silk worm and the piece of fabric.




Read to the child: Draw a line on the clock from the 12 down to the 6 , dividing this clock into two equal parts. Now use your pencil to shade in one of the parts. What do we call fractions when 2 equal parts make up the whole? [halves] When the minute hand travels from the 12 down to the 6 , it has traveled halfway around the clock. Point to the half on the right.
 This is half of an hour. That is why when the minute hand points to the six we can say that it is half past the hour. Write the words "past" and "after" on the right side of the clock.

Point to clocks 1-3. Clock 1 says 1:30 because the minute hand is pointing to the 6 . Exactly half of the hour has passed, so you can read this time as "half past one o'clock." Do you notice how the hour hand is also halfway between the 1 and the 2 ? What are some ways to read the time shown on clocks 2 and 3 ? [8:30, half past eight; $4: 30$, half past four]


Read to the child: Divide this clock into 4 equal parts by drawing a line from the 12 to the 6 and another line from the 9 to the 3 . What do we call fractions with 4 equal parts in a whole? [fourths] Use your pencil to shade in one fourth of this clock from 12 to 3.
If you divide a dollar into 4 equal parts, or
 fourths, you'll have 25 cents. Do you remember what the coin worth 25 cents is called? [quarter] When you divide an hour into 4 equal parts, you have 15 minutes in each part. Quarter is another way of saying fourth. When the minute hand points to the 3 , one quarter of the hour has passed, so we can say it is a "quarter past" the hour.


Write the time shown on the clock. Then circle whether the time is quarter past, half past, or quarter to the next hour.


Write the time on the digital clocks.
half past four quarter after three



Jack's family eats dinner at 5:30. Circle the correct time of day label ( AM or PM ), and then draw a line from the correct phrase to the hour.


Kylie's father leaves for work at 8:15 each morning. Circle the correct label (AM or PM), and then draw a line from the correct phrase to the hour.


Kylie gets ready for bed at 7:45. Circle the correct label (AM or PM), and then draw a line from the correct phrase to the hour.
quarter past
half past
quarter to

Have you heard someone say that "time flies"? Time can't actually fly, but it can feel like $(\rightarrow, ~ a, ~)$ it's going by very quickly.

Write this number in expanded form.
71,604 $\underline{70,000+1,000+600+4}$

| For each addition problem, write the numerals from the expanded form in the green box and complete the problem. | $6,000+400+7$ | $4,000+80+6$ |
| :---: | :---: | :---: |
|  |  |  |
|  | 6,407 | 4,086 |
|  | +3.719 | - 2,756 |
|  | 10,126 | 1,330 |
| Is it EVEN or ODD? |  | $10.130$ |
| Draw a line to connect the numbers to the correct answer. |  | ${\underset{216}{989}}^{-916}$ |

Write a multiplication problem and complete it to find out how many watches there are.


## Number Cube Puzzle

This kind of puzzle is popular in Asian countries. To complete it, you need the digits 1,2 , and 3 in each row and each column. Use the clues to help you complete it.

| 3 | 1 | 2 |
| :--- | :--- | :--- |
| 2 | 3 | 1 |
| 1 | 2 | 3 |

The digits in the green boxes must add up to 5 .

The digits in the blue boxes must add up to 3.

The digits in the purple boxes must add up to 4 .

The digits in the orange boxes must add up to 3 .
$\diamond$ Multiplication Fact Quiz $\diamond$
Have your parent or teacher quiz you on the Set A multiplication facts below, and circle any facts you missed. You will be doing targeted practice on these facts for the rest of the unit.

$$
\begin{aligned}
& 6485384 \\
& \frac{\times 6}{36} \quad \frac{\times 6}{24} \quad \times 4 \quad \times 5 \quad \times 4 \times 8 \quad \times 8 \\
& 336594 \\
& \frac{\times 5}{15} \times \frac{3}{9} \quad \times 4
\end{aligned}
$$



O Take the measuring tape from the math box. Read to the child: Jack and Kylie live in Australia. They are curious about how far away different countries are and carefully examine a map to estimate the distances $>$, in kilometers. About how far do you think they are from China? Have the child make a guess (in kilometers) and write it on the whiteboard. Estimating allows you to make the best guess possible using known information. Map designers use scales to help the reader get a sense of size because it is not possible to draw a map in actual size. It would be too large! Point to the map of South Asia and Australia. Find the scale at the bottom left corner of this map. One centimeter on this map represents how many kilometers? $[1,000]$


Use the metric side of your measuring tape to measure the line between Beijing, China, and Perth, Australia. Count by 1,000 s for every centimeter you measure. Circle the distance below and compare to your guess

$$
5.000 \mathrm{~km} \quad 7.000 \mathrm{~km} \quad 9.000 \mathrm{~km} \quad 6.000 \mathrm{~km}
$$

About how many kilometers is it from Beijing to Tokyo? Make a guess, and then measure the line and count by 1,000 s for every centimeter you measure. Circle the answer.

## $2.000 \mathrm{~km} \quad 3.000 \mathrm{~km} \quad 1.000 \mathrm{~km} \quad 4.000 \mathrm{~km}$

About how many kilometers is it from New Delhi to Jakarta?
$2.000 \mathrm{~km} \quad 3.500 \mathrm{~km} \quad 1.000 \mathrm{~km} \quad 4.000 \mathrm{~km}$



Point to the map of Australia above. Find the scale at the bottom of the map. Then fill in the blank with the correct information. Estimate the number of miles between the Australian cities marked with dashed lines and write your guesses on the whiteboard.

## 1 inch $=1.000$ miles

Use the inch side of the measuring tape to measure the actual distances. Remember, if the measurement is halfway between the inch marks, then add half of 1,000 to the measurement. What is half of 1,000 ? [500]

1. About how far is it from Sydney to Hobart?
$2.500 \mathrm{mi} \quad 3.000 \mathrm{mi} \quad 1.500 \mathrm{mi} \quad 1.000 \mathrm{mi}$
2. About how far is it from Darwin to Canberra? $2.000 \mathrm{mi} \quad 3.500 \mathrm{mi} \quad 1.000 \mathrm{mi} \quad 4.000 \mathrm{mi}$
3. About how far is it from Perth to Brisbane? $2.500 \mathrm{mi} \quad 3.000 \mathrm{mi} \quad 1.500 \mathrm{mi} \quad 1.000 \mathrm{mi}$

Compare your estimate to the actual distances.


58
0 Jenny Phillips
MATH 3
Jack and Kylie want to go on some hikes, but they need to estimate the different distances before choosing a trail. Use the scale to help you measure and estimate the distances in either kilometers (on the left side map) or miles (on the right side).


While visiting South Australia's Flinders Ranges, they wanted to go on a 4-kilometer hike. Which trail should they choose? Measure each trail in centimeters and use the scale to determine how many kilometers it represents. Circle the hike that is 4 kilometers long (one direction).
Hike A:


$$
9 \mathrm{~cm} \longleftrightarrow
$$

$\square$ 9 km
Hike B:


The next day they wanted to go on a 3-mile hike using a different map that used inches to represent miles. Which trail should they choose? Measure both trails in inches and find the distance represented by each line on the map in miles. Circle the hike that is 3 miles long.


in $\longmapsto$ $\square$ 3 mi

5
in $\longmapsto$ $\square$
Write the time shown on the clock. Then circle
whether the time is half past the hour, quarter

past the hour, or quarter to the next hour. | For each addition problem, write the numerals |
| :--- |
| shown in expanded form in the green box and |
| complete the problem. |

60

- Jenny Phillips

a


## \&

Circle all the half-inch tick marks on the ruler below.


Measure the height of the flowers, using the lines to line up your measuring tape. Write the answers in the boxes.



Math 3 Answer Key

| Chart | $\times$ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 |  | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
|  | 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
|  | 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
|  | 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| 30 | 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| $\frac{\times 0}{0} \div \frac{5}{0} \times 0$ | 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |
|  | 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
| $\times 2 \times 0 \times 8$ | 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |
|  | 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

64

$\bigcirc$ Read to the child: Jack loves to learn. He spent the morning doing math and learning to draw butterflies of Australia. The clocks below show the times he started and finished his schoolwork. What times are shown on the clocks? The amount of time that passes from one event to another is called elapsed time. Using the number line below or counting hours on the clock, start at 9:00 AM and count the number of hours that pass until you reach 12:00 PM. Write the number of elapsed hours in the box.


I2 AM |llllllllll
Another way to find elapsed time is by using subtraction. 12 End This strategy works when you are finding the difference between full hours if you are not crossing AM and PM or when the elapsed time occurs within the same hour. To or $9_{\text {start }}$ find the answer, subtract the start time from the end time.

In the afternoon Jack and his mom volunteered at a soup kitchen, serving lunch to those in need from 1:02 PM to 1:45 PM. To figure out the elapsed time, we could start at 1:02 PM and count the number of minutes that pass until we reach 1:45 PM, but that would take a long time. Instead, we can use subtraction since the times are within the same hour. Subtract the start time from the end time to find the elapsed time.
 Jack to draw each shell. Then circle your favorite drawing


| Start |
| :---: |
| $4: 13 \mathrm{PM}$ |
| End |
| $4: 46 \mathrm{PM}$ |



## LESSONPRACTICE

Jack's and Kylie's families went to an Australia Day celebration on Saturday from 1:00 PM to 5:00 PM. How long were they at the celebration?


Later that night they watched the Australia Day fireworks to celebrate the founding of the country. The fireworks show went from 10:04 PM until 10:38 PM. How long did it last? Subtract the start time from the end time to find the elapsed time.

| Start <br> $10: 04 ~ P M$ | 34 |
| :---: | :---: | | End <br> minutes <br> Elapsed Time |
| ---: |

Write the times shown on the clocks. Then find the elapsed time.




Math 3 Answer Key


O Read to the child: You have already learned place value up to the ten thousands place. Today, we are going to learn place value to the hundred thousands place. Australia's national animal is the kangaroo. Kangaroos are the only large animals known to move about by hopping. They can hop very fast. Point to the number in purple. This is how many feet they can hop per hour. Look at the number as I read it, and notice how I say THOUSAND when I reach the comma. 73,921
Read this number slowly, "seventy-three -thre." thousand, nine hundred twenty-one."

Now, you read these numbers, saying THOUSAND when you get to the comma.


What number comes after 99? What comes after 999? 9,999? What do you think comes after 99,999? Read these numbers, saying THOUSAND when you get to the comma. 100,000


Two of the main species of kangaroo found in Australia are the red and the western grey kangaroos. The number on the place value chart shows how many red kangaroos are in Western Australia. Read the number aloud. The numbers in the thousands are in the green
thousands
 columns. Notice how there is a hundred thousands, ten thousands, and thousands in the thousands section.

- Which digit is in the hundred thousands place? 6
- Which digit is in the thousands place? 8
- Which digit is in the ten thousands place? 3
- Which digit is in the tens place? ?
- Which digit is in the hundreds place? I

I will now tell you the number of western grey kangaroos found on the east coast of Australia, and you write the number on a whiteboard using digits. Read this number aloud as many times as necessary for the child to write it down: four hundred ninety-six thousand, fifty-nine. [496,059]

Using the number you just wrote, answer the following questions. Look at the chart on this page if needed:

- Which digit is in the hundred thousands place? 4
- Which digit is in the thousands place? 6
- Which digit is in the ten thousands place?
- Which digit is in the hundreds place? $\bigcirc$


MATH 3


Write the digit in each place value.

$$
284,359
$$



Write each of the following numbers using digits. Remember to include the comma.
one hundred nine thousand, forty-two

four hundred seventy thousand, thirty-six


Circle the numbers that are greater than 100,000.



- Jenny Phillips


How many days are in each month? Fill out the calendar chart on the back of the array mat. (If needed, have the child watch daily until mastered one or both of these videos on The Good and the Beautiful Kids YouTube channel: "How Many Days Are in a Month?" or "Days in Each Month Song.") Erase the mat Awhen finished

O Read to the child: In previous lessons you have learned how to measure the length of an object. Today, you will learn how to measure volume, which is the amount of space an object or liquid takes up. In the US customary system, volume is measured using gallons, quarts, pints, and cups. The amount of liquid a container can hold is called capacity.

can help you remember that there are 4 quarts in a gallon. The next unit is pints. Look at the visual again. How many Ps are inside one Q? There are 2 pints in every quart. Now count all the Ps in the visual to find how many pints are in a gallon. The smallest unit is cups. How many tiny Cs are inside one P? There are 2 cups in a pint. Now count the number of Cs inside one Q . There are 4 cups in a quart. Finally, count the number of Cs in the whole visual to find the number of cups in a gallon.

We are going to memorize and review this sentence in this course. I'll read it aloud, and then you read it aloud with me twice.

## There are 2 cups in a pint, 2 pints in a quart, and 4 quarts in a gallon.

O Optional Activity: Give the child a 1-cup measuring cup and a large mixing bowl. Have the child put 1 pint of water into the bowl (using 2 cups) Dump it out. Have the child put in 1 quart of water by adding 2 pints (4 cups). Dump it out. Then, without the child looking, put in 1 quart and ask the child if it looks like 1 pint or 1 quart. This activity gives a better visual of how much a pint and a quart are.

O Read to the child: Look at the items in the first column of this page as you do this activity. Circle the most reasonable unit to use to measure the volume of each item.


Use the Gallon G visual to fill in the blanks and complete the problems.

| How many pints |  | 2 quarts | How many cups are in |  | $3 \text { pints }$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |
| are in 2 | $\times$ | 2 pints per quart |  |  | 2 cups per pint |
| quarts? |  | 4 total pints |  |  | 6 total cups |

LESSONPRACTICE
Read the sentence in the green box two times aloud. Then try to recite the sentence without looking at it.

There are 2 cups in a pint, 2 pints in a quart, and 4 quarts in a gallon.

Draw two lines to divide the gallon in fourths. Then write $Q$ (for quart) on each fourth to show that there are four quarts in a gallon.


Draw a line to divide the quart in half. Then write $P$ (for pint) on each half of the quart to show that there are two pints in a quart.

## Draw a line to

 divide the pint in half. Then write C (for cup) on each half of the pint to show that there are two cups in a pint.Which would be the more reasonable measurement for each of the following items? Circle the answer

| A big bucket of paint <br> A baby's bottle <br> A family-sized carton of juice <br> A teacup | 2 gallon | 1 pint |
| :--- | ---: | ---: | ---: |
|  | 2 gallons | 2 cups |

Jack is shopping with his father. They need to buy the items listed below, but the larger containers are sold out. How many of the smaller containers will they need? Shade the equivalent amounts. Use the Gallon $G$ visual on page 71 to find the answers.


Fill in the blanks to show the conversions. Look at the Gallon G visual on page 71 and use skip counting or multiplication to find the answers.

$\qquad$


Read to the child: Jack and Kylie love visiting the beautiful hills in Australia. Do you see Kylie and Jack on the next page? One of their favorite things to do there is run up a hill and then roll down. Look at this number line in the shape of a hill.


If you run up the hill and stop at the spot marked $\$ 3.30$, which way would you roll down, towards the $\$ 3.00$ or the $\$ 4.00$ ? [\$3.00] Yes, $\$ 3.30$ is closer to $\$ 3.00$ than it is to $\$ 4.00$. This means $\$ 3.30$ rounds to $\$ 3.00$.

Notice what is right in the middle of the hill: $\$ 3.50$. Half of a dollar is 50 cents. When rounding to the nearest dollar, begin by looking at the digits to the right of the decimal. If the value is equal to $50 \%$ or greater, it rounds up to the next dollar. When the digits after the decimal are less than 50¢ (49c or lower), you round down to the nearest dollar. Looking at the hill for help if needed, round each amount to the nearest dollar.


Read to the child: Let's round to the nearest dollar with dollar amounts that are higher. When rounding money to the nearest dollar, we are rounding to the ones place. So if we are rounding $\$ 125$ and some cents to the nearest dollar, we would be rounding either down to $\$ 125$ or up to $\$ 126$. Looking at the hill for help if needed, round each amount to \$125 or \$126.


O Game-Fields of Australia: Take the 6 -sided and 10 -sided dice from the math box. Read to the child: Let's play a game to practice rounding to the nearest dollar. We'll complete the Set A Box on the next page first.

1. You will roll both dice and write the numbers rolled to the right of the decimal point on the first dollar amount ( $\$ 135$ ). For example, if you rolled a 6 and then a 3 , you would write " 63 ," so the total amount would read " $\$ 135.63$." (Note: If a " 10 " is rolled, treat it like a zero.)
2. Then you will determine if the number rounds down or up and say the amount rounded to the nearest dollar. If the number rounds up, circle a sheep, and your turn is over. If the number rounds down, do not circle anything, and your turn is over.
3. I will do the same thing, but I will circle a cow if the number rounds up.
4. We will complete Set B Box in the same way.
5. After Set $A$ and $B$ are completed, count the number of sheep circled and the number of cows circled. If more sheep are circled, you win. If more cows are circled, I win. This is completely a game of chance and just for fun!


${ }^{76}$
enny Phillips


Math 3 Answer Key
Read to the child: Jack's family has a garden where they grow carrots, peas, and corn. The family organizes the different types of crops within the space of their garden using fractions. Fractions name parts of a whole and can be shown using different shapes such as circles, rectangles, and squares. Every fraction has two parts, called the numerator and the denominator. The numerator (top number) is the number of parts being referred to. In the image below, there are 3 parts that are shaded green, so we write that number above the fraction bar. The denominator is the total number
 of equal parts that
make up the whole. The square is divided into 4 equal parts, so we write 4 below the fraction bar. We read this fraction as three-fourths.
O Remove the garden boxes and vegetable pieces from the Lesson 23 page of the Appendix. Show the child "Jack's Garden." Jack's garden has 7 equal parts that make up the whole garden bed. His family planted carrots in one part. Write a fraction to represent how much of the garden has carrots in the space at the top right. Now count how many parts they planted with peas and write a fraction to represent the peas. Finally, count the parts that are planted in corn and write a fraction.


Read to the child: Fractions that have a numerator of 1 are called unit fractions. The fraction for carrots, $\frac{1}{7}$, is an example of a unit fraction. Shade in one part of each circle, label each unit fraction below, and read its name aloud.


O Give the child "Kylie's Garden Box" and the vegetable fraction pieces. Kylie's family wants to grow a garden too. Help them plant their garden by splitting the garden box into the correct number of parts for each plant. All the fractions have 10 as the denominator. That means the box needs 10 equal parts. Use the following fractions for the spring garden: $\frac{2}{10}$ peppers, $\frac{3}{10}$ cucumbers, $\frac{4}{10}$ tomatoes, $\frac{1}{10}$ beets

In the fall the family planted new crops. Clear the box and plant the garden with the correct number of parts for the following plants: $\frac{3}{10}$ carrots, $\frac{5}{10}$ lettuce, $\frac{1}{10}$ radishes, $\frac{1}{10}$ broccoli

Shade each shape according to the fraction shown. Then circle all the fractions that have a 1 as the numerator.


Write the fraction for the shaded parts of each shape. Circle the fraction that has a 6 as the denominator.


## LESSONPRACTICE

Suppose you start a garden with your family this summer and $\frac{1}{4}$ of the garden has carrots and $\frac{3}{4}$ has peas. Divide the box into 4 equal parts. (Begin by dividing the rectangle in half, and then divide each half into half again.) Label the parts with "C" to represent the fraction of the garden with carrots and " $P$ " to represent the fraction of the garden with peas.


Design your own garden! Divide the garden box below into 8 equal parts. Then decide which kinds of vegetables you will plant using the following fractions:

$$
\frac{1}{8} \frac{3}{8} \frac{4}{8}
$$

Shade the parts, draw pictures, or write the names of the vegetables to show which ones are in each part of the garden.


Draw lines to divide each shape into the number of parts listed. The first one is done for you.


Draw lines to divide each shape into the number of parts shown by the denominator. Then shade each shape according to the fraction shown.

$\qquad$
Round to the nearest dollar. Write the rounded price on the tag.


Round each number to the nearest hundred. Write the answer in the box

| 377 | 3,175 | 2,644 |
| :--- | :--- | :--- | :--- | :--- |
| 400 | 3,200 | 2,600 |

Figure out the skip counting pattern and write the missing numbers.

| 220 | 240 | 260 | 280 | 300 | 320 |
| :--- | :--- | :--- | :--- | :--- | :--- |


| Complete the problems. |  |  |
| :--- | ---: | ---: |
| 237,063 | 3,428 |  |
| 243,708 |  |  |
| $+416,809$ |  |  |
| 653,872 |  |  |$+\frac{6,261}{12,689} \quad \frac{+39,271}{682,979}$

Secret Number
Read the clues to find the secret number.

I. It is in the square and the oval.
2. It is greater than 10 and less than 16 .
3. It is an odd number.


Answer:

| $\diamond$ Multiplication Fact Practice $\diamond$ |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Put a check mark in the green box when you have practiced multiplication facts Set A for 10 minutes or more. Then complete the problems in this section. |  |  |  |  |  |
| 5 | 4 | 3 | 4 | 6 | 4 |
| $\times 5$ | $\times 6$ | $\times 5$ |  | $\times 6$ | $\times 3$ |
| 25 | 24 | 15 | 32 | 36 | 12 |



Remove the crocodiles from the Lesson 24 page of the Appendix and give them to the child for the Lesson Practice. Read to the child: Let's review the relationship between gallons, quarts, pints, and cups by reciting this sentence a few times.

There are 2 cups in a pint, 2 pints in a quart, and 4 quarts in a gallon.
Suppose you have a gallon of milk and a quart of milk and you need to know how many quarts of milk you have altogether. Today, we will learn how to convert a unit of measurement so we can add it to a different unit. To do this, we first convert the larger unit to an equivalent number of smaller units.

Step 1 is to change gallons to quarts. How many quarts are in a gallon? [4] Count the number of Qs in the Gallon G visual below. Now, draw lines to divide the gallon jug into 4 parts and write a $Q$ in each part.

$\qquad$ quarts

Step 2 is to add all the quarts together. Count the total number of quarts and write the answer in the blank.

Today, Jack and his dad are making pavlova, a favorite Australian dessert. If they have 3 quarts and 1 pint of whipping cream, how many total pints of whipping cream do they have?

Step 1 is to change quarts to pints How many pints are in a quart? [2] Write a "P" on each half of the
 quart containers.

Step 2 is to add all the pints together. Count the total number of pints in the image and write the answer below.

$$
6 \text { pints }+1 \text { pint }=7 \text { pints }
$$

Another way to complete these problems is to use multiplication. If you had 4 pints and 1 cup of raspberries, how many cups of raspberries would that be altogether?


You know there are 2 cups in every pint, so you can multiply the number of pints by 2 to find the number of cups in 4 pints.

$$
\begin{aligned}
& 4 \times 8 \\
& \text { \# pints } \\
& \text { \# cups in a pint }
\end{aligned}
$$

$$
8_{\text {cups }}+1 \text { cup }=9 \text { cups }
$$


2. Next they whipped together 3 pints and 1 cup of egg whites. How many total cups did they whip?

\& LESSON PRACTICE

Convert the larger unit to the smaller unit and then add the amounts. Draw lines on the pictures if needed to help you convert. Write the answer on the line.
2 quarts and I pint $\qquad$ 5 pints

1 gallon and 2 quarts $=6$ quarts

2 pints and l cup $=$ Efor

## CROCODILE Crunch <br> 

 crocodiles. Freshies, as they are called by the Australians, usually eat small animals such as fish, frogs, turtles, waterbirds, and snakes.


Round to the nearest dollar

| $\$ 3.62$ | $\$ 4.00$ |
| :---: | :---: |
| $\$ 31.47$ | $\$ 31.00$ |
| $\$ 124.50$ | $\$ 125.00$ |

## 

Look at the line of children. Amy is the first in line, starting on the left. Answer the questions below about the other children's positions in the line using ordinal numbers such as 2 nd , 3 rd, etc.

- What place is Jake in? 5 th/fifth - If Faith moves in front of Emma, then what -Who is second in line? Emma place will Faith be in? 2nd/second - What place is Erik in? 10th/tenth

Who is the eighth in line? Melia

- If Jake and Misha leave the line, then what place will Thomas be in? 5 th/fifth
- Who is in line right after Melia? Calvin


At a wildlife refuge, Jack and Belle counted all the birds they saw in five minutes. This is how many they counted. Count the tally marks and write the totals in the boxes.

## $\diamond$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set A for 10 minutes or more. Then complete the problems in this section.


O Read to the child: Jack really enjoys spending time with God while reading his Bible. He usually starts studying at 8:15 AM, but today he got a late start. He spent 15 minutes studying and finished at 8:46 AM. To find the start time, should we add or subtract? [subtract] Point to the purple numbers in the box as you explain. Yes! Because the start time happened in the past, we need to count backward. By subtracting 15 minutes from the end time, we find the start time.


Later, Jack wanted to practice playing the guitar for 30 minutes. If he starts practicing at 9:24 AM, what time will he finish? For this problem, we are looking for a time in the future. Should we add or subtract? [add] Point to the purple numbers in the box as you explain. That's right! We add the 30 minutes he practices to his start time to find the time he will finish.


Let's complete a couple more. Have the child complete these problems on a whiteboard.

- Jack started lunch at I2:03 PM. It took 24 minutes for him to eat. What time did he finish eating? Label your answer with AM or PM. 12:27 PM
- Jack spent 37 minutes riding his bike. He finished at 3:56 PM.

What time did he start? Label your answer with AM or PM. 3:19 PM
Ostimation Game: For fall break Jack's and Kylie's families are visiting Blue Mountains National Park, which is just a short drive from Sydney, Australia. The stunning blue appearance of the mountains is created by oils released by the many eucalyptus trees in the park combined with water vapor and dust.


The families planned their trip by estimating how long each activity would take. Look at the times in the gray box at the top of the next page and make your own estimate for how long each activity will take. Write your guess in the "estimated minutes" box. Then complete the problems below to find the elapsed time. Have the child complete these problems on a whiteboard using subtraction. Write your answers in the "actual minutes" box.

- The cable car ride started at $10: 42 \mathrm{AM}$ and ended at I0:55 AM.
- They started their walk to Empress Falls at II:3I AM and arrived at the falls at II:53 AM.
- After lunch they took another tour along the scenic walkway to reach one of the giant rock formations in the park. They started at l:14 PM and finished at I:45 PM.
- Next, they biked through the forest from 2:13 PM until 2:58 PM.
- Finally, it was time for Jack's favorite part of the day. The hot-air balloon tour started at 4:02 PM and ended at 4:59 PM.


Jack sketched some of the animals he saw in the Blue Mountains. Use a whiteboard to complete the problem, and then draw the clock hands to show the answer.


MATH 3
\& REVIEW \& ACTIVITIES \&


## $\diamond$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when for 10 minutes or more. Then complete the problems in this section.

$$
\begin{array}{r}
6 \\
6 \\
\times 6 \\
\hline 36 \\
\times 84 \\
\hline 64
\end{array} \begin{array}{r}
5 \\
\times 3 \\
\hline 15
\end{array}
$$

Math 3 Answer Key

（ Read to the child：Jack＇s and Kylie＇s families spent the afternoon volunteering at a nearby donation center．Jack used a pictograph to sort the number of shirts，pants，skirts，and shoes that were in his pile． A pictograph is a graph that uses pictures to represent data．It is useful when trying to organize large amounts of information．When reading a graph，it is important to start by reading the title，the categories，the symbols，and the key．Have the child point out these parts on the graph


Symbol $\longrightarrow \Sigma=2$ items $\longleftarrow$ Key

In the first pictograph，each star represents 2 items．Count by $2 s$ to find the number of skirts that were donated and write the answer in the box to the right of the stars．Notice that the shirt category is only showing half a star at the end．Pause for the child to locate．Since each full star represents 2 items，how many items do you think a half of a star would represent？［1］Find the number of shirts that were donated by counting by $2 s$ until you reach the last complete star．Then add one more for the half star．Write the answer in the box．

How many pairs of pants and shoes were donated？Count the stars and fill in the answer．
$\bigcirc$ Read to the child：Kylie used a tally chart to organize each type of clothing that was in her pile．This type of graph is used to collect data quickly and efficiently．Filling in a chart with marks representing numbers is faster than writing out words or numbers．

The title and categories are the same as the pictograph，but the tally chart uses tally marks as a symbol and does not require a key．You
can count by 5 s when you see one full set or by 10 s when you see two groups of 5 ．Count the marks and write the number of items Kylie had in her pile in the boxes to the right．畔州

| Trum |  |  |
| :---: | :---: | :---: |
|  |  | 34 |
|  |  | 27 |
|  | 州州列1 | 16 |
|  | 州形㖄洲洲 | 30 |





Math 3 Answer Key


MATH 3

## VOLCANIC ERUPTIONS



## * LESSONPRACTICE

Choose the more reasonable unit of measurement for the volume of each o object by drawing a line from the picture to either mL or L .


These jugs show how much liquid they can hold in milliliters. Write the equivalent amount in liters in each box below. Include the unit label.


2 L
L


3 L


5 L

Color in the pitchers to show the correct amount of liquid.


Add the number of liters in each group together, and then write the equivalent amount in milliliters in each box below. Include the unit label.




Fill in the blank with the correct conversion
$\qquad$ L
$7 \mathrm{~L}=\underline{7.000 \mathrm{~mL}}$
$\qquad$
$5,000 \mathrm{~mL}$ $\qquad$ L
$10 \mathrm{~L}=\underline{10,000 \mathrm{~mL}}$


Math 3 Answer Key


O Read to the child: Jack's uncle owns a roadside didgeridoo [did-jur-ee-DO] stand. These Australian instruments were originally made from hollow tree branches. One bright spring day, Jack was helping his uncle at the stand. A woman came by with $\$ 100$ in her purse and wanted to buy the three instruments listed below. Does she have enough money to buy all three? Help Jack quickly round the price of each instrument to the nearest dollar and write the amounts in the blue boxes. Then add the amounts together on the whiteboard. According to your estimate, can the woman buy all three didgeridoos for $\$ 100$ ? Inol Which two instruments could she buy with $\$ 100$ ? The first two ve to give the correct amount of money for purchases, rounding can help us quickly see the total cost of items and give us a good idea if we can purchase something.


Next, a man came by and wanted to buy two certain didgeridoos. He had
$\$ 100$ but needed to keep at least $\$ 20$ to buy gas to fill his tank. How much money can he spend on the two instruments? [\$80] To help Jack figure out if the man can buy the two instruments, round the price of each instrument to the nearest dollar and write the amounts in the blue boxes. Then subtract the two amounts from $\$ 80$ on a whiteboard. Can he buy the two instruments and have at least $\$ 20$ left? [yes]


Read to the child: On the whiteboard round each of the amounts to the nearest dollar, and then write the problems vertically and complete them. $\$ 45$ $\qquad$

$$
\begin{array}{r}
\$ 45.49-\$ 20.32 \frac{-\$ 20}{\$ 25} \quad \$ 43.76+\$ 31.50+\frac{\$ 32}{\$ 76} \\
\text { me-Didgeridoo Collection: Have the child cut out the didgeridoo }
\end{array}
$$

Game-Didgeridoo Collection: Have the child cut out the didgerid boxes on the dashed lines on the next page. Read to the child: Let's play a game called "Didgeridoo Collection Game." First, let's read the instructions:

1. Put all the boxes you cut out in a bowl or bag
2. For each round see how many didgeridoos you can collect without going over $\$ 100$. Your turn is first. Draw a didgeridoo from the bowl or bag. On the whiteboard round the cost of the instrument to the nearest dollar. You can choose to keep that one instrument and stop, or you can draw another. If you draw another, round the cost and add it to the cost of the first instrument you drew. Continue on as long as you like or stop when you like, but if you go over $\$ 100$, you do not collect any instruments for the round. If you stop before you go over $\$ 100$, write the number of instruments you collected in the Round 1 box. Once your turn is over, put all the instruments back in the bowl or bag.
3. I will do the same thing on my turn for Round 1. Then you complete Round 2 and so on.
4. Once we have gone through all the rounds, we will add up the total number of instruments we each collected and see who collected the most.


Math 3 Answer Key

This section is blank for double-sided printing and cutting purposes.




## \& FRACTIONS \&

Shade each shape according to the fraction shown.


Write a fraction to show the amount that is shaded in each shape.


Shade each shape according to the fraction shown.


Write a fraction to show the amount that is shaded in each shape.

$\frac{5}{6}$
 팅


Fill in the blank with the correct conversions.
$1 \mathrm{~cm}=10 \mathrm{~mm} \quad 1 \mathrm{~L}=1,000 \mathrm{~mL}$


- Jenny Phillips



## \% MEASUREMENT CONTINUED \%

The pictures below show the amount of each type of drink that was provided at the church picnic. Complete the conversions to answer the questions. Draw lines on the images if needed.

How many total pints of lemonade are there?

How many quarts of water are there?


How many cups of milk are there?


Use your measuring tape to measure the lines in inches or centimeters.


Fill in the blanks with the correct abbreviations
kilometer $=$ $\qquad$ km
millimeter $=$ $\qquad$

Use your measuring tape to measure the line in inches.
$\longmapsto \quad 2$ inches
Fill in the blank with the correct symbol (<, >, or $=$ ) to make the comparison true.


## TELLING TIME TO THE MINUTE, TIME EXPRESSIONS. AND ELAPSED TIME

Draw hands on the clock to match the time written above each clock. Then circle the appropriate event for the time shown.


Read each clock and write the time to the nearest minute.


Jack's mom put the pastries in the oven at 3:03 PM and took them out at 3:34 PM. How long were the pastries in the oven?

## $\square$ Additional Proctice

Draw hands on the clock to match the time written above each clock. Then circle the appropriate event for the time shown.


Read each clock and write the time to the nearest minute


Jack worked on his project from 1:08 PM to 1:55 PM. How long did Jack work on his project?


O Read to the child: Twelve-year-old Winnie and her brother, 9 -year-old Tombe, live near Lake Victoria in Uganda. Today, Tombe and Winnie are going fishing on the lake with their father. Lake Victoria is the largest lake in Africa and the third-largest lake in the world. The lake is home to many unique species of fish, such as these tiny cichlids. Winnie shared some facts about the lake with Tombe.


Circle the most reasonable labels for the measurements she shared.
Lake Victoria is 322 km long.
Lake Victoria has a depth of 80 m
The cichlid fish are about 5 cm long.
Converting between units of measurement is a useful skill. We will fill in basic
conversions in the box to help us with this concept. The prefix cent means hundred. Just like there are 100 cents in a dollar, there are 100 centimeters in a meter. Write

| Metric Length |
| :---: |
| $\mathbf{1} \mathbf{m}=100 \mathbf{c m}$ |
| $\mathbf{1 k m}=1,000 \mathbf{m}$ | 100 in the blank next to cm . The prefix kilo means thousand. There are 1,000 meters in a kilometer. Write 1,000 in the blank next to $m$.

Tombe reeled out 5 meters of fishing line. How long is his fishing line, measured in centimeters? There are 100 centimeters ( cm ) in 1 meter, so count 5 groups of 100 centimeters ( cm ) and write the answer on the blank. Or multiply 5 by 100 to find the answer.



Five meters is equal to 500 centimeters.
A table can
also be use
cone convert between units. The first row shows that 1 meter is equal to 100 centimeters. Fill in the table with the conversions.

| Meters | Centimeters |
| :---: | :---: |
| 1 | 100 |
| 2 | 200 |
| 3 | 300 |
| 4 | 400 |
| 5 | 500 |
| 6 | 600 |

If Dad's fishing boat is 600 centimeters long, how many meters is it? Use the chart to find the answer. Pause for response. Right, 600 centimeters is equal to 6 meters.

Later that day, Winnie estimated the distance they traveled around the lake. Each time they rowed the boat, they traveled about 1 meter forward. She estimated that they traveled about
5,000 meters. If $1,000 \mathrm{~m}=1$ km, how many kilometers did they travel? Fill in the table to find the answer.

| Kilometers | Meters |
| :---: | :---: |
| 1 | 1,000 |
| 2 | 2,000 |
| 3 | 3,000 |
| 4 | 4,000 |
| 5 | 5,000 |

Suppose that
on another day Tombe's father traveled 3 kilometers. How many meters is that? You can count groups of 1,000 meters or multiply $3 \times$ 1,000 to solve.



Convert the lengths to either meters or kilometers.
$2,000 \mathrm{~m}=\ldots 2 \mathrm{~km} 5,000 \mathrm{~m}=\ldots \mathrm{km} \quad 4 \mathrm{~km}=4,000 \mathrm{~m} \quad 6 \mathrm{~km}=2,000 \mathrm{~m}$
 Lake Victoria has an area of 25,564 square miles.
Write this number in expanded form.


The White Nile River, which begins in Uganda, is a tributary of the Nile and is 2,299 miles long. Write this number in expanded form.

```
2,000+200+90+9
```



R REVIEW \& ACTIVITIES \&
Below is a list showing the approximate
number of
freshwater fish species in six different countries,
Round each number to the nearest TEN.

| Uganda: | 92 | 90 |
| :--- | :--- | :---: |
| Guatemala: 166 | 170 |  |
| Australia: | 279 | 280 |

Shade each shape according to the fraction shown.


Round each number to the nearest HUNDRED.

| China: | 1,323 | $\underline{1,300}$ |
| :--- | :--- | :--- |
| Canada: | 1,97 | $\underline{1,200}$ |
| India: | 939 | $\underline{900}$ |

Figure out the skip-counting patterns and write the missing numbers
40, 44
, 48, 52, 56, 60
-50, 45
$40,35,30,25,20,15$
$\diamond$ Multiplication Fact Practice $\diamond$
Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more. Then complete the problems in this section.

| 9 | 4 | 7 | 5 | 3 | 7 | 3 | 9 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $\times 5$ |  |  |  |  |  |  |  |
| 45 | $\times 4$ |  |  |  |  |  |  |
| 16 | $\times 4$ |  |  |  |  |  |  |
| 28 | $\times 4$ | $\times 7$ | $\times 8$ | $\times 9$ | $\times 4$ |  |  |
| 21 | $\frac{5}{21}$ | $\frac{4}{36}$ |  |  |  |  |  |


$\Rightarrow$ MATH

O Read to the child: The siblings hiked up the mountain. Tombe measured the air again. He learned that air temperature is often colder higher in the mountains. Write the temperature shown on the thermometer.

$$
21^{\circ} \mathbf{C} \quad 70^{\circ} \mathbf{F}
$$

Is the temperature closer to body temperature or room temperature? Circle one.


Winnie then measured the temperature of the water and found that it was also colder at the top of the mountain. What temperature does the digital thermometer say? Make a line on Tombe's thermometer to mark 56 degrees Fahrenheit. Then look across the thermometer to the Celsius scale to find what the equivalent temperature is in degrees Celsius. Write the number. Is the water temperature higher or lower than room temperature?
lower
Read to the child: For each activity circle the more reasonable temperature.


LESSON PRACTICE
Fill in the blank boxes on the chart. Look at the previous page for help.


Shade the thermometers to show the correct temperatures in either degrees Fahrenheit or degrees Celsius. Optionally, add more to the scenes below, such as snow, grass, flowers, or fallen leaves, to match the temperature.


- Jenny Phillips


Round each number to the nearest HUNDRED. Write the answer in the box


Color in the pitchers to show the correct amount of liquid.


On their hike Tombe saw 8 butterflies and 3 moths. He also counted 13 beetles. How many insects did he see altogether?
$8+3+13=24$ insects

Skip-Counting Maze skip count by 3 sto find the way through the jungle to the hut.


For each subtraction problem, write the value shown in expanded form in the green box and complete the problem.
$9,000+600+70 \quad 7,000+500+90$

| $\begin{array}{r} 61 \\ 9,6 \times 0 \end{array}$ | $\begin{gathered} 81 \\ 7,590 \end{gathered}$ |
| :---: | :---: |
| $-5,423$ | $-4,462$ |
| $4,247$ | $3,128$ |
| The rain started falling at 6:03 AM and fell for 49 minutes. What time did the rain stop falling? | $\begin{aligned} & 6: 03 \\ & \text { elime stapsed } \\ & \text { time }+.49 \\ & \text { time } \\ & \hline 6: 52 \end{aligned}$ |

- Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more. Then complete the problems in this

| 6 | 3 | 3 | 10 |
| :---: | :---: | :---: | :---: |
| $\times 1$ | $\times 3$ | $\times 4$ | $\times 5$ |
| 6 | 9 | 12 | 50 |
| 6 | 4 | 3 | 9 |
| $\times 4$ | $\times 8$ | $\times 5$ | $\times \bigcirc$ |
| $24$ | $32$ | $15$ | $\bigcirc$ |



Read to the child: Many people travel to Uganda each year to see the animals. Winnie's grandfather is a safari guide, and today she is going with him. Winnie uses tables and bar graphs to help organize data she collects on the safari. Information, such as numbers and descriptions, arranged in rows and columns is called a table. The table here shows the number of animals that were sighted on the safari today


| Animal | \# of Animals <br> Sighted |
| :---: | :---: |
| Gorilla | 5 |
| Monkey | 30 |
| Elephant | 20 |
| Buffalo | 10 |
| Crocodile | 5 |
| Giraffe | 25 |


 in the table to create a bar graph. A bar graph is a set of bars used to show the amounts of each type of data collected. The bars can be positioned vertically or horizontally. She uses the ba graphs to show tourists how many animals are usually seen on a safari.

To read the bar graph, look at the names of the animals long the bottom of the bars. Place your finger on the buffalo column. Move your finger up to the top of the bar, and then slide it over to the scale on the left. What number are you pointing to? [10] That means 10 buffalo were sighted. The table shows that there were 20 elephants sighted. Draw a bar in the elephant column to represent this data. Now read the bar graph to find the number of giraffes sighted. Write this number in the correct space in the table on the left.

Use the information shown in the bar graph to answer the questions.

- Which animal was sighted the most? monkey
- Which two animals were sighted the least? gorilla and crocodile
- How many more monkeys were sighted than buffalo? 20
- How many total animalswere zighted? $20+10+5+25=95$

O Graphing Practice: We are going to make our own bar graph. First, write the names of four different families in the blanks on the table on the next page. (One can be your family.) Write the number of people in each family in the space next to their name. Using the data in your table, create a bar graph. Write a title for the graph and list each family name along the bottom. Then color in the bars with the correct number for each family. Ask the child questions, such as, "Which family has the most people?" etc.

| Family Name | \# in Family |
| :---: | :---: |
|  |  |
|  | will |
| Answ |  |
|  |  |
|  |  |

LESSONPRACTICE

## Joy's Flowers

Winnie's mother, Joy, often makes bouquets of flowers to sell to the tourists after their safari ends. Today,


## $\checkmark$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more. Then complete the problems in this section.

$$
\begin{array}{rrrrrrr}
5 & 4 & 7 & 7 & 5 & 8 & 9 \\
\times 9 \\
\hline 45 & \times 4 \\
\hline 16 & \times 3 \\
\hline 21 & \times 4 \\
\hline 28 & \times 8 \\
40 & \times 7 \\
\hline 56 & \frac{4}{36} & \times 9 \\
\hline 27
\end{array}
$$


$\rightarrow$ MATH 3

## LESSONPRACTICE

Put a check mark next to each picture that has the line of symmetry correctly drawn. If it is incorrect, draw a correct line of symmetry.


Write your name in the box below, using all capital letters. Draw all possible lines of horizontal and vertical symmetry through each letter. Then write the number of lines of symmetry below each letter.
Answers will vary. Most capital letters have this many lines of symmetry: $0=F, G, J, L, N, P, Q, R, S, Z$; $1=A, B, C, D, E, K, M, T, U, V, W, Y ; 2=H, I, O, X$

Tangram Lines of Symmetry
Use the orange tangram shapes from the math box to complete this activity. Place the correct shapes across from the line of symmetry to complete a mirror image.
ther diagonal lines of symmetry (not shown) are possible and correct for the starfish.

Fill out the chart with the correct conversions.


Use the information in the table below to fill out the bar graph. Then answer the questions.

| Animal | \# of Animals |
| :---: | :---: |
| Goat | 2 |
| Chicken | 12 |
| Duck | 4 |
| Rabbit | 8 |

Which animal do they have the most of? chickens How many animals do they have altogether? 26
How many more rabbits are there than ducks? 4

The walk from Winnie's hut to the garden $i$ is 9 meters long. How long is it measured in centimeters?

| 900 cm |
| :--- |
| Tombe and Winnie's father is 200 <br> centimeters tall. How tall is he in meters? <br> 2 m |


$\diamond$ Multiplication Fact Practice $\diamond$
Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more.
 multiplication facts.

$$
\begin{aligned}
& 4587489 \\
& \frac{\times 4}{16} \frac{\times 4}{20} \frac{\times 7}{56} \frac{\times 3}{21} \frac{\times 9}{36} \frac{\times 3}{27} \frac{\times 5}{40} \frac{\times 5}{45}
\end{aligned}
$$

The multiplication facts above are hidden in the chart below. Find the facts, circle them, and write the multiplication and equal symbols where they go. Facts can be horizontal, vertical, or diagonal. The first one is completed as an example.


( Read to the child: Tombe and Winnie always enjoy this time of year when they get to help their parents gather the harvest from their garden. They always share half of their crops with the community as a way to bless those around them. Their family grows beans, sweet potatoes, plantains, corn, and wheat.

With fractions, when the top number (numerator) is half of the bottom number (denominator) then the fraction is equal to one-half.

Circle the correct number of boxes to represent half of the beans. What fraction of the beans are circled? To write the fraction of each crop they share, write the total number of boxes as the denominator and the number of circled boxes as the numerator in the green squares.


Circle the correct number of boxes to
represent half of the sweet potatoes in the next column. What fraction of the sweet potatoes is circled?


For each set of boxes, circle half of the crop. What fraction of each crop is circled?


Fill in the blanks with the fractions that represent half:


Did you notice that the numerator is always half of the denominator and that the denominator is always an even number in fractions that equal one-half?


Game-Capture the Kernels: Take two different colored pencils and the 10 -sided dice from the math box. Roll the dice. If the number you rolled can be used to create a fraction equal to one-half (either as a numerator or denominator), then write the number in the blank space with your colored pencil to capture it. After you have gone, or if the dice lands on


## LESSONPRACTICE

Shade in half of each circle below. Then write the fraction that represents the amount shaded.

## 

Circle all five fractions that are equal to one-half.


2 MATH 3


Math 3 Answer Key

Draw horizontal or vertical lines of symmetry for each shape. Circle the shapes that have only one line of symmetry.


Round each number to the nearest hundred. Write the answer in the box.


Figure out the skip-counting pattern and write the missing numbers.

| 21 | 18 | 15 | 12 | 9 | 6 |
| :--- | :--- | :--- | :--- | :--- | :--- |

Complete the prpblems

| 724,063 | 735,726 | 5,624 |
| ---: | ---: | ---: |
| $+214,854$ | $+63,241$ | $+4,352$ |
| 938,917 | 798,967 | 9,976 |



## $\diamond$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more. Then complete the problems in this section.

| 4 | 4 | 3 | 4 | 8 | 8 |
| ---: | ---: | ---: | ---: | ---: | ---: |
| $\times 4$ |  |  |  |  |  |
| 16 | $\times 5$ |  |  |  |  |
| 20 | $\times 7$ | $\times 7$ | $\times 5$ | $\times 7$ |  |
| 21 | $\frac{5}{56}$ |  |  |  |  |

O Jenny Phillips


## CONVERTING BETWEEN INCHES,

 FEET. AND YARDS
## $\square$

Skip Counting
Practice items the child has not mastered.

- Count by 6 s from 6 to 60 . See page $v$
- Count by odd numbers from I to 19.1, 3, 5, 7. etc

Read to the child: Today, we will explore Tombe and Winnie's goat farm to learn how to convert between inches, feet, and yards. Look at the baby goat. The length of its leg is exactly 12 inches, which is equal to 1 foot. Take the measuring tape from the math box. Pull out the measuring tape to 12 inches to see the actual size of the baby goat's leg.

Use the measuring tape to fill out the table of conversions. Count up by 12 s and circle each 12 th number on your measuring tape with a marker.

| ft | I | 2 | 3 | 4 | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| in | 12 | 24 | 36 | 48 | 60 |

If the height of the mother goat is 3 feet, how many inches tall is she? [36 in]

If the baby goat is 1 foot 10 inches tall, how $1 \quad f+\gg 12$ in many total inches tall is he? To find the | answer, convert 1 foot to inches. Then add the inches +10 in |
| :--- | together and label your answer.

 - 22 in


Read to the child: Find 3 feet on your measuring tape. This is the same as 1 yard. In the picture above, each section of the fence for the goat pen measures 3 feet (or 1 yard). Count by 3 s to fill out the table of conversions.

| yd | 1 | 2 | 3 | 4 | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ft | 3 | 6 | 9 | 12 | 15 |

If each side of the goat pen is 4 yards long, how many feet long is each side? Use the table to find the answer. Write the answer on the image above.

If the goats' shelter is 2 yards 1 foot tall, $2 y \mathrm{y} \geqslant \mathrm{f}+$ how many total feet tall is it? To find the answer, convert the yards to feet, using the chart. Then add the feet together and label your answer.

- Game-Spin \& Match: Take the paper clip from the math box. Read to the child: On the next page, we will take turns using a pencil and paper clip to spin. Convert the measurement you land on to a smaller unit of measurement. For example, 1 yard 1 foot will be converted to 4 feet. Use a whiteboard to calculate and then find the matching equivalent measurement. Mark off the matching box with your initials. If you spin a measurement that has already been claimed, then your turn is over. The first player to claim three boxes in a row is the winner.


Write the number below to complete each conversion

$$
\mathbf{1} \mathbf{f t}=12 \text { in } \quad \mathbf{1} \mathbf{y d}=3 \mathbf{f t}
$$

Winnie's goats enjoy eating carrots from her garden. How much longer would the carrot need to be to measure 1 foot? (Hint: There are 12 inches in a foot. Subtract the length from 12 inches to find the difference.)

$$
8 \text { in }
$$

 4

How many total inches long is the goat's lead rope?

total inches !

How many more feet must the bale of hay be to reach 1 yard high? (Hint: There are 3 feet in a yard.)

125

## Fun

## Finds

 Using the measuring tape from the math box, measure the lengths ofdifferent items around your house. See if you can find at least two items Using the measuring tape from the math box, measure the lengths of
different items around your house. See if you can find at least two items that fit into each category. Write the items and measurements below.

Less than 12 in ( 1 ft ) 13 to 24 in




Read to the child: Bead making is one of the oldest forms of art and has a long history throughout the world, especially in Uganda. Winnie's favorite hobby is to help her mom make beaded necklaces using recycled paper from books, newspapers, and magazines. Each bead is hand rolled and then coated with a chemical to seal it and harden the outside. They are very pretty and colorful.

Winnie made a bar graph to compare the quantities of the colors of beads that they made. Look at the data below. 10 35

First, Winnie gave her graph a title. Notice the word "Beads" at the top of the graph. Then she chose the best scale for her graph. The scale tells you what each one of the lines represents. Scales often increase by 1 s , $2 \mathrm{~s}, 5 \mathrm{~s}$, or 10 s depending on the data. Winnie decided to use a scale that increases by 5 since the numbers in her data are multiples of 5 . Finish writing the numbers for the scale on the blanks, counting by 5 s . Winnie knew it was also important to label each of her bars with the specific colors. Lastly, she filled in the number of spaces needed to represent each number of beads. Use a green colored pencil to fill in the bar for the green beads.


Now it's your turn to create a bar graph! Once Winnie and her mom were finished making the bead necklaces, they decided to donate a few, sell some at a local market, and give the rest as gifts to their family members Use the data to create a bar graph below. Your graph will need to be horizontal like the graph above.
-
Donate: 6
Sell: 12
Gift: 4
-

Step 1: Write a title on the line below, such as "Necklaces."
Step 2: Determine what scale you will use. You could count by $1 \mathrm{~s}, 2 \mathrm{~s}, 5 \mathrm{~s}$, or 10 s, but which scale makes sense with your data? Notice how all your numbers are even and the highest number is 12 . You do not have 12 spaces, so you cannot count by 1 s . Counting by 2 s will work best here.

Step 3: Label the rows with "Donate," "Sell," and "Gift."
Step 4: Fill in the correct number of spaces to create the bars.


## 路 LESSON PRACTICE



Tombe took a survey of his community's favorite fruits. Help Tombe create a horizontal bar graph of the results he collected.

The answer that matches these clues is next to
Tombe's favorite animal. Circle his favorite animal.

- The number is even.
- The number has a 4 in the ones place
The digit in the hundreds place would be 6 if you rounded the number to the nearest hundred.


Lions and hippos live in Uganda. A lion can drink about 8 cups of water in a day. How many pints does a lion drink in a day? (Hint: Draw 8 cups


Figure out the skip-counting patterns and write the missing numbers.

$$
6,12,18,24,30,36 \star 36,33,30,27,24,21,18,15
$$

## $\triangleleft$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more. Then complete the problems in this section.

| 4 | 9 | 7 | 4 | 5 | 8 | 9 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $\times 4$ |  |  |  |  |  |  |
| 16 | $\times 5$ |  |  |  |  |  |
| 45 | $\times 3$ |  |  |  |  |  |
| 21 | $\times 7$ | $\times 8$ |  |  |  |  |
| 28 | $\times 7$ | $\times 4$ | $\times 9$ |  |  |  |
| 56 | $\frac{36}{27}$ |  |  |  |  |  |



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O Read to the child: Winnie and Mama are preparing a vegetable stew and chapati (an African flatbread) for dinner. To make the stew, Winnie chops up two-thirds of an onion, three-fourths of an eggplant, one-thirdof a red pepper,one-halfof a sweet potato, andfour-fourths of a squash.


Whole numbers can be named as fractions, too Examples of fractions that equal one whole are two-halves, three-thirds, four-fourths, five-fifths, and so on. Can you find and circle the whole number fraction in Winnie's stew recipe? If the numerator and the denominator are the same number, the fraction is equal to 1
Activity: Set out the $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}$, and 1 cup measuring cups and 2 cups flour in a bowl. Read to the child Next Winnie and Mama make the chapati bread. They need to add one cup of flour to make the dough, but they have lost the 1 cup measuring cup. Move the 1 cup away from the others. Winnie has $\frac{1}{2}$ cup, $\frac{1}{3}$ cup, and $\frac{1}{4}$ cup measuring cups she can use instead. Have the child find each of these measuring cups.

Circle the words that represent a fraction in the sentence I just read When naming a fraction in word form, we name the numerator (top number) first, write a hyphen, and then we name the denominator (bottom number) as an ordinal number, such as "third." One-half is an exception to the rule. Look at Winnie's recipe below and match the fractions to their word forms and fraction images to the right.


Let's use these smaller cups to scoop out the amount of flour Winnie needs. They are each a fraction, or part of a whole cup. We will start with the $\frac{1}{2}$ cup. Fill the $\frac{1}{2}$ cup with flour and pour it into the 1 cup. Repeat until the 1 cup is full. How many scoops did you need? Write your answer in the blank space above the denominator of 2. Now pour the flour back in the bowl, and we will repeat this process with the $\frac{1}{3}$ and $\frac{1}{4}$ cup measuring cups. Write what you find in the blanks above the denominators of 3 and 4 .


Fill in the missing information. The first one has been done for you. Then circle the fractions that are equal to one-half.


Winnie wants to try a new recipe for stew. Circle all the fractions that equal 1 to find out what is in her new recipe. Which vegetable is your favorite one? Put a square around it


The child should put a square around his or her favorite vegetable. O Jenny Phillips

Complete the problems below to find the answer to the riddle. Fill in the blank to make each fraction equal to $\frac{1}{2}$.

How are a dollar and the moon similar? Answer: They both have...
$\frac{\mathrm{F}}{\frac{9}{9}} \frac{0}{7} \frac{U}{\frac{2}{2}} \frac{R}{\frac{4}{8}} \quad \frac{\mathrm{Q}}{\frac{5}{10}} \frac{U}{\frac{3}{6}} \frac{\mathrm{~A}}{\frac{2}{4}} \frac{R}{3} \frac{T}{5} \frac{\mathrm{E}}{5} \frac{\mathrm{R}}{6} \frac{\mathrm{~S}}{\frac{4}{4}} \frac{\mathrm{~S}}{\frac{8}{8}}$


Fill in the denominator for each fraction to make it equal to I.

| 7 | 9 | 5 | 3 |
| :---: | :---: | :---: | :---: |
| 7 | 9 | 5 | 3 |
| 0 | $F$ | $T$ | $R$ |

Fill in the numerator for each fraction to make it equal to 1 .

| $\frac{4}{4}$ | $\frac{8}{8}$ | $\frac{2}{2}$ | $\frac{6}{6}$ |
| :---: | :---: | :---: | :---: |
| $R$ | $S$ | $U$ | $E$ |

$$
\begin{array}{l|l}
\frac{2}{2} & \frac{6}{6} \\
\hline U & E
\end{array}
$$

(4.4.


Math 3 Answer Key


O Read to the child: Today, Tombe went fishing with his father, and they caught fish of all sizes. Tombe likes to measure the fish and keep a record of their lengths. Below is the longest fish they caught. Tombe already measured the fish in feet and inches, but he wants to know the length of the fish in inches only.


To find the total inches, the first step is to convert the 2 feet into inches by adding two groups of 12 inches (because 1 foot is equal to 12 inches). The second step is to add all the inches together.


Tombe subtracted the sum of the lengths of the
two smaller fish from the length of the longest
fish to find the difference. He subtracted the
inches column first, and then the feet column.
$\begin{aligned} & \text { Fill in the blanks to complete the problem. How }\end{aligned}$
$l$ much longer is the largest fish?

Help Tombe find the sum of the lengths of two more fish.

First, add the inches. Notice that the sum in the inches column is 12 inches, which is the same as 1 foot. We need to convert those inches into feet and carry them to the feet column. This is just like when you carry to another place value in addition when the sum is greater than 9. Add all the feet together, including the one we carried from the inches
\(\left.\begin{array}{l}1 \mathrm{f}+\mathrm{in} <br>

+1 \mathrm{f}+5 \mathrm{in}\end{array}\right\rangle \mathrm{ft+2in=1ft} \mathrm{\)\begin{tabular}{l}

${ } \mathrm{in} \mathrm{$| ${ } \mathrm{column} and write the$, |
| :--- |
| total number of feet in |
| the box next to "ft." in |
| the space for inches you |
| can write a zero because |} <br>

in there are no inches

} 

remaining.
\end{tabular} total number of feet in the box next to "ft." In the space for inches you n there are no inches remaining.

Tombe was curious how of ould compare to the longest fish. He added he inches column first, and then the feet colum. Fill in the blank to find combined length for both fish. Is the combined length of the maller fish greater than or less
 add

- Jenny Phillips


Fishing Pole

| Lengths |  |  |
| :--- | :--- | :--- |
| 2 ft 2 in | 26 in |  |
|  | 2 ft 5 in | 29 in |
|  | 2 ftgin | 33 in |

Convert the fishing pole lengths into total inches and write the answers in the chart. Then complete each problem by adding or subtracting the feet and inches.

$$
\begin{aligned}
& \text { I. What is the combined length of fishing pole A } \\
& \text { and fishing pole C? }
\end{aligned} \begin{array}{r}
2 \mathrm{ft} 2 \mathrm{in} \\
+2 \mathrm{ft} 9 \mathrm{in} \\
\hline 4 \mathrm{ft} \mathrm{11in}
\end{array}
$$

Fill in the missing information. The first one has been done for you. Then circle the fractions that equal 1.
 to show $3^{\circ} \mathrm{C} / 39^{\circ}$


Lostum
Fill in the blanks for the addition problems with the numbers that make each problem accurate.

$\diamond$ Multiplication Fact Practice $\diamond$
Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more. Then complete the problems in this section.

| 7 | 8 | 4 | 3 | 4 | 5 |
| ---: | ---: | ---: | ---: | ---: | ---: |
| $\times 8$ | $\times 5$ | $\times 7$ | $\times 7$ | $\times 4$ | $\times 9$ |
| 56 | $\frac{\times 7}{28}$ | $\frac{1}{21}$ | $\frac{45}{45}$ |  |  |
| 7 | 7 | 5 | 8 | 9 | 3 |
| $\times 3$ | $\times 4$ | $\times \frac{8}{40}$ | $\frac{\times 7}{56}$ | $\frac{\times 4}{36}$ | $\times \frac{9}{27}$ |

O Jenny Phillips

( Read to the child: A Venn diagram is one method for visually showing the similarities and differences between two or more items. Many of the tourists who come on safari ask Winnie questions about the differences between the monkeys and the apes they see, so Winnie created a Venn diagram to show how they are the same and how they differ.


Use the diagram to answer the following questions aloud.

- What are two things monkeys and apes have in common?

Items in Both Primates section

- What is one way that apes are different from monkeys?

Items in Apes section

O Set out three colored pencils (blue, purple, red). A favorite food in Uganda (enjoyed by monkeys, apes, and humans) is bananas. As many as 94 varieties are grown there! We are going to create a Venn diagram that compares two types of bananas grown in Uganda. We'll use a blue colored pencil to underline facts unique to Cavendish bananas, red for facts about plantains, and purple for facts that apply to both. Then we'll sort the facts into the correct sections of the diagram below.

You are probably familiar with Cavendish bananas, which are the sweet yellow bananas sold in the United States. Cavendish bananas can be eaten raw or cooked. Once the banana is ripe, the skin is soft and easy to peel.
Plantains, the most commonly eaten fruit in Uganda, can also be found in the US. They are longer and wider than Cavendish bananas. The skin is thicker and does not peel easily, even when the fruit ripens. The fruit itself is starchy and unsweetened, similar to a potato, so it is almost always eaten cooked or fried, not raw Both Cavendish bananas and plantains come from the Musa plant family and have a long, curved shape. They start green, ripen to yellow, and finally turn brown when they are over-ripened.


In each section of the Venn diagram, write one or two items from the paragraph that you underlined. The child needs to write only one item in each section.
\% LESSONPRACTICE *
Circle the numbers that are the same when skip counting by both 3 s and 5 s . Then write


Number Shapes


Math 3 Answer Key


O Read to the child: Tombe sold two boxes of veggies and earned the amount of money shown below. Write the amounts, including a dollar sign, in the boxes. The value of coins less than $\$ 1.00$ goes on the right side of the decimal point. The whole dollar amounts are written to the left of the decimal. Now add the amounts together to find out how much money he earned altogether. Write a decimal point in the answer directly below the decimal points in the problem.


O Read to the child: Winnie sold three bracelets for $\$ 12.20$. The customer paid her $\$ 15.25$. How much money does Winnie need to give back in change? First, write the amounts in the correct boxes. Then subtract the amount owed from the amount paid to find the amount of change Winnie needs to give the customer. Remember to write a decimal point in your answer below the decimal points in the problem. Circle the bills and coins that Winnie should use to return the change using the fewest number of bills and coins possible.


Math 3
Mama sold a bouquet of flowers for $\$ 11.35$, and her customer paid $\$ 12.50$. Write the amounts in the correct places and subtract. How much
change does she need to give back to
$\frac{\$ 1203 \text { paid }}{\$ 11.35 \text { owed }}$

Then circle the coins needed for change by using the least number possible. Start with the quarters, then dimes, and then nickels. If using another high value coin would be too much change, then go to the next highest value coin.


Tombe's father sold some fish for \$27.18. The customer paid with the bills and coin shown below. How much did the customer pay? Write the amount below and include the dollar sign. Line up the decimal points. Then use subtraction to find how much change is owed


Circle the bills and coins needed to equal the amount. Use the least number of coins. (Hint: Circle the coins with the highest value first.)
$\$ 12.93$


Add these amounts of money together, and then compare the amounts using <, >, or = symbols.


## $E \cdot x \cdot p \cdot d \cdot n \cdot d \cdot e \cdot d$

Mount Stanley is the highest mountain in Uganda. It rises to 16,762 feet. Write 16,762 in expanded form. $10,000+6,000+700+$ $60+2$


This waterfall is on Mount Elgon, an extinct volcano on the border of Uganda and Kenya. The mountain's highest point is 14,177 feet. Write 14,177 in expanded form. $10,000+4,000+100+$ $70+7$


Complete $16,762+14,177=$
$16,762+14,177=30,939$

Write the fractions that represent the amounts shaded. Circle the fraction that is equal to one-half.


Complete the conversions


How many inches tall is the basket?


Write the missing numbers to create addition problems going across each row and down each column. (Hint: Solve $6+\ldots=13$ first.)


## $\diamond$ Multiplication Fact Practice $\downarrow$

Put a check mark in the green
box when you have practiced
multiplication facts Set B for 10
minutes or more. Then complete the problems in this section.

Figure out the skip-counting patterns and write the missing numbers
$7,14,21,28,35,42 \quad 60,55,50,45,40,35,30,25$


## Skip Counting

- Have the child skip count by 3 s from 72 to 102.2,75,78, 81, etc
- Have the child skip count backward by 25 s from 200 to 0 .

200, 175, 150, 125, etc.

O Read to the child: Tombe and Winnie woke up eager to attend the Nile River Festival that takes place every year in Uganda. The Nile River Festival is an exciting event that celebrates the beautiful features of the river. The clock shows what time Tombe and Winnie plan to arrive at the festival. Write the time shown on the clock.


This time is read as nine twenty. Another way to say this time is 20 past 9 or 20 after 9 because 20 minutes have already gone by after the 9 th hour. Past and after are terms often used for minutes 1 through 30 .

Kayaking, rafting, and mountain biking are just a few of the activities that occur at the Nile River Festival. Winnie's favorite activity is the mountain bike race. This event takes place down off-road tracks along the riverbanks. The winner finished at the time shown on the clock. Write the time in the space provided.

This time is read as ten fifty-five. Another way to say this time is 5 to 11 or 5 till 11 because it will be 11:00 AM in 5 minutes. To and till are terms often used for minutes from 31 through 59.

Read to the child: Point to each clock and say the time that each event starts by using one of the terms in blue to say the appropriate time. Read the underlined sentences in the previous column again, if needed, at any point during the exercise.


Have the child draw hands on the clocks to show the times indicated



- Jenny Phillips

MATH 3

Shade in half of each of the circles below. Then write the fraction that represents the amount shaded.


Complete the problem
There are 66 kayaks in the race. Tombe saw 32 green kayaks, and Winnie saw 19 red kayaks. How many kayaks did they not see?


Complete the problem.
There are 60 minutes in an hour. Tombe and Winnie ate for 21 minutes and watched the air ramps for 33 minutes. How many minutes are left in the hour?

$$
\begin{array}{|rll}
\hline 21 & 60 & \text { or } \\
+33 & -54 & \text { subtract } \\
\frac{21}{} \text { and } 33 \\
\text { from } 60
\end{array}
$$

Circle all five fractions that are equal to one-half. In fractions that equal one-half, the numerator (top number) should be half of the denominator (bottom number).

Math 3 Answer Key


O Read to the child: Chapati is a popular bread in Uganda. It is commonly served alongside stews, vegetables, and meats. Follow the steps:

1. Shade 1 part in the first piece of chapati bread and 3 parts in the second.
2. Write the fraction of shaded parts below each chapati.
3. Use the correct symbol ( $<,>$, or $=$ ) to fill in the comparison bubble.

Point to the denominators (bottom numbers) in the purple fractions. Are they the same? Point to the numerators in the fractions. Notice they are different.

When the denominators are the same, we only need to compare the numerators to see which fraction is greater. If the denominators are the same, the fraction with the larger numerator is greater. When fractions have equal denominators, the parts are equal sizes. A larger numerator means you are referring to more pieces. Compare these fractions by using the correct symbols ( $<,>$, or $=$ ) to fill in the comparison bubbles.

$$
\frac{3}{9} \ominus \frac{1}{9} \quad \frac{4}{6}\left(<\frac{5}{6} \quad \frac{4}{5}\left(>\frac{3}{5} \quad 4 \geqslant \frac{3}{7}\right.\right.
$$

( Read to the child: Follow the steps:

1. Shade in 1 part of each chapati
2. Write the fraction of shaded parts below each chapati.
3. Based on the amount shaded, use the $<$, $>$, or = symbol to fill in the comparison bubble.


Notice that this time the numerators
are the same and the denominators are different, $\frac{1}{2}$ and $\frac{1}{4}$. When the numerators are the same, the fraction with the smaller denominator is greater because each part is bigger. Compare these fractions by using the correct symbol (<, >, or $=$ ) to fill in the comparison bubbles.


## (2) $\sum$ Dare to Compare

O Take the 6 -sided dice from the math box. For each round you and the child each roll the dice and find the fraction with the number you rolled. For example, if you roll a 1 in Round 2 , your fraction will be $\frac{1}{9}$. Have the child determine the winner of the round by who has the greater fraction. If you and the child roll the same number, you both roll again.
 ${ }^{145}$

## \& R REVIEW \& ACTIVITIES \&

Answer the questions. Then round the number to the nearest hundred.


Complete the addition and subtraction problems.

| 6,568 | 7,162 | $\$ 47.84$ |
| ---: | ---: | ---: |
| $+4,398$ | $-3,239$ | $+\$ 14.37$ |
| 10,966 | 3,923 | $\$ 62.21$ |



O Jenny Phillips $\square|147|$


O Read to the child: You have learned about reflectional symmetry, which is when two halves of a shape reflect each other like a mirror image. You've been practicing with horizontal and vertical lines of symmetry. Draw two lines of symmetry on the first square


Today, we will look at diagonal or oblique lines of symmetry. On the second square, draw a slanted line connecting the two blue dots. Is this a line of symmetry? Yes, if you fold the square on this line, the sides would match up perfectly. Draw a slanted line connecting the two orange dots. Do you have reflectional symmetry when you divide the square with these lines? Yes, because squares have 4 lines of symmetry. A regular pentagon has 5 sides and 5 lines of symmetry. Draw all 5 lines of symmetry on the
 pentagon by connecting the matching colored dots.

## The number of possible lines of symmetry in a regular polygon is equal

 to the number of sides. If a square has 4 lines of symmetry and a regular pentagon has 5 lines of symmetry, how many lines of symmetry do a regular hexagon and regular octagon have? Draw the lines and write the answers below.
$=8$ lines
of symmetry

O Read to the child: One day while drawing shapes in the sand, Tombe noticed that when he walked around some shapes, they looked the same. Rotational symmetry is when an image can be turned less than one full turn and still look the same. Notice the star below has been rotated 5 times and still looks the same each time. It has rotational symmetry.


Next, Tombe drew a square. Does this shape have rotational symmetry? Yes, when it is turned a quarter turn, the shape looks exactly the same as the first square. (The blue line is to show the shape has turned.)


Then Tombe drew a triangle. Does this shape have rotational symmetry? No, this triangle never looks the same until it rotates back to the starting point, so it does not have rotational symmetry.


- Activity: Spin and Fold Symmetry: Cut out the shapes on the next page. Have the child rotate each shape (a quarter turn at a time) all the way around and answer yes or no for whether the shape has rotational symmetry. If the shape doesn't look the same until you get back to the starting point, then it does not have rotational symmetry. Next, have the child fold and crease the paper shapes along each line of reflectional symmetry (reopening the fold each time).
* LESSONPRACTICE *

Draw lines of symmetry on the shapes below. Be sure to check for oblique (diagonal) lines of symmetry.


Take the following shapes from the math box. Rotate each piece to see if it has rotational symmetry and circle YES or NO. Then draw lines of symmetry on the shapes below.




## MATH 3

\& REVIEW \& ACTIVITIES \& $\qquad$

| MATH 3 |
| :--- | :--- | :--- | :--- | :--- | :--- |



Read to the child: The local markets in Uganda are a wonderful way to explore Ugandan culture. The markets start business early in the morning and stay open until late in the evening, usually staying very crowded throughout the day. There is such a variety of products sold in these markets, most of which are beautiful works of art produced by Ugandans. Some of their most popular and well-known items are shown below.
Let's suppose you have $\$ 83.35$ to spend and are interested in purchasing a handwoven basket and a giraffe wood carving. Write the price of each item rounded the nearest dollar in the green box. Then add the amounts together to find the approximate

$\$ 29.40$
amounts together in the orange box and compare the amounts. In this example, our answers are very close, but the first problem was probably much
faster to do. Rounding can help us quickly estimate a total price.

| $\$ 29$ | $\$ 29.40$ |
| ---: | ---: |
| $+\$ 36$ |  |
| $\$ 65$ | $\$ 35.89$ |
| $\$ 65.29$ |  |

Now, suppose you are going to pay for those items with the $\$ 83.35$. Round to the nearest dollar. In this green box, subtract the rounded total you wrote in the first green box from the rounded amount of money you have. Then complete the problem in the orange box that uses the actual amounts of money. How close are your answers?

Next, you stop at one of the food vendors to buy some sambusas. They cost $\$ 12.15$. You pay for them with the $\$ 18.06$ that you have left. In the green box, find the approximate amount of change you will receive by subtracting the price of the sambusas rounded to the nearest dollar from the rounded amount of money you have. Then subtract using the actual amounts in the orange box. How close are your answers? Rounding can help us quickly solve problems.
Read to the child: Decide which player will be $X$ and which player will be O. Players take turns completing the problems on the whiteboard by rounding to the nearest dollar and then subtracting. After finding an answer, the player may place his or her X or O on the space. The first to get three in a row wins the game!

| $\$ 18$ |
| ---: |
| $-\$ 12$ |
| $\$ 6$ |


$\Rightarrow$ MATH 3

## 禺 LESSON PRACTICE

Tombe and Winnie are rounding and subtracting to find out approximately how much more certain items cost than others at the market. Circle the box that shows who rounded and subtracted correctly.

\$14.99
\$8.50


\$35.51


Refer to the pictures and prices below and on the previous page to answer the following questions. Round each price to the nearest dollar, and then subtract.


Approximately how much more does the giraffe wood carving cost than the textile fabric?

Approximately how much more does the handwoven basket cost than the bowl?


## \& REVIEW \& ACTIVITIES \&

## Fruit Logic

Use the clues to color each fruit from Uganda the correct color. Don't start coloring until you know which color each fruit should be. Tip: Use your red, purple, green, and yellow colored pencils to arrange the colors in the correct order

Clues: The green fruit is not next to the purple fruit. The yellow fruit is directly to the right of the purple fruit. The purple fruit is not one of the middle two fruits. The red fruit is between two fruits.


Tip: Use your red, orange, green, and yellow colored pencils to arrange the colors in the correct order.

Clues: The orange fruit is at one of the ends. The green fruit is to the left of the yellow one. The yellow fruit is not on an end. Neither the red fruit nor the yellow fruit are next to the orange one.


## $\triangleleft$ Multiplication Fact Practice $\diamond$

Put a check mark in the green
box when you have practiced
multiplication facts Set B for 10
minutes or more. Then complete the problems in this section.

- Jenny Phillips

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O Read to the child: Ten-year-old Mia lives in Quebec City, Canada, with her parents and a little dog named Gigi. They love to walk through the her parents and a little dog named Gigi. They love to walk through
old parts of the city. Today, Mama and Mia are planning a birthday party for Papa and need to buy some supplies from different shops in town. Follow their path through the town on the map on the next page as you help complete the story problems.

At the post office, Mama purchased stamps for $\$ 18.40$ and envelopes for $\$ 6.35$ so she could mail out invitations. She paid the cashier $\$ 30.75$. How much change will she receive? First, add the amounts of her purchases together to find the total cost. Then subtract the total cost from the amount paid to find the amount of change.


Next, they stopped at the bookstore, and Mia bought a book with beautiful images of Canada's national parks as a gift for Papa. It cost $\$ 24.96$. She also bought a journal for $\$ 8.72$. If the cashier gave her $\$ 1.32$ in change, how much did she give the cashier? Add all the amounts together to find the answer.


At the market by the park, Mama bought some apples for $\$ 4.36$ and peaches for $\$ 3.92$. One of the apples had a worm in it, so Mama got a refund (money back) of $\$ 0.75$. How much did she spend for the fruit altogether? Complete the problems below. Will you add or subtract the refund from the total cost? Write the correct sign before solving


Next, they stopped at the pet store. Mia had \$12.25 remaining to spend. She bought a toy for $\$ 3.47$ and Gigi's dog food for $\$ 8.15$. How much money did she have left?


Finally, at the bakery Mama ordered butter tarts for $\$ 12.75$, sweet bannock bread for $\$ 6.65$, and a blueberry grunt pie for $\$ 9.20$. How much did the items cost altogether?



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## 数 REVIEW \& ACTIVITIES \&

Read the sentence in the green box two times aloud. Then try to recite the sentence without looking at it.

## There are 2 cups in a pint, 2 pints in a quart, 4 quarts in a gallon.

Draw two lines to divide the gallon in fourths. Then write Q (for quart) on each fourth to show that there are four quarts in a gallon.


Draw a line to divide the quart in half. Then write $P$ (for pint) on each half of the quart to show that there are two pints in a quart.


Draw a line to divide the pint in half. Then write C (for cup) on each half of the pint to show that there are two cups in a pint.

Write a fraction to show the amount that is shaded in each shape. Circle the shape that has the greatest fraction.


$\frac{5}{8}$


O Jenny Phillips


Math 3 Answer Key
O Punch out the fraction bars on the Lesson 47 page of the Appendix to prepare for the lesson. Read to the child: Canada has an abundance of maple trees, which is why about $85 \%$ of the world's maple syrup is produced there.
To the right, write the fraction that represents the maple syrup in each jar. Notice how each jar has the same amount of syrup but is shown by a different fraction. When two fractions represent the same amount, they are called equivalent fractions. Equivalent fractions are different fractions that represent the same amount.
Let's look at another example of equivalent fractions. The amount of syrup Mia had left is shown in the jar. Shade the second jar with an equivalent amount of syrup. Then write the fractions representing the maple syrup below each jar.

$$
\Longrightarrow \quad \omega
$$ Write the number of days in each month during a leap $\quad 31,30,3,1$ year. How many days are in February?

- Which month is the IOth month? 7th month? October; July 4
H

Hand the child the fraction bars you punched out Use the fraction bars to check your work. Lay one of the $\frac{1}{3}$ pieces in front of you. Then take two of the $\frac{1}{6}$ pieces (since your answer was $\frac{2}{6}$ ) and position them directly underneath the $\frac{1}{3}$ piece. Do you see
 how they line up perfectly and are the exact same amount? They are equivalent!

Practice finding equivalent fractions by multiplying the numerators and denominators by the numbers shown. Then use the fraction bar punch-outs to check your work.

$$
\frac{2 \times 2}{3 \times 2}=\frac{4}{6} \quad \frac{1 \times 3}{2 \times 3}=\frac{3}{6}
$$

O Using the fraction bar punch-outs, have the child find a fraction that is equivalent to $\frac{1}{2}$.
Another way we can find equivalent fractions, other than using pictures, is find an equivalent fraction for $\frac{1}{3}$.

$$
\text { equivalent to } \frac{1}{2}
$$ by multiplying the numerator and the denominator by the same number. Multiply both the numerator and denominator by 2 and fill in the blanks to

$$
\frac{1 \times 2}{3 \times 2}=\frac{2}{6}
$$

$$
x_{0}
$$



LESSON PRACTICE

Circle the pairs of fractions that are equivalent.


Shade in the correct amount to show an equivalent fraction. Then write the fraction that is shaded under each picture.

$\frac{2}{4}=\frac{1}{2}$

$$
\frac{4}{10}=\frac{2}{5}
$$



Determine each equivalent fraction. Then follow the directions below to answer the riddle.

$$
\begin{array}{ll}
\frac{1}{5} \times 2=\frac{2}{10} r & \frac{1}{3} \times 3=\frac{3}{9} h \\
\frac{2}{3} \times 2 & =\frac{4}{6}+ \\
\frac{1}{6 \times 2}=\frac{2}{12} r & \frac{2 \times 2}{4 \times 2}=\frac{4}{8}+ \\
u
\end{array}
$$

Figure out the answer to the riddle by writing the letter shown next to each number on the answer lines to the riddle.

I am something that is lighter than a feather and yet harder to hold. What am I?

$$
\begin{gathered}
\frac{Y}{9} \frac{0}{10} \frac{U}{8} \frac{R}{2} \\
\frac{B}{12} \frac{R}{2} \frac{E}{6} \frac{A}{5} \frac{T}{4} \frac{H}{3}
\end{gathered}
$$

 Then draw lines of symmetry on the shapes below. Be sure to check for oblique (diagonal) lines of symmetry.

(YES) N

(Yes) No
(YEs) No


YES) NO

(YES) No


Yes (NO)


Draw hands on the clocks to show the times indicated.


Canadian maple syrup is classified into four main types based on its color and taste. Round to the nearest dollar and then complete the problems.

how much more is the bottle of amber syrup than the dark syrup? $\qquad$


$$
\begin{aligned}
& \text { Approximately how much would it cost to buy } 2 \text { bottles of the } \\
& \text { very dark syrup and one bottle of the golden syrup? }
\end{aligned}
$$

## $\diamond$ Multiplication Fact Practice $\diamond$

## $\square$

Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more. Then complete the problems in this section.


O Read to the child: You have already learned place value up to the hundred thousands place. Today, we are going to learn place value in the hundred millions. Mia's favorite place to visit is the local library. Today, she is reading facts about Canada's population. Look at the number that shows how many people live on Prince Edward Island as I read it and notice how I say THOUSAND when I reach the comma. Read this number slowly: "one hundred fifty-nine THOUSAND, seven hundred thirteen."

Now, you read the numbers in orange that

show the populations of other Canadian provinces, saying THOUSAND when you get to the comma.


What comes after 999? 9,999? 99,999? What do you think comes after 999,999? The next place value after hundred thousands is called millions. Look at the place value chart at the top of the page. Notice how there is a millions, ten millions, and hundred millions place value. From right to left, read the name of each place value.


Write the number for the population of the province of Manitoba in the place value chart, including the commas. Then look at the number as I read it aloud. Notice how I say MILLION after the millions place and THOUSAND after the thousands place. This is because we say the place value group name before moving to the next group. Read this number slowly: "one MILLION, three hundred seventy-nine THOUSAND, five hundred eightyfour."

Now it's your turn. Read aloud these numbers that show the populations of more Canadian provinces. Say million for the first comma and thousand for the second comma.


Write the number for Alberta's population in expanded form below. How many zeros will you need to write four million? zeros
$4,000,000+400,000+20,000+$
$8,000+100+10+2$


We have two provinces left Read the numbers aloud for the populations and then answer the questions.


- Which digit is in the millions place? 1
- Which digit is in the hundred thousands place? 1
- Which digit is in the tens place? 8
- Which digit is in the
thousands place? 7
$14,733,119$
- Which digit is in the millions place? 4
- Which digit is in the hundreds place? 1
- Which digit is in the ten millions place? 1
- Which digit is in the thousands place? 3


Write the number $15,904,234$ using words. (Write small!)
fifteen million, nine hundred four thousand, two hundred thirty-four

Jasper National Park
$2,456,891$ visitors a year
Write the number of Jasper National Park visitors in words.
two million, four hundred fifty-six thousand, eight
hundred ninety ${ }^{-}$one

| List the digit that is in |
| :--- |
| each given place value. |$\quad$ Millions $\square 2$ \& REVIEW \& ACTIVITIES \&

For each problem calculate the cost of the three stamps. (The cost of each stamp is written on the stamp.) Then subtract the amount from the money paid to figure out the amount of change due to the customer. Use the whiteboard to figure out the problems and write the answers in the green boxes.

## Stamps Purchased



Stamps Purchased


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Math 3 Answer Key



Read to the child: Mia enjoys watching her dad play ice hockey. It is one of his favorite hobbies. She cheered as her dad hit the puck to his teammate for a total distance of 2 yards and 2 feet. Let's calculate that distance in feet.


To find the total feet, the first step is to convert 2 yards to feet by adding two groups of 3 feet (because 1 yard is the same as 3 feet). The second step is to add all the feet together.


The teammate hit the puck 3 yards, and then Dad hit it 4 yards and 2 feet into the goal. Let's find the total distance the puck traveled by adding the distance that Mia's dad hit the puck to the distance that the teammate hit the puck.



When adding distances, there may be times where you will need to regroup by carrying over to the next column. Point to the feet column in the problem to the right. For example, the feet column in the problem here adds to 3 feet. We know 3 feet is equal to 1 yard, so we can convert those feet to yards. Now, add the 1 yard to the 3 yards to find the total.

$$
3 \mathrm{yd}+1 \mathrm{yd}=4 \mathrm{yd}
$$

Let's look at a subtraction problem with yards and feet. First, let's do a problem without any regrouping. Start with the smaller unit and subtract the feet first and then the yards.

Here's another problem. Notice we cannot
take 2 feet away from 0 feet, so we must borrow from the yard column. One yard is the same as 3 feet, so we can replace the 0 feet with 3 feet. Subtract the feet column first and then the yards column. Fill in the blanks by following these steps.


## LESSON PRACTICE



Score the Goal! Crumple up a small piece of scratch paper to make a paper puck. Complete each problem and circle the right answer. After each problem set your course book on a flat surface about 2 feet in front of you. Then place the paper puck on the edge of the surface right in front of you. Blow the paper puck toward the net on this page. If your paper puck reaches the book, you get a point.

$\qquad$

MATH 3
R REVIEW \& ACTIVITIES $\qquad$

There are around $1,649,976$ ice hockey players in the world. Complete the exercises based on this number.


Write the number in words. (Write small.)


List the digit that is in each given place value.

one million, six hundred forty-nine thousand, nine hundred seventy-six

$\diamond$ Multiplication Fact Practice $\diamond$
Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more. Then complete the problems in this section.


$$
\begin{aligned}
& \text { Use all the orange } \\
& \text { tangram pieces to create } \\
& \text { these images. }
\end{aligned}
$$




Read to the child: Mia arrived at the library one sunny day and was excited to see that the summer reading program was starting. When the librarian asked Mia how many minutes of reading she could do over the summer, Mia chose 2,000 minutes. She read every day for the first 6 weeks. Then she added up all her minutes and subtracted them from 2,000 to find out how many more minutes she needed to reach her goal.
$\bigcirc$ Read to the child: Mia wrote down this problem to subtract her minutes read from the total minutes needed. She couldn't subtract 9 from 0 , so she needed to borrow. Point to the tens place (purple). But she couldn't borrow from the tens place. Point to the hundreds place (blue). She looked to the hundreds place but couldn't borrow from there either.
 Point to the thousands place (green). Finally, she got to the thousands place, and now she can borrow from the 2 .

Before she subtracts, she is going to regroup and borrow. Regrouping is renaming or changing a group of ten. Point to the circled 2. The circled 2 is in the thousands place and represents 2 thousands. A thousand is made up of 10 hundreds.


2
Point to the 2 that is crossed out in the thousands place. If Mia regroups 1 of the thousands into hundreds, she will have 1 thousand and 10 hundreds, which is still equal to 2 thousands. To show the regrouping, she crosses out the number in the thousands place and writes one number
 less above it. Now, point to the 1 written by the 0 in the hundreds place. To show the 10 hundreds, she writes the number 1 next to the zero in the hundreds place. Now she has the number 10 in the hundreds place, representing 10 hundreds. Ten hundreds is the same as how many thousands? [1 thousand] She has borrowed 10 hundreds from the thousands column.

## (3) Now she can regroup and borrow from the 10 that is in the hundreds place! Mia thinks borrowing

 is fun. She crosses out the 10 in the hundreds place and writes a 9 because she is borrowing 1 hundred and regrouping it into 10 tens.

She writes the number 1 next to the 0 in the tens place to show the 10 tens that she borrowed from the hundreds place. Now we have the number 10 in the tens place, representing 10 tens, which is the same as 1 hundred. We still have a total of 2,000 , but now we are showing it as 1 thousand, 9 hundreds, and 10 tens.


Now Mia can regroup and borrow from the tens column. She changes 1 of the tens to 10 ones. She crosses out the 10 in the tens column and writes 9 . She writes the number 1 next to the zero in the ones place to show the 10 ones she borrowed from the tens place. Now she can subtract 9 from 10 in the ones
 column and then move on to subtract
the numbers in the tens, hundreds, and thousands columns. Have the child complete the subtraction. Mia has read for 1,249 minutes, and she needs to read for 751 more minutes to reach her goal.

O Have the child follow the steps to regroup, borrow, and subtract while you repeat the steps in the lesson.


## Optional Video Lesson

For additional practice watch the optional video lesson on goodandbeautiful.com/math3 titled "Subtracting Across Zeros." The section below is used during the video.


## * LESSON PRACTICE

Mia's mother grew up in Quebec City. From her birth until now, she has lived in five different houses in the city. Complete the subtraction problems to figure out how many years she lived in each house. The answer that is odd is the house Mia lives in now. Circle it.


## * REVIEW \& ACTIVITIES \& So ${ }^{59 \%}$ Change!

Complete the problems.

| Mom bought a large |
| :--- |
| wreath to hang on |
| the front door. It cost |
| \$27.46. Mom received |
| $\$ 2.54$ in change. How |
| much did she pay the |
| cashier? |$\$ \$ 24.75$ amount paid $\$ \$ 2.54$ cost of item

Shade the next two shapes to show equivalent fractions. Then write the fraction of the shape that is shaded under each shape.


1701


Let's continue to use more than one number line to compare fractions. Remember that the farther a fraction is from 0 the larger it is. We will use two number lines: one with sixths and one with thirds.


Which is greater, $\frac{3}{6}$ or $\frac{1}{3}$ ? Three-sixths is greater because it is farther from 0 than $\frac{1}{3}$. Which is greater, $\frac{4}{6}$ or $\frac{2}{3}$ ? They are equivalent because they are located at the same place on their number lines. Continue practicing by comparing the fractions $(<\rangle,,=)$ below using the number lines.

$$
\begin{array}{ccc}
\frac{2}{3}<\frac{6}{6} & \frac{2}{6} & \odot \frac{1}{3} \quad \frac{5}{6}<\frac{3}{3} \\
& \frac{1}{6}<\frac{2}{3} \\
& \text { LESSON PRACTICE }
\end{array}
$$

Fill in the missing fractions on the number lines below. Then use the number lines to answer the questions in the next column.



We can compare fractions using number lines. The number line below shows several buildings in relation to Mia's house, measured in miles. On Monday she walked $\frac{1}{4}$ of a mile to drop off a letter at the post office. On Tuesday she walked $\frac{3}{4}$ of a mile to visit Grandma.


A fraction is larger if it's farther from 0 than another fraction. Use the correct symbol (< or $>)$ to compare these fractions. The distance to Grandma's house, $\frac{3}{4}$ of a mile, is greater than the distance to the post office, $\frac{1}{4}$ of a mile.


Let's look at a number line that is divided into a different number of segments. Count the segments and use that number as your denominator to fill in the missing fractions.


Earlier we compared fractions using the same number line. Now we will use two different number lines to help us compare fractions. Lay your pencil down over the $\frac{1}{2}$ vertically until it is lined up with the $\frac{2}{4}$ of the previous number line. Notice that $\frac{1}{2}$ and $\frac{2}{4}$ are on the same exact place on the number lines, which means they are equivalent. The distance to the library, $\frac{2}{4}$ of a mile, is the same distance as $\frac{1}{2}$ of a mile.

- Suppose Gigi ate $\frac{3}{8}$ of her gray bone and $\frac{1}{4}$ of her gray bone brown bone. Which bone did she eat more of?
- Suppose Gigi ate $\frac{5}{8}$ of her gray bone and $\frac{3}{4}$ of her brown bone. Which bone did she eat more of? brown bone
- Use the number lines on the bones to compare the following fractions with the <, >, or = signs.

$$
\frac{2}{4} \rightleftharpoons \frac{4}{8} \quad \frac{1}{8}<\frac{5}{8} \quad \frac{6}{8} \supseteq \frac{1}{4} \quad \frac{3}{4} \bigodot \frac{6}{8}
$$

Fill in the number lines below. First, count the total number of segments that the number line has been divided into and use that number as the denominator. Then write the numerators.


## \& REVIEW \& ACTIVITIES \%

$\diamond$ Multiplication Fact Practice $\diamond$
Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more. Then complete the problems in this section.

| 4 | 3 | 7 | 5 | 7 |
| ---: | ---: | ---: | ---: | ---: |
| $\times 7$ | $\times 9$ | $\times 8$ | $\times 8$ | $\times 4$ |
| 28 | $\frac{5}{27}$ | $\frac{4}{28}$ |  |  |
| 7 | 9 | 4 | 9 |  |
| $\times 3$ | $\times 4$ |  |  |  |
| 21 | $\times 4$ | $\times 5$ | $\times 3$ |  |
| 16 |  | $\frac{4}{20}$ |  |  |



Complete the problems and use the key to answer the riddles. If you need help to subtract across zeros, consider watching the video from the last lesson again.

What flower tells what

What tree does everyone carry in his or her hand?



$\bigcirc$ Read to the child: Far north in the province of Manitoba in Canada, the tiny town of Churchill is known as the polar bear capital of the world. Of the approximately 25,000 polar bears on the earth, as many as 15,500 of them live near this town. Each fall, tourists flock to the town to catch a glimpse of the majestic bears as they migrate to Hudson Bay. Let's suppose you want to create a graph representing the number of polar bears seen each day for a week. A line graph is a graph that uses points and line segments to show changes in data. When comparing changes in data over a period of time, a line graph is a great choice.


Line graphs help you see trends in data. Is the number of polar bear sightings increasing or decreasing each day? There wereno tours scheduled on Sunday, so no data was collected. If you had to predict (or guess) how many bears would have been seen on Sunday, would you guess that there would be more or less than on Saturday? It's more
 likely that there
would be more because we see the numbers have been going up each day. Let's suppose that 190 bears passed the town on Sunday. Make a dot on the graph above Sunday that is halfway between 180 and 200. Then draw a line from the dot for Saturday to the one you drew for Sunday.

Because the purpose of line graphs is to show trends, you may not be able to tell the exact amount a dot represents. Look at the dot for Monday. It is halfway between 60 and 80 on the graph. This dot represents a number around 70 . We can use rounded numbers when answering questions about this line graph.

- About how many polar bears were seen on Tuesday? 90
- About how many polar bears were
seen on Thursday?
- About how many more polar bears
were seen on Saturday than on Friday?

| Use the boxes to the right to complete |
| :--- |
| the problem. |

O Read to the child: Now it's your turn to create a line graph using the array mat from the math box as the grid for your graph. You will use the data from the chart below that shows the average amount of snowfall in Quebec City, Canada, over several months.

STEP 1: Write a title for your graph in the space at the top of the array mat.

STEP 2: Select a scale. (With the data given, the best scale for this graph is multiples of 10.)

STEP 3: Label the vertical and horizontal sides of your graph. The vertical side will have the scale in centimeters (i.e. $0 \mathrm{~cm}, 10 \mathrm{~cm}, 20$ cm , etc.), starting at the bottom and going up by 10 s for each line. The months will be listed horizontally across the bottom, starting with September and ending at May.

| September | 0 cm |
| :---: | :---: |
| October | 5 cm |
| November | 35 cm |
| December | 70 cm |
| January | 75 cm |
| February | 65 cm |
| March | 45 cm |
| April | 15 cm |
| May | 0 cm |

STEP 4: Draw points on the graph to represent the data. Then draw lines to connect the dots from left to right.

O Have the child answer these questions. Use a whiteboard if needed.

- During which month did the most snow fall?
- How much more snow fell in December than in $y$ November? 35 cm

Read the graph and answer the questions about it. This graph shows profit in dollars at a bookstore.


Which week had the lowest profit? week 2

Which week had the highest profit?

## week 6

Which weeks had about the same amount of profit?

## weeks 3 \& 4

Mia was trying to attract hummingbirds to her yard. Each day she put out something new to attract them, and she kept track of how many hummingbirds came into her yard each day. Create a line graph based on data she collected by following the steps below. Then answer the questions.

1. Write a title.
2. Write the scale ( $0,2,4,6,8$, etc.) in the blue box.
3. Draw the points and connect the dots with a line.
How many more hummingbirds did Mia
see on Saturday than she did on Monday? 11
Do you think the birds liked the new
things Mia put out for them?



Math 3 Answer Key


Read to the child: Beavers are the national animal of Canada. Some of their favorite foods include twigs, grass, leaves, and roots of water plants. Let's suppose that a beaver gathered the twigs shown below.


The beaver collected 2 whole twigs plus $\frac{1}{2}$ of a twig. When we put the whole number (2) next to the fraction ( $\frac{1}{2}$ ), we get a mixed number: $2 \frac{1}{2}$. A mixed number consists of a whole number and a fraction.

It's your turn! Label each set of twigs using a mixed number by counting the number of whole twigs and writing that number in the big box. Then write the fraction that represents the part of a twig to the right of the whole number


Suppose we want to illustrate $1 \frac{1}{2}$ leaves by shading the correct number of leaves. Begin by shading the number of whole numbers, in this case 1 whole leaf. Then shade 1 out of 2 equal parts of the last leaf.


Shade the correct number of leaves to match each mixed number. The whole number tells you how many whole leaves to shade. The fraction tells you how many parts to shade in the last leaf.

$1 \frac{3}{4}$


78

## 路 LESSON PRACTICE

Take 1 of each shape from the math box ( 1 yellow hexagon, 1 red trapezoid, 1 blue rhombus, and 1 green triangle). Place the shapes on the outlines to create a mixed number. You will have to move the hexagon down for each set. Then write a mixed number to describe each picture you created.



180

- Jenny Phillips


Math 3 Answer Key
$\Rightarrow$ MATH 3

All the patterns you just completed are repeated patterns because you repeated the same operation to continue the pattern. Let's look at growing patterns. Look at the numbers on the steps. The difference between the first and second numbers is 2 . But the difference between the second and third numbers is 3 . That means that our rule cannot be plus 2 . So we look at the difference between the next set of numbers. What is the difference between 10 and 6 ? Write the answer in the space between the numbers. Now we can see a growing pattern of $+2,+3$, +4 . How much will you have to add to get to 15 and then to 21 ? Write the amounts in the blanks. Using this pattern, you can find the next 4 numbers in the pattern. Write them on the bricks to the right.

Let's try one more growing pattern. Find the differences between the numbers that are shown, and write the answers in the blanks between numbers. What pattern do you see? The number we add to the pattern increases by 2 each time. Use this pattern to find the next 3 numbers and write them on the spiral.

Optional extensions: On a whiteboard have the child create a repeated pattern using plus 6 as the rule. The child may also color the white spaces in the spiral to complete the color pattern

## LESSON PRACTICE

Look at the number patterns below. Complete the patterns and answer the questions.
$23,33,43,53,63$,
What rule does this pattern follow? $\qquad$ $+10$

Write the next three numbers in the pattern. $73,83,93$
If the pattern continues, what will the 9th number in the pattern be?

870, 760, 650, 540,
What rule does this pattern follow? $\qquad$
Write the next three numbers in the pattern. $430,320,210$

## $1,4,10,19$,

How much was added between the first and second number? $\qquad$ 3 How much was added between the second and third number? $\qquad$ 6
Write the next two numbers in the pattern. 31,46

| Find the rule and fill in the rest of the chart. <br> \# of Legs Rule: $\qquad$ $+4$ | \# of dogs | \# of legs |
| :---: | :---: | :---: |
|  | 2 | 8 |
| How many legs would there be if you had 9 dogs? | 3 | 12 |
|  | 4 | 16 |
| 36 legs | 5 | 20 |
|  | 6 | 24 |



First, complete the addition and subtraction problems, and then round the answer to the nearest dollar to find the answer to the riddle.




How many more countries have French as an official language than Spanish?

## $\checkmark$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more. Then complete the problems in this section.



O Read to the child: Mia enjoys accompanying her mom to the grocery store. She helps by weighing the fruits and vegetables on the scale. Heavier items, like the melon below, are weighed using pounds, while lighter, smaller items like cherries can be weighed using ounces. Circle the more reasonable unit of measurement for each of the other fruits.

pound


Pounds and ounces are the most common US customary units for measuring how heavy
something is. Scales are used to weigh an object. Look at the scale here. Notice there are two different abbreviations shown on the scale. The word "ounces" is abbreviated with "oz" and the word "pounds" uses "lb," from the Latin word libra, for its abbreviation. Find the number of ounces in a pound by counting the number of
 Circle the items that would be measured in tons.


MATH 3
Read each scale below and fill in the blank with the measurement

$\qquad$ oz

How many total
ounces do the
limes and the lemons weigh altogether?

| 3 oz |
| ---: |
| $+\quad 7 \mathrm{oz}$ |
| 10 oz | more does the pumpkin

3 lb 12 oz stalk of celery? $\frac{-1 \mathrm{lb} 2 \mathrm{oz}}{2 \mathrm{lb} 10 \mathrm{oz}}$ Add to find the answer.


tick marks on the scale from 0 lb to 1 lb and fill in the blank to show the equivalence. Each black tick mark represents 1 ounce, and each

red tick mark represents
1 pound. Look at the first scale here. The dial is pointing to the 9th tick mark, which means that the broccoli weighs 9 ounces. Write a 9 in the space provided. The scale with the cabbage shows the dial pointing to the 4 th tick mark past the 2 pounds. Write a 2 in the space for pounds and a 4 in the space for ounces.
Read each scale below and fill in the blanks with the measurements


Four in a Row!

Using different colored pencils, take turns crossing out items and saying aloud the most reasonable unit of measurement (either ounces, pounds, or tons). The first person to get four items in a row is the winner.

| $\begin{aligned} & \text { a small } \\ & \text { tree } \\ & \text { pounds } \end{aligned}$ | $\begin{gathered} 10 \\ \text { staples } \\ \text { ounces } \end{gathered}$ | 5 grapes ounces | 3 baby carrots ounces | a slice of bread ounces |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| a battery ounces | a few marbles ounces | a giant dictionary pounds | baseball pounds | an elephant tons | $\begin{gathered} 25 \\ \text { safety } \\ \text { ouncess } \end{gathered}$ |
| socks <br> ounces | a house <br> tons | a dog <br> pounds | a spoon ounces | a truck tons | an apple ounces |
| a hat <br> ounces | 10 <br> potatoes pounds | a penny ounces | a pen ounces | the <br> Statue of Lifons ${ }^{\text {ty }}$ | a handful of nuts ounces |
| a pair of shoes ounces | a <br> notepad ounces | a gallon of milk pounds | a pair of glasses ounces | a whale <br> tons | a chair pounds |
| ** LESSON PRACTICE |  |  |  |  |  |

Fill in the bubble for the correct abbreviation for each unit of measurement.

$$
\begin{aligned}
& \text { Ounces } \\
& \text { Oin } \bullet \text { oz oon }
\end{aligned}
$$

Pounds
Opd oft ©lb
Fill in the blank or circle the correct answer
$\qquad$ ounces $=1$ pound
$\underline{2,000}$ pounds $=1$ ton
Ounces, pounds, and tons measure: length /weigh / volume

Write the mixed number shown by the shaded shapes.

$2 \frac{5}{6}$

$1{ }^{2} \frac{2}{3}$

A fruit stand is 4 feet long. How many inches long is it? Write the answer in the green box and include the unit label.


Answer the question and complete the pattern.
$42,46,50,54, \ldots$
What rule does this pattern follow? +4
Write the next three numbers in the patter. $58,62,66$

Convert the lengths to either meters or kilometers.

Write a problem that answers the question. Then complete the problem.


You bought $\$ 5.67$ worth of blueberries and paid with $\$ 20.00$. How much change should you receive?

$2,000 \mathrm{~m}=2 \mathrm{~km} \quad 5,000 \mathrm{~m}=5 \mathrm{~km} \quad 4 \mathrm{~km}=4,000 \mathrm{~m}$

For each addition problem, write the numerals shown in expanded form in the green box and complete the problems.

$$
\begin{array}{rc}
7,000+80+2 & 5,000+700+40 \\
7,082 & 5,740 \\
+1,274 & +3,178 \\
\hline 8,356 & \frac{8,918}{}
\end{array}
$$

## $\diamond$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set B for 10 minutes or more. Then complete the problems in this section.

| 3 | 9 | 5 | 4 |
| ---: | ---: | ---: | ---: |
| $\times 9$ | $\times 4$ |  |  |
| 27 | $\times 4$ |  |  |
| 20 | $\times 4$ |  |  |
| 16 |  |  |  |


| 9 |
| ---: |
| 3 |
| $\times 5$ |
| $\times 7$ |
| 45 |
| 20 | | 5 |
| ---: |
| $\times 8$ |
| 40 |

Even or Odd? circle all the products (answers to multiplication problems) above that are ODD.

O Read to the child: Today is Dad's birthday party. Mom and Mia have prepared some delicious Canadian foods for the event. The main dish is a traditional meat pie, called tourtière [TOUR-tee-air].

## Let's suppose that Mom


cut the first pie into 4 equal
pieces. Draw lines on this pie to show how to cut it into 4 pieces. Shade one piece of the pie. What fraction of the pie is shaded? Yes, each part is $\frac{1}{4}$. Four of the guests each took one slice of pie. Write an addition problem to show how much pie was eaten by those guests.

$$
\frac{\frac{1}{4}}{\text { guest 1 }}+\frac{\frac{1}{4}}{\text { guest } 2}+\frac{\frac{1}{4}}{\text { guest 3 }}+\frac{\frac{1}{4}}{\text { guest } 4}=\frac{\frac{4}{4}}{\text { total amount }}
$$

The total eaten was $\frac{4}{4}$ of the pie, which is the same as one whole.


Mom cut the next pie into 6 equal pieces. What fraction of the whole pie is 1 piece? Write the fraction in the box. Now let's suppose that one guest ate 2 pieces of pie. How many sixths would that be? Write $\frac{2}{6}$ on the line below for guest 1 . A second guest ate 3 pieces. How many sixths did he eat? Write $\frac{3}{6}$ on the line for guest 2. A third guest ate just one piece of pie. Write $\frac{1}{6}$ on the line for guest 3. If we add all the pieces that were eaten together, how many total

$$
\frac{\frac{2}{6}}{\text { sixths were eaten? }}+\frac{\frac{3}{6}}{\text { guest 1 } 2}+\frac{\frac{1}{6}}{\text { guest 3}}=\frac{\frac{6}{6}}{\text { total amount }}
$$



When the denominator (bottom number) of a group of fractions is the same, we can add the fractions together by adding the numerators (top numbers). Add these fractions together by adding only the numerators. The denominators do not change because the total number of equal parts that make the whole did not change. Write the answers in the boxes and shade the fraction circles to show the total fraction amount.


We can subtract fractions with the same denominator in the same way that we add them. We subtract only the numerators, while the denominator stays the same. For dessert Mia has prepared layered bar cookies and cut the
 bars into nine pieces. What fraction of the whole dessert is each bar? Write the fraction in the box to the right. Mia started with $\frac{q}{q}$. After a guest took away $\frac{1}{9}$ (or one bar), how much did she have left? Cross out one bar and count the remaining bars.
Then write your answer in the box on the next page.

MATH 3


$$
\frac{9}{9}-\frac{1}{9}=\frac{8}{9}
$$

Soon more guests took away some bars. The second guest took two pieces. How many ninths is that? Write the fraction on the blank line below. What fraction of the bars did Mia have left?

$$
\frac{8}{9}-\frac{2}{9}=\frac{6}{9}
$$

A third guest took two more bars. Subtract the fraction that represents those bars from the amount she had to find the new fraction of the bars she had left.

$$
\frac{6}{9}-\frac{2}{9}=\frac{4}{9}
$$

Suddenly, Gigi jumped up and snatched one bar away. Write the fraction for the number of bars Gigi ate. What fraction of bars are left now?

$$
\frac{4}{9}-\frac{1}{9}=\frac{3}{9}
$$

Mia, Mom, and Dad ate one bar each. Write the fraction for the number of bars they ate altogether in the blank and subtract it from the amount remaining.

$$
\frac{3}{9}-\frac{3}{9}=0
$$

When there are zero ninths remaining, we can just write zero for the answer.

On the line below each shape, write the fraction that represents the amount shaded on each shape. $\frac{4}{6}+\frac{2}{6}=\frac{6}{6} \quad \frac{\frac{2}{8}}{\text { Then add the fractions and shade the final circle to show the total amount. }}+\frac{\frac{5}{8}}{5}=\frac{7}{8}=\frac{3}{5}=\frac{5}{5}$
In the first blank box, write the fraction that represents the amount shaded on each shape. Then cross out the number of pieces that are being subtracted and complete the subtraction problem.

 whole. The first one is shown as an example


Add the fractions together. Remember that when fractions have the same denominator, we add the numerators and the denominator does not change. Write your answer as a fraction.

$$
\begin{aligned}
& \frac{1}{5}+\frac{4}{5}=\frac{5}{5} \\
& \frac{3}{7}+\frac{4}{7}=\frac{7}{7} \\
& \frac{1}{2}+\frac{1}{2}=\frac{2}{2} \\
& \frac{1}{5}+\frac{1}{5}+\frac{3}{5}=\frac{5}{5} \\
& \frac{2}{6}+\frac{2}{6}+\frac{2}{6}=\frac{6}{6}
\end{aligned}
$$



Math 3 Answer Key

| Chart | $\times$ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
|  | 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
| 2 HALVES $B$ | 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
| 23 | 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| $3_{4}^{6}$ | 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| 8 | 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |
| $3{ }^{\frac{3}{4}}$ | 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
| 2 | 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |
| (2) $5 \frac{3}{7}$ | 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

190


O Read to the child: Canada has the longest coastline of any country in the world, and it is home to more than 750 lighthouses! A lighthouse is a tower with a very bright light at the top called a beacon that helps sailors guide their ships at night.

As the ships were passing by, the lighthouse keeper noticed a pattern on their sails. Find the differences between the first two
numbers by subtracting 4
from 8, and write the answer in the blank between the numbers. Use this pattern to find the next numbers in the pattern.

What pattern did you see? It is increasing by 4 each time, or skip counting by 4 . Let's look at a different type of pattern. Find the differences between the first two numbers by subtracting the smaller number from the greater number. Pause while the child finds the difference. Is the pattern increasing or decreasing? This time the pattern is decreasing by 6 , or skip counting backward by 6 . Now fill in the boxes to continue the pattern.


Arrays with rows and columns of objects demonstrate multiplication patterns. Notice below that 10 helms can be separated into 2 groups of 5 or 5 groups of 2 , which both equal the same amount. The commutative property of multiplication says we can change the order of the factors 2 and 5 , and the product remains the same, 10


Fill in the blanks with the correct number by changing the order of the factors on the left side of the equation.

$$
3 \times 8=8 \times \underline{3} \quad 5 \times 4=4 \times \underline{5}
$$

MATH 3
Save Our Ship! A ship has broken down and needs your help! Take a game pawn from the math box and place it on the circle titled "start." Successfully complete Challenge 1 and then move your pawn along the dotted path to the next circle to Challenge 2. Continue this process until you reach the ship that needs your help.


Challenge 1: Complete the number pattern by using repeated addition.
$9,18,27, \underline{36}, \underline{45}, \underline{54}, \underline{63}$
Challenge 2: Complete the number pattern by using repeated subtraction.
900, 800, 700,
Challenge 3: Circle equal groups of 6 on the array of anchors, and then fill in the blanks of the problem.

$$
\underline{3} \times \underline{6}=\underline{18}
$$



Challenge 4: Draw circles around the first array of dots to show 4 equal groups of 2. Draw circles around the second array of dots to show 2 equal groups of 4 . Then use the commutative property to write an equation that models the picture.

$$
t \times
$$

$\qquad$
$\qquad$
$\square$
$\square$4



Draw circles around the first array of telescopes to show 2 equal groups of 6 . Draw circles around the second array of telescopes to show 6 equal groups of 2 . Then use
 the commutative property to show an equation that models the picture.
$\underline{2} \times \underline{6}=\underline{6} \times \underline{2}$




$\bigcirc$ Read to the child: You have been practicing subtracting across zeros using the method of regrouping and borrowing shown to the right Today, we are going to learn a shortcut for subtracting across zeros that is faster.

In the shortcut method, we can do all the steps of regrouping and borrowing in two steps. Start by drawing a box around the zeros that you need to borrow from until you reach a digit higher than zero. In the example to the right, the box is around number 200.

We can borrow 1 from 200. What is 1 less than 200? [199] We cross out 200 and subtract 1 . Write 199 above 200 and move the 10 ones that we borrowed to the ones place by writing a 1 in front of the zero. Notice how both problems have 199 written above the original problem with 10 ones in the ones place. So we know that our shortcut method will give us the same answer as the regular method. Now find the answer.


Every winter thousands of tourists flock to Ottawa, Canada, to enjoy outdoor activities during Winterlude. The most popular attraction, skating down the frozen Rideau Canal, can bring in as many as 10,000 people each day. On Tuesday, 9,487 people skated the canal.


Find the difference between the numbers using the subtraction across zeros shortcut. Start by drawing a box around the zeros that you need to borrow from until you reach a digit higher than zero. In this problem you will draw a box around 1 and three zeros (do not include the zero in the ones place because we are not borrowing from it).
 Cross out 1,000 in the box and subtract 1 . Write 999 above the zeros. Then carry the 10 ones by writing a 1 next to the zero in the ones place. Now subtract to find the answer.

When using this method, only include one place value with a number higher than zero in the box you draw. Each year event organizers plan for as many as 750,000 tourists. This year 643,487 came. In this problem draw a box around the 5 and the three zeros after it. Do not include the 7. What number is 1 less than 5,000? Write 4,999 above and complete the problem.

This method works when subtracting across any number of zeros, even with money. When Mia's family went to Winterlude, they spent \$378.27 on ice skate rentals, food, and lodging for the weekend. They had a budget of $\$ 400$ for the trip. How much did they have left at the end of the trip? Put a box around the 4 and three zeros. One less than 4,000 is 3,999 . Carry the 1 and write it next to the final zero. Then subtract.


Figure out the answer to the riddle by completing the problems and writing the letter shown by each number on the answer lines to the riddle.


| $500,000 \quad 300,000$ |
| ---: |
| $-275,453$ |
| 224,547 |

## * REVIEW \& ACTIVITIES $\stackrel{\text { \& }}{\text { * }}$

Read and then complete the section.
 numbers when using line graphs.

1. Sales really dropped off in April when the shop only sold 10 pairs of skates. On the line above April, draw a dot that represents about 10. Then draw a line from March's dot to April's dot.
2. Answer the questions:

- Which month had the highest sales? January
- About how many skates were sold in February and about how many were sold in October?
- About how many more skates were sold in February than October?



## Mixed Numbers Path



Add the fractions together. Remember that when you add fractions with the same denominator, add the numerators and keep the denominator the same.

$$
\frac{1}{5}+\frac{3}{5}=\frac{4}{5} \frac{3}{7}+\frac{2}{7}=\frac{5}{7} \frac{1}{2}+\frac{1}{2}=\frac{2}{2} \frac{1}{6}+\frac{1}{6}+\frac{3}{6}=\frac{5}{6}
$$

Jenny Phillips
Read the following information aloud to the child: Unit
assessments give you practice with the math concepts learned in
this unit without having you over practice concepts that you have
mastered. These assessments also give you practice working on
math problems for an extended period of time. This helps you
to extend focus and attention span and to be better prepared
for any type of testing you will have to do in the future. Here
are some tips. First, make sure to always read the instructions
carefully. Sometimes you can get answers wrong simply because
you did not understand the instructions. Second, do not rush
through exercises you think you already know. Instead, make
sure to do your work carefully. Sometimes you can get answers
wrong, even though you understand the concept, just because
you rushed.


Answer the questions using the number in the purple box above.
Which digit is in the ten thousands place? 5
Which digit is in the millions place? 6

## $: \quad$ Additional Practice

Circle the correct word form for the number.
2,468,731
a) two million, forty-six eight, seven hundred thirty-one thousand two million, four hundred sixty-eight thousand, seven hundred

Write the number in standard form.
$4,000.000+700.000+4.000+80+3$
$4,709,083$
Subtract.
4,790,083
$\begin{array}{r}-2,468,731 \\ \hline 2,321,352\end{array}$

## Z NAMING AND IDENTIFYING FRACTIONS\&

Circle the fractions that are equal to $\frac{1}{2}$.


Shade in half of the circle. Then write the fraction that represents the amount
shaded.


Fill in the numerator or denominator to make each fraction equal to 1.

| $\frac{10}{10}$ | $\frac{7}{7}$ | $\frac{2}{2}$ | $\frac{4}{4}$ |
| :--- | :--- | :--- | :--- |

## I Additional Proctice

Circle the fractions that are equal to $\frac{1}{2}$.

$$
\frac{3}{9} \quad \frac{5}{7} \quad \frac{2}{4} \quad \frac{3}{6}
$$

Fill in the numerator or denominator to make each fraction equal to 1 .

$$
\frac{8}{8} \quad \frac{3}{3} \quad \frac{5}{5}
$$

Shade in half of the circle to the right. Then write the fraction that represents the amoun shaded.


## \% TIME:5 OR 10 MINUTE INTERVALS \%

Draw hands on the clock to match the time written above each clock.


Fill in the blanks with the correct numbers and circle the correct term (either AFTER or TILL, PAST or TO).


## : $\square$ Addition al Proctice

Draw hands on the clock to match the time written above each clock.


Fill in the blanks with the correct numbers and circle the correct term.


| Hatur |  |
| :---: | :---: |
| \% Equivalent rractions \% \% Compare and order fractions \% |  |
|  | $\frac{1}{4} \circlearrowleft \frac{2}{4} \quad \frac{5}{7} \bigcirc \frac{1}{7} \quad \frac{3}{9} \bigcirc \frac{3}{6} \quad \frac{4}{9} \odot \frac{4}{8}$ |
|  |  |
| $\frac{1}{4}=\frac{3}{12} \quad \frac{2}{3}=\frac{4}{6}$ | $\frac{2}{5}$ $\frac{5}{5}$ $\frac{4}{5}$ $\frac{2}{5}$ $\frac{4}{5}$ $\frac{5}{5}$ |
| $\frac{3}{5}=\frac{15}{25} \quad \frac{3}{4}=\frac{12}{16}$ | $\frac{2}{8}$ $\frac{2}{5}$ $\frac{2}{10}$ $\frac{2}{10}$ $\frac{2}{8}$ $\frac{2}{5}$ |
| $\sum$ Additionol Proctice |  |
| $\otimes ® \otimes$ | $\frac{3}{7} \bigcirc \frac{5}{7} \quad \frac{2}{10} \odot \frac{5}{10} \quad \frac{1}{2} \bigcirc \frac{1}{4} \quad \frac{2}{6} \bigcirc \frac{2}{9}$ |
| Fill in the blanks with an equivalent fraction by multiplying by thenumbers shown. |  |
| $\frac{5}{6}=\frac{35}{42} \quad \frac{1}{3}=\frac{9}{27}$ |  |
| \% ${ }^{\text {m }}$ |  |
| nams |  |
| Z fractions ona number line \% | $\sum \text { Addition Pl Proctice }$ |
| Iabe eash segmenton the enumber ine enth the orrect faraion. |  |
| $\begin{array}{llll} \frac{1}{4} & \frac{2}{4} & \frac{3}{4} & \frac{4}{4} \end{array}$ | $\begin{array}{lllll} \frac{1}{5} & \frac{2}{5} & \frac{3}{5} & \frac{4}{5} & \frac{5}{5} \end{array}$ |
|  |  |
| 0 $\frac{1}{3}$ $\frac{2}{3}$ $\frac{3}{3}$ | Use the two number lies |
| 7           <br> 0 $\frac{1}{9}$ $\frac{2}{9}$ $\frac{3}{9}$ 4 $\frac{5}{9}$ 5 6 $\frac{7}{9}$ $\frac{8}{9}$ 8 |  |
| $\frac{1}{3} \bigcirc \frac{8}{9} \quad \frac{3}{3} \bigcirc \frac{5}{9} \quad \frac{2}{3} \bigcirc \frac{6}{9} \quad \frac{2}{3} \bigcirc \frac{2}{9}$ | $\frac{6}{8} \ominus \frac{3}{4} \quad \frac{1}{8} \bigcirc \frac{2}{4} \quad \frac{3}{8} \bigcirc \frac{3}{4} \quad \frac{4}{4} \bigcirc \frac{5}{8}$ |
|  |  |
| maini |  |



Write a mixed number to describe the amount of twigs the beaver collected.


## \% USING A THERMOMETER E

Circle the correct answer. Using the Celsius scale, water freezes at what temperature?
$-20{ }^{\circ} \mathrm{C}$

$32{ }^{\circ} \mathrm{C}$
What temperature is shown on the thermometer? Write the answers below. Then circle the correct scene to match the temperature.

$: \quad$ Additional Practice

Circle the correct answer. Using the Fahrenheit scale, water boils at what temperature?
$160^{\circ} \mathrm{F}$


What temperature is shown on the thermometer? Write the answers below. Then circle the correct scene to match the temperature.



## 202

## \% METRIC CONVERSIONS E \&

Fill in the blanks with the correct abbreviations.
kilometer $=\mathrm{km}$ meter $=\underline{m}$ centimeter $=\underline{\mathrm{cm}}$

Write the equivalent measures in the blanks.

## $1 \mathrm{~m}=100 \mathrm{~cm} \quad \mid \mathrm{km}=1.000 \mathrm{~m}$

Convert the measurements into centimeters or meters. Then draw lines of symmetry on the shapes.
 m

## $\sum$ Additional Proctice

Fill in the blanks with the correct unit abbreviations.

$$
1,000 \underline{m}=1 \mathrm{~km}
$$

$100 \mathrm{~cm}=1 \mathrm{~m}$
Circle the most reasonable unit of measurement for each item.


Convert the measurements into centimeters or meters. Then draw lines of symmetry on the shapes.


## US CUSTOMARY CONVERSIONS: INCHES. FEET. AND YARDS

Fill in the blanks with the correct abbreviations.

$$
\text { yard }=y d \quad \text { feet }=\underline{f t} \text { inch }=\text { in }
$$

Write the equivalent measures in the blanks.


Fill in the blanks with the correct unit abbreviations.
$12 \mathrm{in}=1 \mathrm{ft}$

$$
3 \mathrm{ft}=1 \mathrm{yd}
$$

Circle the most reasonable unit of measurement for each item.


Convert the length of each object into inches or feet.



Add or subtract to find the answer.

| 1 ft 2 in | 4 ft 11 in | 2 ft 2 in |
| :---: | :---: | :---: |
| + 1 ft 8 in | -3 ft 1 in | + 1 ft 3 in |
| 2 ft 10 in | 1 ft 10 in | 3 ft 5 in |
| 1 yd 1 ft | 5 yd 2 ft | 2 yd 2 ft |
| + 3 yd 1 ft | - 2 yd 1 ft | + 4 ydO ft |
| 4 yd 2 ft | 3 yd 1 ft | 6 yd 2 ft |



Circle the bills and coins you would use to equal the amount. Use the least number of coins.


Subtract to find the amount of change received.

$$
\begin{array}{cc}
\$ 15.00 \text { paid } \\
-\$ 12.38 \text { owed } \\
\hline \$ 2.62 \text { change }
\end{array} \quad \begin{gathered}
\$ 40.00 \text { paid } \\
-\$ 26.48 \text { owed } \\
\hline \$ 13.52 \text { change }
\end{gathered}
$$

## Z'MONEY: ROUND. AND THEN SUBTRACT\%

Use the prices shown for each
size of maple syrup to answer
the questions. Round to the
nearest dollar first, and then
find the answer.
About how much more does the
l6 oz bottle of syrup cost than

the 8 oz? | Approximately how much more |
| :--- |
| does the 12 oz bottle of syrup cost |
| than the 8 oz ? |

About how much more does the 16 oz bottle of syrup cost than
$\$ 12$
$-\$ 5$
$-\$ 7$

- Additional Practice



## Z్MONEY: TWO-STEP STORY PROBLEMS

Read each story problem carefully and complete it using more than one step.

$$
\begin{aligned}
& \begin{array}{l}
\text { step. } \\
\begin{array}{l}
\text { Mia and her mom bought two bags of } \\
\text { beans to make the maple baked beans } \\
\text { for the church social. Each bag costs } \\
\$ 5.38 \text {. They paid } \$ 20 \text {. How much change }
\end{array} \\
\text { did they receive? }
\end{array} \\
& \begin{array}{l}
\text { + } \\
\text { Both bags of }
\end{array} \\
& \hline
\end{aligned}
$$

counter. How many beans were still left in
the bags?

## $\sum \quad$ Additional Practice

Read each story problem carefully and complete it using more than one step.



Read to the child: The Kumar family lives in the bustling city of New Delhi, which is the capital of India. Raj is 10 years old; his sisters are 13 -year-old Subha and 8-year-old Kiara. Today, they are going to the fabric shop to pick out fabric to make a blouse to match a new sari [saw-ree], a traditional Indian dress, for their mother.


The shelves are filled with a dazzling array of rich, colorful fabrics. Their mother chooses a bolt of emerald green, and the store owner measures out 6 meters of fabric for her sari. She also needs enough yellow trim to sew along the outside edges of the fabric. Kiara wonders how they will know how much trim to buy.


6 m
To find the answer, they need to measure each edge of the fabric where the trim will be attached. The fabric is 6 meters long and 1 meter wide. Starting at the star in the top corner, trace your finger along the edge of the fabric, and then write the length of each side in the spaces below. Add up the total distance around the fabric.
$6 m+1$ m $\qquad$ 6 m m $\qquad$

They will need 14 meters of trim to decorate the sari fabric.
The distance around a 2D shape is called the perimeter. To find the perimeter of an object, add the lengths of all sides.

Raj notices some beautiful tiles on the walls of the tailor's shop. Help him find the perimeter by skip counting around the edge of the tiles, starting at the star. Write the perimeter.


Since each tile is a square, the sides are all the same length. Write in the missing measurements, and then find the perimeter of the design.

## -

 $\sqrt{ }$

Math 3 Answer Key

* LESSON PRACTICE


41 yd
This is the café that serves some of Raj's favorite treats. Add the lengths of all sides to find the perimeters and write the answers below.


32 cm
Take the array mat from the math box. Draw the rectangles on the mat according to the instructions below. Use the grid lines on the mat to measure. Then answer the questions. The first one is shown here.

- Rectangle I: Draw a rectangle that is 7 units long and 3 units wide. Label each side and find the perimeter.
$\qquad$
20 units

- Rectangle 2: Draw a rectangle that is 5 units long and 4 units wide. Label each side and find the perimeter. $\qquad$ 18 units
- Rectangle 3: Draw a rectangle that is 3 units long and 2 units wide. Label each side and find the perimeter. 10 units
- Which rectangle has the largest perimeter? ${ }^{\# 1}$
- Which rectangle has the smallest perimeter? \#3

Take the measuring tape from the math box. Measure the sides of the shapes in centimeters and write the measurement next to each side. Add the length of each side together and write the perimeter for each shape.


## Fun

## Finds

Using the measuring tape from the math box, measure the perimeter of three things around your house. Measure each side individually and add the lengths of the sides together. Measure one item in feet, one in inches, and one in centimeters. Ideas may include a book, the top of your table, a painting, a window, or this page.

| Unit of <br> Measurement | Item | Perimeter <br> (include units) |
| :---: | :---: | :---: |
| Feet |  |  |
| Inches | Ans wers |  |
| Centimeters |  |  |

## $\Rightarrow$ MATH 3



Write the $=$ (equal) or $\neq$ (not equal) sign between the fractions. (Hint: Equivalent fractions are different fractions that represent the same amount. Equivalent fractions are made by multiplying the numerator and the denominator by the same number.)
$\frac{1}{4}=\frac{2}{8} \quad \frac{1}{2} \in \frac{2}{3} \quad \frac{2}{3} \Theta \frac{4}{6}$

## - Multiplication Fact Practice

Put a check mark in the green box when you have practiced multiplication facts Set C for 10 minutes or more. Then complete these problems.
$5 \times 6=30$
$6 \times 3=18$
$6 \times 8=48$
$7 \times 6=42$
$5 \times 7=35$
$7 \times 7=49$
$7 \times 9=63$
$8 \times 3=24$
$9 \times 6=54$



213


Read to the child: Subha is making shikanji [SHIH-kahn-jee], a delicious Indian lemonade. She cut the lemon into equal slices. Look at the slices below and tell me how many there are. These four slices make one whole lemon. Suppose Subha squeezed two of the slices into one glass and the other two into another. Write a fraction under each pair of lemon slices to show the part of the whole lemon that was used for each glass of lemonade.
Since there are 4 slices in one whole lemon, use 4 for the denominator in each fraction.

## Now add the fractions

together. Remember that the denominator does not change because the total number of equal parts (lemon slices) does not change.

[^0]
$$
\frac{2}{4}+\frac{2}{4}=\frac{4}{4}
$$

Fractions need to have a common denominator before we can add or subtract them. Circle the problems below that have common denominators.


Let's suppose that Subha finished making a pitcher of lemonade, and she divided it equally into 5 glasses. She poured 3 glasses for the children and 2 glasses for the parents. Write fractions to show how much of the lemonade was for the children and how much was for the parents. Then add the fractions together. Remember that you add only the numerators. The denominator does not change because the total number of equal parts (5 glasses) does not change.

Everyone except Subha drank their lemonade right away. She saved hers | $\begin{array}{l}\text { for later. Let's write a subtraction } \\ \text { problem to show what fraction of } \\ \text { the lemonade is left. We started with }\end{array}$ |
| :--- |$\frac{3}{5}=\frac{2}{5}$ a whole pitcher that was poured into 5 equal glasses. Write $\frac{5}{5}$ in the first box. If the lemonade from 4 glasses is gone, what fraction of the total is that? [ $\frac{4}{5}$ ] Write the fraction in the next box. Now subtract. The total number of glasses does not change, so we do not change the denominator.

Add or subtract the fractions below. Remember that the denominator does not change. We add or subtract only the numbers in the numerators.

$$
\frac{5}{5}-\frac{4}{5}=\frac{1}{5}
$$

$$
\begin{aligned}
& \frac{1}{4}+\frac{2}{4}=\frac{3}{4} \quad \frac{3}{7}+\frac{2}{7}=\frac{5}{7} \quad \frac{2}{6}+\frac{2}{6}=\frac{4}{6} \\
& \frac{5}{9}-\frac{4}{9}=\frac{1}{9} \quad \frac{3}{3}-\frac{1}{3}=\frac{2}{3} \quad \frac{4}{5}-\frac{1}{5}=\frac{3}{5}
\end{aligned}
$$

* LESSON PRACTICE

Decode the problem. Then add or subtract the fractions.


$$
\frac{4}{7}+\frac{1}{7}=\frac{5}{7}
$$



Read each story problem carefully and solve by adding or subtracting the fractions. Remember to keep the denominator the same.

| $\begin{array}{l}\text { Subha drank } \frac{5}{8} \text { of her lemonade. Subtract } \\ \text { to find the amount of lemonade Subha had }\end{array}$ |
| :--- |
| 8 |$-\frac{5}{8}=\frac{3}{8}$ left. (Hint: She started with $\frac{8}{8}$ lemonade.) Raj spent $\frac{2}{5}$ of his rupees on a book and $\frac{1}{5}$ on a bookmark. Add to find the fraction of rupees that Raj spent.

- Jenny Phillips

Each colored arc on the rainbow joins a factor pair. The factors under the rainbow go in order from least to greatest. The numbers in same-colored boxes must equal the purple number when multiplied. Fill in the missing factors.

Factors
Factors are the
numbers multiplied
in a multiplication
problem. Look at
the multiplication
fact below. For the
number 10,2 and
5 are a factor pair
because 2 times 5 is
10. Another factor
pair for 10 is 1 and
10.





Perimeter
The distance around a 2D shape is called the perimeter.
To find the perimeter of an object, add the length of each side.
Write the perimeter for each frame inside the frame, including the units. 5 in


$\bigcirc$ Read to the child: Can you think of a word that sounds similar to "multiple"? [multiply or multiplication] You have already been using multiples in this course. When you skip count, you are using multiples. You can get a multiple of a number by multiplying it by any other number. For example, in red are some multiples of $8: 8 \times 1=8,8 \times 2=$ $16,8 \times 3=24,8 \times 4=32$, and so on. On the whiteboard, multiply the number 6 by $1,2,3$, and 4 , and then write the multiples of 6 in these boxes:


Like most families in New Delhi, Raj's family members walk, ride a bike, or take the bus or metro to get around town. Today, Raj's family is riding the bus to a museum across town. It costs 5 rupees for children to ride the bus. Count the money that Raj, Subha, and Kiara paid for bus fare by skip counting, and write the multiples of 5 under each rupee to find the total they paid.


Adult passengers on the bus pay 10 rupees. Count the amount paid by Mom, Dad, and 4 other adults who boarded the bus at their stop. Write the multiples of 10 under the coins to find the total.


During the bus ride, Raj noticed that the apartment building numbers have $a+10$ number pattern. Look at the numbers on the buildings. Even though they count up by 10 s, they are not multiples of 10 because you cannot get those numbers when you multiply another number by 10 .


O Game: Choose a different colored pencil for each player. Take the 6 -sided dice from the math box. Each player takes a turn rolling the dice and finding a box with a multiple of the number that was rolled. (For example, if a 6 is rolled, choose between the $6,12,18,24,30$, or 36 boxes.) The player colors in the box with his or her colored pencil to claim it. The first player to get four in a row (vertically, horizontally, or diagonally) wins.

Multiples Match

| 6 | 20 | 24 | 30 | 12 | 2 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 8 | 16 | 40 | 48 | 36 | 32 |
| 10 | 28 | 21 | 15 | 35 | 14 |
| 33 | 60 | 4 | 5 | 18 | 9 |

## $\Longrightarrow$ MATH 3 <br> \& ${ }^{2}$ *

Write the multiples of 3 from 3 to 36 . Write the multiples of 4 from 4 to 40 . Circle the numbers that appear in both lists. Then use the multiples to create a Venn diagram by writing each number in the correct part of the diagram.
$\begin{aligned} & \text { Multiples } \\ & \text { of } 3:\end{aligned} 3,6,9,12,15,18,21,24,22,30,33,36$
$\begin{aligned} & \text { Multiples } \\ & \text { of } 4 \text { : }\end{aligned} 4,8,(12,16,20,24,28,32,(36,40$



In each row, circle the multiples of the number in orange

| 5 | 25 | 64 | 12 | 35 | 60 | 75 | 83 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 10 | 15 |  |  |  |  |  |  |
| 50 | 400 | 900 | 1,020 | 300 | 650 |  |  |

Solve each story problem by adding or subtracting fractions. Write the addition or subtraction sign in the orange space, and remember to keep the denominator the same.

Subha finished $\frac{6}{8}$ of her homework Subtract to find the amount Subha had left. (Hint: She started with $\frac{8}{8}$ of her homework.)

Raj read $\frac{3}{7}$ of his book yesterday and read $\frac{2}{7}$ of his book today. How much of his book has he read?

$$
\begin{aligned}
& \frac{8}{8}-\frac{6}{8}=\frac{2}{8} \\
& \frac{3}{7}+\frac{2}{7}=\frac{5}{7}
\end{aligned}
$$

Find the perimeter of each shape and write the answer inside the shape



Complete the problems and use the key to answer the riddles.


## $\diamond$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set C for 10 minutes or more. Then complete these problems.


- Jenny Phillips


When multiplying a number by a multiple of 10,100 , or 1,000 , multiply all the digits that are not 0 , and then write the same number of $0 s$ in the multiple at the end. Look at the first problem. The number 40 is a multiple of 10 . Point to the digit in 40 that is not a 0 . Multiply 2 and 4 together to get 8 . Write 8 on the line. How many 0 s are in 40 ? Write one 0 after the 8 . Your answer is 80 . Now complete the other problems.

$3 \times 300=900$
$5 \times 3,000=15,000$
$6 \times 60=360$

O Read to the child: Let's see a way that this strategy applies to real life. While shopping with his mom, Raj noticed many different spices on the shelves. Indian food is famous for its unique flavors from all the spices that are used.

One spice Raj noticed was cinnamon bay leaves (tej patta). There were 7 packages with 300 leaves in each package. We can multiply to find the total number of leaves

First, multiply 7 times 3. Write this answer on the line. Since there are two 0 s in the number 300 write two 0 s after the 21 Then add a comma. The product of 7 and 300 is 2,100.

write two zeros at the end

Fennel seeds were another spice Raj picked up and observed. There were 8 bags with 5,000 seeds in each bag. Let's multiply to find the total number of fennel seeds there were altogether

First, multiply 8 times 5 . Write this answer on the line. Since there are three 0 s in the number 5,000, write three $0 s$ after the 40 . Even though the answer from step 1 ended in a 0 , we still need to write three more 0s in step 2. Then add a comma. The product of 8 and 5,000 is 40,000 . That's a lot of seeds!

write three zeros at the end


* LESSON PRACTICE


Green:
$3 \times 300=900$
$4 \times 700=2.800$
Orange:
$4 \times 90=360$
Blue:
$5 \times 50=250$
$8 \times 20=160$

- Jenny Phillips
$7 \times 60=420$
Red:
$5 \times 6,000=\underline{30,000}$
$3 \times 4,000=\underline{12,000}$
Purple:
$6 \times 4,000=24,000$
$9 \times 200=1,800$


## SPICES ON THE SHELF

Find the products on the right. Then draw a line to match each product with the correct spice on the shelf.


| Find the products below. |  |
| :--- | :--- |
| $8 \times 30=\underline{240}$ | $2 \times 60=\underline{120}$ |
| $8 \times 300=\underline{2,400}$ | $2 \times 600=1,200$ |
| $8 \times 3,000=\underline{24,000}$ | $2 \times 6,000=\underline{12,000}$ |
| $4 \times 70=\underline{280}$ | $5 \times 80=\underline{400}$ |
| $4 \times 700=\underline{2,800}$ | $5 \times 800=\underline{4,000}$ |
| $4 \times 7,000=\underline{28,000}$ | $5 \times 8,000=\underline{40,000}$ |

MATH ${ }^{3}$

## 8. REVIEW \& ACTIVITIES \&

## 8



List the digit that is in each given place value.

| Millions |
| :--- |
| Hundred  <br> Thousands 2 <br> Ten  <br> Thousands 8 <br> Tens 6 |

Write the number in words (write small).
Tens
three million, two hundred eighty-seven thousand, two hundred sixty-three

Write the number below using digits. Include the commas.
Eighty million, four hundred thousand, nine hundred thirty-two
80,400,932


This magnet attracts multiples of 4 . Circle all the multiples of 4 below (which are numbers created by multiplying 4 by another number).
(4) $6 \quad 14$ (16) (44)
(12) 26 (8) 34 (24)
(40) 22 (48) (20) 2
(28) (32) $18 \quad 30$ (36)

## Perimeter

The distance around a 2 D shape is called the perimeter. To find the perimeter of an object, add the length of each side.

Take the yellow hexagon, two orange triangles, and the measuring tape from the math box and follow the instructions.

Measure each side of the hexagon to the nearest centimeter and add up all the sides. Write the perimeter in the box. Form the two triangles into a square. Measure each side of
the square to the nearest centimeter. Write the perimeter in the box.

## $\triangleleft$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set C for 10 minutes or more. Then draw a line from the problem to its answer.



O Read to the child: India is home to the Asian elephant, one of three elephant species found in the world. In the image below, there is a male elephant on the left, a female in the middle, and a newborn baby elephant on the right. A female elephant weighs about 3 tons, and a male elephant weighs about 5 tons. Newborn baby elephants weigh about 200 pounds. Write each elephant's weight on the line.
$\qquad$ tons


The smallest unit of weight in the US customary system is ounces. All weight can be measured in ounces, but the numbers can get very large for heavy objects, so we use other units of weight for heavier things. Pounds is another unit for weight. There are 16 ounces in 1 pound. Do you remember the abbreviations for ounces and pounds? Write them on top of the scale.

When adult elephants are weighed in pounds, the number is quite large, so instead, we often use tons. Ton is abbreviated "tn." Write "tn" on the
 scale above. We can figure out how many pounds
a female elephant weighs because we know there are 2,000 pounds in 1 ton. Find out how many pounds equal 3 tons by using multiplication.

$$
\overbrace{\text { tn }}^{\substack{\text { Step } 1:}} \overbrace{2,0,000}^{3 \times 2}=\frac{6,000}{\text { Step tep 2: }} \mathrm{lb}
$$

write three zeros at the end
Using these steps, calculate how many pounds a male elephant weighs

$$
\underset{\text { tn }}{5} \times \underset{\text { libper to }}{2,000}=10,000 \mathrm{lb}
$$

## Check the Scales

Rice is a staple food for many meals in India, and it is measured by weight on a scale. With this type of scale, the arm is balanced when each side holds an equal amount of weight. If one portion is heavier, that side will dip down. One side of this scale is holding 8 oz of rice, and the other side is holding 4 oz of rice. Write the correct weight under each side of the scale, including units.



Write the following list of weights from lightest to heaviest, starting at the top of the chart and going to the bottom. Then circle the image that best represents the weight you wrote on the left. The first is done for you.



Complete the problems. First, multiply the digits that are not 0 s. Then write the number of $0 s$ in the multiple of 10,100 , or 1,000 .
$6 \times 6,000=36,0004 \times 400=1,600 \quad 2 \times 2.000=4,000$ $5 \times 5,000=25,00030 \times 400=12,0009 \times 2,000=18,000$

Complete the problems using the subtraction across zeroes strategry
Subtraction Across Zeros Strategy


## $\checkmark$ Multiplication Fact Practice $\diamond$

Mark the green box when you have practiced multiplica tion facts Set C for 10 minutes or more. Then write and complete a multiplication problem for each question.
If there are 5 shelves of books
and 6 books on each shelf, how
many books are there in total?
$5 \times 6=$
many books sre there in tota? 30 books
If you have 9 boxes of eggs with $9 \times 8=$
8 eggs in each box, how many
eggs do you have altogether? 2 eggs
eggs do you have altogether? 12 eggs
If you have 9 puppies and they $9 \times 6=$ each have 6 spots, how many
spots are there in all? 54 spots

If you have 8 tricycles and they $8 \times 3=$ each have 3 wheels, how many
wheels are there altogether? 24 wheels

If you bake 7 cakes and they each $7 \times 6=$ hove 6 condes on them, how 42 candles

On each clock write the time given. Then, in the purple box, write the elapsed time from the first clock to the time on the second clock.
10 past 7:00 AM


Elapsed Time


- Jenny Phillips


O Read to the child: When we measure the perimeter of a 2D shape, we measure the distance around the shape. This is helpful when, for example, we want to build a fence around a yard. But how do we know how much grass we would need to put inside the fence? We need to calculate the area. The space inside a 2D shape is called the area. Look at the blue rectangle below. To figure out how much space is inside the rectangle, we can cover it with squares and count them. Each square is called a square unit.


Count the individual square units in the blue rectangle.

The total area of the rectangle is 12 square units. Finding the area means you are finding how many square units cover the surface of a 2D shape. Write the number of square units in the green and orange shapes.


O Read to the child: The Kumar family is taking a trip to the city of Agra to visit the Taj Mahal, one of the most famous buildings in all of India. During the two-hour train ride to the site, Kiara reads their guidebook to learn about the Taj Mahal and its grounds. She is amazed by the vast gardens and graceful domed design of the white marble building.

The guidebook has a map of the grounds at the Taj Mahal. How many square units make up the gardens? How many make up the buildings and platform? What is the total area of the Taj Mahal grounds? Fill in the missing numbers in the guidebook.


Punch out the 8 tiles from the Lesson 67 page of the Appendix. Using these tiles, arrange them to create a shape with an area of 8 square units. Pause while the child works. Then count the squares in the child's shape when he or she is finished. Now let's rearrange the squares into a different shape that still contains 8 square units. Then we'll count the squares again. Pause to count. Even though the new shape looks different, it still has the same area. Remove 2 squares from the child's shape. How many square units does your shape contain now? If you rearranged these 6 squares into a new shape, how many squares would you have?


## Area Arrays

For this game take the array mat, two colors of dry-erase markers, and the six- and 10 -sided dice from the math box.

The first player rolls both dice and on the array mat draws a rectangle using the numbers rolled as the dimensions. For example, if you roll a 9 and a 2 , you will draw a rectangle that is 2 units wide and 9 units long. The player counts the square units inside the shape and writes the total inside the rectangle. The second player
 does the same with a different colored marker.

If doubles are rolled, draw the width and length on the array mat, and then connect the two points to create a triangle. Write the total area of the triangle inside your shape.

The game ends when there is no more space to draw a shape without overlapping another shape. The person with the most total area on the mat wins.

```
& LESSONPRACTICE *
```

Write the area in square units for each image.

4
Whole squares: $8=4$
Half squares: $8=4$
Area: $\underline{8}$ square units

Whole squares: 4
$4=2$
Area: 6 square units


Whole squares 6 Half squares: $2=1$
Area: 7 __square units


Whole squares: 6 Half squares: $4=2$
Area: 8 square units

With the area tiles from the lesson, make three shapes that each have an area of 6 square units. Then make a shape that is 2 square units wide and 4 square units tall. How many square units does the shape contain? 8 square units


Subha and Raj are going with their family to Baga Beach, one of the best beaches in India. Solve each story problem by adding or subtracting fractions.

The family drove $\frac{4}{8}$ of the way on Monday. How much farther do they have to go?

Raj read $\frac{3}{7}$ of his book on the way to Baga Beach and $\frac{3}{7}$ when he got there. How much of his book has he read?


Factors are the numbers multiplied in a multiplication problem.
Write two or three sets of factors for each number.

| 9 | 18 | 12 |
| :---: | :---: | :---: |
| FACTORS | FACTORS | FACTORS |
| $1 \times 9$ | $1 \times 18$ | $1 \times 12$ |
| $3 \times 3$ | $2 \times 9$ | $2 \times 6$ |
|  | $3 \times 6$ | $3 \times 4$ |


$\bigcirc$ Read to the child: You have learned to multiply 1-digit numbers by other 1-digit numbers, such as $4 \times 3$ and $5 \times 3$. Today, you are going to learn to multiply 2 -digit numbers by 1 -digit numbers. As I slowly read each of the following two steps, point to the digits I am talking about.

Step I
Multiply the bottom number by the digit
in the ones place in the top number.


Now you try it. In the first problem, start by multiplying 3 times 2. Then multiply 3 times 3 . In the next problem, follow the same steps. If the product of step 2 is greater than 9 , write the first digit in the hundreds place and the second digit in the tens place.


OJenny Phillip.

$\xrightarrow{ }$ MATH 3

Complete these three problems

$$
13
$$

$$
31
$$ following the two steps.

$$
24
$$

$$
\begin{array}{r}
\times 2 \\
48
\end{array} \frac{\times 3}{39}
$$

$$
\begin{array}{r}
5 \\
\hline 155
\end{array}
$$

O Have a whiteboard and dry-erase marker ready. Take the 6 -sided dice and two game pawns from the math box. Read to the child: Let's play Multiplication Tour. Place the game pawns on "Start." You go first. Roll the dice and move that many spaces. Write the problem vertically on the whiteboard and find the answer. If the product is greater than 300, go again. Continue until you reach a problem that does not have a product greater than 300 . Then it is my turn. The first person to get all the way around India wins! Repeat the game one or more times


8 LESSON PRACTICE
Today, Mom and the girls are at a baby shower. Find the product of each problem. Then write the numbers in the matching colored boxes below to find the birth date of Subha and Kiara's new cousin. (Write one digit in each box.)


Which month is the 12th month of the year? Circle the correct answer.


October | September


Math 3 Answer Key


## Area Arrays

Step 1: Take the array mat from the math box.

Step 2: With a dry-erase marker,
draw shapes with the following dimensions:
2 units wide and 3 units long
1 unit wide and 4 units long
3 units wide and 5 units long
4 units wide and 7 units long
Step 3: Write the total square units inside each shape. Step 4: Show your work to your parent or teacher.


Write the abbreviations below and complete the conversion chart for the US customary system's units of weight

$\diamond$ Multiplication Fact Practice $\diamond$
Put a check mark in the green box when you have practiced multiplication facts Set C for 10 minutes or more. Then complete these problems.

$$
\begin{array}{r}
7 \\
\times 7 \\
\times 7 \\
\hline 49 \\
\times 9 \\
54 \\
\hline 72
\end{array} \begin{array}{r}
8 \\
\times 9 \\
\times 30
\end{array} \frac{6}{18} \begin{array}{r}
7 \\
\times 6 \\
\hline 42
\end{array}
$$



Read to the child: When you started learning about numbers, you began at one and learned to count up. In this course we have worked with numbers up into the millions. These numbers are positive numbers. Today, we are going to learn about negative numbers, which are numbers less than 0 . Zero is not positive or negative.

Negative numbers are numbers less than zero.

Let's look at negative numbers on a number line. Point to 0 on the number line below. If you count up 2 spaces, where will you land on the number line? Now, go back to 0 and count down 2 spaces. This is negative 2. We write it with a minus sign in front of the number. Starting at the 0 again, count down and say each number aloud as you point to it. The child should say "negative one, negative two, negative three, negative four, negative five." Notice how the negative numbers follow the same pattern as positive numbers


Math 3 Answer Key

You have been measuring temperature using a thermometer, which uses a vertical number line. Thermometers often include negative numbers because temperatures can drop below 0 degrees. Look at the thermometer on the right. What temperature does it show in degrees Celsius? Another way to say this temperature is 10 degrees below 0 . The lower the temperature is, the farther the negative number will be from 0 . Draw a line on the thermometer at -40 degrees Fahrenheit. Is this temperature warmer or colder than -10 degrees Celsius?

## 路 LESSON PRACTICE

Circle the correct answer to each question. Use the image of the sea levels from the lesson.

- Which object is found at $\mathbf{- 4 0 0}$ meters?
shipwreck

deep-sea diver
- Which object is found at $-1,400$ meters?
submarine | whale

- Which object is found at $-1,200$ meters?
shark
| whale


Complete the number line below. Write 0 under the red tick mark. Fill in the missing positive numbers counting up by 1 s from 1 to 10 under the orange tick marks. Then under the blue tick marks, write the negative numbers by counting down by 1 s from -1 to -10 , moving away from 0 toward the left


Temperatures on very tall mountains are extremely cold. Help the hikers record the daily high and low temperatures during their hike up Kanchenjunga.
eratures shown on the
degrees Cels sus and Fahron

8

## 



O Read to the child: We have learned about the US customary system, which uses inches, feet, yards, and miles to measure distance and ounces, pounds, and tons to measure weight. The metric system uses centimeters and meters to measure distance, and today we will learn about measuring weight using the metric system.


The most common metric units for measuring weight are the gram and kilogram. Kilo is Latin for "thousand," so 1 kilogram is equal to 1,000 grams.

The abbreviation for gram is the lowercase letter g , and the abbreviation for kilogram is the lowercase letters kg. Fill in the abbreviations on the scale to the left.

An object that only weighs 1 gram is very light. Examples of things that weigh about one gram include a paper clip, a dollar bill, and a pen cap. Things that weigh about one kilogram include a liter of water, a thick dictionary, and a pineapple. Write " 1 g " or " 1 kg " beneath each object in the next column to show the approximate weight of that item.


Read to the child: Raj and his mother went to the corner market to buy ingredients for the evening meal. Raj examined their shopping list as they walked down the street.

"Is this everything we need to make our meal?" he asked.
"No, those are the things we are missing. There are many more ingredients in our recipe," she said.

The market was busy with customers as Raj and his mother shopped. Raj lifted a potato. "How do I know how much we need?" he asked. His mother pointed to a scale. "You weigh the potatoes by adding them to the scale until it reads 2 kilograms." Which scale holds the correct number of potatoes?


Yogurt is next on the list. Which container should they purchase for their

$>$ MATH 3
A shopkeeper approached with a different type of scale. He held the scale in one hand and placed a 2 kg weight on one side. Then he started loading onions onto the other side. When the arm of the scale was straight across, they knew there were exactly 2 kg of onions on the scale, and the shopkeeper bagged them up. Which scale shows the onions they purchased?


Finally, there was only one item left. How would they weigh the powdery ground ginger? The shopkeeper smiled at Raj. "How much do you need?" he asked. He took a paper square and placed it on a scale, scooping a spoonful of powder onto it. Which scale has 50 g of ginger?


Back at home the cooking began, and everyone jumped in to help. Subha cooked the paneer, a type of cheese. Kiara peeled the potatoes as Mom cut them into cubes. Raj was in charge of weighing the rest of the ingredients and adding them to the pot. Read the scales and write the correct weight on each ingredient on the recipe card.


Math 3 Answer Key


Complete the problems. Multiply the bottom number by the digit in the ones place of the top number. Then multiply the bottom number by the digit in the tens place of the top number.

$$
\begin{array}{r}
62 \\
\times \quad 3 \\
\hline 186 \\
32 \\
\times 4 \\
\times 4 \\
\hline 128 \\
\hline 204 \\
\hline 243
\end{array}
$$

## - Multiplication Fact Practice $\diamond$

Put a check mark in the green box
when you have practiced multiplication facts Set C for 10 minutes or more. Then complete the problems in this section.

$$
\begin{array}{r}
9 \\
\times 6 \\
\times 54 \\
\hline 52
\end{array} \begin{array}{r}
5 \\
\times 6 \\
\hline
\end{array} \begin{array}{r}
8 \\
\times 9 \\
\hline 72
\end{array} \begin{array}{r}
9 \\
\times 73
\end{array}
$$

Shade the thermometers to show the correct temperatures in degrees Celsius and Fahrenheit.


Fill in the blanks.


Fill in the missing numbers on the number line. Start by writing a 0 under the red tick mark.


\section*{| -3 Jenny Phillips $x \mid 237$ |
| :--- | :--- |}



Time
Read the time on each clock in two different ways. (For
example, 2:30 could be read as "two-thirty" or "half past two.")
five forty-f


Read to the child: Volume is the amount of space an object takes up, or the number of cubic units an object contains. For cube- or rectangular prism-shaped objects, follow these steps to find the volume.


Let's find the volume of the figure to the right. Imagine the figure separated into two layers There are 2 cubes in each layer. There are 2 layers. Multiply the number of cubes in each layer

by the number of layers. The
volume is 4 cubic units.

```
2 cubes per layer }\times2\mathrm{ layers = 4 cubes
```

 answer in the last blank.

9 cubes per layer $\times \underline{3}$ layers $=\underline{27}$ cubes

Find the volume of each figure below. Remember to first visualize the figure in separate layers. Then multiply the number of cubes in each layer by the number of layers.

 volume. Lastly, answer the questions below.


Which figure contains the fewest number of cubes?
A B
(C)
D

Find the volume of the figure below. Remember to first visualize the figure in separate layers. Then multiply the number of cubes in each layer by the number of layers.

## 8 8 cubas $\times 1$ 1 over $=8$ A



MULTIPLICATION: TWO-DIGIT BY ONEDIGIT NUMBERS WITH REGROUPING

## $\square$

Place Value
You can add or subtract 10 from any number by changing the digit in the tens place. Say the answers aloud.

$$
\begin{array}{rlrr}
387+10= & 142+10= & 264-10= & 671-10= \\
397 & 152 & 254 & 661 \\
& \text { Skip Counting } &
\end{array}
$$

- Skip count by 9 s from 9 to 99 . See chart pagev
- Skip count by 90 s from 90 to 900 .
90, 180, 270, 360, etc
O Read to the child: Let's learn about regrouping in multiplication. Point to the multiplication problem below: $16 \times 4$. Start by multiplying the bottom digit by the digit in the ones place above. Point to the ones column. What is $4 \times 6$ ? Now look at the chart for the number 24 . We have 2 tens and 4 ones. We cannot write the 2 tens in the ones place.

- Jenny Phillips

O Read to the child: Let's go over three steps for multiplying with regrouping. As I read each step, point to the digits in the problem that I'm talking about. To begin, write the 2-digit number on top of the 1-digit number.


Read to the child: Let's go through the steps with another problem. This time as I read the problem, you write anything that should be written.
 carried (2) to the product from step 2. $(8+2=10)$ Write the answer below the
line.

O Read to the child: Let's go through the steps with another problem. As I read the problem, you write anything that should be written.


O Read to the child: Let's do one more problem with guided steps. Once again, as I read the problem, you write anything that should be written.


O Have the child complete the problems below following the same steps.


Optional Video Lesson
For additional practice, watch the optional video lesson on goodandbeautiful.com/math3 titled "Multiplication with Regrouping." The section below is used during the video.




Read to the child: Today, we will use flowers that are native to India to learn how to complete multiplication story problems. Some story problems tell you the number of equal groups and the amount in each and require multiplication to find the total. Let's look at an example.

Subha has 3 vases. She wants to put 8 lotus flowers in each vase. How many total lotus flowers will she need? This story problem requires us to find 3 groups of 8. We could add 8 plus 8 plus 8 ; however, multiplication is faster


$$
8+8+8=\underbrace{8}_{\text {vase 1 }} \times 8
$$

What is 3 times 8 ? Subha will need a total of 24 lotus flowers.
Continue the lesson with the child on the next page before playing the Flower Path game on this page. Continued on the next page $\gg$
Mental Math

- If you had a bouquet of I dozen flowers, how many flowers
would you have? How many flowers are in 2 dozen? 12, 24
- How many flowers are in a bouquet of a half dozen? 6
Skip Counting
. Skip count by 6 from 6 to 66 . See page v.
Skip count by 60 s. from 60 to 600
$60,120,180,240$, etc.
(14 2

[^1]2 MATH 3


This story problem requires us to find 4 groups of 7 . Again, we could add 7 four times, but multiplying is much faster.

$$
\begin{aligned}
& 7+7+7+7=4 \times 7 \\
& \text { vase 1 vase 2 }
\end{aligned}
$$

What is 4 times 7 ? Raj will need a total of 28 dahlia flowers.

Try this problem on your own. Kiara has 2 vases. She wants to put 10 hibiscus flowers in each vase. How many total hibiscus flowers will she need? Fill in the blanks below, and then find
 the product.

$$
\frac{2}{\frac{2 \text { number }}{\text { of vases }}} \times \frac{10}{\substack{\text { number of } \\ \text { flowers in } \\ \text { each vase }}}=\frac{20}{\text { total }}
$$

Read to the child: Now we're ready to play the game. Take the 10 -sided dice and two game pawns from the math box and turn back to the previous page.


Complete each story problem. Then place the letters in the blanks to answer the riddle. What kind of flowers grow on your face?


There were 8 centerpieces with 5 flowers in each one. How many total flowers were there?

There were 4 rows of flowers. Each row had 6 flowers. How many total flowers were there?

I

作 following fractions by writing either <, >, or $=$ in the circles.

$$
\frac{2}{4} \bigodot \frac{4}{8} \quad \frac{1}{8}<\frac{5}{8} \quad \frac{6}{8} \bigodot \frac{1}{4} \quad \frac{3}{4} \bigodot \frac{6}{8}
$$

$\triangleleft$ Multiplication Fact Practice $\diamond$
Put a check mark in the green box when you have practiced multiplication facts Set C for 10 minutes or more. Then complete these problems to review Set A.
$3 \times 3=\underline{9} \quad 5 \times 3=\underline{15} \quad 8 \times 8=\underline{64} \quad 5 \times 5=\underline{25}$
$6 \times 6=\underline{36} \quad 8 \times 4=\underline{32} \quad 3 \times 4=\underline{12} \quad 9 \times 9=\underline{81}$

## 

Kiara built the following figures out of cube-shaped blocks. Draw a line from each description to the correct model. Then multiply to find the volume. Lastly, answer the questions below.

A B (C) D
Which figure contains the fewest number of cubes?
A B
c
(D)
Find the volume of the figure below. Remember to first visualize the figure in separate layers. Then multiply the number of cubes in each layer by the number of layers.
6 cubes $\times 2$ layers $=\underline{12}$



O Read to the child: Today, we are going to practice adding money with three addends. Addends are the numbers being added together.

When you are adding multiple amounts of money, it is important to keep all the decimal points and place values lined up. This way the dollars and cents are separated, and you can easily see which digits should be added together.

Complete the problem to the right. There are three numbers to add together, so this is a great way to practice some of the mental math strategies you have learned. Start in the green column. Do you notice two digits that add to 10 ? $6+4=10$. Now add the 2 . Write the answer and remember o carry the 1 . In the orange column, you see doubles. $9+9=18$. Add the carried 1 and you have 19. In the blue column, do you see two digits that add to 10? Add these first, and then add the remaining numbers. The decimal point should line up in your answer, as shown.


Raj, Subha, and Kiara's grandmother is earning money to buy gifts for each of her three grandchildren for their upcoming birthdays. Using Grandmother's notes, write each day's total in the boxes below. Use your knowledge and strategies to add the three amounts and write the answer in the total box. Be sure to add the decimal place and dollar sign to the total.

| Earned | \$ $13.1{ }^{1} 3^{\text {Doy }} 1$ |
| :---: | :---: |
| Day1: $\$ 13.32$ | \$ 12.98Doy ${ }^{\text {2 }}$ |
| Day 2: $\$ 12.98$ | + \$ 11.04 Doy ${ }^{\text {3 }}$ |
| Day 3: 11.04 | \$37. 34 Totol |



Grandmother took her money to the market to shop for gifts. She chose the one in the green circle for Subha, the one in the orange box for Raj, and the one in the blue hexagon for Kiara. How much money did she pay for the gifts? Follow the instructions on the next page to find the answer.

Write the cost of each item in the box
with the corresponding color, being
sure to line up the decimal points and
place values. Starting in the far right,
add each column and write the total
amount of money Grandmother spent
on the birthday gifts in the purple box.

## Roll DICE: FINDPrice

Take the 10 -sided and 6 -sided dice from the math box. Roll both dice and write the numbers rolled in the blank spaces for each problem. You can decide which blank to write each number in. Then add the amounts to find the total. If you roll a 10 , write a 0 .




MATH 3
Read to the child: Let's learn about multiplying money. We'll start with multiplying horizontally. For the problem below, multiply the numbers that are not $0(7 \times 2)$ and write the answer. Then count the $0 s$ in the problem and write that many 0 s after 14.
$70 \phi \times 2=140 \phi$
The next step is to convert $140 \$$ to dollars and cents. We know that $100 \$$ is equal to 1 dollar. Write a 1 in the dollar section of the answer. What is left over from $140 \$$ once $100 \$$ is changed to a dollar? Write this in the blank labeled "leftover cents" and on the cent section of the answer

O Read to the child: Let's practice with a couple more problems. First, multiply the digits that are not 0 . Then write the number of 0 s from the problem at the end of the product. Then convert it from cents to dollars and cents.

- Jenny Phillips


Read to the child: Now complete the following sets of problems by first writing the total number of cents and then writing the total amount of money using dollars and cents.
$60 \phi \times 6=\underline{360 \phi}$

$80 \phi \times 4=320 \phi$ $\square$
Read to the child: Now let's try it vertically using fewer steps. If you wanted to buy 3 items that each cost 40 cents, you could figure out how much it would cost by writing this problem. Point to the problem to the right. Complete the problem and write the answer in the green box. Now, let's change the answer to dollars and cents. How many cents are in a dollar? There are 100. Write the answer again in the orange box, but count over two place values from right to left and write the decimal point between 1 and 2 . What is the answer in
 dollars and cents?

| Now complete these <br> problems. First find the <br> total number of cents, <br> and then convert the <br> cents to dollars and <br> cents. The decimal point <br> is written two place <br> values from the right. |
| :--- |

- MATH 3

LESSON PRACTICE

## Multiplying at the Market

These are some items found at the market that Raj's family often visits. Find the cost of each item by creating and completing a multiplication problem in each blank box. Then convert the answer to dollars and cents.


2 coconuts: \$ 1.80


8 tangos: \$ 5.60


## \& REVIEW \& ACTIVITIES \&

Add the fractions below. Remember to add the numerator. The denominator stays the same.

$$
\frac{1}{4}+\frac{2}{4}=\frac{3}{4} \quad \frac{3}{7}+\frac{2}{7}=\frac{5}{7} \quad \frac{2}{6}+\frac{2}{6}=\frac{4}{6}
$$

Write and complete a multiplication problem (number of cubes per layer $\times$ number of layers) to determine the volume of each shape.

$9 \times 3=27$

$4 \times 2=8$

$16 \times 4=64$

In each dark orange box, write the amounts given in the light orange box. Then add the three amounts together. Include a dollar sign and decimal point in each answer.


Put a check mark in the green box when you have practiced multiplication facts Set C for 10 minutes or more. Then have your parent or teacher quiz you on the Set C facts by completing the problems below. Circle any you miss and spend extra time on those facts during your practice time.

$$
\begin{aligned}
& 986797 \\
& \frac{\times 6}{54} \frac{\times 9}{72} \frac{\times 5}{30} \frac{\times 7}{49} \frac{\times 8}{72} \times \frac{6}{42} \\
& 5768678 \\
& \frac{\times 6}{30} \frac{\times 5}{35} \frac{\times 3}{18} \times \frac{6}{48} \frac{\times 7}{42} \times \frac{9}{63} \frac{\times 3}{24} \\
& \begin{array}{r}
6 \\
\times 9 \\
\times 54 \\
\hline 54 \\
\hline 24 \\
\hline
\end{array} \begin{array}{r}
9 \\
\hline 68 \\
\hline
\end{array} \begin{array}{r}
6 \\
\times 6 \\
\hline 18
\end{array}
\end{aligned}
$$



## - Jenny Phillips <br> 253



O Read to the child: Do you remember what perimeter is? [the distance around a 2D shape] Today, we will continue our discussion about perimeter.

You can find the perimeter of any shape with three or more sides by adding the length of each side. Using the measuring tape from the math box, measure each side of the green square, write

the length of each side, and write
the perimeter in inches. We will use the letter P to stand for perimeter.
Did you notice that each side of the square measures the exact same length? If you know the length of one side of a square, you can figure out the perimeter by adding the length of one side four times.

One sunny California afternoon, 10-year-old Rita and her 6 -year-old brother, Warren, decided to do their math work in their tree fort while their parents tended to the garden. Rita's assignment was to find the perimeter of things around her home. The side of this square seed packet is 8
 cm long. What is the perimeter of the seed packet?

$$
8 \mathrm{~cm}+8 \mathrm{~cm}+8 \mathrm{~cm}+8 \mathrm{~cm}=32 \mathrm{~cm}
$$



A rectangle has two long sides that are equal in length as well as two short sides that are equal in length. If you know the length and width of a rectangle, you can find the perimeter.

Fill in the missing length and width of the vegetable box, and then calculate the perimeter.
$20 \mathrm{in}+15 \mathrm{in}+20 \mathrm{in}+15 \mathrm{in}=70 \mathrm{in}$
Using the image on the next page, help Rita find the perimeter of the items in her yard by adding the lengths of the sides. Write your answers in the boxes below and remember to include the units in your answers.


## LESSONPRACTICE

Rita's big brother, Tom, started mowing their lawn by cutting the grass around the perimeter of the yard. Without measuring, find the perimeter of the yard, and then find the perimeter of each shape based on the measurements given. Write the answers in the box below, and include the units of measurement.

Grass:
$\left.\begin{array}{l}\text { Picnic blanket: } \\ \begin{array}{l}\frac{48 \mathrm{~m}}{} \\ \text { Book: } \\ \text { Pool: }\end{array} \frac{26 \mathrm{in}}{20 \mathrm{~m}} \\ \hline\end{array}\right]$

Using the centimeter side of the measuring tape, measure one side of the square and two sides of the rectangles. Record the measurements, and then add to find the perimeter.


Take the tangram pieces from the math box. Assemble them as shown below. Using the measuring tape, measure each side of the perimeter to the nearest centimeter.




$\bigcirc$ Read to the child: You learned from a previous lesson that area is the space inside a 2D shape It is the number of square units required to completely cover a shape. Fill in the box with the number of square units used to cover this rectangle.


The rectangle below is shown as an array. Multiplying the number of rows by the number of columns is a faster way to find the number of squares in an array than counting each square individually.

There are 3 rows of squares. Write 3 in the first box of the equation. There are 4 columns of squares. Write 4 in the second box of the equation. Multiply to find the total number of square units.

3) $\times 4$ - 12

Let's look at another example. Count the number of rows. Write this number in the first box. Count the number of columns. Write this number in the second box. Multiply to find the area.


## 2*3: 6

Continue practicing this skill by finding the area assigned to the radishes, squash, and carrots found in Rita's family vegetable stand. Multiply the number of rows by the number of columns. Label each answer with square units.


Take the array mat from the math box. Use a dry-erase marker to draw the following arrays. Find the area by multiplying the number of rows by the number of columns. Write the answers in the boxes.



Designs for Duke Rita is considering different designs for Duke's new doghouse. Calculate the area of each design. Label the answer with square units. Circle the design that has the greatest area.


Order the areas of the designs from greatest to least.
Design \#2 Design \#3 Design \#1

## \& REVIEW \& ACTIVITIES \&

## Change!

Use a whiteboard to complete the two-step story problem and write the final answer in the box.

Warren spent $\$ 6.73$ on nails and $\$ 21.22$ on wood for a tree house. He paid for the items with $\$ 30.00$. How much change did he receive?


Complete the following sets of problems by first multiplying to find the total number of cents and then writing the total amount of money using dollars and cents.

$90 \$ \times 6=540 \$$




- Complete these problems and answer aloud: $23+19=4229+14=4330+49=79$ $53+29=8269+13=8240+39=79$ Skip Counting
- Skip count by 7 s from 7 to 77 . See chart page $V$ A. Skip count by 70 s from 70 to 700 .
70, 140, 210, 280, etc.
Read to the child: There are two steps when adding and subtracting mixed numbers.

Step 1: Add (or subtract) the whole numbers.

$$
2 \frac{1}{4}+3 \frac{1}{4}=
$$

$$
2 \text { plus } 3 \text { is } 5
$$

Step 2: Add (or subtract) the fractions.
Remember to keep the common
$2 \frac{1}{4}+3 \frac{1}{4}=5 \frac{2}{4}$
$\frac{1}{4}$ plus $\frac{1}{4}$ is $\frac{2}{4}$

Practice adding and subtracting the mixed numbers below. Add or subtract the whole numbers, and then add or subtract the fractions.

$$
2 \frac{1}{4}+3 \frac{1}{4}=5 \frac{2}{4} \quad 8 \frac{3}{5}-1 \frac{1}{5}=7 \frac{2}{5}
$$

$$
4 \frac{2}{7}+2 \frac{2}{7}=6 \frac{4}{7} \quad 3 \frac{5}{6}-2 \frac{4}{6}=1 \frac{1}{6}
$$

Tom and Rita are having fun helping at their family's roadside stand. Because different fruits ripen at different times, their roadside stand doesn't always have the same fruits. Today, they have peaches, blackberries, and strawberries.

Let's suppose Tom ate $2 \frac{3}{8}$ baskets of raspberries and $1 \frac{2}{8}$ baskets of strawberries. Add the mixed numbers to find out how much fruit he ate altogether.

$$
2 \frac{3}{8}+1 \frac{2}{8}=3 \frac{5}{8}
$$

Now subtract the mixed numbers to find how many more raspberries he ate than strawberries.

$$
2 \frac{3}{8}-1 \frac{2}{8}=1 \frac{1}{8}
$$



Tom sold $4 \frac{1}{5}$ boxes of peaches before lunch and $3 \frac{2}{5}$ boxes of peaches after lunch. Fill in the problem in the blank boxes below to figure out how many boxes of peaches he sold in total.

$$
4 \frac{1}{5}+3 \frac{2}{5}=7 \frac{3}{5}
$$

Mixed-Number Mania Take the 6 -sided dice from the math box. To play this game, player 1 rolls the dice twice. He or she writes the matching mixed numbers from the key below on ${ }^{+\downarrow}$, board as an addition problem. Then he or she adds the miv $a r y$. iyer 2 repeats the same steps. The player with the highr , il\ und. Play at least 3 rounds.
$\square$




$\frac{8}{2 \frac{1}{8}}$


Fresh \& Fruity
The mixed numbers next to each fruit show the number of servings that Rita ate. Use this information to answer the questions.


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Jenny Phillips
\& REVIEW \& ACTIVITIES $\qquad$
MATH 3

Rita is learning how to make quilts with her mother and grandmother. Help her find the area of each quilt. Multiply the number of squares in each row by the number of squares in each column to find the area of each quilt.

(6) $\times 9=54$

$7 \times 7=4=49$

## - Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set C for 10 minutes or more.

Add the fractions below. When you have a common denominator, you only add the numerators and the denominator stays the same.

$$
\frac{2}{5}+\frac{1}{5}=\frac{3}{5} \frac{5}{9}+\frac{3}{9}=\frac{8}{9} \frac{4}{6}+\frac{1}{6}=\frac{5}{6}
$$



The multiplication facts above are hidden in the chart below. Find the facts, circle them, and write the multiplication symbol and equal sign where they go. Facts can be horizontal, vertical, or diagonal. The first one is completed as an example.



O Take the game pawns from the math box. Read to the child: You have learned that kilo is Latin for thousand, so a kilogram is 1,000 grams. That means a kilogram is one thousand times heavier than a gram. One paper clip weighs about 1 gram. How many paper clips would weigh about a kilogram? $[1,000]$ Today, we are going to compare and order weights.

Every March Rita and her family hike a hill close to their home that they call Poppy Hill because it is covered in orange poppies. The orange poppy is California's state flower. This year, Rita and Tom have a race to see who can get to the top of the hill first. Let's see who wins. Place the orange game pawn (representing Rita) on the orange START circle, and the blue game pawn (representing Tom) on the blue START circle.

1. Roll the 10 -sided dice for Rita. Find the green number on the chart below that corresponds to the number rolled on the dice. On a whiteboard write >, <, or = to compare the weights. If you wrote a greater than symbol, move Rita up a space. Otherwise, don't move. If you rolled a 10, you have to move back one space (unless you are on "START").
2. Repeat step 1, alternating between Rita and Tom. See who gets to the last circle at the top of the hill first!
$>$ (greater than) $=$ MOVE UP; everything else $=$ DON'T MOVE

| $\\|_{1,000 \mathrm{~kg} \geqslant 100 \mathrm{~g}}^{1}$ | ${ }^{\#} 2500 \mathrm{~kg} \geqslant 500 \mathrm{~g}$ | $T^{\# 3}{ }_{10 \mathrm{~kg} \geqslant 1,000 \mathrm{~g}}$ |
| :---: | :---: | :---: |
| $\# 4 \longdiv { 2 , 0 0 0 \mathrm { g } \geqslant 1 \mathrm { kg } }$ | ${ }^{+} 5{ }_{2} \mathrm{~kg} \geqslant 1,000 \mathrm{~g}$ | $\# 6{ }_{5 \mathrm{~kg}} \geqslant 1,000 \mathrm{~g}$ |
| \#7 7 g ¢ 70 kg | $\#_{2,000 \mathrm{~g}} \Theta_{2 \mathrm{~kg}}$ | $\# 9 \longdiv { 3 , 0 0 0 \mathrm { g } \ominus 2 \mathrm { kg } }$ |



Let's use a number line to order weights. Place the following weights on the number line in their correct positions.


Sometimes we may know the weight of one item and we need to know how much a group of that item weighs. To do this, we multiply the weight of the item by how many items there are. For example, 1 crayon weighs 8 grams. How many grams do 10 crayons weigh?

8 g per crayon $\times 10$ crayons $=80 \mathrm{~g}$
In the boxes below, do the multiplication and write $>,<$, or = signs to make the statements true.


Sometimes we need to change units so we can compare and order different weights. To change kilograms to grams, multiply by 1,000 . For example, 4 kilograms is the same as 4,000 grams. Convert the kilograms to grams, and then write the weights from greatest (1st) to least (4th) in the blue boxes.

$$
\begin{array}{ll}
1 \mathrm{l} \mathrm{~kg} \\
=1,000_{9}^{4.000 \mathrm{~g}} & \stackrel{15 \mathrm{~kg}}{=15,000_{9}^{35 \mathrm{~g}}} 9
\end{array}
$$



## MATH 3 Q LESSON PRACTICE <br> $8^{8}$

Convert kilograms to grams, and then write the purple numbers in the blue boxes from greatest (1st) to least (4th).


Write the missing weights on the number line.


Write $<,>$, or = to compare each set of weights.

---1-1
? ADDITION fruit weighs. Add the weights together and draw an arrow to show the total weight of the fruits on each scale. Then use $<,>$, or $=$ to compare each set of scales.


KEY


## 曷路 $R$

REVIEW \& ACTIVITIE

If 1 orange weighs 90 grams, how $\begin{array}{r}90 \\ \times \quad 3 \\ \hline 270 g\end{array}$

This is the quilt Rita is entering at the county fair. Find the area by multiplying the number of rows by the number of columns. Then add the length of each side to find the perimeter.
 many grams do 3 oranges weigh?


Fastest Birds!



28


|  | $\times$ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Char | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| $\sum$ Wholes 3 | 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
|  | 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
|  | 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|  | 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| - | 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |
| $\frac{2}{2}{ }_{1}$ | 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
| (5) 2 | 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |
| ${ }^{\frac{2}{4}\left(\frac{3}{3}\right.} 5$ | 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |



O Give the child a blue colored pencil. Read to the child: We have been practicing finding the perimeter of different shapes. You have learned that you do not need to have the measurement of every side of the shape to find the perimeter of squares and rectangles. Look at the figure below. There is one side without a measurement. Point to the side with the question mark, and then slide your finger down to the opposite side of the shape that is 10 centimeters long. Trace the 10 cm line with your colored pencil. Then move up to the side that is 5 centimeters long and trace it with your colored pencil as well. Notice how the length of the 5 -centimeter line and the line without a measurement would combine to be the same length as the 10 -centimeter line. To find the missing measurement, subtract the short length that you know $(5 \mathrm{~cm})$ from the


You know that opposite sides of rectangles will always have the same length. We can use this knowledge to help us find missing measurements. First, use your colored pencil to trace one side that is missing a measurement. Then, use subtraction to find the length. To find the missing length, subtract the shorter length that you know from the total length found on the opposite side. Write the missing length on the shape. Follow the same steps to find the other missing length. Then add the lengths of all sides together to find the perimeter and write it below.

$$
P=50 \mathrm{~mm}
$$



Sometimes you may have to add two or more side lengths together to equal the full length of the opposite side. To find the length of the pink line in the shape below, you will need to add the length of the 4 -inch line and the 3 -inch line. Point to these lines. Then subtract that sum from the length of the opposite side, which is 9 inches in this shape. Use mental math to find the answer, and then write the length on the pink line.

Sometimes you can use the length of the opposite side to determine the missing length. Look at the line that is 2 inches long. Notice how the line across from this one is the exact same length. Write " 2 in " on the short green line.




Math 3 Answer Key

Convert kilograms to grams, and then write the purple numbers in the blue boxes from greatest (1st) to least (3rd)


An orange weighs about 200 grams. Underline the equation that shows about how many oranges weigh 1 kilogram.

$$
\begin{aligned}
& 200 \text { oranges } \times 200 \mathrm{~g} \text { per orange }=4,000 \mathrm{~g} \\
& 200 \mathrm{~g} \text { per orange } \times 1,000 \text { oranges }=200,000 \mathrm{~g} \\
& 200 \mathrm{~g} \text { per orange } \times 5 \text { oranges }=1,000 \mathrm{~g}
\end{aligned}
$$

## Change!

Use a whiteboard to complete the two-step story problem and write the final answer in the box.

Tom bought a hamster for $\$ 15.99$ and a hamster cage for $\$ 32.97$. He gave the cashier $\$ 1.04$ $\$ 50.00$. How much change did he receive?

Complete the following sets of problems by first multiplying to find the total number of cents and then writing the total amount of money by using dollars and cents.



Write the missing numbers to create addition problems by going across each row and down each column. (Hint: Complete 7 + __ $=15$ first.)


## $\diamond$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set C for 10 minutes or more. Then complete the problems in this section.

$$
9 \times 8=\frac{72}{54} \quad 8 \times 6=\frac{48}{18} \quad 6 \times 7=\frac{42}{} \quad 7 \times 5=\underline{35}
$$



M MATH 3
O Read to the child: Let's go through the steps with another problem. As I read the steps, you write the numbers in the correct place of the answer.


Read to the child: Let's do one more problem with guided steps. Once again, as I read the steps, you write the numbers in the correct place of the answer.




- Jenny Philifips


Read to the child: Volume is the amount of space an object or liquid takes up, or the number of cubic units an object contains. Volume is used to measure three-dimensional shapes, which are shapes that have length, width, and height.

You have learned to find volume by multiplying the number of cubes in each layer by the number of layers in the shape. Find the volumes of the shapes below.


- Jenny Phillips



There is another way to calculate volume by using the following steps.


Step 1: Count the number of units across the bottom of the shape. This is the length. In our example, the length is 4 units.

Step 2: Count the number of units along the other side of the bottom. We call this the width. In our example, the width is 2 units. Multiply the length times the width.

4 units $\times 2$ units $=8$ square units
Step 3: Count how many units tall the shape is, or how many layers it has. This is the height. The height is 3 units. Then we multiply our answer from Step 2 by the height.

```
8 square units }\times3\mathrm{ units = 24 cubic units
```

The total volume of our shape is 24 cubic units. What would happen if you multiplied the width and height first and then multiplied by the length? Use your whiteboard to complete the problem. Did you get the same result? The commutative property of multiplication tells us that we can multiply numbers in any order and the final product will be the same.

Multiplying the length, width, and height is especially useful when you can't count the units. You can multiply the measurements in any order, and you will get the same answer. To find the volume of the box below, choose two measurements to multiply together. Then multiply the product by the third measurement. Write the final answer in the gray box

$\Rightarrow$ MATH 3
Find the volume of these household items by multiplying the length times the width times the height. You can multiply the numbers in any order, and you will get the same answer. Write the final answer in the gray box.


## LESSON PRACTICE 路

Rita is planting her own garden this year. Her father built her a garden box, and now they need to order soil from the garden center to fill it. How much soil will they need?


Circle the three-dimen sional (3D) objects.

Put a check on the two-dimensional (2D) objects.


$$
276
$$

- Jenny Phillips


[^2]277
Math 3 Answer Key


O Read to the child: You have learned that the perimeter of a figure is the total length of all sides of a 2D shape. Review this concept by filling in the missing length and width of the rectangle. Then calculate the perimeter. Remember to include the unit ("in") in your answer.


5 in +2 in +5 in +2 in $=14$ in
When finding the perimeter of a rectangle, we can use a quicker method. We can double the length, double the width, and then add them together. Look at the rectangle in the previous example. There are two lengths that measure 5 inches. Double 5 inches and write the answer in the first blank below. Now there are two widths that measure 2 inches. Double 2 inches and write the answer in the second blank. Now find the su

$$
\frac{10}{2 \times 5 \text { in }} \text { in }+\frac{4}{2 \times 2 \text { in }} \text { in }=14 \text { in }
$$

Rita is making different-sized pillows to donate to a homeless shelter. She needs to know how much fabric border to add around the perimeter of each pillow. Practice finding the perimeter by doubling the length and the width and finding the sum. Remember to include the units in your answers.

$$
3 \mathrm{ft}
$$

$$
\frac{6 \mathrm{ft}}{2 \times 3 t}+\frac{4 \mathrm{ft}}{2 \times 2 \mathrm{t}}=10 \mathrm{ft}
$$



$$
\frac{4 \mathrm{ft}}{2 \times 2 \mathrm{ft}}+\frac{2 \mathrm{ft}}{2 \times 1 \mathrm{ft}}=6 \mathrm{ft}
$$



$$
\frac{8}{2 \times 4 \mathrm{ft}}+\frac{4 \mathrm{ft}}{2 \times 2 \mathrm{tt}}=12 \mathrm{ft}
$$

Perimeter Problem Solving Read each story problem. Draw a rectangle and label the dimensions using the information given from the story problem. Then find the perimeter.



A


9


Take the array mat from the math box. Draw the following rectangles and
find the perimeter of each one by doubling the length, doubling the width and adding the products. Write the perimeter of each rectangle below.
Rectangle I: 6 units long and 5 units wide 22 units
Rectangle 2: 4 units long and 3 units wide 14 units
Rectangle 3: 5 units long and 4 units wide 18 units
Rectangle $4: 6$ units long and 2 unit wide 16 units

Below are pictures of Warren's poster projects. Take the measuring tape from the math box, use centimeters to measure the poster board, and fill in the measurements for each side. Then double the length, double the width, and add the products to find the perimeter.

Poster A




Read to the child: You have learned many ways to apply measuring skills to real-life situations, such as measuring the length, weight, area, or perimeter of various objects. Measurements are also used with cooking. Tablespoons and teaspoons are used to measure small amounts of ingredients, such as sugar, salt, baking powder, vanilla, oil, and herbs.

Lay out the following 4 measuring spoons in front of the child. There are 4 measuring spoons that are most commonly used: 1 tablespoon, 1 teaspoon, $\frac{1}{2}$ teaspoon, and $\frac{1}{4}$ teaspoon. Look
 for abbreviations
teaspoon. Then copy the abbreviations into the blue boxes below.


Take a close look at all the spoons and pick up the two that would hold the largest amounts. [1 tablespoon and 1 teaspoon] Let's find out how many teaspoons are in a tablespoon. It is helpful to know how to use the other measuring spoons to measure equal amounts.

How many teaspoons do you think it will take to fill up the tablespoon? Let's find out. Have the child fill the 1 teaspoon with salt or sugar and pour it into the tablespoon. Repeat this process until the tablespoon is completely filled [3 times]. Write your answer in the blank.

$$
1 \mathrm{Tbsp}=3+\mathrm{sp}
$$

How many $\frac{1}{2}$ teaspoons of salt or sugar do you think it will take to fill up the teaspoon? Let's see if you are right. Have the child pick up the $\frac{1}{2}$ teaspoon and fill it with salt or sugar and pour it into the teaspoon Repeat until it is completely filled. Write your answer in the blank.

$$
11+s p=2 \frac{1}{2}+s p
$$

How many $\frac{1}{4}$ teaspoons do you think it will take to fill up the teaspoon? Have the child pick up the $\frac{1}{4}$ teaspoon and fill it with salt or sugar and pour it into the teaspoon. Repeat until it is completely filled. Write your answer in the blank.

$$
1+s p=4 \frac{1}{4}+s p
$$

Look at the numbers you wrote next to $\frac{1}{2}$ and $\frac{1}{4}$ teaspoons above. The denominator (bottom number) of each fraction is the same as the number of scoops needed to make a whole teaspoon.
$\bigcirc$ Optional Extension: Involve
the child in making a favorite recipe this week. Challenge him or her to use the smaller measuring spoons to make equivalent measures in place of the 1 tablespoon or 1 teaspoon.


Write the measurements next to the spoons from least to greatest.


Use the comparison symbols $>,<,=$ to make the statements true.
$\frac{1}{2}$ teaspoon $>\frac{1}{4}$ teaspoon
1 teaspoon $<1$ tablespoon
$\frac{1}{2}$ teaspoon $<1$ teaspoon
3 teaspoons $=1$ tablespoon

Circle the number of teaspoons that is equal to a tablespoon.


Circle the number of $\frac{1}{2}$ teaspoons that is equal to 1 teaspoon.


Circle the number of $\frac{1}{4}$ teaspoons that is equal to 1 teaspoon.


Let's suppose you were making a recipe that needed 4 tablespoons of sugar. How many teaspoons would you need to use if you didn't have a tablespoon? Circle the teaspoons in groups of 3. Then write a multiplication equation in the boxes below to represent the groups you circled.


Write the correct abbreviations in the blanks.

| teaspoon:__tsp |
| :---: |
| tablespoon: Tbsp |

Multiply to find each product. The ODD answer is the California state bird. Put a check mark in the box next to the state bird.


* REVIEW \& ACTIVITIES \& $\qquad$
Find the volume of this box by multiplying the measurements of all three sides together in any order. Write the final answer in the gray box.

Convert kilograms to grams, and then write the purple weights in the blue boxes from
greatest (1st) to least (4th).
$4,200 \mathrm{~g}$
Continue the pattern:

Find the perimeter and the area of the patchwork quilt. Write the answers below.


$$
\text { Perineser } 18 \text { fit Aroo } 20 \text { satt }
$$

## « Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set C for 10 minutes or more. Then multiply the inner numbers on the target and write the answers on the outer ring.



Read to the child: Previously you learned that area is the space inside a 2D shape. To find the area, you multiply the number of rows by the number of columns in a rectangle or square, and you use the words "square units" in the answer because area is the number of squares needed to cover a space.


In a square, there is an equal number of rows and columns inside the shape. Look at the example below. There are 3 rows and 3 columns of square units. Count how many square units there are and write your answer in the blue box. Check your answer by multiplying the number of rows by the number of columns.
 eeded to cover a space.

Read to the child: On the grid below, draw a shape with 4 rows and 4 columns of units. To do this, start at the dot in the top left corner, and then count down 4 rows and draw another dot. Connect the dots with a line. Then, starting at the first dot, count 4 columns across and place another dot. Draw a line to connect the dots, and then complete the square shape by drawing in the other 2 sides and shading the area.


Count the number of square units in the square you just drew and complete the problem to find the area.

4 units $\times 4$ units $=1 \bigcirc$ square units
The product of a whole number multiplied by itself is called a perfect square.

A perfect square is the product of a whole number multiplied by itself.

## Area Arrays

Take the array mat and a dry-erase marker from the math box.

- Draw a square that has 5 rows and 5 columns. Multiply to find the perfect square and write it below:

$$
5 \text { units } \times 5 \text { units }=25 \text { square units }
$$

- Draw a perfect square with a total of 4 units. To do this, think of what number multiplied by itself equals 4 . Test it on your array mat, and then fill in the equation below:

$$
\sum \text { units } \times 2 \text { units }=4 \text { square units }
$$

- Erase your array mat, and then draw a square that has 8 rows and 8 columns. Multiply to find the perfect square and write it below:


If the units are measured in inches, centimeters, feet, yards, meters, etc., you will use "square" followed by one of those units. For example, if you were measuring this square in centimeters and there were 6 rows and 6 columns, the
 formula to find the area would look like this:

$$
6 \mathrm{~cm} \times 6 \mathrm{~cm}=36 \text { square } \mathrm{cm}
$$

In the chart below, some perfect squares are listed in the right column. This chart could go on forever!

$$
\begin{aligned}
1 \times 1 & =1 \\
2 \times 2 & =4 \\
3 \times 3 & =9 \\
4 \times 4 & =16 \\
5 \times 5 & =25 \\
6 \times 6 & =36 \\
7 \times 7 & =49 \\
8 \times 8 & =64 \\
9 \times 9 & =81 \\
10 \times 10 & =100 \\
11 \times 11 & =121 \\
12 \times 12 & =144
\end{aligned}
$$

## LESSON PRACTICE

Rita and her 14-year-old brother, Tom, wanted to fix up an old table to use in their backyard. They decided to cover the table top with 1-foot square tiles to make it strong and durable, but they weren't sure how many tiles they would need


Rita started by adding one tile to the top corner of the table. One tile was definitely not enough to cover the table's surface. Tom added three more tiles to make a square. How many tiles make up this perfect square?

More tiles were needed to cover the table, so Rita added one more row while Tom added another column. How many rows and columns are there now? How many tiles make up this perfect square? Write a multiplication equation.


Rita added one more row and column of tiles, which covered the entire table. How many rows and columns are there? How many tiles make up this perfect square? Write a multiplication equation below.

Pretend each unit is one square inch and find the area of the following shapes.


Circle the image that is a perfect square. - Jenny Phillips

$\Rightarrow$ MATH 3
O Read to the child: Let's go through the steps with another problem. As I read the steps, you write anything that should be written.

\% LESSONPRACTICE *
Magnificent Mountains multiply to find the height of the highest peak of each mountain in meters. Put a check mark in the box next to the tallest mountain peak.




O Read to the children: When you encounter a math story problem, you can look for words that give you hints about what kind of math should be used to complete a problem. If a story problem asks for perimeter, you need to find the sum of lengths of the outer edges. If it asks for area, you need to find the amount of space the object takes up. Read the following questions carefully to discover what the problem wants you to find.

Rita's dad drew some designs for a shed he is building in their yard. What would be the total distance around the base of the shed with these dimensions?

What does this problem want you to find: area or perimeter? $\qquad$ perimeter

To find the perimeter of the base, we add the lengths of each side. Remember that the opposite sides of a rectangle are the same length.
$7 \mathrm{ft}+8 \mathrm{ft}+7 \mathrm{ft}+8 \mathrm{ft}=30 \mathrm{ft}$

Warren is going to seal the floor of the shed with a waterproof coating. How many square feet of floor will be covered?

What does this problem want you to find: area or perimeter? $\qquad$ area

We can calculate the area of the rectangular floor by multiplying the length times the width. Include the unit "square feet" in your answer.

$$
7 \text { 7 } \times 8 \text { ft }-56 \text { square feet }
$$

Tom baked two pans of brownies to share. He cut one pan of brownies into squares and decided to arrange some on a platter in the shape of a T. He will pipe frosting around the edges once they are cool. How many inches of frosting will go around the outside edge?
What does this problem want you to find: area or perimeter?
Fill in the missing lengths, and then add to find the perimeter.
$3 \mathrm{in}+15 \mathrm{in}+3 \mathrm{in}+6 \mathrm{in}+$ 9 in +3 in +9 in +5 in $=54$ in $P=54 \mathrm{in}$


Tom decided he'd rather cover the entire surface of the second pan of brownies with frosting. What is the area of the brownie surface?


## * LESSON PRACTICE *

Every spring, a beekeeper brings beehives into the orchards so the bees can pollinate the trees for a good harvest. How much land does this part of the orchard include?




| Number Cube Puzzle <br> To complete this puzzle, you need the digits 1, <br> 2, and 3 in each row and each column. Use the <br> clues to help you complete it. <br> 2 | 2 $?$ |
| :--- | :--- | :--- |

The digits in the green boxes must be 2 and 1 . The digits in the blue boxes must add up to 5 . The digits in the purple boxes must add up to 5 .
$\qquad$

Round the numbers to the nearest hundred.

$$
\begin{aligned}
& 546 \\
& 500 \\
& \hline 62 \\
& \hline
\end{aligned}
$$

Circle the number of teaspoons that is equal to a



## « Multiplication Fact Practices

Put a check mark in the green box when you have practiced multiplication facts Set C for 10 minutes or more. Then complete the problems below.

$$
\begin{array}{llllll}
9 & 8 & 6 & 7 & 9 & 7
\end{array}
$$

$$
\frac{\times 6}{54} \frac{\times 9}{72} \times \frac{5}{30} \times \frac{7}{49} \times \frac{8}{72} \times \frac{6}{42}
$$

$$
\begin{array}{llllll}
6 & 3 & 9 & 6 & 3 & 5
\end{array}
$$

$$
\begin{array}{r}
3 \\
\times \quad 2,916
\end{array}
$$

$$
\frac{\times 9}{54} \frac{\times 8}{24} \frac{\times 7}{63} \frac{\times 8}{48} \frac{\times 6}{18} \frac{\times 7}{35}
$$

| Chart | * | 1 | 2 | 3 | 4 | 5 |  | 6 | 7 | 8 |  | 9 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 1 | 2 | 3 | 4 | 5 |  | 6 | 7 | 8 |  | 9 | 10 |
| - | 2 | 2 | 4 | 6 | 8 | 10 |  | 12 | 14 | 16 | 18 | 18 | 20 |
| 4 whices | 3 | 3 | 6 | 9 | 12 | 15 |  | 8 | 21 | 24 | 2 | 27 | 30 |
|  | 4 | 4 | 8 | 12 | 16 | 20 |  | 24 | 28 | 32 | 3 | 36 | 40 |
| $\frac{9}{6}$ | 5 | 5 | 10 | 15 | 20 | 25 |  | 30 | 35 | 40 | 4 | 45 | 50 |
| 9) $10 \cdot \frac{8}{8} 5$ | 6 | 6 | 12 | 18 | 24 | 30 |  | 36 | 42 | 48 |  | 54 | 60 |
| $2)^{10} 9$ | 7 | 7 | 14 | 21 | 28 | 35 |  | 42 | 49 | 56 |  | 63 | 70 |
| $2{ }_{1}$ | 8 | 8 | 16 | 24 | 32 | 40 |  | 4 | 56 | 64 |  | 72 | 80 |
|  | 9 | 9 | 18 | 27 | 36 | 45 |  | 54 | 63 | 72 |  | 81 | 90 |
| ( $\frac{3}{3}$ ) $\frac{7}{7}$ | 10 | 10 | 20 | 30 | 40 | 50 |  | 50 | 70 | 80 |  |  | 100 |

nny Phillis


O Read to the child: Today, we are going to review the things you have been practicing in Unit 3. We will play some games together, and you will do some activities independently.


## Area Arrays

Take the array mat, two colors of dry-erase markers, and the 6 - and 10 -sided dice from the math box.

The first player rolls both dice and, on the array mat, draws a rectangle using the numbers rolled as the dimensions. For example, if you roll a 9 and a 2 , you will draw a rectangle that is 2 units wide and 9 units long. The player counts the units (each square) or uses multiplication to find the area and writes the area inside the rectangle. The second player does the same with a different-colored marker. Shapes cannot overlap.

If doubles are rolled, draw the width and height on the array mat, and then connect the two sides to create a triangle. Write the area of the triangle inside your shape.

The game ends when there is no more space to draw a shape without overlapping another shape. The person with the most total area on the mat wins. Bonus: Take area from the other player by drawing shapes with smaller areas inside larger ones.

O Game-Spin \& Match: Take the paper clip from the math box. Read to the child: We will take turns using a pencil and paper clip to spin. Convert the measurement you land on to a smaller unit. For example, kilograms will change to grams, meters to centimeters, and centimeters to millimeters. Mark off the matching box with your initials. If you spin a measurement that has already been claimed, your turn is over. The first player to claim three boxes in a row is the winner. If no one gets 3 , you tie.


Game-Factor Forest: Read to the child: Take the 10-sided dice from the math box. Take turns rolling the dice and finding a tree with a factor pair of the number rolled. For example, if the number 4 is rolled, then look for $2 \times 2$ or $4 \times 1$. With a colored pencil, circle all the trees whose factor pair gives the product of the number rolled. Then it is the other player's turn. If no factor pairs remain for the number rolled, your turn is over. Continue until all the trees have been claimed. The player with the most trees circled is the winner.


MATH 3

O Have a whiteboard and dry-erase marker ready. Take the 6 -sided dice and two game pawns from the math box. Read to the child: Let's play "Multiplication Tour." Place the game pawns on "Start." You go first. Roll the dice and move that many spaces. Write the problem vertically on the whiteboard and complete it. If the answer is correct, then you can move forward on your next turn. If the answer is incorrect, then do not roll again for your next turn. Instead, work the problem again. Then it is my turn. The first person to get all the way around California twice wins! Repeat the game one or more times.




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Continue the skip-counting pattern.


Fill in the missing numbers on the number line. Start by writing a zero under the red tick mark


## \% ADD AND SUBTRACT FRACTIONS

In the blanks write the shaded part of each shape as a fraction. Then add or subtract the fractions. Shade the final shape to show the answer.


Add or subtract the fractions and mixed numbers below.

| $\frac{3}{9}+\frac{5}{9}=\frac{8}{9}$ | $\frac{1}{4}+\frac{2}{4}=\frac{3}{4}$ | $4 \frac{5}{8}+3 \frac{1}{8}=7 \frac{6}{8}$ |
| :---: | :---: | :---: |
| $5 \frac{2}{2}-2 \frac{1}{2}=3 \frac{1}{2}$ | $2 \frac{3}{7}-1 \frac{2}{7}=1 \frac{1}{7}$ | $3 \frac{2}{6}+3 \frac{2}{6}=6 \frac{4}{6}$ |

:..........: $\square$ Additional Practice <............:

In the blanks write the shaded part of each shape as a fraction. Then add or subtract the fractions. Shade the final shape to show the answer.

$\frac{2}{8}+\frac{5}{8}=\frac{7}{8} \quad \frac{6}{10}-\frac{3}{10}=\frac{3}{10}$
Add or subtract the fractions and mixed numbers below.


## MULTIPLYING BY MULTIPLES OF \& 10.100. AND 1.000

Find the products below.

Find the products below.

$$
\begin{aligned}
3 \times 5,000 & =15,000 \\
7 \times 200 & =1,400 \\
4 \times 30 & =120
\end{aligned} 9 \times 400=3,600
$$

$$
2 \times 9,000=18,000 \quad 8 \times 60 \$=480 \phi
$$

Convert the total number of cents for the last problem to dollars and cents.


$$
\begin{aligned}
& 2 \times 500=1,000 \quad 4 \times 7,000=28,000 \\
& 5 \times 90=450 \\
& 8 \times 300=2,400 \\
& 3 \times 2,000=6,000 \\
& 6 \times 40 \$=240 \phi \\
& \text { Convert the total number of cents for } \\
& \text { the last problem to dollars and cents. } \\
& 8240 \\
& \square \text { Additional Practice }
\end{aligned}
$$



Circle all the multiples of 4 listed below (which are numbers found by multiplying 4 by a whole number).

$=\square$ Additional Practice


Circle all the multiples of 5 listed below (which are numbers found by multiplying 5 by a whole number).

| 1 | 4 | 5 | 8 | 10 | 12 | 15 | 20 | 24 | 25 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 28 | 30 | 33 | 35 | 38 | 40 | 44 | 45 | 50 |  |

[^3]
## \% <br> MEASUREMENT: GRAMS AND KILOGRAMS

Write $a \gg,<$, or = symbol to compare each set of weights.

$$
6 \mathrm{~kg} \odot 8,000 \mathrm{~g} \quad 2,000 \mathrm{~g} \Theta 2 \mathrm{~kg}
$$

Convert kilograms to grams, and then write the blue weights in the purple boxes from greatest (1st) to least (4th).

$$
\begin{aligned}
& 6,500 \mathrm{~g} \quad \begin{array}{l}
6 \mathrm{~kg} \quad 7,200 \mathrm{~g} \quad \\
=\underline{6,000} \mathrm{~g}
\end{array} \quad\left\{\begin{array}{l}
7 \mathrm{~kg} \\
=\underline{7,000} \mathrm{~g}
\end{array}\right.
\end{aligned}
$$

$$
\begin{aligned}
& \text { ::3:*:*:: } \quad \square \text { Addition al Practice }
\end{aligned}
$$

Write $\mathrm{a}>,<$, or $=$ symbol to compare each set of weights.

$$
4 \mathrm{~kg} \bigodot 4,000 \mathrm{~g} \quad 2 \mathrm{~kg} \odot 7,000 \mathrm{~g}
$$

Convert kilograms to grams, and then write the blue weights in the purple boxes from greatest (1st) to least (4th).

$$
\begin{aligned}
& { }^{464} 4 \mathrm{~kg} \quad{ }^{2 \pi}, 500 \mathrm{~g}{ }^{38} 3 \mathrm{~kg}{ }^{4 \pi} 200 \mathrm{~g}
\end{aligned}
$$

## K MEASUREMENT:OUNCES. \&

Fill in each bubble with the correct symbol: $>,<$, or $=$.

1 oz


(<)

Order the following weights from least to greatest.

$$
\begin{array}{ccc}
\begin{array}{c}
2 \mathrm{lb}
\end{array} & 8 \mathrm{oz} & 1 \text { ton } \\
8 \mathrm{oz} & 100 \mathrm{lb} \\
2 \mathrm{lb} & \underline{100 \mathrm{lb}}, & 1 \mathrm{lon} \\
\hline
\end{array}
$$

## $\cdots$ Additional Proctice

Fill in each bubble with the correct symbol: $>,<$, or $=$.


Order the following weights from least to greatest.

$$
\begin{array}{rrrr}
8 \mathrm{lb} & 14 \mathrm{oz} & 3 \text { tons } & \begin{array}{r}
55 \mathrm{lb} \\
14 \mathrm{oz}
\end{array} \\
\hline
\end{array}
$$

180

## 

Fill in the blanks.


\[
4

\] cubes $\times \underline{3}$ layers $=\underline{12}$ cubes |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |

Find the volume of these objects by multiplying the length times the width times the height. Write the total volume on the line in cubic units.


## $\cdots$ Additional Practice

On the grid below, draw the shapes indicated and follow the directions.


- Draw a square with sides that are 4 units long. Write the area in the square.
- Draw a rectangle with a length of 5 units and width of 3 units. Write the perimeter in the rectangle.
- Draw a shape that has an area of 9 square units. What is the perimeter of the shape? $12(3 \times 3)$ or $20(9 \times 1)$


Math 3 Answer Key


- Jenny Phillips


Read to the child: A fact family is a set of math facts that uses the same three numbers. Let's review addition and subtraction fact families. Point to the fact family to the right and read each fact aloud. What 3 numbers are used for this fact family?
$3+5=8$
$5+3=8$
$8-5=3$
$8-3=5$


$$
\begin{aligned}
& 3+5=8 \\
& 5+3=8
\end{aligned}
$$

We can use a fact-family triangle to help us visualize the numbers used in the fact family. Notice how the two numbers at the bottom corners of the triangle, 3 and 5 , add up to the top number, 8 . The top number, 8 , minus one bottom number equals the other bottom number. Every addition and subtraction fact family has this pattern.

O Guide the child in filling in the blanks to write a fact family. Now we will practice writing a multiplication and division fact family. Start by finding the product of the bottom numbers. Then divide the top number by each of the bottom numbers.

## ${ }_{3}^{18} 6$



Use what you know about fact-family triangles to fill in the missing corners.


## 尾 LESSON PRACTICE



Use a pencil and paper clip to spin. Write a multiplication and division fact family by using the three numbers you land on. Complete these steps for a total of four different fact families.



Use what you know about fact-family triangles to fill in the missing corners.



Complete these problems. Three of the animals used to be found in Egypt. The animal with the odd answer has never lived in Egypt. Circle the odd answer.


Fill in the missing factors for the number 24. The factors across from each other on the same part of the rainbow must have a

$\diamond$ Multiplication Fact Practices


| $A$ |  |
| :---: | :---: |
|  |  |
| 93 | MULTIPLICATION: MISSING FACTOR |
| 8 | Mental Math |
|  | Multiply the following in your head and answer aloud: |
|  | $645 \times 4201 \times 5 \quad 5 \quad 8 \times 972$ |
|  | Calendar |
|  | hat was the dote a week ogo? Answers will vary hot will the dote be two weeks trom toad <br> w many doys are in 3 weeks? $(7 \times 3) 2$ |
|  | How many months ore in 2 years? $(12 \times 2) 24$ |

O Read to the child: A multiplication problem consists of two parts: factors and a product. Factors are the numbers being multiplied, and the product is what you get when you multiply two or more numbers together. Label the factors and product in the example below:

$$
\text { factor } \xlongequal{10 \times 9=90} \text { factor yproduct }
$$

Sometimes you will know the product of a multiplication problem, but a factor will be missing. For example, imagine you have 24 playing cards and 4 players. How many cards will each person get if the cards are split evenly? The total number of cards is 24 , so that is the product. One of the factors is the number of players, which is 4 . The missing factor is how many cards each player will get.


Another way to solve this problem is by using your knowledge of multiplication. We know there are four people and all of them are going to get an equal number of cards. We have 24 cards in total. The problem for our example looks like this:

$$
4 \times 6=24
$$

This tells us that the missing number can be multiplied by 4 to get 24 . Did you come up with the same missing factor both times?

Read to the child: Now examine these coins below. Each is an Egyptian pound.


There are 16 coins total. Suppose you wanted to divide the coins equally between 2 people. Draw a line between the rows of coins and count how many are on each side of the line. How many coins would each person get? You can also figure this out using the problem below. Fill in the box.

$$
2 \times 8=16
$$

Suppose you wanted to divide these coins among 4 people. Draw circles around 4 equal groups of coins. How many coins are in each group? Fill in the box.

$$
4 \times 4=16
$$

We did not change the product, which is the total number of coins, but we did change the factors. Notice that you can get the same product using different factors. In our example, $2 \times 8$ is equal to $4 \times 4$ because they both equal 16. Knowing this, what is the missing factor in the problem below?

You know that $4 \times 5=20$, so what number $=10 \times 2=4 \times 5$ 20 , write a 2 in the box. $10 \times 2$ and $4 \times 5$ equal
the same amount, so they are equal to each other.
Complete this problem using the same $\quad 9 \times 4=6 \times 6$ method:
$\square$ MATH 3

## \&

This tour bus seats 48 people. There are 4 seats in each row. How many rows are there? Use the multiplication strategy. Write the known information on the lines, and then fill in the blank box with the missing factor.

$$
\frac{4}{\substack{\text { seats in } \\ \text { each row }}} \times 12=\frac{48}{\substack{\text { number } \\ \text { of rows }}} \frac{48}{\substack{\text { total } \\ \text { seats }}}
$$



A restaurant is famous for its ful medames [FOOL MU-dom-os], an Egyptian dish made of mashed fava beans. Up to 30 people can be seated at the restaurant's 5 tables. Evenly distribute 30 plates by drawing one plate at a time


Darius and Seth's father worked 30 hours each week teaching university classes for two weeks in a row. One week he worked 5 days, and the other week he worked 6 days. How many hours a day did he work during week 1 if he worked the same number of hours each day? How many hours per day did he work during week 2? Use the data from the chart to fill in the problems, and then find the answers.
Employee Timesheet

|  | Hours <br> Worked | Number <br> of Days | Hours <br> per Day |
| :--- | :--- | :--- | :---: |
| Week I | 30 | 5 | 6 |
| Week 2 | 30 | 6 | 5 |

Week 1

$$
\begin{gathered}
\frac{5}{\begin{array}{c}
\text { number of } \\
\text { days }
\end{array}} \times \underset{\begin{array}{c}
\text { hours per } \\
\text { day }
\end{array}}{6}=\underset{\begin{array}{c}
\text { hours } \\
\text { worked }
\end{array}}{30} \\
\text { Week 2 } \\
\frac{6}{\frac{6}{\text { number of }} \begin{array}{c}
\text { days }
\end{array}} \times \underset{\begin{array}{c}
\text { hours per } \\
\text { day }
\end{array}}{5}=\frac{30}{3} \begin{array}{c}
\text { hours } \\
\text { worked }
\end{array}
\end{gathered}
$$





O Remove the tiles from the Lesson 94 page of the Appendix. Read to the child: You learned earlier that the area of a rectangle is found by multiplying the length times the width. Today, we are going to learn how to find the measurement of one of the sides.

To do this, you must know 2 of the 3 numbers involved. If you only know the length of one of the sides, but you also know the area, you can find the missing width!

Give the child 12 tile pieces. Each of these tiles represents one square unit. Let's say you have a rectangle with an area of 12 square units, and the length of one side of the shape is 6 units. Find the width of the shape. Have the child put 6 tiles in a row and then complete the rectangle by using all the remaining tiles.


What is the width of a shape with an area of 12 square units and a length of 6 units? 2 units

Give the child all 25 tiles and have him or her create rectangles using the following measurements and fill in the missing blanks.

| Area $=20$ square units | Area $=25$ square units |
| :--- | :--- |
| Width $=4$ units | Width $=5$ units |
| Length $=5$ units | Length $=5$ units |
| Area $=9$ square units | Area $=18$ square units |
| Width $=3$ units | Width $=2$ units |
| Length $=3$ units | Length $=9$ units |

O Read to the child: You can also use your knowledge of multiplication to find the missing side.


Look at this green rectangle. We know the length is 6 cm and the area is 24 square cm . Let's use the formula for area and fill in the parts we know to help us find the missing number.
$\begin{array}{ll}{\underset{c}{c}}_{\dot{c}} & \text { area }=\text { length } \times \text { width } \\ & 24 \mathrm{sqcm}=6 \mathrm{~cm} \times 4 \mathrm{~cm}\end{array}$
We can see that our width needs to be a number that can be multiplied by 6 to make 24 . What number is that?
Test your answer using the area tiles by gathering 24 tiles and placing 6 tiles in a row. Fill in the rest of the
rectangle with the tiles. What is the width of your shape? Are your answers the same? Write the width in the blue boxes.

You can also use division to find the missing width of the rectangle. Divide your 24 tiles into 6 even groups, because the length is 6 units. How many tiles are in each group?

$$
24 \div 6=4
$$

The product divided by a known factor will give you the missing factor.

Using the tiles from the Appendix, create a square or rectangle for each of the following areas and record the missing information:
24 square units
Length: wars will varth:
AnsWers 20 square units
Length: Width:
8 square units
Length: Width:
Write a multiplication problem to match each area:
area $=$ length $\times$ width

$18=6 \times 3$

$56=8 \times 7$
Circle the correct width:

Area: 35 sq cm
Length: 5 cm
6 cm 7 cm 4 cm
Area: 10 sq ft
Length: 5 ft
$5 \mathrm{f}=2 \mathrm{ft} 9 \mathrm{ft}$
Area: 81 sq in
Length: 9 in
12 in 6 in 9 in


$\bigcirc$ Read to the child: Did you know there are three different ways to write a division problem? They are shown below. All of them can be read aloud as "fifteen divided by three."

| $15 \div 3$ | $3 \longdiv { 1 5 }$ | $\frac{15}{3}$ |
| :---: | :---: | :---: |
| division sign | division bracket | fraction bar |

All three forms have the same answer. What is 15 divided by 3 ? 5
You are already familiar with the division sign and will have more practice with the division bracket and the fraction bar in future math levels; however, it is important to recognize the different ways to write a division problem.

Use three different ways to write "ten divided by two." Then find the quotient (answer) and write it on the line below.


In a previous lesson, we learned how to use division to find the number of items in each group by passing out shapes one at a time. Now we will learn how to use division to find the number of groups when we know the number in each group.

Take 12 shapes out of the math box. Separate the shapes into groups of 4 until all the shapes are gone. How many groups are there? Write a 3

$$
12 \div 4=3
$$

in the box. 12 divided by 4 equals 3 . This means
that 12 shapes divided into groups of 4 makes 3 groups.
$\left.\begin{aligned} & \text { Take } 2 \text { more shapes from the math box. Use all } \\ & \text { these shapes to complete this division problem. }\end{aligned} \right\rvert\, 4 \div 7=2$ The first number, the dividend, tells you the total number of shapes to use. In this example, the second number, the divisor, tells you the number of shapes to put into each group. Write the total number of groups, the quotient, in the box.

The Cairo Tower is the tallest structure in Egypt and stands 614 feet high! Seth and Darius enjoy taking the elevator to the very top, where there is a beautiful view of the Nile River. Suppose the elevator can only take 6 people at a time. There are 18 people waiting in line. Divide to find the number of trips the elevator must make for all 18 people to make it to the top of the tower. Fill in the boxes with the numbers to represent this problem.


- Jenny Phillips
$\Longrightarrow$ MATH 3


## A Race to the Top!

O Take the 10 -sided dice and game pawns from the math box. Read to the child: Roll the 10 -sided dice and find the story problem that matches the number rolled. Then complete the problem. If the answer is EVEN, move up one space. If it is ODD, do not move, and your turn is over. We'll take turns following these steps. The first person to reach the last circle (the top of the tower) wins the game!
I. The elevator can hold 8 people at a time. There are 32 people waiting in line. How many trips must the elevator make? 4
2. There are 90 people at the top of the tower. They are standing in 10 equal groups. How many people are in each group? 9
3. If the restaurant at the top of the tower can hold 96 people at a time and there are 12 tables that seat the same number of people, how many people would sit at each table if every table is full? 8
4. The bus to the tower has row seats that hold 6 people per row. The bus is full with 72 people. How many rows of seats are there on the bus? 12
5. There are 35 people who work at the tower. If there are different people working each of the 5 days the tower is open, how many people work each day? 7
6. There are 5 large binoculars to look through. There are 30 people waiting in line. How many different groups of people will take turns using the binoculars? 6
7. The lobby can hold 8 people at a time. There are 40 people waiting in line. How many groups will enter the building? 5
8. The restaurant has made 90 slices of cake. Each cake has 10 slices. How many cakes did the restaurant make? 9
9. There are 4 people who take 12 brochures from the lobby. They each take the 3 same number of brochures. How many brochures did each person take?
10. A helicopter giving tours of Egypt holds 4 people at a time. There are 36 people waiting in line for a ride. How many trips must the helicopter make? 9


| Fill in the blanks |
| :--- |
| in the multiplica- |
| tion and division |
| fact-family house |
| with $(8,5,40)$ |

Wrate

Math 3 Answer Key




Fill in the blanks in the multiplication and division fact-family houses with $(4,5,20),(8,9,72)$, and $(6,9,54)$.


Round each blue number to the nearest ten and round each green number to the


Add the mixed numbers to find how much of each fruit the twins found in the fruit basket.

$$
\begin{aligned}
& 5 \frac{1}{4}+4 \frac{2}{4}=9 \frac{3}{4} \\
& 2 \frac{1}{5}+2 \frac{3}{5}=4 \frac{4}{5} \\
& 12 \frac{1}{6}+9 \frac{4}{6}=21 \frac{5}{6} \\
& 2 \frac{1}{3}+3 \frac{1}{3}=5 \frac{2}{3}
\end{aligned}
$$

## $\triangleleft$ Multiplication Fact Practice $\diamond$

Put a check mark in the green box when you have practiced multiplication facts Set D for 10 minutes or more. Then complete the problems below. Draw a line to match the problem to its correct answer.

$$
\begin{array}{llllll}
12 & 12 & 12 & 12 & 12 & 12
\end{array}
$$

$$
\frac{\times 3}{36} \frac{\times 9}{108} \frac{\times 12}{144} \frac{\times 7}{84} \frac{\times 4}{48} \frac{\times 11}{132}
$$


Geson

O Read to the child: Sometimes when you are dividing, you cannot share the total amount equally. Look at the example below. There are 7 pieces of falafel, a popular dish in Egypt made with fava beans. Seven is not an even number, so it does not divide equally into 2 groups. How many pieces of falafel do Seth and Darius each get? Write a 3 in the green box. How many pieces are left over? Write a 1 in the blue box. The leftover amount is called the remainder. It is the amount that remains after dividing.


This means that 7 divided by 2 equals 3 with a remainder of 1 . We will use a capital letter R in front of the remainder.

Let's review the vocabulary terms for a division problem. The dividend is the total number of falafel we started with, 7 . The divisor is the number of groups we divided them into, 2 . The quotient is the number of falafel in each group, along with any remainders, 3 with a remainder of 1 . The remainder is the number of falafel left over, 1. Fill in the blanks with the correct terms.


Let's do a couple more division problems with remainders by using each illustration below. For each problem, circle the groups that contain equal amounts of falafel. In each the green box, write the first part of the quotient, which is the number of pieces in the circled groups. Write the next part of the quotient, which is the remainder or leftover number, in the each blue box after the R .


- Jenny Phillips

3 MATH 3
O Read to the child: Now it's your turn to illustrate a division problem! Look at the division problem to the right. Remember from previous lessons that the divisor can represent either the number of groups or the number in each group. Let's draw 4 dots in each group to help us complete this problem. In the first rectangle, draw one group of 4 dots, and then draw another group of 4 dots. How many total dots have you drawn? You've drawn 8 dots out of the 9 total. Do you have enough left over to make another group of 4? You can't make another full group, but you need to show a total of 9 dots. In the last rectangle, draw the number of dots remaining to get from 8 to 9 . Now use your illustration to fill in the answer. How many groups have an equal number of 4 dots? Write a 2 in the green box. How many leftover dots are there? Write a 1 in the blue box.

Read to the child: Make illustrations to help you complete the division problems below. The dividend tells you the number of total dots you need to draw. This time the divisor tells you the number of dots to draw in each group. (Hint: In the first problem, keep drawing groups of 4 until you cannot make another full group. The amount left over is the remainder.)



LESSON PRACTICE
Fill in the boxes with the correct numbers from the problem shown.

$$
22 \div 5=4 R 2
$$



Use the illustrations of the ancient Egyptian coins to complete each division problem.


| $\pm$ | ↔ ${ }^{\text {k }}$ | $i \quad \dot{\text { i }}$ i |
| :---: | :---: | :---: |
| $4=[3 \mathrm{P} 11$ |  | = |
| : $: 8: 80$ |  | NN= 3 [ ${ }^{\text {n }}$ |
| [5] 1 | 5 |  |
| $\because \because \because \because \square^{\circ}$ | may |  |
| [3-2] |  |  |
| $\because \because 8:$ |  | 80, ${ }^{4}$ |
| [3] 1 | . |  |
| \%\% \%\% \% | - |  |



O Read to the child: Mathematicians came up with specific steps for completing math problems with more than one operation so answers would be consistent. Imagine how confusing it would be if you worked from left to right, but I worked from right to left. We would have two completely different answers! We call these steps the order of operations, and we use them when we have different operations in the same problem. The mnemonic device "Please Excuse My Dear Aunt Sally" helps us remember the order. "My Dear" stands for multiplication and division. It comes before "Aunt Sally," which stands for addition and subtraction. It helps us remember to do the multiplication and division part of a problem BEFORE the addition and subtraction. (We will learn about the "Please Excuse" part later.)

$$
\begin{gathered}
1+2 \times 4 \\
1+\boxed{8} \\
1 /
\end{gathered}
$$

Look at this problem. Which operations do you see? Which operation do you need to complete first? Multiply 2 by 4 and write the product in the first box. The final step is to add 1 and 8 and write the sum in the answer box.

Let's look at another problem. Which operations do you see in this problem? Use the mnemonic device to help you figure out which operation to complete first. Divide 15 by 3 and write the quotient in the first box. Then subtract 2 from 5 and write the difference in the answer box.


O Guide the child through the problems below. Now use the order of operations to figure out which operation to complete first. Perform any multiplication or division first, from left to right. Then perform any addition or subtraction, from left to right. Use a whiteboard to complete the problems.

$$
\begin{array}{cc}
5 \times 8-1030 & 4+18 \div 67 \\
4 \times 6-10+216 & 8-4+15 \div 39
\end{array}
$$


\&
Use a whiteboard to complete the problems below the chart. Write the answers in the boxes below, and then cross out the matching numbers in the grid to find the answer to the riddle
What did ancient Egyptians use for medicine?


When multiplication and division operations are in the same problem, complete those operations from left to right. Likewise, when addition and subtraction operations are in the same problem, complete those operations from left to right.
$4 \times 5 \div 2 \quad 54 \div 9 \times 7 \quad 3+7-5 \quad 10-1+8$ $10 \quad 42 \quad 5 \quad 17$
Use the order of operations for combinations of operations in a problem. "Please Excuse My Dear Aunt Sally" reminds us that multiplication and division operations are done before addition and subtraction.



You can check your work by replacing N in the equation with your answer.


Solve these problems by using the inverse operation of addition method. Then check your work by replacing the $N$ with your answer in the original problem. If your answer is correct, place a check mark in the box.

$$
\begin{aligned}
& N+4=6 \\
& 6 \square 4=2 \\
& N=2 \\
& \text { check: } \underline{2}+4=6 \downarrow
\end{aligned}
$$

$$
7+N=10
$$

$$
10 \square 7=\underline{3}
$$

$$
N=3
$$

$$
\begin{gathered}
N=\underline{3} \\
\text { check: } 7+\underline{3}=10 \downarrow
\end{gathered}
$$

Look at the subtraction problem in the green box. To find the missing number, we can try using the inverse operation of subtraction, but sometimes that method will not work with subtraction problems. With this problem, if we add both numbers, we would get 16 , and that is incorrect. Instead, another method is to use the fact family. Around the problem in the green box above are all the facts for $(10, \mathrm{~N}, 6)$. Which

$$
\begin{array}{ll}
1 O-N=6 & 6+N=10 \\
10-6=N & N+6=10
\end{array}
$$ problem is the easiest to solve? Circle it, and then solve for N . Once again you can check your work by replacing the N in the equation with your answer to see if it is correct.

Complete the problems in the green boxes using the fact family method.
$12-N=3 \quad 3+N=12$
$12-\underline{3}=N \quad N+\underline{3}=\underline{12}$

$$
N=\underline{9}
$$

$N-8=77+8=N$
$N-7=88+7=N$

$$
\text { check: } 12-\underline{9}=3 \forall
$$

To find the missing number in a multiplication problem, we can use the inverse operation of multiplication. What is the inverse operation of multiplication? [division] Write a division sign in the green box. Begin with the product, 8 , and

work backward. What is 8 divided by 2 ?
Write the answer in the blank.
Check your work by replacing the $N$ in the equation with your answer to see if it is correct.


Complete these problems by using the inverse operation of multiplication.

$$
\begin{array}{cc}
\begin{array}{ll}
6 \times N=24 & N \times 2=12 \\
24 \div 6=4 & 12 \div 2
\end{array}=\underline{6} \\
N=\frac{4}{6 \times 4}=24 \nabla & \text { check: } \\
\text { check: } 6 \times 2=12 \mathrm{~V}
\end{array}
$$

To find the missing number in a division problem, we can sometimes use the inverse operation of division, but other times it won't give us a correct answer. Instead, we can use the fact family method, as we did with subtraction. To find the value of N in the equation in the green box, choose another equation from the fact family that is easier to solve. Circle it and solve it.

$$
\begin{aligned}
& 16 \div N=8 \quad N \times 8=16 \\
& 16 \div 8=N \quad 8 \times N=16
\end{aligned}
$$

$$
N=2
$$

Check your work by replacing the $N$ in the equation with your answer to see if it is correct.
Check:

$$
16 \div 2=8 \boldsymbol{v}
$$

Solve these problems using the fact family method.

$$
\begin{array}{c|c}
20 \div N=44 \times N=20 & N \div 9=33 \times 9=N \\
20 \div 4=N & N \times 4=20
\end{array}\left|\begin{array}{c}
N \div 3=9 \quad 9 \times 3=N \\
N=5
\end{array}\right| \begin{gathered}
N=27 \\
\text { check: } 20 \div 4=5
\end{gathered}
$$

## LESSON PRACTICE

ANCIENT EGYPTIAN INVENTIONS Solve for each missing number in the equations below. Circle the matching number in the grid after completing each problem. Cross out any numbers that don't have a match. All circled answers show something invented by the Egyptians.


$$
\begin{array}{ccc}
N \div 9=2 & N \times 7=14 & N-26=32 \\
N=18 & N=2 & N=58 \\
15+N=22 & N-10=75 & N \div 5=8 \\
N=7 & N=85 & N=40
\end{array}
$$



$\bigcirc$ Read to the child: Look at the line segments $A B$ and $B C$. What do you notice?


The line segments have an endpoint in common: point $B$. When two line segments join together, they create an angle. An angle is formed by two line segments or rays that have a common endpoint. The line segments or rays are called the sides of the angle.

These line segments DE and EF are joined at point E so they form an angle, which we can call angle $E$. We name the angle using the letter at the vertex, which is the point where the two ends meet Angles can be wide or narrow.

A clock is an excellent way to picture angles. The two hands of a clock make up the sides of an angle. The hands move around in a circle, and the angle is a measurement of how much of the circle is between the two sides. The degree is a unit used to measure angles, but it is a different type of degree than the one that measures temperature.


On this clock face, one hand is completely horizontal and the other is completely vertical. We call this a right angle, and it will often be marked with two little lines that form a box at the vertex. A right angle measures exactly 90 degrees


On this clock face, the hour and minute hands are closer together than in the 90-degree angle. An angle that measures less than 90 degrees is an acute angle.


This third clock shows a wide angle. The hour and minute hands are farther apart than in the 90 -degree angle. An angle that measures between 90 and 180 degrees is an obtuse angle.

It's important to know an angle can be in any position and can open in any direction. The clocks below show hands making angles in different positions.


O Remove the angle punch-out pieces from the Lesson 100 page in the Appendix. On the blank clocks, have the child draw one right, one acute, and one obtuse angle. Then have the child sort the clocks into groups of right, acute, and obtuse angles.


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|  | 8 * REVIEW \& ACTIV | S |
| :---: | :---: | :---: |
| Make an illustration to represent each division problem. Then fill in the green and blue boxes with the answer. | Solve the equations. Then write the answers in the boxes below to find the | Write the names of the following items in the correct boxes. Word bank: line segment, line, ray, point |
| $16 \div 5=3 \mathrm{R}$ | $N \times 9=27 \quad N=3$ |  |
|  | $18+S=22 \quad S=4$ |  |
| $\div 4=3 \mathrm{R} 2$ |  |  |
|  | $4 \times Q=8 \quad Q=2$ | line segment |
| 111 | $x+11=12 \quad x=1$ | $\diamond$ Multiplication Fact Practices |
| the order of operations to mplete the problems, using a |  | Put a check mark in the green box when you have practiced multiplication facts Set D for 10 minutes or more. Then complete the problems below. |
| whiteboard if needed. Write the answers in the boxes below. | $13-M=9 \quad M=4$ | $11 \quad 4121212$ |
| $\begin{array}{cc} 8+4-5 & 12-4+7 \\ 7 & 15 \end{array}$ | $9 \div K=3 \quad K=3$ | $\frac{\times 12}{132} \times \frac{12}{48} \times \frac{\times 6}{72} \quad \times 9 \times 3$ |
| $\begin{array}{cc} 8 \times 3 \div 2 & 36 \div 9 \times 2 \\ 12 & 8 \end{array}$ | $24 \div Y=6 \quad Y=4$ | $\begin{array}{llllll}12 & 12 & 12 & 12 & 12 & 12\end{array}$ |
| $\begin{array}{cc} 20 \div 2-5 & 8+24 \div 4 \\ 5 & 14 \end{array}$ | X QKN S Y | $\frac{\times 6}{72} \frac{\times 2}{24} \frac{\times 5}{60} \times \frac{7}{84} \frac{\times 8}{96} \frac{\times 4}{48}$ |

Mental Math
ORDER OF OPERATIONS:
PARENTHESES
Complete the problems, adding the numbers in your head
ansing aloud.
Complete the temperature chart on the back of the array
mationally, determine the current temperature inside or
Terside your home.


Read to the child: In a previous lesson, you learned about the order of operations. We used the mnemonic device Please Excuse My Dear Aunt Sally to help us remember to multiply and divide (from left to right) before we add and subtract (from left to right). Today, we will discover another part of the phrase as we continue to learn the steps in the order of operations. The " P " in "Please" stands for parentheses. They look like this (). The word "Please" comes first, so we must perform any operation in parentheses first. Parent/Teacher Note: The word "E" for "Excuse," which represents exponents, will be covered in future levels.

Let's look at an example. Which two operations do you see in the problem? Normally, we would do division before addition. However, in this case, there is an addition problem in parentheses, so we need to do that problem first. What is 6 plus 6 ? Write a 12 in the first box. Perform the last step by dividing 12 by 3 , and then write the final answer in the bottom box.


Let's take a look at another problem. Point to the problem inside the parentheses. This is where we begin. What is 7 minus 2 ? Write a 5 in the box. Which two operations do you see remaining? How do we know which one to complete first? We work from left to right. What is 5 times 4 ? Write a 20 in the box. The last step is to divide 20 by 10 , and then write the final answer in the box.

$9+(4 \times 6) \div 8$


We will work one more problem together. Which operation is shown in the parentheses? [multiplication] What is 4 times 6? Write 24 in the box. Which operation should we perform next, addition or division? Refer to the mnemonic device if needed. What is 24 divided by 8 ? Write a 3 in the box. Perform the last step, 9 plus 3, and then write the final answer in the box.

O Guide the child through the problems below. Remember to complete the work within the parentheses first. Use the mnemonic device if needed.

$\triangle$ MATH 3

## * LESSON PRACTICE

Complete each problem by using a whiteboard. Write the letter in each box on the line below with a corresponding answer to answer the riddle.


What is the most popular sport in modern Egypt?



Complete each division problem

$$
\begin{array}{lll}
15 \div 3=\underline{5} & 24 \div 8=\underline{3} & 32 \div 4=8 \\
35 \div 5=7 & 36 \div 6=6 & 12 \div 3=4
\end{array}
$$

The division facts above are hidden in the chart below. Find the facts, circle them, and write the division and equal signs. Facts can be horizontal, vertical, or diagonal


Draw a line segment from each image to its name.



Continue the number patterns.
$95,85,75,65, \frac{55}{30}, \frac{45}{35}, \frac{35}{41}, \frac{25}{48}, \frac{15}{56}$

## Fun Finds

Find two of each type of angle in the area around you and draw what you find.

## Risht Ansles:



## Obtuse Angles:

## $\checkmark$ Multiplication Fact Practices

Put a check mark in the green box when you have practiced multiplication facts Set D for 10 minutes or more. Then complete the problems below.

$$
\begin{array}{r}
1212 \\
\times 12 \\
\times 12 \\
\hline 144 \\
\times 36 \\
\times 5 \\
\hline 60 \\
\times 24 \\
\hline 96 \\
\times 12 \\
\hline 12
\end{array}
$$

- Jenny Phillips


Read to the child: Today, we will continue to learn more about lines. First, let's review the orientation of lines, which is a fancy way of saying the direction. If a line runs straight up and down, it is called a vertical line. If it runs left to right, like the horizon, it is a horizontal line.


Some lines are not vertical or horizontal; instead, they are slanted. These lines are called oblique lines or diagonal lines. Here are some examples:


Draw an example of vertical, horizontal, and oblique lines in the boxes.

$\bigcirc$ Read to the child: Lines that cross each other at exactly one point are called intersecting lines. The point where the lines cross is called the point of intersection.


Lines that intersect at right angles are called perpendicular lines. Horizontal and vertical lines are perpendicular, but oblique lines can be perpendicular to other oblique lines as well. Look around the room you are in. Do you see any examples of perpendicular
 lines?

Lines that never intersect and are always the same distance apart are called parallel lines. They can be oriented in any direction, whether vertically, horizontally, or diagonally, and they must always
 remain the same distance apart. What parallel lines do you see around you? Answers will vary
Label the pairs of lines as "intersecting," "perpendicular," or "parallel." Place a dot where the lines intersect, if they intersect.


Examine the lines below and fill in the correct answers from the word bank.

Words can be used more than once. intersecting perpendicular parallel Line $A B$ and line $C D$ are parallel.
Line EF and line CD are intersecting and perpendicular.
Line $A B$ and line $G H$ are intersecting Line CD and line GH are intersecting
 Circle the correct answer
Are line EF and line GH parallel? yes no

There are different types of lines all around us. Using orange, green, blue, and red colored pencils, complete the exercises below.


1. Trace over an oblique line in orange. Answers will vary. Some
2. Trace over two parallel lines in red. options are shown.
3. Make a dot at two different intersections using blue.
4. Trace over a horizontal line using green

LESSON PRACTICE
Draw lines to connect the image to the proper description.


Circle the types of lines that are shown in each image.


Write the letters that contain the types of lines below in the correct column. (Hint: Some letters belong in more than one column.)

## A, E. F. H. K, M, N, T, V, W, X, Y, Z

Perpendiculor Parallel Oblique
E, F, H, T
$\begin{array}{ll}E, F, H, M, & A, K, M, N, V \\ N, Z & W, X, Y, Z\end{array}$

- MATH 3


## PASS"

Seth and Darius love to play football (called soccer in the US ) and have made great friends with their team members. During a recent game, the team made a
series of passes that led to the game-winning goal! Below is a diagram of their passing play. Look at the line segments and answer the questions.
vertical horizontal oblique point of intersection parallel perpendicular
would BC be parallel or
perpendicular to DE ?



O Read to the child: Let's review rounding to the nearest ten. Look at the number line below. The number 51 is between 50 and 60 . It is closer to 50 than 60 , so 51 becomes 50 when rounded to the nearest ten. Is 58 closer to 50 or 60 ? It rounds up to 60 when rounded to the nearest ten.


If the digit to the right of the place you are rounding to is $0,1,2,3$, or 4 , round down. If it is $5,6,7,8$, or 9 , round up.

Let's round this number to the nearest hundred. When we
 round we always look at the place value to the right of the one we want to round to. If that digit is five or greater, the digit in the place value we are rounding to increases by one, and all digits to the right of it become zeros. This is called rounding up. If the digit to the right of the place value we are rounding to is four or less, that digit stays the same and all digits to the right of it become zeros. This is called rounding down. Any digits to the left of the place value we are rounding stay the same.

O Read to the child: Camels are found throughout Egypt, and they are well adapted to Egypt's desert climate. With little water available, a camel can go a week to ten days without water. When water is available, a thirsty camel can drink 53 gallons in three minutes! In one year a camel can drink 18,467 gallons. About how many thousands of gallons is that? In order to find an approximate number of thousands, we can round to the nearest thousand. That's about 18,000 gallons!


Let's practice rounding to different place values. Color the place value and digit the same color as the place value being rounded to below. Using the rounding rules above, determine if the number will round up or down. Then write the rounded numbers in the boxes. The first one is done for you.

|  |  |  |  |  |  | $\stackrel{\text { ¢ }}{\stackrel{\text { ® }}{\star}}$ | ¢ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 2 | 5, 6 | 3 | 8, | 2 | 5 |
| Hundreds | $1$ | 2 | 5,6 | 3 | 8,1 | $\bigcirc$ | 0 |
| Millions | 1 | 2 | 6,0 | 0 | 0,0 | 0 | 0 |
| Ten Thousands | 1 | 2 | 5,6 | 4 | 0,0 | 0 | 0 |
| Hundred Millions | 1 | 0 | 0, 0 | 0 | 0, 0 | 0 | 0 |
| Ten Millions | 1 | 3 | 0,0 | 0 | 0,0 | 0 | 0 |

## Ready, Set, Round!

O Game: Take the 10 -sided and 6 -sided dice from the math box. Read to the child: Roll both dice to create a number. For example, if you roll a 7 and a 2 , you can choose to create the number 72 or 27 . Round the number to the nearest TEN and claim the space with the answer by writing an $X$ in the space. Then it's my turn. Ill follow the same steps, but Ill write an O to claim a space. If the rounded number is already claimed, then we do not get to mark a space. The person to capture the most spaces wins. If we roll a 10 , we roll that dice again.

| 60 | 20 | 70 |
| :--- | :--- | :--- |
| 40 | 10 | 50 |
| 90 | 30 | 80 |




Circle the correct answers.

1. Round $645,089,120$ to the nearest hundred million.

$$
600,000,000 \quad 700,000,000
$$

2. Round $561,765,982$ to the nearest hundred thousand.

561,700,000


Round each number to the nearest ten thousand. Write the answer in the box.
456,346
460,000
728,934
730,000

$$
843,901
$$

$$
840,000
$$

$$
304,223
$$

730,000

$$
300,000
$$

Complete the division problems.

Fill in the box with the missing factor to complete each multiplication problem. Then write the letter (next to each problem) in the blank space above the matching answer below.
(R) $6 \times 4=24$
(I) $3 \times 7=21$
C. $2 \times 9=18$

Fill in the box with the miss
the letter (next to each pro
(B) $2 \times 8=16$
(A) $4 \times 5=20$
(B) $2 \times 8=16$
(A) $4 \times 5=20$
the letter (next to each pro l
F $5=1$ in the box th the miss


Circle the types of lines that are shown in each image below.


Camels, like many animals, are often given salt blocks to lick. Find the volume of each salt block by multiplying the length times the width times the height. Write your final answer in the gray box.


What is the official language of Egypt?
$\cup^{\infty} \frac{A}{5} \frac{R}{4} \frac{A}{5} \frac{B}{8} \frac{I}{9} \frac{C}{9}$
$\triangleleft$ Multiplication Fact Practices
Put a check mark in the green box when you have practiced multiplication facts Set D for 10 minutes or more. Then complete the problems below.

$$
\begin{array}{ll}
14 \div 2=7 & 16 \div 4=4 \\
12 \div 3=4 & 18 \div 3=6 \\
12 \div & 18 \div 9=2
\end{array}
$$

Write the missing factors for the number 28.


$\bigcirc$ Read to the child: You have already learned how to multiply large numbers by a single-digit factor. Multiplying money follows the same steps. Look at the problem shown. We will multiply as usual and ignore the decimal point for now. We begin by multiplying 3 , the bottom factor, by the digit on the right in the top factor, 2 . Write the product of 3 and 2 at the far right under the line. Next, we multiply the bottom factor, 3 , by the next digit in the top factor, 1 . Write the product of 3 and 1 next to the 6 under the line. Now we multiply the bottom factor, 3 , by the next digit in the top factor, 7 . Write the product of 3 and 7 under the line. The last step is to write a dollar sign in front of your answer and count over two places from the right and write a decimal point to separate the dollars and cents. Write a dollar sign and decimal point where the arrows are pointing. The final answer is twenty-one dollars and thirty-six cents.


Guide the child through the problems below. Find each product. Remember to include a dollar sign and decimal point in your answer.

| $\$ 5.44$ | $\$ 2.16$ | $\$ 1.32$ |
| ---: | ---: | ---: |
| $\times \quad 2$ |  |  |
| $\$ 10.88$ | $\times \quad 4$ | $\times \quad 7$ |
| $\$ 8.64$ | $\$ 9.24$ |  |

$\bigcirc$ Read to the child: Did you know we can use the order of operations and multiplying money to help us solve everyday problems? Let's take a look at a few examples where these concepts can be applied.

Mom is planning a birthday party for Darius and Seth. She purchased 6 invitations and 6 stamps. Invitations cost $\$ 0.89$ each, and stamps cost $\$ 0.55$ each. Instead of multiplying each cost by 6 and then adding the costs together, you can first add the two costs and then multiply the total by 6 . The problem below represents this situation. Complete the problem to find the total cost of the invitations and stamps. Remember that problems in parentheses are completed first. Help the child to complete the problem, using a whiteboard to add and multiply, and then write the answers in the boxes below.


3 MATH 3
Let's look at another example. Mom bought 2 birthday cakes, one for Darius and one for Seth. Each cake costs $\$ 12.50$. She has a coupon for $\$ 5.00$ off. The problem to the right represents this situation. Find the total amount Mom spent to buy the cakes.

\$50.00-(\$4.25 × 8)


We will work on one more problem together. Mom ordered a tray of 8 sub sandwiches for the guests. Each sandwich cost $\$ 4.25$. She paid with a \$50 bill. Complete the problem to find how much change Mom received.
$\bigcirc$ Guide the child through the problems below. Circle the problem that best represents each story problem. Then complete the problem, using a whiteboard to show your work.

The party favors cost $\$ 1.75$ each. There are 4 boys and 5 girls attending the party. Which problem can be used to find the total amount of money needed to purchase a party favor for each child?

(B) $(\$ 1.75+4)-5$
$\$ 15.75$

Darius and Seth's grandmother gave them $\$ 70$ for their birthday gift. After they tithed $\$ 10$, they divided the rest of the money equally between the two of them. Which problem can be used to find the answer?


O Play the game on the next page with the child before beginning the lesson practice.

## LESSON PRACTICE

Find each product. Remember to include a dollar sign and decimal point in your answer.

|  | 2 | 111 |
| ---: | ---: | ---: |
| $\$ 3.21$ | $\$ 6.04$ | $\$ 4.85$ |
| $\times \quad 3$ | $\times \quad 5$ | $\times \quad 2$ |
| $\$ 9.63$ | $\$ 30.20$ | $\$ 9.70$ |

Complete the story problems.
Darius walked 3 dogs in the morning $\quad \$ 3.50 \times(3+5)$ and 5 dogs in the afternoon. He makes $\$ 3.50$ for every dog he walks. Complete the problem to find the amount of money Darius made.

## $\$ 28.00$



Darius used his money to buy a book for $\$ 10.50$ and 2 highlighters for $\$ 1.25$ each. Complete the problem to find the amount of money he spent.



O Take the two game pawns and 6 -sided dice from the math box. Read to the child: Ancient Egyptians loved playing board games. Archaeologists like Seth and Darius' father have found games like the two in this lesson in Egyptian tombs. We will be playing a version of the Egyptian games "Senet" and "Mehen." (You may choose to play just one game or both.)

1. Senet: The goal of the game is to get your pawn to the other side of the board. We will each place a pawn on "start" at opposite ends of the game board. On your turn you will write a greater than, less than, or equal to symbol in the circle of the problem you are on. If you are correct, move one space toward the other side. Then it will be my turn. If you land in a space that is already completed, then move your pawn up or down the column to an uncompleted problem. Continue until someone reaches the other side with his or her pawn.
2. Mehen: We will each place our pawn on "start" on the game board on the next page. Then we will take turns rolling the dice and moving forward that many places. Find the missing number that makes the two sides of the equation equal. Write that number in the space. Continue until you reach the snake's head at the center. Repeat either game as often as desired.


## - Jenny Phillips



O Read to the child: Complete the problems, and then write the equal ( $=$ ) or not equal $(\neq)$ sign in the circle.

| $(3 \times 4)+(3 \times 5)$ | $\fallingdotseq$ | $3 \times 9$ |
| :---: | :---: | :---: |
| $4 \times 5$ | $\nexists$ | $(4 \times 2)+(4 \times 4)$ |
| $6+8$ | $\fallingdotseq$ | $8+6$ |
| $5+(7 \times 2)$ | $\nexists$ | $(5+7) \times 2$ |



## LESSON PRACTICE

Write a number in the blank to make the statement true.

$$
\begin{aligned}
&(2 \times \underline{5})+5 \fallingdotseq 15 \\
& 60 \fallingdotseq(5 \times 6)+(6 \times 5) \\
& 20-\frac{4}{24} \fallingdotseq 16 \\
& \fallingdotseq(4+2) \times 4 \\
& 12 \times 3 \fallingdotseq 36
\end{aligned}
$$

Complete each problem, and write the answer on the line below it. Then write 1st through 5th in the boxes under each problem to put the answers in each row in order from least to greatest

| $5 \times 8$ | $66 \div 11$ | $50-25$ | $20 \times 3$ | $100-80$ |
| :--- | :--- | :--- | :--- | :--- |
| 40 6 25 60 | 20 |  |  |  |
| $4+h$ | $1 s+$ | $3 r d$ | $5+h$ | $2 n d$ |

$(31-1) \div 3 \quad 48 \div 8-85-15-42+9-12 \times 4$



Use all the orange tangram pieces from the math box to create these images.


Fill in the blanks in the multiplication and division fact-family houses with $(6,8,48)$ and $(3,9,27)$


Put a check mark in the green box when you have practiced multiplication facts Set D for 10 minutes or more. Then complete the problems below

| 10 | 11 |
| ---: | ---: |
| $\times 12$ |  |
| 120 | $\times 12$ |
| 132 |  |



Each number is the sum of the two numbers it is directly above. Use logic to find the missing numbers. See the example as needed.
$\left.12 \begin{array}{r}12 \\ \times 6 \\ \times 9 \\ \hline 72108 \\ \hline 60\end{array}\right]$

| 121212 |
| ---: |
| $\times 7$ |
| 84 |
| 48 |
| 24 |

$$
\begin{array}{lll}
12 & 12 & 12
\end{array}
$$

$$
\frac{\times 3}{36} \frac{\times 8}{96} \frac{\times 1}{12}
$$



Read to the child: Division story problems follow two different patterns. You can either divide by the number of groups to find the number in each group, or you can divide by the number in each group to find the number of groups.


Y A customer placed an order for 24 potato scones, known as tattie scones. Mr. MacKenzie set out 4 boxes to equally package them. How many potato scones must be placed in each box? This division story problem told us the total number of scones and the number of groupsin this case, boxes. Write the total number of potato scones in the first green box. Write the number of boxes that Mr. MacKenzie set out in the second green box. Write the quotient of 24 divided by 4 in the last green box. Label your answer with "scones per box" on the blank line.


A customer placed an order for 50 Aberdeen butteries. He wanted them packaged with 10 in each box. How many boxes are needed for this order? This division story problem told us the total number of butteries and the number of butteries in each group, or box. Write the total number of butteries in the first green box. Write the number of butteries the customer wants in each box in the second green box. Write the quotient of 50 divided by 10 in the last green box. Label your answer with "number of boxes" on the blank line.


Guide the child through the problems below. Write a division problem to answer each question. Then find the quotient.
equested them to into 2 bags. How many pistachio

$\square$ croissants must be placed in each bag?

A customer placed an order for 48 bannocks. She wanted them packaged with 8 in each box. How many boxes are needed for this order?



A customer placed an order for 45 Scottish biscuits. He requested 9 biscuits in each box. How many boxes are needed for this order?


A customer placed an order for 21 Forfar bridies. Mr. MacKenzie set out 3 boxes to equally package them. How many Forfar bridies must be placed in each box?


A customer placed an order for 12 Dundee cakes. Mr. MacKenzie set out 2 boxes to equally package them. How many Dundee cakes must be placed in each box?


A customer placed an order for 16 black buns. She requested 8 buns in each box. How many boxes are needed for this order?

| 16 |
| :--- |
| buns |
| buns per <br> box |$=$| $\boxed{\text { boxes }}$ |
| :---: |




O Read to the child: This year Elsie has a goal to visit 100 lochs [locks] (Scottish Gaelic for "lake"). She writes the name of each loch she has visited on a list and then uses Roman numerals to number them Roman numerals were created by ancient Romans to represent numbers. First, let's review the letters that are used for Roman numerals and their numerical values. Look at the chart and point to the letter that represents 50 . Which letter represents 10 ? 100 ? 5 ? 1 ?

| 1 | 5 | 10 | 50 | 100 |
| :---: | :---: | :---: | :---: | :---: |
| 1 | $\vee$ | $\chi$ |  | $C$ |

To write a number using Roman numerals, there are a few rules.

1. When the same Roman numerals are next to each other, their values are added. For example, the Roman numeral III means $1+1+1$ which is 3 .
2. More than three of the same Roman numeral are never written together. The number 4 is not IIII it is IV. When a smaller Roman numeral comes before a larger one, the first is subtracted from the second. For example, IV means 5 -1, which is 4 . And IX means $10-1$, which is 9 .


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3. When a larger Roman numeral comes before a smaller one, the values are added. For example, VI means $5+1$, which is 6 . And XIII means $10+1+1+1$, which is 13 .


Look at Elsie's list below. Which number is Loch Lomond on the list? Since X stands for 10 and I stands for 1 , that means we would add $10+1+1=$ 12. Write the number represented by each Roman numeral on Elsie's list.


Read to the child: Make your own loch list. Write a number between 1 and 100 next to each loch name. Then write the Roman numeral for each number next to it

$\rightarrow$ MATH 3


Write a greater than, less than, or equal symbol to compare the numbers and Roman numerals.


Draw a line from each pole to the correct fish to match the Roman numeral to the number.




Read to the child: This is a coordinate plane, and it can be used to plot and find points and lines. You can see that it looks like a grid with two perpendicular number lines.


An ordered pair is a pair of numbers used to show the position of a point on a coordinate plane. You can find a point on a coordinate plane using an ordered pair, written within parentheses and separated by a comma, like this: $(5,4)$. To plot a point, start at zero and go across the horizontal number line until you reach the first number of the ordered pair. Move up vertically until you reach the point across from the second number on the vertical number line. Then draw the point.

On the grid below, place your right pointer finger on the 0 and slide it over until you reach the circled number 5 on the horizontal number line. The second number in the pair is always found using the vertical number line. Starting at the circled 5 (first number we found), move your finger up until you reach the 4th line, which will be across from the circled number 4 on the vertical number line. The letter found at $(5,4)$ is marked $A$, so this point is named point $A$.

## $(5,4)$

$$
\begin{array}{ll}
\text { This number } & \text { This number } \\
\text { is found using } & \text { is found using } \\
\text { the horizontal } & \text { the vertical } \\
\text { number line. } & \text { number line. }
\end{array}
$$



Notice how the number lines meet at 0 . The numbers on both lines increase as you move to the right and upward.

Let's practice plotting some points on the coordinate plane above. We will say that Point $B$ is at $(4,1)$. Which number is found using the horizonta number line? Which number is found using the vertical number line? Parent/ Teacher Note: The child should not draw dotted lines on the coordinate plane like the orange and purple ones in the example above; they are only to help guide the child in finding the first coordinate. Find the point on the coordinate plane and plot, which means to draw, a point and label it with a B. Plot and label the following points on the coordinate plane above:

$$
\begin{array}{ll}
B(4,1) & C(3,3) \\
D(2,1) & E(1,4)
\end{array}
$$

If you connect the points in alphabetical order, what letter do they make?
Ask the child where he or she thinks using a coordinate plane could be useful. If you were planting a garden, you could draw a coordinate plane to plan where each seed or plant should go. If you were designing a plan for a city, the numbers could represent miles, and you could plot roads, houses, parks, and more! You can use a coordinate plane to place furniture in a room
or design a parking lot. A touch-screen phone uses a coordinate plane to track where you're touching the screen. Coordinate planes are used in physics experiments and when reading a map.

Coordinate planes can be organized in different ways. The one below uses number lines that count by 10 s. Look at it and write the letter at each point in the corresponding blank to find the name of one of three languages spoken in Scotland.



Remove the game board from page 361 and the game pieces from the Lesson 108 page in the Appendix. Cut the game boards along the dashed line so you have two boards. Read the instructions on the back of the game board aloud to the child.

路 LESSONPRACTICE



Scotland is famous for its golf courses. Plot the points on the golf course and label them to show where each hole is found.

$$
\text { Hole 1: }(46,32)
$$

Hole 2: $(48,18)$ Hole 3: $(52,8)$ Hole 4: $(28,10)$ Hole 5: $(14,0)$ Hole 6: $(2,12)$ Hole 7: $(6,26)$ Hole 8: $(12,34)$ Hole 9: $(36,26)$
MATH 3
Complete the division story problems.
A customer placed an order for 8
each box. How many boxes are needed
for this order?
A customer placed an order for 42
bridies. Mr. Mackenzie set out boxes
to equally package them. How many
bridies must be placed in each box?

$\bigcirc$ Read to the child: Elsie and her father are making tattie scones for breakfast. A tattie scone is a traditional Scottish scone made with potatoes. The dough is rolled out and cut into triangles. Today, Elsie is having a little fun making her triangles different shapes. Look at the scones she has made below. The first triangle has sides that are all equal in length; it is an equilateral triangle. The second one has two sides that are equal in length and a third side length that is different; it is an isosceles triangle. The third triangle has sides that are all different lengths; it is a scalene triangle.


O Read to the child: Elsie loves cutting out the scones and has made so many that she and her father are going to share some with their neighbor. On the plate below, circle the scones that are equilateral triangles in blue, isosceles triangles in yellow, and scalene triangles in


O Read to the child: Elsie's father has been showing her his architectural drawings and teaching her about the power of triangles. Did you know that triangles are the strongest shape? They are used often in buildings because they can hold the most weight. Look at the picture of St. Giles' Cathedral in Scotland below. Can you find three equilateral and three isosceles triangles?


- Jenny Phillips
$\leftrightharpoons$ MATH 3

LESSON PRACTICE
Circle the correct triangle type.



Math 3 Answer Key

Read to the child: So far you have learned how to use
fractions to describe part of a whole. For example, fractions to describe part of a whole. For example, to write a fraction that represents the part of the
 circle that is shaded. The whole circle is divided into 5 equal parts, and 1 part is shaded, which is one-fifth of the circle.
In this lesson, we will learn about fractions of a set. Fractions can be used to describe a part of a group of objects. The denominator is the number of total objects. The numerator is the number of parts being referred to. Fill in the boxes to write a fraction that represents the part of the group of circles that is shaded.

Shade in the correct number of each set of shapes according to the fraction shown.

$\square$


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| CA |  |
| :---: | :---: |
| $0 \cdot 8$ | 4 |
| 粦 | 3 |
| * | 1 |
| * | 2 |
| \% | 1 |

Write the fraction of the bouquet for each $2 B$ type of flower in boxes 1B and 2B. Count the total number of flowers in the bouquet to find the denominator. Then write the number of the type of flower as the numerator.


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Math 3 Answer Key



Say the name of each geometric solid aloud. Point to the solid with 2 faces, 0 edges, and 0 vertices.
cone cube cylinder rectangular


O Read to the child: We have learned about different units of capacity. Review equivalent units of capacity by writing the correct number in each box to make each statement true.


Division can be used to convert units of capacity from smaller units into larger units. To convert 8 pints to quarts, we know that there are 2 pints in 1 quart. Circle groups of 2 pints. Each circled group is a quart. How many groups did you circle? Write this number in the box.


O Liquid Conversions Activity: Take the 10 -sided dice from the math box. Read to the child: Roll the dice to see which problem to complete. Complete the problem. The answer is the number of units to shade in the container. Player 2 repeats these steps. If the problem for the number rolled has already been completed, roll again. The first player to shade the full container wins the game.

Liquid Conversions



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1 LESSONPRACTICE *
Use division to convert the measurements, using a whiteboard if needed. Then draw a line to connect equivalent measurements in the left and right columns.


Convert from pints to quarts.
4 pints -2 quarts

14 pints 5 quarts
10 pints quarts

Convert from quarts to gallons.
16 quarts 6 gallons
24 quarts 8 gallons
32 quarts 4 gallons

- Jenny Phillips



## - Jenny Phillips

i O Take 6 light-green triangles (pattern blocks) from the math box and set them in a pile in front of the child. Read to the child: In this lesson we will continue learning about fractions of a set. Suppose we want to find the number of triangles that make up $\frac{1}{2}$ of the set. Since the denominator of $\frac{1}{2}$ is 2 , we begin by separating the 6 triangles into 2 equal groups. Put one group of triangles in front of you and one group of triangles in front of me. How many triangles do we each have? This means that $\frac{1}{2}$ of 6 is 3 . Write a 3 in the box.

$$
\begin{aligned}
& \begin{array}{l}
\text { Number of groups } \\
\text { being referred to }
\end{array} \rightarrow \\
& \begin{array}{l}
\text { Number of } \\
\text { equal groups }
\end{array}
\end{aligned} \rightarrow ?
$$

Put the 6 triangles back into 1 pile. Suppose
this time you want to find out how many triangles make up $\frac{1}{3}$ of the set. Since the denominator of $\frac{1}{3}$ is 3 , begin by separating $\frac{1}{3}$ of $6=2$ the triangles into 3 equal groups. How many triangles are in one group? This means that $\frac{1}{3}$ of 6 is 2 . Write a 2 in the box.

Let's see how this concept can be applied in a different situation. Mom was outside enjoying the beautiful day while picking ripe pears off the pear tree. She was planning to make her delicious pear crumble, which is Elsie and Finley's favorite

Mom noticed that out of 8 pears, $\frac{1}{4}$ of them were ripe. What is the denominator of $\frac{1}{4}$ ? Circle the pears so there are 4 equal groups. How many pears are in one group? This means that $\frac{1}{4}$ of 8 is 2 . Write a 2 in the box.


$$
\frac{1}{4} \text { of } 8=2
$$

$\Rightarrow$ MATH 3

Now it's your turn! Suppose there are 9 pears and $\frac{1}{3}$ of them are ripe. Complete the problem by circling the pears in 3 equal groups, counting the number of pears in one group, and then writing your answer in the box.


$$
\frac{1}{3} \text { of } 9=3
$$

PICKING PEARS Find the fraction of a set of 12 pears. You can use 12 shapes from the math box to help you complete these problems. Separate the pears into equal groups based on the denominators. Then write the number in one group in the box. The pears shown in the tree with the correct answers are the ripe pears. Pick each pear with a correct answer of the tree by drawing a circle around it.

$$
\begin{aligned}
& 12 \text { total pears } \\
& \frac{1}{2} \text { of } 12=6 \quad \frac{1}{4} \text { of } 12=3 \\
& \frac{1}{6} \text { of } 12=2 \quad \frac{1}{3} \text { of } 12=4
\end{aligned}
$$




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O Read to the child: Elsie and her family are going to the Highland games, which is an annual sporting competition in which Scottish family groups called clans participate. Each clan has a different coat of arms, which you can see on the flags below. The flags all have something in common; they each have four sides. Shapes with exactly four sides are called quadrilaterals. The word "quad" means four. Point to each shape and say its name.


Quadrilaterals are a type of polygon. Polygons are two-dimensional, closed shapes with straight sides. A rectangle is a quadrilateral and a polygon. In the next column are more examples of shapes that are polygons. Point to each shape and say its name. Then, underneath each shape, write how many sides it has.


Read to the child: You get to be the judge of this Highland games event. Name the shapes in each group aloud, and then circle the one that has the most vertices of the group. Write the number of sides and vertices inside that shape. The shape with the most vertices of all the shapes is


HIDDESM oren HIGFLAND GAMES

Step 2: In the green boxes below, write the number of sides of each shape you found in the order shown by the blue boxes next to the shapes. Shape number 1 is done for you as an example.
Step 3: Match the number in the green box to a letter in the key below and write that
Step 1: Find the shape hidden nearest to each coordinate below.






Read to the child: Today, we will review how to complete multiplication and division story problems. Remember to look for information that you need to answer a question or complete a problem. We will also continue to use the strategy of circling the information and underlining the question to help us complete problems.
Elsie had 4 flower vases. She arranged 6 thistles in each vase. How many thistles did she use for her flower arrangements?


First, you find the information that is given and circle it. In this problem, you would circle " 4 flower vases" and " 6 thistles in each vase." Next, underline the question that needs to be answered: "How many thistles did she use for her flower arrangements?" We know how many flowers were in each vase, and we are asked to find the total number of thistles Elsie used. That means we can multiply the number of thistles in each vase by the number of vases to find the answer. Complete the problem below.



Let's look at a different example.
Elsie had a total of 50 Scottish bluebell flowes. She wanted to arrange them equally into vase. How many flowers should she put into each vase?

Start by circling what you know and underlining the question you need to answer. Division can be used any time you are given the total number of objects and asked to separate the objects equally into groups. This story problem gives you the total number of flowers and asks you to find the number of flowers in each vase. That means you can use division. Write the quotient of 50 divided by 5 in the blue box.

| 50 flowers |  |  | $50 \div 5=10$ ? flowers in |
| :--- | :---: | :---: | :---: |
| each vase |  |  |  |

Finley is organizing his books on a bookcase. He has 8 fiction books and 7 nonfiction ooks. Finley wants to put an equal number of books on each of the 5 shelves. How many books
 should he put on each shelf?

Circle the important information and underline the question. First, we can add to find the total number of books. Write the sum of 18 plus 7 in the yellow box. Now that we have the total number of books, we can divide them by the number of shelves there are on the bookcase. Write the total number of books in the yellow box and divide that by the number of shelves to find the number of books on each shelf.

$8+7=25_{\text {totol books }}$ $25 \div 5=5$
total books shelves

Let's walk through one more problem together.
Finley and Elsie visited the library once a week. Altogether they checked out 4 books per weeb for 5 weeks. Finley read44 of the books, and Elsie read the rest. How many books did Elsie read?

Circle the important information and underline the question. First, we need to multiply the number of books checked out per week by the number of weeks. Write the product of 4 times 5 in the yellow box. Now that we know the total number of books checked out, we can subtract the number of books that Finley read to find the number of books that Elsie read.

$$
\begin{aligned}
& \\
& \begin{array}{|l|l|}
\hline \text { Finley }-14 \text { books } & \text { Elsie - books? }
\end{array} \\
& \underset{\substack{\text { books } \\
\text { per week }}}{4 \times 5=20} \text { weeks }=20-14=6 \begin{array}{c}
\text { total books } \\
\begin{array}{c}
\text { number of } \\
\text { books } \\
\text { Elsie read } \\
\text { books }
\end{array} \\
\begin{array}{c}
\text { number of } \\
\text { Fooks } \\
\text { Finley read }
\end{array}
\end{array}
\end{aligned}
$$

Complete the following multistep story problems on your whiteboard. Circle the important information and underline the question. Then decide which steps are needed to complete each problem.
I. Finley is reading a book that has 22 chapters He has already read 10 Chapters. Finley's goal is to finish his book in the nex 3 days. How many chapters must he read each day in order to reach his goal?

$$
22-10=12 \text { chapters } 12 \div 3=4 \text { chapters }
$$

2. Elsie's bookcase has 8 shelves There are 4 books on each shelf. Elsie also has bookssitting on her desk. How many books does Elsie have altogether?

$$
\overline{8 \times 4}=32 \text { books } \quad 32+2=34 \text { books }
$$

Note to Parent/Teacher: While the child is working on the first two problems from the Lesson Practice, punch out the story-problem cards from the Lesson 115 page in the Appendix. Select a room (schoolroom, dining room, kitchen, etc.) in which to hide the six story problems. The child will search for the cards and complete the problems as part of the Lesson Practice.

## \& LESSONPRACTICE *

Read each story problem carefully. Circle the important information and underline the question. Then use the correct operations to find the answer.

Finley bough 3 souvenirs from the festival gift shop. Each souvenir cost \$6. He paid the cashier \$20. How much change will Finley receive?


As the family went to the parking lot to go home, they noticed 3 rows of parking spaces in front of their car. Each row had 20 spaces 5 of the parking space were empty. How many spaces were filled with cars? Use the space below to complete the problem.

$$
\begin{aligned}
& 3 \times 20=60 \text { spaces } \\
& 60-5=55 \text { spaces }
\end{aligned}
$$

## Search and Complete the Story Problems!

Search for the story problems in the room where your parent or teacher hid them. Can you successfully find all six story problems? After you find them, use a whiteboard to complete the problems. Write the answers on the lines below after you complete each one.

1. $\$ 22 \quad 2.48$
2. 3 $\qquad$ 4. 4 5. 12 6. 24


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O Take the measuring tape from the math box and read to the child: Measure the line segments below. Are they the same length? Yes, they are congruent, which means they have the exact same shape and size.


Similar shapes have the same shape but not necessarily the same size; similar shapes are proportional. If we can shrink or expand a shape to be exactly the same size as another shape, those shapes are proportional. Shapes are congruent and similar if they are the same shape and size. Two of the same shape that are not the same size are similar but not congruent. The squares on the left are congruent and similar while the squares on the right are only similar.


Same Shape and Size Congruent and Similar


Same Shape, Different Size Similar

- Read to the child: Draw lines from the pairs of shapes to the correct labels. If shapes are similar, but not congruent, it means they are the same shape, but not the same size. To be congruent and similar, they must be the same shape and size.


O Read to the child: Draw shapes that are congruent to the shapes given using the grids as guides.


Read to the child: Draw shapes that are similar but not congruent to the shapes given using the grids as guides.


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Use the measuring tape to measure the pairs of lines. Circle the


Draw a red line to match the shapes on the left that are congruent to shapes on the right. Then draw a blue line to match the shapes on the left to the ones on the right that are similar but not congruent. Each shape on the left


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Math 3 Answer Key
MATH 3
Game-Adder Ladder: Take the 10-sided dice and the game pawns from the math box. Place the game pawns on "START" in the center of the circle. Read to the child: We will play this game to help us review geometry concepts learned in this unit. Player 1 rolls the dice and moves that number of spaces. He or she answers the question or completes the task, using a whiteboard if needed. Player 2 repeats the same steps. The first player to climb the adder ladder and reach the snake's tail wins the game. Note: If the child answers incorrectly, review the concept before moving on.

Read to the child: Today, we are going to review the concepts you have been practicing in Unit 4. We will play some games together, and you will do some activities independently.

## TIC-TAC-QUOtient

O Game-TIC-TAC-QUOtient: Take the 10 -sided dice from the math box. Read to the child: Roll the dice. If it lands on an even number, you get to pick a problem in an even box. If it lands on an odd number, you get to pick a problem in an odd box. Some problems may have a remainder. If completed correctly, write X or O in that box. Then I will take a turn. The first player to get 3 in a row wins the game.

| $\begin{gathered} 24 \div 4 \\ 6 \\ O D D \end{gathered}$ | $\begin{gathered} 48 \div 8 \\ 6_{\text {EVEN }} \end{gathered}$ | $21 \div 3$ |
| :---: | :---: | :---: |
| $3 \div 5$ <br> EVEN | $15 \div 2$ <br> ODD | $5^{33} \dot{R} 3$ <br> EVEN |
| $39 \div 3$ | $568 \div 7$ | $18 \dot{\bar{j}} 9$ |

Jenny Phillips
$\Rightarrow$ MATH 3



O Jenny Phillips
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MATH 3

|  <br>  $\begin{array}{llll} 6 \text { (12) } 18 \quad 20 \text { (24) } 28 \quad 32 \text { (36) } \end{array}$ |  | Practice multiplication facts Set D for 10 minutes. Then complete the problems in record the ones you got right on the |
| :---: | :---: | :---: |
| $40 \quad 44$ (48) 56 (60) 68 (72) $78 \quad 82$ (84) 90 (96) $98 \quad 100$ |  | $\begin{aligned} & \begin{array}{l} \text { Masterer Charat on page viii } \\ 11 \\ \times 12 \\ \times 12 \\ \frac{\times 12}{132} \\ \hline 120 \end{array} \frac{12}{108} \frac{\times 12}{144} \end{aligned}$ |
| Complete the division problems. $14 \div 2=7 \quad 16 \div 2=8 \quad 20 \div 4=5$ |  | $\begin{array}{r} 8 \\ \times 12 \\ \times 12 \\ \times 12 \\ \hline 72 \end{array} \frac{512}{60} \times \frac{7}{84}$ |
| $12 \div 3=4 \quad 18 \div 3=6 \quad 21 \div 3=7$ |  | $\begin{array}{r} 43 \\ \times 12 \\ \times 12 \\ \hline 48 \\ \times 12 \\ \hline 36 \\ \times 120 \\ \hline 120 \\ \hline 132 \end{array}$ |
|  |  | $\begin{array}{rrrr} 12 & 12 & 12 & 12 \\ \times 7 & \times 9 & \times 6 & \times 8 \\ \hline 84 & \frac{\times 9}{108} & \frac{\times 8}{96} \end{array}$ |
| 18 |  | $\begin{array}{rrrr} 12 & 12 & 12 & 12 \\ \times 3 & \times 4 & \times 2 & \times 0 \\ \hline 36 & \frac{\times 4}{48} & \frac{\times 0}{0} \end{array}$ |






Draw a line to match the geometric solid to its name.


Draw a line to match the shape to its name. Circle the shapes that are


Draw a line to match the shape to its name. Circle the shape that is a quadrilateral.


Circle the shape that has 5 faces, 5 vertices, and 8 edges.

Cross out the shape that has 6 faces, 8 vertices, and 12 edges.

## K UNIT CONVERSIONS E

Complete the US customary system conversions.
$1 \mathrm{ft}=12$ in $1 \mathrm{yd}=\underline{3} \mathrm{ft} \quad 16 \mathrm{oz}=1 \quad \mathrm{lb}$
$2 \mathrm{yd}=$ $\qquad$ 6 ft $2 \mathrm{ft}=$ $\qquad$ in 3 ft $\qquad$ yd

1 gal $=$ $\qquad$ qt 1 qt $=$ $\qquad$ pt 1 pt = $\qquad$ c
$\begin{aligned} & \text { Complete the metric } \\ & \text { system conversions. }\end{aligned} \mathbf{1 L = 1 , 0 0 0} \mathrm{mL} \quad \mathbf{1 k g}=\underline{\underline{1,000}} \mathrm{~g}$

$$
2 \mathrm{~m}=\underline{200 \mathrm{~cm} \quad 3 \mathrm{~km}=\underline{3,000} \mathrm{~m} .}
$$ $\sum \square$ Additional Practice

Complete the US customary system conversions.
$3 \mathrm{ft}=\underline{1} \mathrm{yd} \quad 12 \mathrm{in}=\underline{1} \mathrm{ft} 1 \mathrm{lb}=\underline{16} \mathrm{oz}$
$4 \mathrm{qt}=\underline{1}$ gal $2 \mathrm{pt}=\underline{1} \mathrm{qt} 2 \mathrm{c}=\underline{1} \mathrm{pt}$

| Complete the |
| :--- |
| metric system |
| conversions. |

$20,000 \mathrm{~mL}=\underline{2} \mathrm{~mm}=\underline{2} \mathrm{~cm} \quad 4 \mathrm{~kg}=\underline{4,000} \mathrm{~g}$
$2,000 \mathrm{~m}=\underline{2} \mathrm{~km}$


Math 3 Answer Key goodandbeautifulicom


[^0]:    When the denominators of two fractions are the same, the fractions have a common denominator.

[^1]:    - Jenny Phillips

[^2]:    - Jenny Phillips

[^3]:    - Jenny Phillips

