Simply

Good and Beautiful

MATH

4

COURSE BOOK

The Good and the Beautiful CURRICULUM

Simply Good and Beautiful MATH 4

COURSE BOOK

Created by the Simply Good and Beautiful Math Team

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The Good and the Beautiful CURRICULUM
goodandbeautiful.com

Table of Contents

ABOUT THE COURSE

Supplies Needed

- *Simply Good and Beautiful Math 4 Course Book*
- *Simply Good and Beautiful Math 4 Answer Key*
- *Math 4 Mental Math Map Mysteries*
- *Simply Good and Beautiful Math Scratch Pad* or other scratch paper
- Device to access videos (highly recommended)
- Pencils
- Crayons or colored pencils (keep on hand)
- 12-inch ruler
- Dice

Course Overview

Math 4 consists of 120 lessons divided into four units. Each unit ends with an assessment. The course is designed to be completed by the child independently, but parents/teachers can choose to be as involved in the lessons as they would like to be.

Lesson Overview

Most lessons are 3–4 pages and consist of four parts: video lesson, mini lesson, lesson practice, and review.

Video Lesson: Themed videos provide detailed teaching and interactive guided practice of the lesson topic. Scan the QR code or go to goodandbeautiful.com/Math4 to access the videos.

Mini Lesson: A concise written lesson on the topic.

Lesson Practice: Practice that is dedicated to the lesson topic.

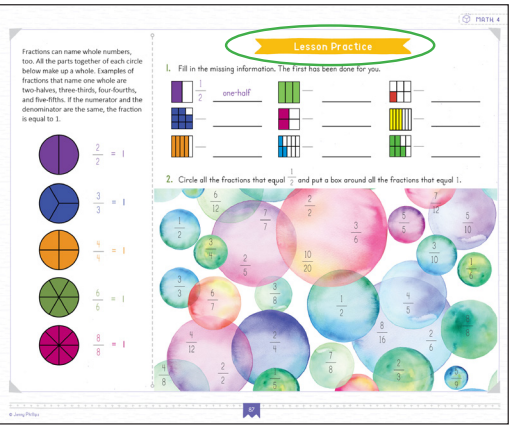
Review: Daily review of topics from previous lessons, including daily review of multiplication facts.

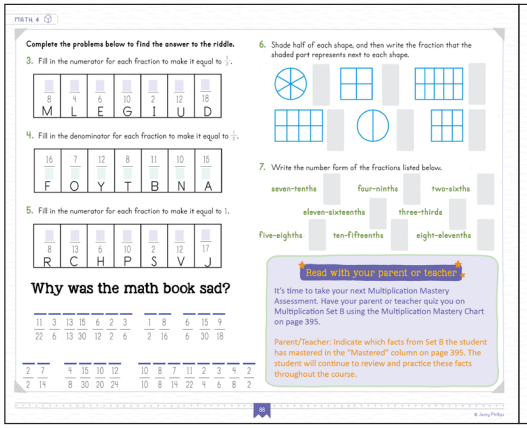
A Reference Guide is included at the end of the course book.

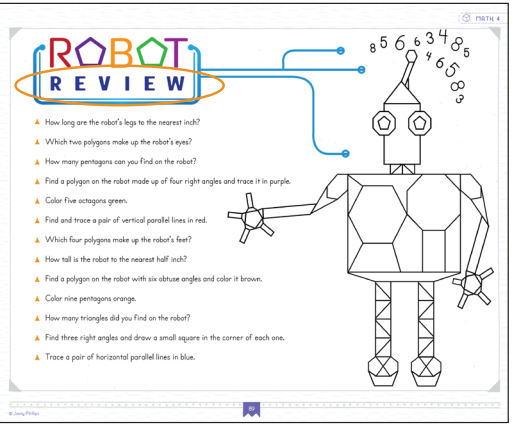
Getting Started

Simply open the course book. Students may choose to watch the video lesson or to read just the mini lesson. Please note that videos may contain material not included in the written mini lesson. After completing the video and/or mini lesson, the student should complete the lesson practice and review sections. Parents/teachers should grade their child's work daily and provide immediate help and feedback. Students who struggle with the lesson practice should be encouraged to review the mini lesson or the video for help.

Students should complete one section in their *Math 4 Mental Math Map Mysteries* book each time they complete a math lesson.







Frequently Asked Questions

How many lessons should my student do each week?

- There are 120 lessons in the course. If your student completes four lessons per week, he or she will complete the course in a standard school year with typical breaks for vacation or sickness.

How long do lessons take?

- The average time to complete a lesson is 35–45 minutes. This includes time to watch the video, complete the practice and review sections, and practice multiplication facts.

What if my child is too slow/fast?

- If your child takes longer than average but is understanding and retaining information, don't worry. You may want to break up the lessons. Complete the video and lesson practice at one time and the review section at another time.
- To avoid holes in his or her math foundation, we suggest not skipping entire levels if your child works more quickly than average but is learning new concepts. Consider having your child do multiple lessons a day to complete the course faster.
- If your child takes less time than average and seems to already know all the information, consider giving the Unit Assessments to see if he or she can skip any units or move on to the next course. Remember, the first few lessons of the course are review from Math 3, and it's expected that most students will know the information already.

What if my child cannot remember concepts?

- In the back of the course book is a reference guide. This page may be useful for your student to refer to as he or she is completing difficult concepts that require memorizing information such as conversions, volume, perimeter, area, long division, etc.

Does my student have to watch the videos?

- The videos contain the bulk of the teaching and are highly recommended. However, if your student feels confident in the topic being taught, he or she can skip the video and read the mini lesson instead. A student who struggles with the lesson practice should be encouraged to go back and watch the video.
- Some families prefer to have the parent/teacher teach the child using the mini lesson rather than have the child watch the video lesson independently.

Is Math 4 completed independently by the child?

- Yes, Math 4 is designed for your student to mostly complete independently, though at times children may need parent/teacher assistance to understand a concept. Parents/teachers will need to grade their child's work and should do so on a daily basis when possible, providing immediate feedback.

Is Math 4 a spiral or mastery program?

- Math 4 is mainly a spiral course, constantly reviewing concepts your student has learned to ensure understanding and retention of information.

What if there isn't room to complete the work?

- Students should always keep scratch paper on hand while completing the lessons. The *Simply Good and Beautiful Math Scratch Pad* is available for purchase.

Do you include any specific doctrine?

- No, the goal of our curriculum is not to teach doctrines specific to any particular Christian denomination but to teach general principles such as honesty, hard work, and kindness. All Bible references in our curriculum use the King James Version.

UNIT 1 OVERVIEW

LESSONS 1-30

Extra Supplies Needed

- ruler
- colored pencils or crayons

New Concepts Taught

- commutative property of multiplication
- compare numbers through hundred millions
- estimations (sums and differences)
- measurement to a quarter inch
- order numbers through hundred millions

Parent/Teacher Tips

The first several lessons in this unit review foundational concepts that students should have mastered in previous math levels. It is expected and appropriate that these lessons will be fairly easy for the child. These lessons may be finished in much less time than the lesson average.

Concepts Reviewed and Expanded Upon

- addition (three or more addends)
- addition/subtraction (multi-digit, money)
- angle classifications
- commutative property of addition
- conversion (units of length)
- division (arrays, equal groups)
- elapsed time beyond 1 hour
- expanded form through hundred millions
- fact families and inverse operations
- fractions and mixed numbers
- fractions equal to one-half and one
- geometric figures and polygons
- mental math (addition and subtraction)
- multiplication
- number patterns
- place value through billions
- round whole numbers to billions
- scales
- solving for unknowns
- subtraction across zeros
- time

Read with your parent or teacher

Multiplication Mastery in Math 4

Action Item

Get one or more of the resources in green to prepare for Lesson 5.

Why

Many topics taught in Math 4 depend on a solid understanding of multiplication facts. Multiplication is a core, foundational math topic. It can be very frustrating trying to master certain subjects, like those listed below, without first having your multiplication facts memorized.

- Area
- Fractions
- Factors
- Measurement Conversions
- Division
- Prime/Composite Numbers

In Math 4 you will practice all of your multiplication facts. Because they are easy to understand and master, the 1s, 2s, 10s, and 11s facts are not included in our multiplication practice resources (listed on the right), and they are not included in the mastery charts. However, they are practiced in lessons and reviews. In Units 1 and 2, you will work on mastering two sets of multiplication facts per unit.

How

If the student has not mastered all the multiplication facts, please provide him or her with one or more of the resources below. The course book will guide the student through the process of practicing, testing, mastering, and reviewing multiplication facts while using these resources.

Musical Multiplication

Available for purchase at goodandbeautiful.com.

Good and Beautiful Multiplication Flashcards

A PDF is available for free at goodandbeautiful.com. (Go to the Math 4 product page, and then click on "FAQs, Helps & Extras.") Physical copies are also available for flashcards.

Each of the resources in green in the right column above divides multiplication into four sets.

SET A: 3 × 3, 6 × 6, 5 × 3, 8 × 4, 8 × 8, 3 × 4, 5 × 5, 9 × 9, 6 × 4

SET B: 4 × 4, 4 × 5, 7 × 3, 7 × 4, 8 × 5, 8 × 7, 9 × 3, 9 × 4, 9 × 5

SET C: 5 × 6, 5 × 7, 6 × 3, 6 × 8, 7 × 6, 7 × 7, 7 × 9, 8 × 3, 9 × 6, 9 × 8

SET D: 12 × 3, 12 × 4, 12 × 5, 12 × 6, 12 × 7, 12 × 8, 12 × 9, 12 × 11, 12 × 12

When Each Set Should Be Mastered

You will practice and review all facts throughout the entire course.

SET A: Memorize before the end of Unit 1

SET B: Memorize before the end of Unit 1

SET C: Memorize before the end of Unit 2

SET D: Memorize before the end of Unit 2

You may be wondering why the times tables are not mastered together (such as all the 4s at one time). While skip counting is a great concept and one we teach, we have found that mixing up the times tables helps the child rely, not on skip counting, but on memorization, which is a faster process.

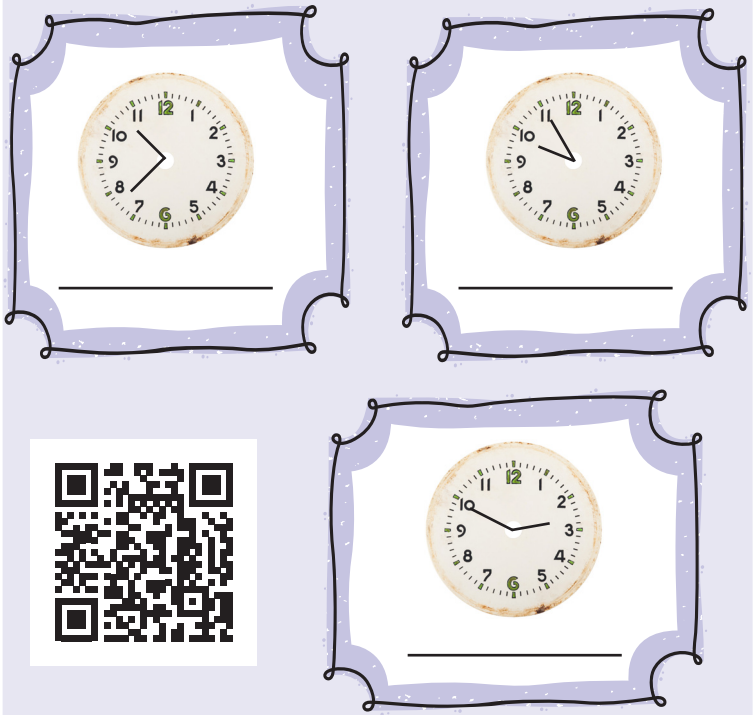
Lesson 13

RAYS AND ANGLES

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

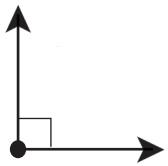
Scan the QR code or watch the video lesson on goodandbeautiful.com/Math4. The section below is used during the video.



Mini Lesson

A ***ray*** is a geometric figure that is part of a line that has one endpoint and continues on forever.

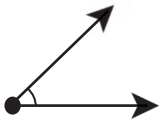
An ***angle*** is formed by two line segments or rays that have a common endpoint. We use degrees to measure an angle. A ***right angle*** is an angle that measures 90°, which creates a square corner.

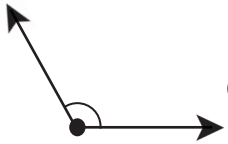


Right Angle
90°

An ***acute angle*** is an angle that measures less than 90°, and an ***obtuse angle*** is an angle that measures between 90° and 180°.

Acute Angle
less than
90°





Obtuse Angle
between 90°
and 180°

A ***straight angle*** is an angle that measures 180°.

Straight Angle
180°

Lesson Practice

1. Name each type of angle.

2. What type of angle is formed by the missing slices of pizza?

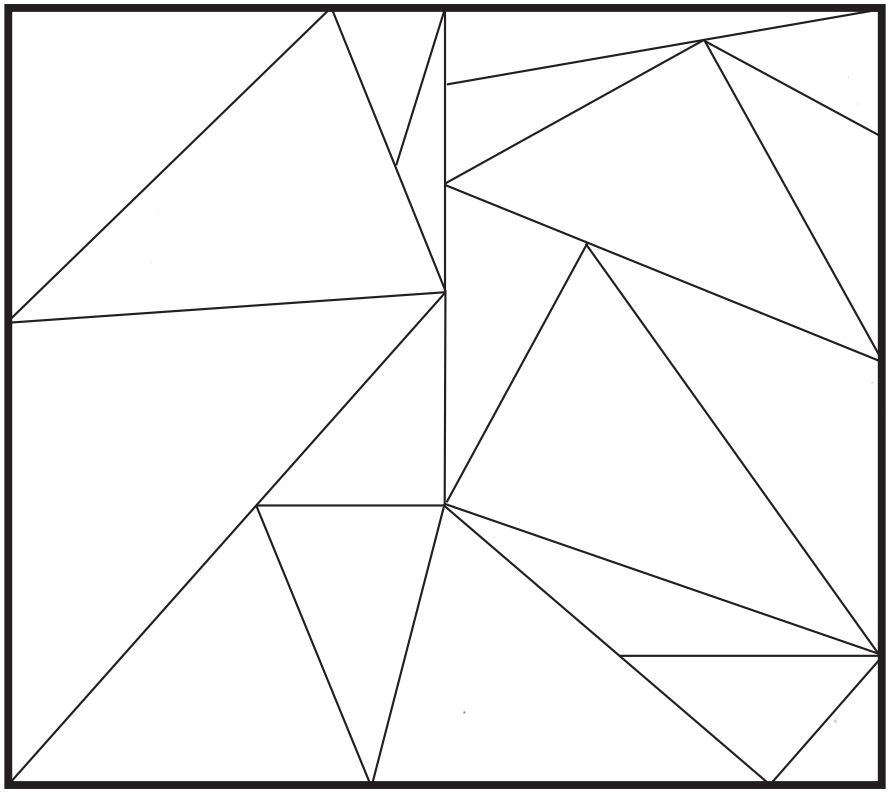
3. Below are the measurements for six different angles. Based on the measurement, determine which type of angle is being formed and draw a line to it. Angle names can be used more than once.

38°	acute
90°	
127°	obtuse
74°	
180°	right
169°	straight

Triangle Angles

Locate a triangle in the design. If the triangle has a right angle (90°), color it BLUE. If the triangle has an obtuse angle (between 90° and 180°), color it YELLOW. If the triangle has only acute angles (less than 90°), color it RED. Repeat for all the triangles.

Hint: An easy way to tell the type of angle is to use the corner of a piece of paper. If the corner fits into the angle perfectly, it's a right angle; if the angle is narrower than the corner, it's an acute angle; and if it's wider, it's an obtuse angle.



Review

1. Complete the following problems using mental math strategies.

14	28	64	51	72
+ 38	+ 43	+ 31	+ 45	+ 27

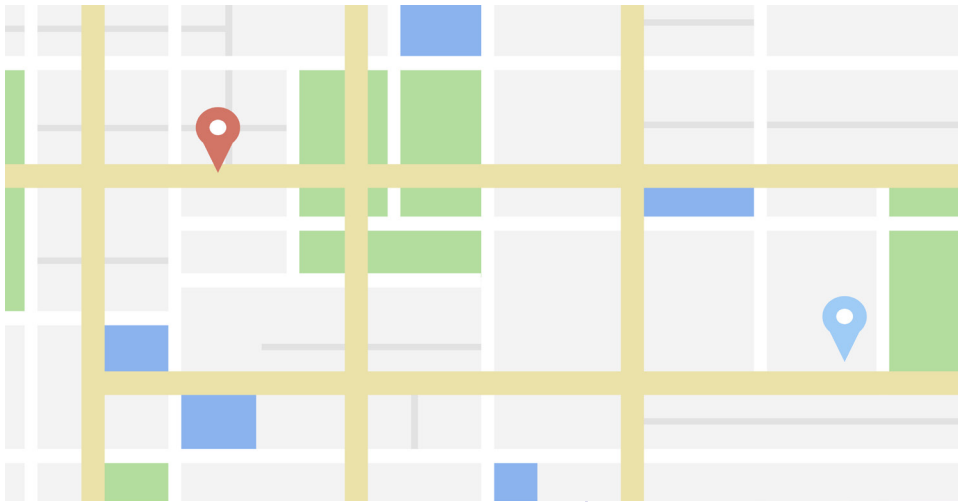
2. Circle the digit in the thousands place, and then write the number in expanded form.

54,267

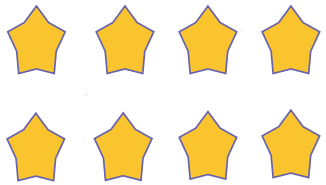
7,654

37,005

3. On the map below, trace a pair of horizontal parallel streets in red. Trace a pair of vertical parallel streets in yellow. Trace a pair of perpendicular streets in blue.



4. Write a division equation for this array.



5. Complete the problems.

609	472	872	342
- 371	- 274	- 531	- 81

Targeted Multiplication Fact Practice

Practice any problems you missed in your Set A quiz in Lesson 11. Then complete the problems in this section.

8	3	4	9	5	8	5
× 4	× 3	× 6	× 9	× 3	× 8	× 5

1	3	4	8	0	6	6
× 2	× 4	× 8	×10	× 0	× 6	× 4

Lesson 19

ADDING AND ROUNDING TO ANY PLACE VALUE

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math4. The section below is used during the video.

$$\begin{array}{r} 374,011,952 \\ +\ 56,731,541 \\ \hline \end{array}$$

6,438,734,169

Round to nearest billion.

Mini Lesson

Addition to Any Place Value

When adding large numbers, we follow the same steps we use when adding small numbers. To complete an addition problem, follow these steps:

1. Write the numbers vertically. Remember to line up the place values correctly.
2. Add the digits in each place value, starting with the ones place on the far right.
3. If the sum is a two-digit number, REGROUP. Write the digit in the ones place under the line. Write the digit in the tens place above the column immediately to the left.

$$\begin{array}{r} 562,901,872 \\ +\ 28,089,430 \\ \hline 2 \end{array} \rightarrow \begin{array}{r} 1 \\ 562,901,872 \\ +\ 28,089,430 \\ \hline 02 \end{array} \rightarrow \begin{array}{r} 1\ 1 \\ 562,901,872 \\ +\ 28,089,430 \\ \hline 302 \end{array} \rightarrow \begin{array}{r} 1\quad 11\ 1 \\ 562,901,872 \\ +\ 28,089,430 \\ \hline 590,991,302 \end{array}$$

Rounding to Any Place Value

Remember that rounding is replacing a number with a number close in value that is simpler to work with.

5 or greater, round up!

4 or less, round down!

When rounding to any place value, follow these steps:

1. Locate the digit in the place value you want to round to and underline it.
2. Circle the digit to the right.
3. Decide which rule the circled digit follows and change the underlined digit if necessary.
4. Replace the circled digit and all digits to the right with zeros.

The number below is shown rounded to different place values. The rounding strategy can be used to round a number to any place value.

Rounded to 1,576,379,471

the nearest 10,000	the nearest 100,000	the nearest 1,000,000	the nearest 10,000,000	the nearest 100,000,000	the nearest 1,000,000,000
1,576,380,000	1,576,400,000	1,576,000,000	1,580,000,000	1,600,000,000	2,000,000,000

Lesson Practice

1. Complete the addition problems.

487,675,012	8,241,765,132	219,518,264
+ 47,917,075	+ 684,179,542	+ 34,504,335

KOALA COUNTDOWN

PLATYPUS	381,957
ECHIDNA	307,165,195
DINGO	36,942
WOMBAT	23,671,498
KOOKABURRA	1,655,954,203
KANGAROO	49,827,590
KOALA	73,941

2. How many koalas and platypuses are there altogether? Show your work in the box to the right.

3. How many echidnas are there, rounded to the nearest million?

4. How many kookaburras are there, rounded to the nearest hundred million?

5. Which animal has a population of fifty million when rounded to the nearest ten million?

6. When added together, are there more kangaroos and dingoes or wombats and platypuses?

7. Using the chart, come up with your own addition problem and have your parent or teacher complete it.

Review

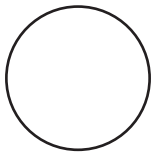
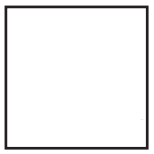
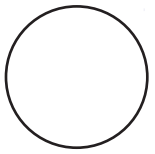
1. At 8:38 AM you started your math homework, and you finished at 10:45 AM. How long did it take you?

2. Once you finished your math homework, you started reading a book for history. You read until 12:05 PM. How long did you read?

3. Use mental math strategies to find the answers.

46 - 22 = 84 - 57 = 32 - 15 =

4. Divide and shade each shape to match the fraction listed.

$\frac{6}{8}$  $\frac{2}{5}$  $\frac{2}{2}$  $\frac{1}{4}$ 

5. Draw a line of symmetry through each polygon. Which polygons have more than one line of symmetry? _____

✧Multiplication Fact Practice✧

Practice Set B for 10 minutes.
Then complete the problems.

8 × 8	9 × 4	5 × 8	8 × 4	4 × 9	4 × 7	3 × 7	8 × 5	4 × 4	7 × 4
8 × 7	9 × 5	3 × 9	7 × 8	5 × 9	9 × 3	4 × 5	9 × 9	5 × 4	7 × 3

Lesson 23

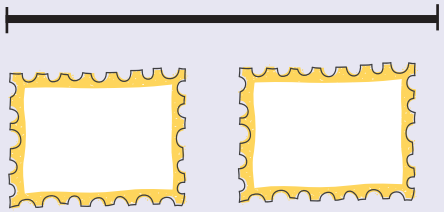
READING A RULER AND INCH SCALE

Supplies
12-inch ruler

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

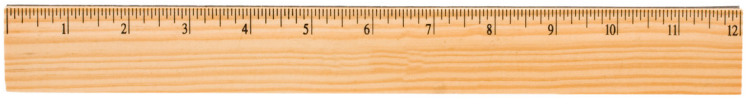
Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com /Math4. The section below is used during the video.



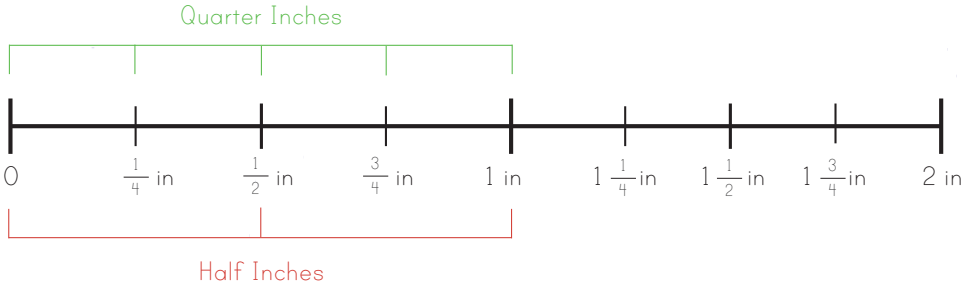
Mini Lesson

A scale is a number line that can be used for measuring. Many tools have scales, but in this lesson, we will focus on a scale used for measuring length: a ruler. Rulers in the US are usually 12 inches long. Twelve inches is equal to one foot. Inches and feet are two of the units of length in the US customary system.

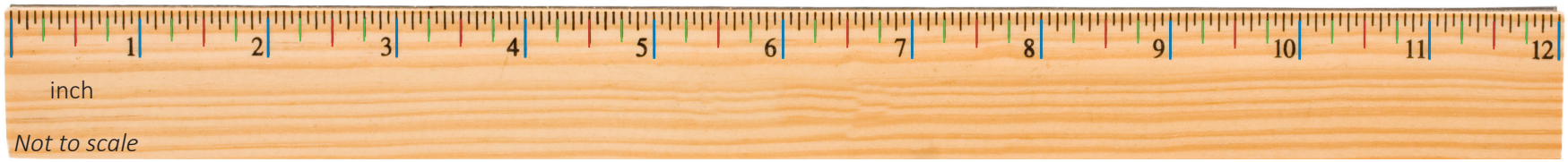


12 inches = 1 foot

To read this ruler, we must understand how to read an inch scale. Inch scales have tick marks showing each inch and fractions of an inch. These tick marks allow us to measure to the nearest inch, half inch, quarter inch, eighth inch, and sixteenth inch. At this level we will only measure to the nearest inch, half inch, and quarter inch. A half inch is $\frac{1}{2}$ of an inch, and a quarter inch is $\frac{1}{4}$ of an inch.



On the ruler below, each inch, starting at 0, is marked with a blue tick mark. Half inches are marked with a red tick mark. Each whole-inch tick mark is also a half-inch tick mark ($1 = \frac{2}{2}$); therefore, each blue tick mark also represents a half inch. Quarter inches are marked with a green tick mark. Each whole-inch tick mark and half-inch tick mark is also a quarter inch ($\frac{1}{2} = \frac{2}{4}$ and $1 = \frac{4}{4}$); therefore, each red tick mark and blue tick mark also represents a quarter inch. When reading measurements, we say the fraction part in the simplest way. For example, for each half-inch tick mark, we say one-half rather than two-fourths. We also say one instead of two-halves or four-fourths.



Not to scale

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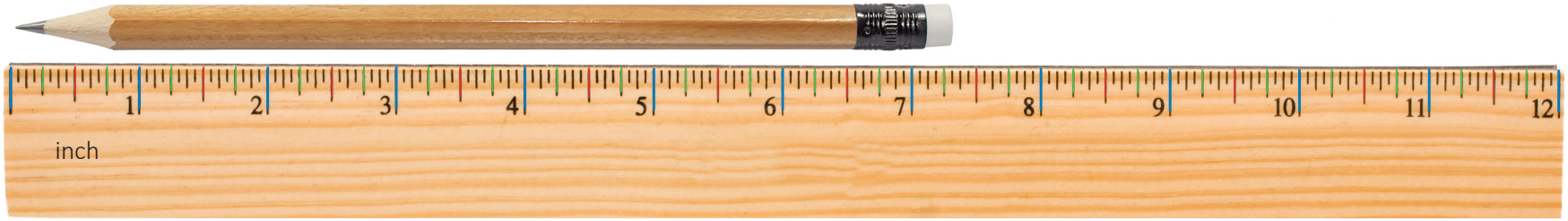


If we measure this pencil to the nearest **inch**, we look at the end of the pencil and determine which whole-inch tick mark is closest. The pencil is between 7 and 8 inches. It is closer to 7 inches because the end of the pencil is between 7 inches and $7\frac{1}{2}$ inches.

If we measure this pencil to the nearest **half inch**, we look at the end of the pencil and determine which half-inch tick mark is closest. This pencil is closer to the $7\frac{1}{2}$ inch mark because it is past the halfway point between 7 inches and $7\frac{1}{2}$ inches.

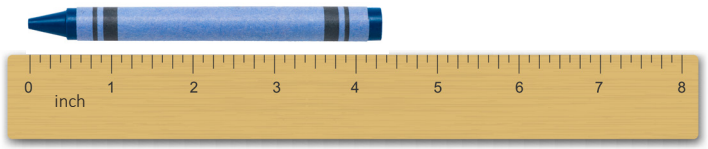
If we measure this pencil to the nearest **quarter inch**, we look at the end of the pencil and determine which quarter-inch tick mark is closest. This pencil is closest to $7\frac{1}{4}$ inches.

Measured to the nearest

Inch: 7 inches
Half inch: $7\frac{1}{2}$ inches
Quarter inch: $7\frac{1}{4}$ inches

Lesson Practice

1. On the ruler below, trace the inch lines in blue, the half-inch lines in red, and the quarter-inch lines in green.



2. Using the ruler above, measure the length of the crayon to the following units:

Nearest inch _____ Nearest half inch _____

3. Find an object in your house that measures between 5 and 9 inches. Show your parent or teacher and write the name of the object and its measurement.

4. A line segment is named by its two endpoints.

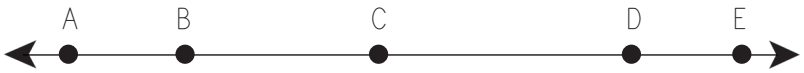
This is line segment AB or BA. We write it like this: $\overline{AB}$ or $\overline{BA}$.

What is the name of this line segment? _____

5. Using a 12-inch ruler, measure the following line segments on the line below to the nearest quarter inch.

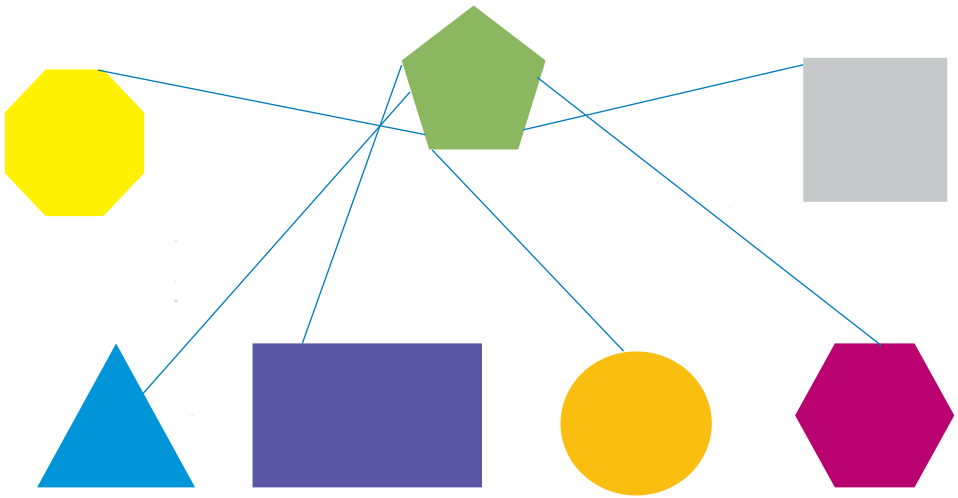
$\overline{AE}$ _____ Hint: Put the first line of your ruler on point A and measure the distance between point A and point E.

$\overline{BD}$ _____ $\overline{CE}$ _____ $\overline{AB}$ _____



6. Label the inch scale below with the missing half-inch and quarter-inch measurements.

7. Measure each line segment from the pentagon to the other shapes to the nearest quarter inch. Write the measurement on each line. Which shape is farthest away?



HOW TALL ARE YOU?

Today, you will try an interesting activity to estimate your height in inches. First, you will need to carefully trace your hand on the next page.

Use your ruler to measure your hand from the very bottom of your hand to the top of your middle finger, to the nearest inch.

To find out your approximate height, multiply the length of your hand by 10.

Hand = ____ inches × 10 = ____

Since we are rounding to the nearest inch, your height will be an estimate and not an exact measurement. Do you want to get an even closer estimate to your actual height? Try measuring your hand to the nearest half inch or quarter inch and multiplying it by 10. Use a calculator if you need help.

☑ Multiplication Fact Quiz ☑

Have your parent or teacher quiz you on the Set B multiplication facts below and circle any facts you missed. You will be doing targeted practice on these facts for the next few lessons.

4	4	7	7	8	8	9	9	9	5	4	3	5	5	4	3	7
× 4	× 5	× 3	× 4	× 5	× 7	× 3	× 4	× 5	× 4	× 9	× 7	× 8	× 9	× 7	× 9	× 8

All done! No review.

Trace Your Hand

Lesson 28

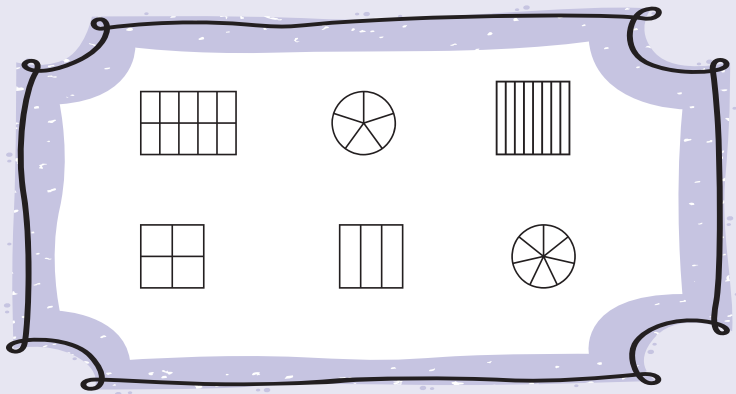
FRACTIONS EQUAL TO ONE-HALF OR ONE

Supplies
12-inch ruler

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math4. The section below is used during the video.



Mini Lesson

When naming a fraction in word form, we name the numerator (top number) first, write a hyphen, and then name the denominator (bottom number) as an ordinal number. Look at these examples of fractions and their word forms. Note that one-half is an exception to this rule.

 $\frac{1}{2}$ one-half

 $\frac{1}{4}$ one-fourth

 $\frac{7}{8}$ seven-eighths

 $\frac{1}{3}$ one-third

 $\frac{3}{5}$ three-fifths

 $\frac{1}{10}$ one-tenth

 $\frac{2}{3}$ two-thirds

 $\frac{5}{6}$ five-sixths

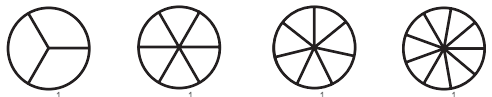
 $\frac{10}{10}$ ten-tenths

If the numerator of a fraction is half of the denominator, then the fraction is equal to $\frac{1}{2}$. In the fractions shown below, notice that the top number of each fraction is exactly half of the bottom number. Each fraction below is equal to $\frac{1}{2}$.

$\frac{1}{2}$ $\frac{2}{4}$ $\frac{3}{6}$ $\frac{4}{8}$ $\frac{5}{10}$

Fractions with an odd number in the denominator cannot be written as a fraction to equal one-half with a whole number in the numerator, because you get a mixed number when you divide an odd number in half. We don't normally write a mixed number as a numerator.

Quick Tip!

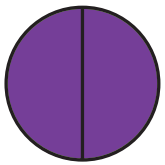


$1\frac{1}{2}$ $2\frac{1}{2}$ $3\frac{1}{2}$ $4\frac{1}{2}$

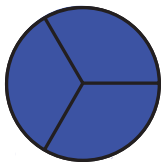
3 5 7 9

Continued on the next page ➔

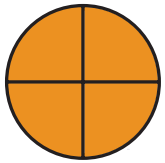
Fractions can name whole numbers, too. All the parts together of each circle below make up a whole. Examples of fractions that name one whole are two-halves, three-thirds, four-fourths, and five-fifths. If the numerator and the denominator are the same, the fraction is equal to 1.



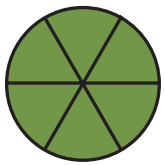
$\frac{2}{2} = 1$



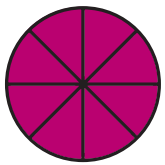
$\frac{3}{3} = 1$



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



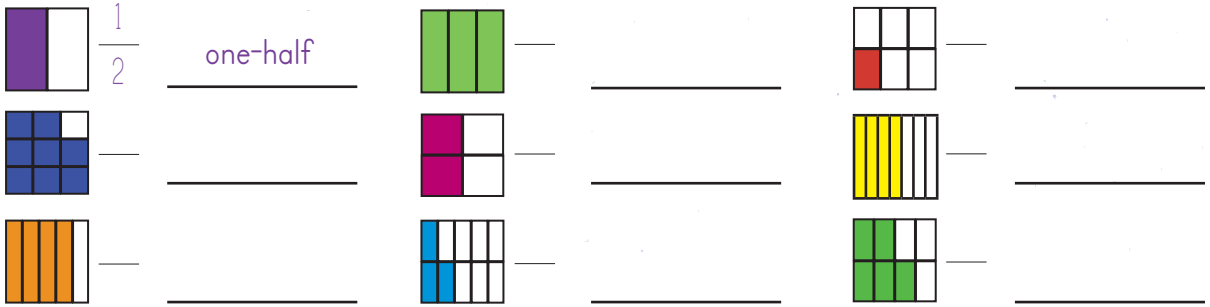
$\frac{6}{6} = 1$



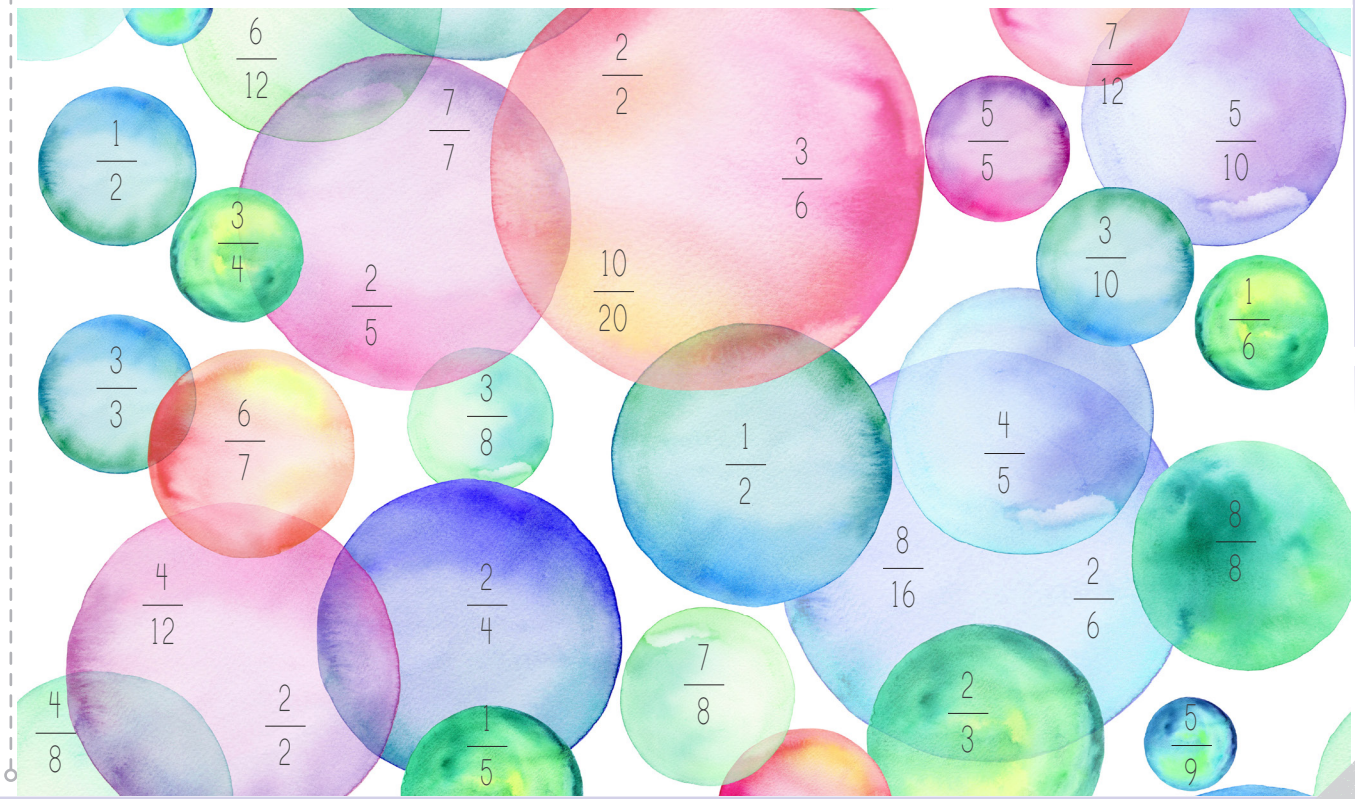
$\frac{8}{8} = 1$

Lesson Practice

1. Fill in the missing information. The first has been done for you.



2. Circle all the fractions that equal $\frac{1}{2}$ and put a box around all the fractions that equal 1.



Complete the problems below to find the answer to the riddle.

3. Fill in the numerator for each fraction to make it equal to $\frac{1}{2}$.

$\frac{\square}{8}$	$\frac{\square}{4}$	$\frac{\square}{6}$	$\frac{\square}{10}$	$\frac{\square}{2}$	$\frac{\square}{12}$	$\frac{\square}{18}$
M	L	E	G	I	U	D

4. Fill in the denominator for each fraction to make it equal to $\frac{1}{2}$.

$\frac{16}{\square}$	$\frac{7}{\square}$	$\frac{12}{\square}$	$\frac{8}{\square}$	$\frac{11}{\square}$	$\frac{10}{\square}$	$\frac{15}{\square}$
F	O	Y	T	B	N	A

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

$\frac{\square}{8}$	$\frac{\square}{13}$	$\frac{\square}{6}$	$\frac{\square}{10}$	$\frac{\square}{2}$	$\frac{\square}{12}$	$\frac{\square}{17}$
R	C	H	P	S	V	J

Why was the math book sad?

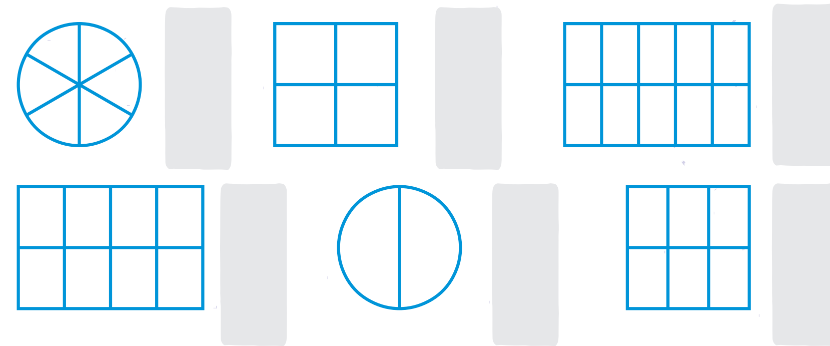
___ ___ ___ ___ ___ ___ ___   ___ ___   ___ ___ ___

$\frac{11}{22}$ $\frac{3}{6}$ $\frac{13}{13}$ $\frac{15}{30}$ $\frac{6}{12}$ $\frac{2}{2}$ $\frac{3}{6}$ $\frac{1}{2}$ $\frac{8}{16}$ $\frac{6}{6}$ $\frac{15}{30}$ $\frac{9}{18}$

___ ___   ___ ___ ___ ___   ___ ___ ___ ___ ___ ___ ___ ___

$\frac{2}{2}$ $\frac{7}{14}$ $\frac{4}{8}$ $\frac{15}{30}$ $\frac{10}{20}$ $\frac{12}{24}$ $\frac{10}{10}$ $\frac{8}{8}$ $\frac{7}{14}$ $\frac{11}{22}$ $\frac{2}{4}$ $\frac{3}{6}$ $\frac{4}{8}$ $\frac{2}{2}$

6. Shade half of each shape, and then write the fraction that the shaded part represents next to each shape.



7. Write the number form of the fractions listed below.

seven-tenths ___ four-ninths ___ two-sixths ___

eleven-sixteenths ___ three-thirds ___

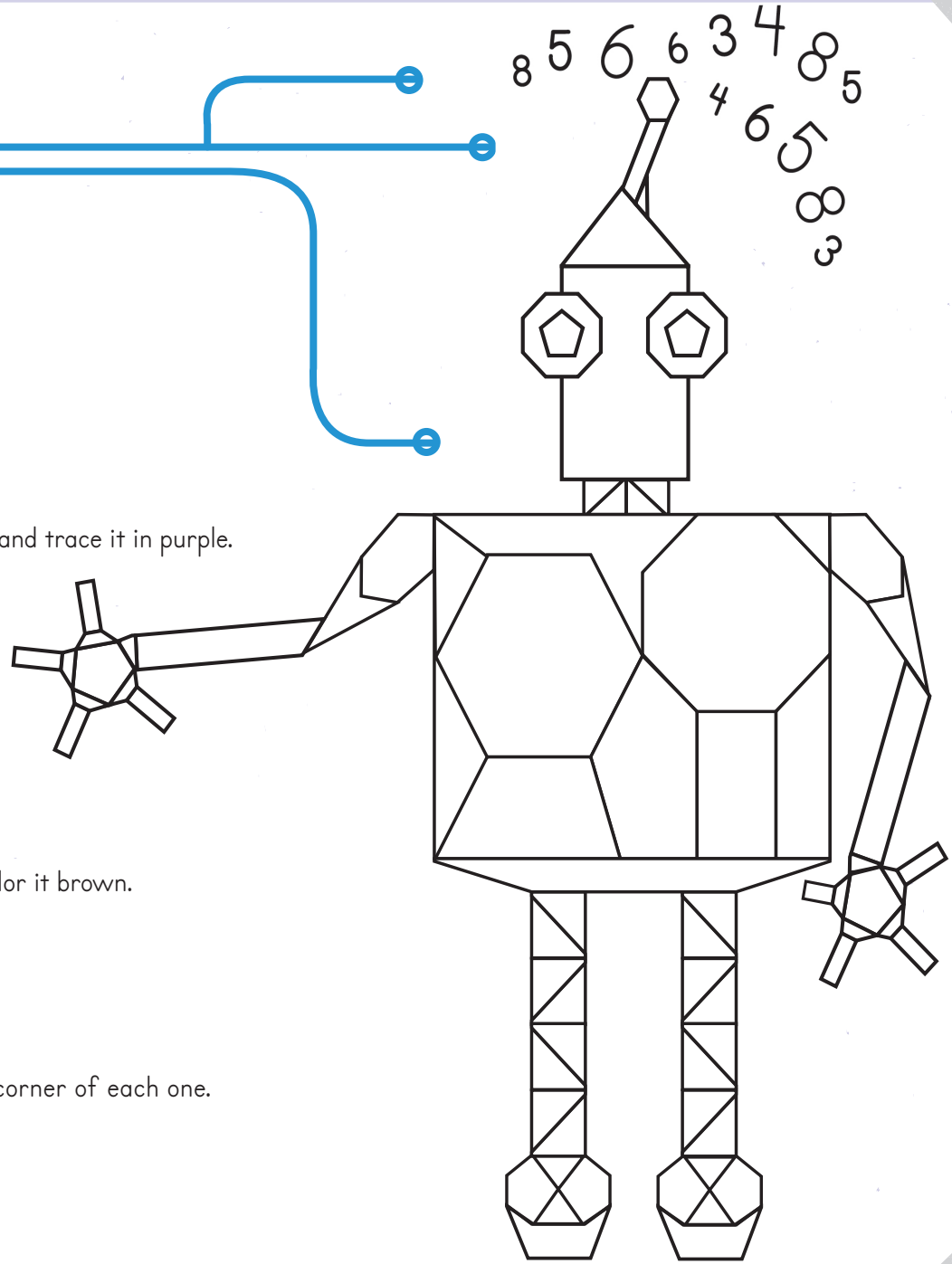
five-eighths ___ ten-fifteenths ___ eight-elevenths ___

Read with your parent or teacher

It's time to take your next Multiplication Mastery Assessment. Have your parent or teacher quiz you on Multiplication Set B using the Multiplication Mastery Chart on page 395.

Parent/Teacher: Indicate which facts from Set B the student has mastered in the "Mastered" column on page 395. The student will continue to review and practice these facts throughout the course.

ROBOT REVIEW



- How long are the robot's legs to the nearest inch?
- Which two polygons make up the robot's eyes?
- How many pentagons can you find on the robot?
- Find a polygon on the robot made up of four right angles and trace it in purple.
- Color five octagons green.
- Find and trace a pair of vertical parallel lines in red.
- Which four polygons make up the robot's feet?
- How tall is the robot to the nearest half inch?
- Find a polygon on the robot with six obtuse angles and color it brown.
- Color nine pentagons orange.
- How many triangles did you find on the robot?
- Find three right angles and draw a small square in the corner of each one.
- Trace a pair of horizontal parallel lines in blue.

LESSONS 29-30

UNIT ASSESSMENT

Supplies
12-inch ruler

Parent/Teacher

Read the following information aloud to the child: Unit assessments give you practice with the mathematical concepts learned in this course without having you overpractice concepts that you have mastered. These assessments also give you practice working on exercises for an extended period of time. This helps you to extend your 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 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. And finally, if you feel you are having trouble focusing, take a quick break to do something else, like ten jumping jacks. There are no videos for Lessons 29–30.

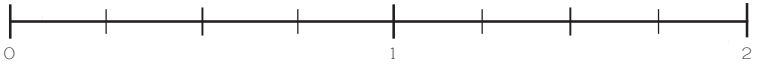
For Lesson 29 complete all the exercises with PURPLE headers ONLY. Your parent or teacher will correct the work. If you make one or more mistakes in a section, your parent or teacher will check the orange "Additional Practice" checkbox for that section.

For Lesson 30 complete all the orange sections **that are checked**. If you still miss multiple problems, go back and rewatch the video or reread the mini lesson for that topic. All the principles will be reviewed again in future units. If you have only a few or no orange sections to practice, you may move on to the next unit.

Student

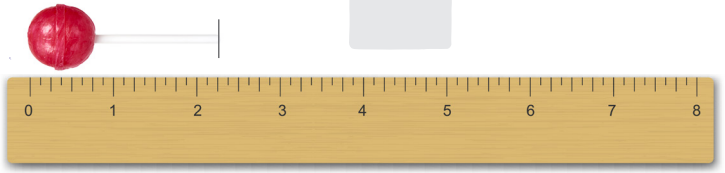
READING SCALES & MEASURING
(LESSON 23)

1. Label the inch scale below with the missing half-inch and quarter-inch measurements.



2. Measure this line segment to the nearest quarter inch.

3. How long is the lollipop?



Additional Practice

1. Draw a line segment that is $2\frac{3}{4}$ inches long.

2. Measure the following line segment to the nearest inch.

3. Find an object in your house that measures between 3 inches and 4 inches. Show it to your parent or teacher.

Additional Practice

Label each clock with the type of angle formed by its hands.






ELAPSED TIME
(LESSONS 18 & 25)

1. At 7:24 AM you started your math lesson. At 8:48 AM you finished the last problem. How long did the lesson take you to complete?

2. Next, you started working on your science project. You started at 9:12 AM, and it took 2 hours and 7 minutes to complete. What time did you finish your science project?

3. Mary and her family are driving from Kansas to Colorado. They leave at 7:35 AM and arrive at 11:23 AM. How long did the drive take?

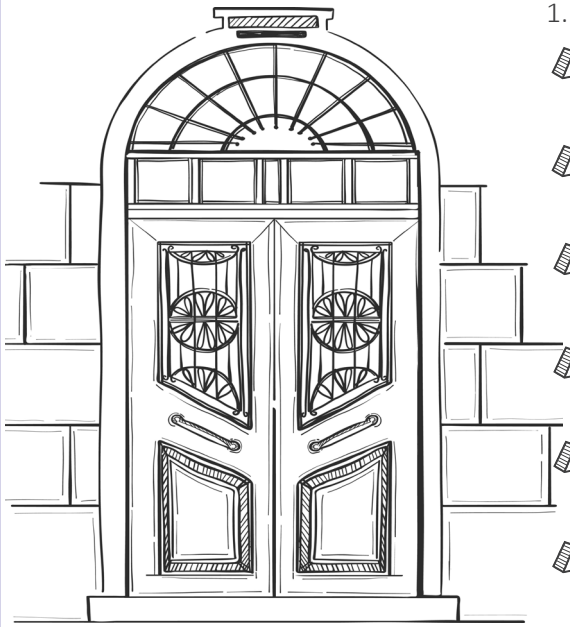
4. Takeshi ran in a race for a local charity. It took him 2 hours and 27 minutes to complete the race, and he finished at 4:38 PM. What time did the race start?

Additional Practice

Fill in the missing start and end times for each flight. Show your work on a separate piece of paper.

Destination	Start Time	Flight Duration	End Time
Hamburg, Germany	8:31 AM	3 hours 13 minutes	
Vancouver, Canada		7 hours 39 minutes	10:15 PM
Nairobi, Kenya		2 hours 52 minutes	4:42 PM
Nong Kai, Thailand	1:47 AM	8 hours 24 minutes	
Buenos Aires, Argentina		2 hours 42 minutes	8:39 PM

GEOMETRIC FIGURES & POLYGONS (LESSONS 10 & 14)



1. Follow the directions.

- Trace a horizontal line segment in green.
- Trace a vertical line segment in red.
- Trace an oblique line segment in blue.
- Trace a pair of perpendicular line segments in yellow.
- Trace a pair of parallel line segments in orange.
- Trace a pair of intersecting line segments in purple.

2. Answer the questions by writing the names of the polygons shown above.

Which polygon has right angles? _____

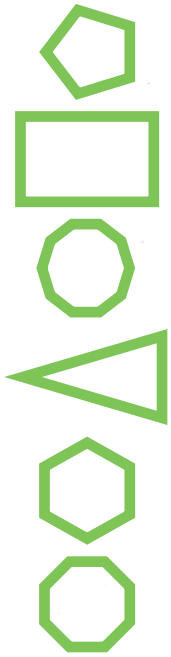
Which polygon has only acute angles? _____

Which polygon has four sets of parallel lines? _____

Which polygons are left? _____

Additional Practice

1. Draw a line from each polygon to its name.



Triangle

Octagon

Pentagon

Hexagon

Quadrilateral

Decagon

2. Use the clues to identify the mystery letter.

A M F L G X Z O H J T

I have no oblique line segments.

I have only straight line segments.

I have a set of parallel line segments.

I have a set of perpendicular line segments.

I have two horizontal line segments and one vertical line segment.

Which letter am I?

UNIT 2 OVERVIEW

LESSONS 31-60

Extra Supplies Needed

- ruler
- measuring cups and large bowl
- colored pencils or crayons

New Concepts Taught

- add/subtract fractions (uncommon denominators)
- associative property of addition
- associative property of multiplication
- convert improper fractions to mixed numbers
- divisibility rules for 2, 5, and 10
- exponents
- long division (one-digit divisors)
- order of operations
- perfect squares to 144
- prime and composite numbers
- triangle classification by angles

Concepts Reviewed and Expanded Upon

- compare fractions
- conversion (units of volume)
- equivalent fractions
- fractions of a set
- graphs (pictographs, bar graphs, and line graphs)
- lines of symmetry
- missing factors
- multiples and factors
- multiplication by 100, 1,000, and 10,000
- perimeter and area (rectangles, squares, and triangles)
- problem solving with multiple steps
- reflectional symmetry
- rotational symmetry
- similar and congruent shapes
- temperature
- triangle classifications by sides

Parent/Teacher Tips

As students learn more advanced concepts, they may want to refer to the Reference Guide on page 394, especially when completing the Review sections. The Reference Guide has visuals and guides to help students practice and memorize certain concepts.

Lesson 40

ORDER OF OPERATIONS

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math4.

$4 \times (2 + 5)$ — do first

$15 - 3^2$ — do first

$24 \div (3 + 1) - 2^2 =$

Mini Lesson

The ***order of operations*** is a set of rules that states the order in which to perform mathematical operations. The correct order is shown here. To help remember the correct order, we can use this phrase below:

1. Parentheses
2. Exponents
3. Multiply and Divide (from left to right)
4. Add and Subtract (from left to right)

The first letter of each word represents a step in the order of operations. The letter "P" is for parentheses, and "E" stands for exponents. "M" and "D" are for multiplication and division, and "A" and "S" mean addition and subtraction.

When simplifying a problem, we start with operations inside parentheses. In the purple box, 2 + 5 is inside the parentheses and is done first. The sum is 7.

Next, we look for any exponents. Exponents tell us how many times a number is multiplied by itself. The number 3^2 is 3 × 3, which is 9.

Then we look for multiplication and division. We multiply and divide from left to right. Whichever operation appears first in the problem is done first. The multiplication fact 7 × 9 is 63.

Finally, we add and subtract, again moving from left to right. The subtraction problem 63 – 3 is 60. After following the order of operations, we find the problem $(2 + 5) \times 3^2 - 3$ simplifies to 60.

$(2 + 5) \times 3^2 - 3$ — Parentheses

$7 \times 3^2 - 3$ — Exponents

$7 \times 9 - 3$ — Multiply and Divide

$63 - 3$ — Add and Subtract

60

If we are simplifying a problem that does not have parentheses, we move to the next step. Think of it as a checklist. If a step is not found in the problem, cross it off and move to the next step.

Lesson Practice

Snowing SOLUTIONS

1. Mathematical operations must be performed in a certain order. Write the following operations in the correct order in the box below.

ADD & SUBTRACT PARENTHESES MULTIPLY & DIVIDE EXPONENTS

1.
2.
3.
4.

2. If one operation is not present in a problem, skip it and go to the next operation. In the problem $3 + 4 \times 7$, there are no parentheses or exponents, so you would skip those steps and go to the next. Multiplication is the first step in this example. For each problem below, write which step you would complete first using the order of operations.

$(4 + 2) \times 4^2 - 1 =$

$4 - 2 + 1 =$

$4 + 2 \times 4^2 - 1 =$

$4 + 2 \times 3 - 1 =$

3. Write the phrase that can help you remember the order of operations.

P _____ E _____ M __

D ____ A _____ S _____

4. Complete each problem using the order of operations. Use scratch paper if you need more room. Remember, if you have both multiplication and division or addition and subtraction in the same problem, you work from left to right.

$10 - 4 + (5 \times 5) =$

$20 - (8 \times 2) =$

$(3 + 5) \div 2 =$

$5 \times (6 - 3) + 7 =$

$4^2 + (15 \div 3) =$

$6 \times 4 + 5 - 10 =$

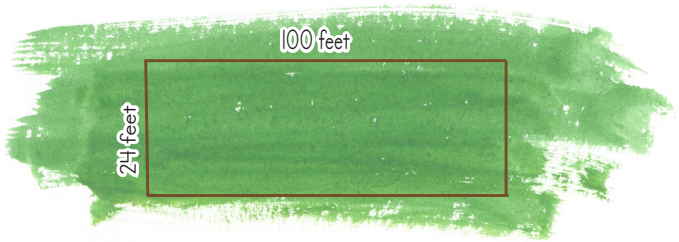
$12 - (3 \times 2) + 2^2 =$

$2^2 \div 2 + (4 \times 1) =$

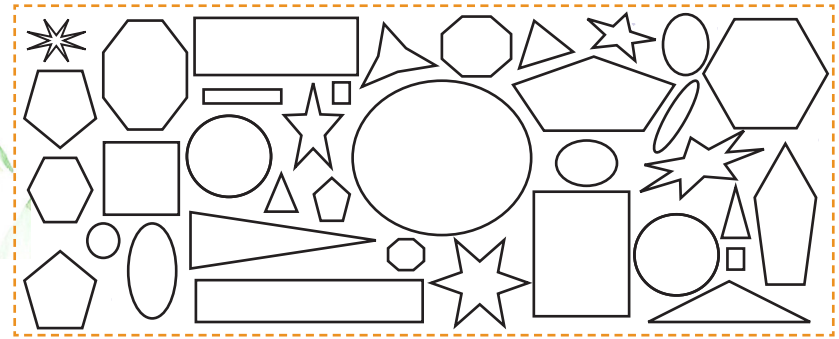
Review

1. Luis' family has a llama farm in the mountains of Peru. They bought five new llamas and are building a corral for them. Using the diagram, find how many feet of fencing they will need to build the new corral.

2. Luis knows that they need at least 2,000 sq ft of grass for the five new llamas. Is the new corral big enough? What is the area of the new corral?



3. Find the congruent shapes and color each set the same color.

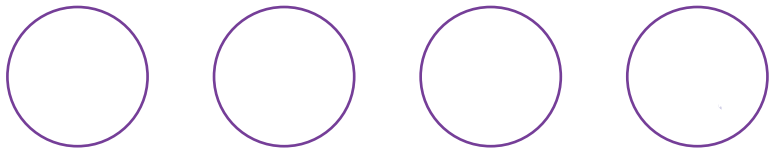


Read with your parent or teacher

It's time to take your next Multiplication Mastery Assessment. Have your parent or teacher quiz you on Multiplication Set C, using the Multiplication Mastery Chart on page 395.

Parent/Teacher: Indicate which facts from Set C the student has mastered in the "Mastered" column on page 395. Your student will continue to review and practice these facts throughout the course.

4. Which fraction is the greatest? Divide and shade the shapes to find out. Circle the greatest fraction.



$\frac{3}{4}$ $\frac{2}{3}$ $\frac{5}{6}$ $\frac{1}{2}$

Lesson 57

TWO-STEP STORY PROBLEMS

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math4.

Logan was 7 years old yesterday. If today is his birthday, how old is he now?

Sam is 6 years younger than Logan. Eli is twice Sam's age. If Logan is 8 years old, how old is Eli?

Logan's age:

Sam's age:

Eli's age:

Mini Lesson

A story problem uses a story to ask a question that you can complete using mathematical operations, such as addition, subtraction, multiplication, and division.

Story Problem	Math
Max is 13 years old. His sister, Maggie, is 5 years younger. How old is Maggie?	13 - 5 = 8 Maggie is 8 years old.

Not all story problems have only one step. Some problems require two steps or more to find the answer. The following example has two parts, and both must be done to get the final answer.

Story Problem	Procedure
Max is 13 years old. His sister, Maggie, is 5 years younger. Their older brother, Jack, is 2 times Maggie's age. How old is Jack?	First, underline the question. Next, circle important information in the story problem.

In this problem we know the age of one child and must use two operations to find the ages of the other children.

First, we know Max is 13. Maggie is 5 years younger than Max, so we subtract 5 from 13 to find Maggie's age.

13 - 5 = 8
Maggie is 8 years old.

Now that we know how old Maggie is, we can find how old Jack is. Jack is 2 times Maggie's age, so we multiply 8 by 2.

8 × 2 = 16
Jack is 16 years old.

The question in this two-step story problem is "How old is Jack?" We now know Jack is 16 years old.

STEP RIGHT UP Guess My Name STEP RIGHT UP

Welcome to the carnival! You are the guesser for a game called "Guess My Name." You already know the ages of all the children shown above, and you have to guess each child's name. Solve the story problems presented by each mystery child below. When you find how old a child is, write the name above the correct child.

Sam turned 8 years old 2 years ago. If his birthday was yesterday, how old is Sam today?

Sam's age

□ □ □ = □

Kirk is 5 years younger than Sam. Miguel is 2 years older than Kirk. How old are Miguel and Kirk?

Kirk's age

□ □ □ = □

Miguel's age

□ □ □ = □

Scott is 1 year older than Miguel. Lena is half the age of Scott. How old are Scott and Lena?

Scott's age

□ □ □ = □

Lena's age

□ □ □ = □

Sarah is 1 year younger than Lena. Rosie is 3 times as old as Sarah. How old are Sarah and Rosie?

Sarah's age

□ □ □ = □

Rosie's age

□ □ □ = □

Challenge Problem

Nathan's little sister, Denise, is 3 years younger than he is. His brother, Robert, is 3 times as old as Denise.

If Robert is 12 years old, is Nathan 6, 7, or 8 years old?

How old is Denise?

Review

1. Find the perfect squares.

$4^2 =$ $3^2 =$ $6^2 =$

2. Convert each problem from factored form to exponent form.

$4 \times 4 =$ ☐

$3 \times 3 \times 3 \times 3 =$ ☐

$7 \times 7 \times 7 \times 7 \times 7 =$ ☐

$6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6 =$ ☐

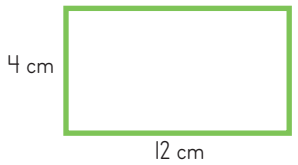
3. Complete each problem.

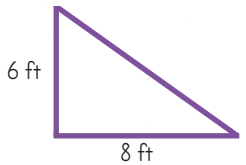
$3\overline{)423}$ $6\overline{)966}$ $8\overline{)328}$

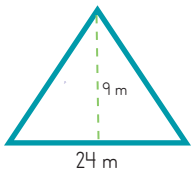
$5\overline{)215}$ $7\overline{)266}$ $4\overline{)252}$

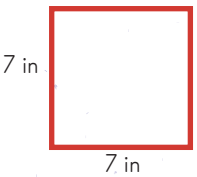
See the Reference Guide on page 394.

4. Find the area of each shape. Hint: Find the area of a triangle by multiplying the base by the height and dividing by 2.









☐ ☐ ☐ ☐

5. Add or subtract the fractions below.

$\frac{8}{12} + \frac{3}{12} = \frac{\quad}{\quad}$ $\frac{7}{8} - \frac{3}{8} = \frac{\quad}{\quad}$ $\frac{5}{6} + \frac{1}{6} = \frac{\quad}{\quad}$

Read with your parent or teacher

It's time to take your next Multiplication Mastery Assessment. Have your parent or teacher quiz you on Multiplication Set D using the Multiplication Mastery Chart on page 395.

Parent/Teacher: Indicate which facts from Set D your student has mastered in the "Mastered" column on page 395.

Students will continue to practice all of their multiplication facts throughout Unit 3, but will not be prompted to practice the sets daily. If your student has not passed off all the facts, continue to work with him or her to pass them off. In Unit 4 you will be prompted to review the sets using the Multiplication Mastery Chart.

UNIT 3 OVERVIEW

LESSONS 61–90

Extra Supplies Needed

- 1 standard dice
- colored pencils or crayons

New Concepts Taught

- add/subtract decimals to the thousandths place
- change mixed numbers to improper fractions
- circles (center, radius, and diameter)
- distributive property
- find mixed numbers using long division
- geometric transformations
- long division (with remainders)
- long division (zero in the quotient)
- measuring turns
- multiplication (two-digit by two-digit)
- perimeter and area (irregular shapes)
- reducing fractions to simplest form
- tessellations (regular and semi-regular)
- volume of cubes
- volume of rectangular prisms

Concepts Reviewed and Expanded Upon

- conversion (units of length)
- geometric solids
- multiplication (multiples of 100, 1,000, and 10,000)
- naming geometric figures
- patterns
- quadrilateral classification
- Roman numerals

Parent/Teacher Tips

Students will complete multiplication facts in every lesson in Unit 3; however, they will not be prompted to practice the multiplication Sets A–D anymore. Memorizing these facts is vital. If the child is still struggling, consider continuing daily practice using *Musical Multiplication* or another method.

Lesson 67

REDUCING FRACTIONS

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful .com/Math4.

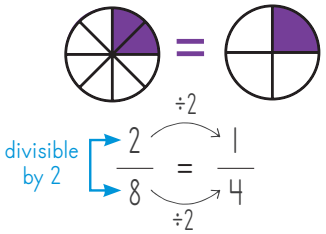
$\frac{6}{12}$ $\frac{4}{16}$

Mini Lesson

When working with fractions, it is best practice to reduce a fraction to lowest terms, also known as simplest form. The terms of a fraction are its numerator and denominator.

The terms for $\frac{1}{2}$ are 1 and 2.

Both the numerator and denominator are even and are therefore divisible by 2. Two is a common factor of 2 and 8, so divide both the numerator and denominator by 2.



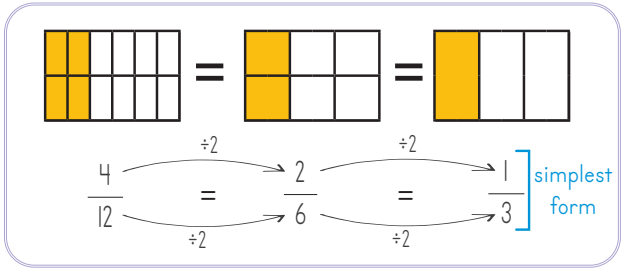
When reducing a fraction, change it to an equivalent fraction with smaller terms. A fraction can be reduced only if the numerator and denominator can be divided by a common factor other than 1.

When both the numerator and the denominator are divided by the same number, the terms of the fraction decrease, but the value stays the same. The fractions $\frac{2}{8}$ and $\frac{1}{4}$ are equivalent fractions.

Sometimes after reducing a fraction, the fraction is still not in simplest form.

To reduce a fraction to simplest form, continue dividing the numerator and denominator by common factors until they can only be divided by 1.

A fraction is reduced to its lowest terms when the numerator and denominator can only be divided by the common factor of 1.



Not all fractions can be reduced. The fractions below cannot be reduced because the only number that divides evenly into both the numerator and denominator is 1. They are already written in lowest terms.

$\frac{4}{5}$ $\frac{2}{7}$ $\frac{8}{11}$ $\frac{5}{9}$

Lesson Practice

1. Circle the fractions in the balloons below that are already in simplest form and cannot be reduced.

2. Draw a line from the fraction on the top row to its simplest form on the bottom row.

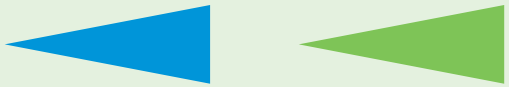
2/4	5/15	6/9	4/16	6/8	5/25
1/3	1/4	1/5	1/2	2/3	3/4

3. Write each fraction in simplest form. Remember, you may need to divide the fraction more than once to reduce it to simplest form.

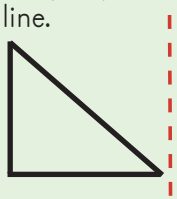
4/6	3/9	8/16
6/10	5/20	8/24
7/21	8/12	12/30

1. Eli is ice-skating. He skates south for a while and then turns 90 degrees in a clockwise direction and continues skating. Which direction is he going now?

2. Which geometric transformation (translation, rotation, or reflection) needs to happen to move the blue triangle directly on top of the green triangle?



3. Draw a geometric transformation of this shape by reflecting it across the red line.



4. What is the most specific name of a quadrilateral that is both a rhombus (has 4 equal sides) and a rectangle (has 4 right angles)?

Review

5. Complete each problem. Use scratch paper if necessary.

$6\overline{)354}$ $3\overline{)258}$ $9\overline{)315}$ $4\overline{)248}$

$7 \times 40{,}000 =$

$5 \times 5{,}000 =$

$8 \times 400 =$

$12 \times 60 =$

$12 \times 70 =$

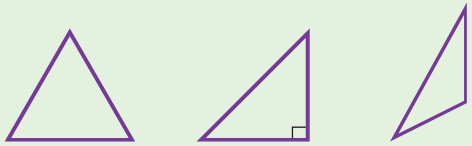
$12 \times 30 =$

$\frac{7}{12} + \frac{1}{4} =$ ___ $\frac{11}{18} - \frac{2}{6} =$ ___

6. Circle each type of quadrilateral that applies.

Parallelogram	Parallelogram	Parallelogram
Trapezoid	Trapezoid	Trapezoid
Rectangle	Rectangle	Rectangle
Rhombus	Rhombus	Rhombus
Square	Square	Square

7. Label each triangle below as right, acute, or obtuse. Remember, a right triangle has a right angle, an obtuse triangle has an obtuse angle, and an acute triangle has three acute angles.



___ ___ ___

8. Estimate the answer by rounding to the nearest ten thousand. Then complete the problem to see how close your estimate is.

$$\begin{array}{r} 158{,}354 \\ +\ 22{,}351 \\ \hline \end{array}$$

9. Pablo is 14 years old. His brother Luca is half of Pablo's age. His sister Ella is three times Luca's age. How old are Ella and Luca?

3 × 9	7 × 8	11 × 4	4 × 9	7 × 12	9 × 7	11 × 12	6 × 7	8 × 12	5 × 9	6 × 12	3 × 8	6 × 9	9 × 12	8 × 9

Lesson 76

DECIMALS AND FRACTIONS

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math4.

$\frac{9}{10}$ = ___.___ $2\frac{7}{100}$ = ___.___ ___

52.98

_____

five hundred forty and two hundred fifty-nine thousandths

_____

Mini Lesson

Both fractions and decimal numbers are used to show fractional parts of a whole. Consider the number three-tenths. As a fraction this number is written with a numerator and denominator. When writing three-tenths as a decimal number, we write only the numerator. The denominator of the fraction is shown by the place value of the last digit after the decimal point.

$\frac{3}{10} = 0.3$ (tenths → tenths place)

$\frac{45}{100} = 0.45$ (hundredths → hundredths place)

$\frac{751}{1{,}000} = 0.751$ (thousandths → thousandths place)

To read a decimal number in word form, first say the whole number. Next, say "AND" for the decimal point. Finally, say the digits to the right of the decimal point as a whole number and the place value of the last digit.

5.2	43.21	12.354
five and two tenths	forty-three and twenty-one hundredths	twelve and three hundred fifty-four thousandths

Sometimes a zero is needed as a placeholder. For example, consider the fraction below.

$\frac{9}{100} = 0.09$ (hundredths → hundredths place)

The denominator of 100 means that the 9 in the numerator must be written in the hundredths place. However, the tenths place cannot be empty. A zero is written in the tenths place so the 9 is in the hundredths place.

$\frac{5}{10} = 0.5$

Zero is also used as a placeholder when there is no whole number with the fractional part of a decimal number. The number five-tenths is written with a zero before the decimal point because there is no whole number in this decimal number. Always write a zero before the decimal point if there is no whole number.

Lesson Practice

1. Read each decimal number aloud to your parent or teacher.

32.5 7.86 14.247 0.2 123.14 0.54 4.7 0.674

2. Circle the correct word form for each decimal number.

4.05

a) four and five tenths
b) four and five hundredths
c) four and five thousandths

72.9

a) seventy-two and nine hundredths
b) seventy-two and nine tenths
c) seventy-two and nine thousandths

13.169

a) thirteen and one six nine thousandths
b) thirteen and one hundred sixty-nine thousandths
c) one three and one hundred sixty-nine thousandths

3. Complete the chart.

	$7\frac{9}{10}$	7.9
fifty-seven and three hundredths		57.03
three hundred seven and eleven thousandths	$307\frac{11}{1,000}$	

4. Write each fraction as a decimal number.

$\frac{6}{10}$ $\frac{4}{100}$ $\frac{22}{100}$

$\frac{3}{1,000}$ $\frac{9}{10}$ $\frac{4}{10}$

$\frac{43}{100}$ $\frac{364}{1,000}$ $\frac{587}{1,000}$

5. Write each decimal number using digits.

a) four and three tenths

b) twenty-two and thirty-seven hundredths

c) six and one hundred eighteen thousandths

d) eighty-three hundredths

Review

1. Match the Roman numerals to the numbers.

XIV	20
LI	17
XX	51
C	14
XVII	100

2. Write the measurement of each diameter.

Diameter =

Diameter =

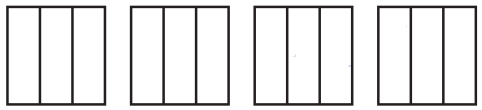
3. Follow the instructions to write the number.

a) Write a 6 in the hundredths place.
b) Write a 1 in the ones place.
c) Write an 8 in the thousandths place.
d) Write a 3 in the tenths place.
e) Write a 4 in the tens place.
f) Write a 9 in the hundreds place.

___ ___ ___ . ___ ___ ___

4. Shade the shapes to represent each mixed number. Then use the shaded shapes to write the improper fraction.

$2\frac{3}{4}$  ___

$3\frac{1}{3}$  ___

5. Add the fractions by creating fractions with common denominators.

$\frac{2}{4} + \frac{4}{8} =$ ___ $\frac{4}{12} + \frac{1}{3} =$ ___ $\frac{4}{10} + \frac{1}{5} =$ ___

6. Reduce all three answers in Problem 5 above to their simplest forms.

7. Complete the problem using the order of operations.
Hint: Please Excuse My Dear Aunt Sally.

$27 - 3 \times 2^2 + (15 - 5) =$

8. Complete each problem. Use scratch paper if necessary.

$3\overline{)1{,}872}$ $6\overline{)486}$ $7\overline{)406}$

6 × 6	4 × 5	5 × 7	12 × 4
7 × 8	6 × 7	12 × 9	5 × 6
5 × 3	8 × 4	9 × 3	12 × 5
3 × 9	9 × 7	7 × 12	4 × 4

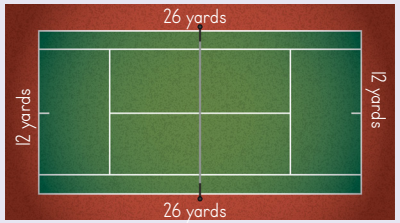
Lesson 78

DISTRIBUTIVE PROPERTY

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math4.



$2 \times (\underset{\text{length}}{\_\_\_\_} + \underset{\text{width}}{\_\_\_\_}) =$

$(2 \times \underset{\text{length}}{\_\_\_\_}) + (2 \times \underset{\text{width}}{\_\_\_\_}) =$

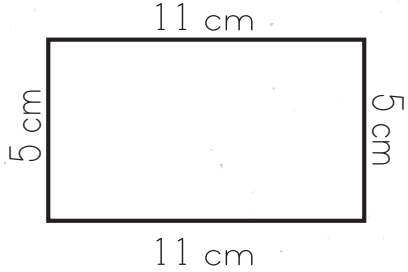
$4 \times (12 + 8) =$

$(\_\_\_ \times \_\_\_) + (\_\_\_ \times \_\_\_) =$

$\_\_\_\_ + \_\_\_\_ =$

Mini Lesson

The perimeter of a rectangle can be found by adding the lengths of all the sides. To find the perimeter of this rectangle, add 5 cm + 5 cm + 11 cm + 11 cm, which is 32 cm.



We can also find the perimeter by using both multiplication and addition.

One way is to add the length (L) and the width (W) together and then double that amount.

Perimeter = 2 × (L + W)
2 × (11 cm + 5 cm)
2 × (16 cm)
32 cm

Another way is to double the length (L) and double the width (W), and then add the products.

Perimeter = 2L + 2W
(2 × 11 cm) + (2 × 5 cm)
22 cm + 10 cm
32 cm

Either way the answer is still 32.

$$2 \times (11 + 5) = (2 \times 11) + (2 \times 5)$$

$$\Downarrow \qquad\qquad \Downarrow$$

$$32 \qquad\qquad 32$$

This illustrates an important property in mathematics called the distributive property. The ***distributive property*** states that multiplying by a sum is the same as multiplying by each value in the sum and combining the products.

In 2 × (L + W), the 2 is distributed to both the length and width using multiplication. First, 2 is multiplied by L. Then 2 is multiplied by W. Finally, the products are added because there is an addition sign in the parentheses.

$$2 \times (L + W) = (2 \times L) + (2 \times W)$$

$6 \times (5 + 3) = (6 \times 5) + (6 \times 3) = 48$

$4 \times (2 + 7) = (4 \times \_\_\_) + (4 \times \_\_\_) =$

$7 \times (5 + 5) = (\_\_\_ \times \_\_\_) + (\_\_\_ \times \_\_\_) =$

$3 \times (12 + 3) = (\_\_\_ \times \_\_\_) + (\_\_\_ \times \_\_\_) =$

$9 \times (4 + 8) = (\_\_\_ \times \_\_\_) + (\_\_\_ \times \_\_\_) =$

$5 \times (6 + 11) = (\_\_\_ \times \_\_\_) + (\_\_\_ \times \_\_\_) =$

$11 \times (4 + 4) = (\_\_\_ \times \_\_\_) + (\_\_\_ \times \_\_\_) =$

$4 \times (9 + 4) = (\_\_\_ \times \_\_\_) + (\_\_\_ \times \_\_\_) =$

$10 \times (7 + 2) = (\_\_\_ \times \_\_\_) + (\_\_\_ \times \_\_\_) =$

Lesson Practice

1. Use the distributive property to complete each problem on the soccer field. Use scratch paper if you need more room.

2. Find the perimeter of each playing field below by using the formula **P = 2 × (L + W).**

A) Ping Pong Table
Length: 9 ft
Width: 5 ft

B) Olympic Swimming Pool
Length: 50 m
Width: 25 m

C) Volleyball Court
Length: 59 ft
Width: 30 ft

D) Bowling Lane
Length: 60 ft
Width: 4 ft

E) Horseshoe Pit
Length: 43 in
Width: 31 in

F) Curling Court
Length: 146 ft
Width: 14 ft

7 × 7	4 × 6
4 × 12	7 × 9
6 × 8	3 × 5
6 × 9	4 × 8
11 × 12	5 × 4
5 × 9	9 × 12
8 × 9	6 × 5
3 × 12	10 × 4

Review

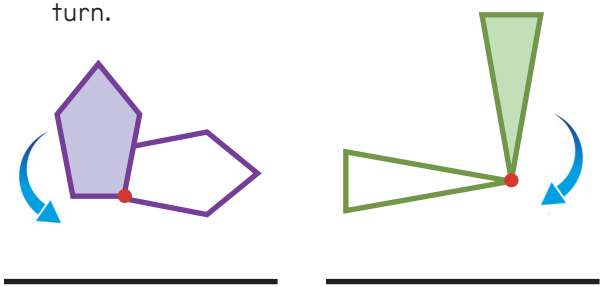
1. Write each fraction as a decimal number.

$\frac{1}{10}$ _____ $\frac{24}{100}$ _____

$\frac{674}{1{,}000}$ _____ $\frac{7}{10}$ _____

$\frac{6}{100}$ _____ $\frac{44}{1{,}000}$ _____

2. Each shape below has been rotated. Label each rotation with the direction and degree of the turn.



_____ _____

3. Find the missing factors. Then circle all the factors that are prime numbers.

96	78	75
4 × ____	3 × ____	5 × ____
8 × ____	2 × ____	3 × ____

4. Write the number for each Roman numeral.

LXII - XL -

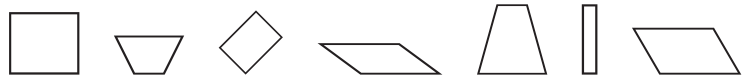
XXIX - IV -

5. Write the place value of the underlined digit in each number using the word bank below.

287.6<u>9</u>4	2<u>3</u>.758	0.01<u>7</u>
_____	_____	_____
4.<u>3</u>71	<u>9</u>34.862	8.34<u>7</u>
_____	_____	_____

hundreds, ones, tenths, hundredths, thousandths

6. Circle every shape that can be classified as a parallelogram (a quadrilateral with two pairs of parallel sides).



7. Reduce each fraction to its simplest form.

$\frac{8}{24}$ _____ $\frac{9}{81}$ _____ $\frac{15}{18}$ _____ $\frac{18}{30}$ _____

8. Write the multiples of 4 from 20 to 48.

20, ____, ____, ____, ____, ____, ____, 48

Lesson 87

ADDING AND SUBTRACTING DECIMALS

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math4.

Mini Lesson

When adding and subtracting decimal numbers, write the numbers vertically, making sure to line up the numbers according to the decimal points and place values.

45.81 + 71.04

$$\begin{array}{r} 45.81 \\ +\ 71.04 \\ \hline 116.85 \end{array}$$

When adding decimal numbers, add each place value and regroup as needed. Write the sum below the line. Write the decimal point directly below the decimal points in the problem.

75.24 - 42.11

$$\begin{array}{r} 75.24 \\ -\ 42.11 \\ \hline 33.13 \end{array}$$

When subtracting decimal numbers, subtract each place value and borrow as needed. Write the difference below the line. Write the decimal point directly below the decimal points in the problem.

If the decimal numbers being added or subtracted have a different number of digits, line up the numbers vertically according to the decimal points. Write zeros as placeholders in any empty places.

23.89 + 3.5

$$\begin{array}{r} {\scriptstyle 1\ \ \ \ } \\ 23.89 \\ +\ \ 3.50 \\ \hline 27.39 \end{array}$$

35.947 - 12.05

$$\begin{array}{r} {\scriptstyle 8\ 1\ \ \ \ } \\ 35.\not{9}47 \\ -\ 12.050 \\ \hline 23.897 \end{array}$$

Lesson Practice

1. Complete each problem.

$$\begin{array}{r} 49.39 \\ +\ 7.88 \\ \hline \end{array} \qquad \begin{array}{r} 223.07 \\ +\ 53.20 \\ \hline \end{array}$$

$$\begin{array}{r} 428.17 \\ -\ 37.99 \\ \hline \end{array} \qquad \begin{array}{r} 73.497 \\ -12.510 \\ \hline \end{array}$$

2. Rewrite each problem vertically and complete it.

133.04 + 87.369

9.12 + 164.027

95.04 - 0.327

458.993 - 64.2

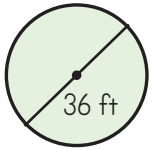
3. Meri has $37.95 to spend at the farmers market. She buys a bag of peaches for $11.52 and a loaf of fresh bread for $7.96. How much money does she have left?

4. José is selling homemade candles at the farmers market. In the morning he made $88.20, and in the afternoon he made $38.64. How much more money does he need to make to have $150?

5. Jocelyn is in charge of weighing fruit at her family's stand. The first batch of tomatoes weighed 25.034 lb, the second batch weighed 8.39 lb, and the third batch weighed 18.7 lb. How much did the tomatoes weigh in total?

Review

1. Write the measurements of the radius and diameter of each circle.



radius =
diameter =

radius =
diameter =

radius =
diameter =

2. Write each decimal number using digits.

a) thirty-two and one hundred twenty-five thousandths

b) eighty-seven hundredths

a) three hundred nine and four tenths

3. Convert each improper fraction to a mixed number.

$\frac{17}{6}$ $\frac{31}{3}$ $\frac{11}{4}$ $\frac{9}{2}$

See the Reference Guide on page 394.

4. Write the rule for each pattern, and then continue the pattern.

84, 73, 62, 51, ____, ____, ____ Rule: _____

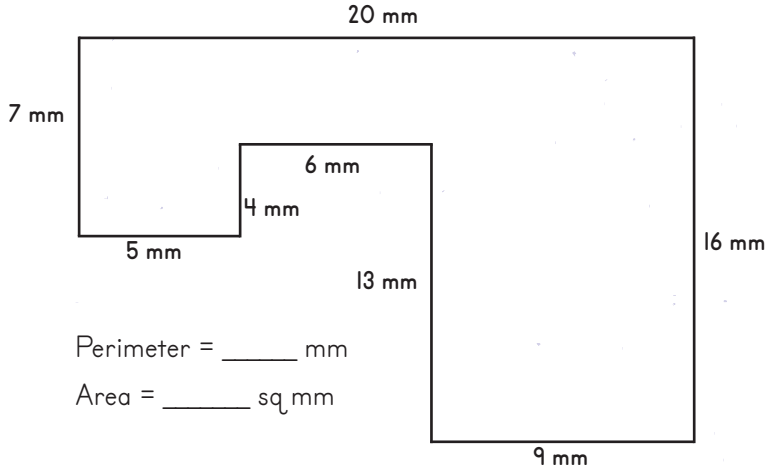
52, 55, 58, 61, ____, ____, ____ Rule: _____

5. Complete each problem. Use scratch paper if needed.

$4\overline{)5{,}725}$ $7\overline{)158}$

$$\begin{array}{r} 27 \\ \times\ 23 \\ \hline \end{array} \qquad \begin{array}{r} 31 \\ \times\ 61 \\ \hline \end{array} \qquad \begin{array}{r} 32 \\ \times\ 25 \\ \hline \end{array}$$

6. Find the perimeter and area. Hint: Divide this shape into three smaller rectangles.



Perimeter = _____ mm

Area = _____ sq mm

7. How many inches are in a foot?

8. How many feet are in a yard?

9. How many inches are in a yard?

10. How many feet are in a mile?

11. How many millimeters are in a centimeter?

12. How many centimeters are in a meter?

13. How many millimeters are in a meter?

14. How many meters are in a kilometer?

Multiplication *MASTERY*

OPTIONAL: Time yourself to see how long this page takes you. Try to beat your previous time from Lesson 80.

TIME:

5 × 3	8 × 4	9 × 9	12 × 6	3 × 4	12 × 7	6 × 4	4 × 5	7 × 4	12 × 8	4 × 3	6 × 5	9 × 7	5 × 12
5 × 8	9 × 5	7 × 3	12 × 5	6 × 7	12 × 11	9 × 3	3 × 6	8 × 8	5 × 7	3 × 12	9 × 6	3 × 5	7 × 9
3 × 3	4 × 6	6 × 6	4 × 12	3 × 7	6 × 9	4 × 7	8 × 6	10 × 7	5 × 9	3 × 0	6 × 11	2 × 12	3 × 9
7 × 7	9 × 12	8 × 5	6 × 3	12 × 3	12 × 12	4 × 9	5 × 5	7 × 6	4 × 8	8 × 12	9 × 8	12 × 2	4 × 4
11 × 12	5 × 4	6 × 8	12 × 4	7 × 8	9 × 4	6 × 12	3 × 8	7 × 5	12 × 9	8 × 9	5 × 6	7 × 12	11 × 4

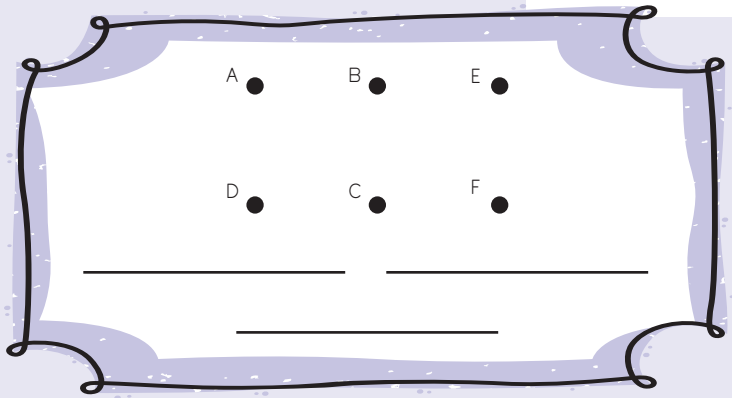
Lesson 88

NAMING GEOMETRIC FIGURES

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math4.



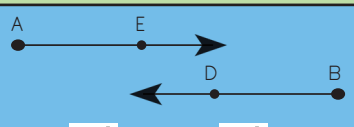
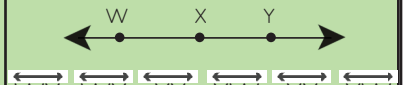
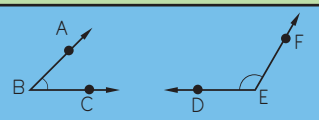
#1 _____

#2 _____

#3 _____

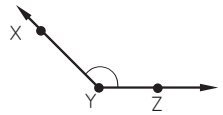
Mini Lesson

Points, line segments, rays, lines, angles, and polygons are examples of **geometric figures.** Geometric figures often have capital letters listed by each vertex or point. These letters are used when naming geometric figures.

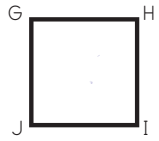
Points are named using one letter.	Point A A•
Line segments are named using the letters at the two endpoints. The order of the endpoints does not matter. The name of a line segment can be abbreviated by drawing a line segment above the two endpoint letters.	 $\overline{FG}$ $\overline{GF}$
Rays are named using the endpoint and any other point on the ray. When naming a ray, the order matters. List the endpoint first and then another point on the ray. The name of a ray can be abbreviated by drawing a ray above the letters that points to the right.	 $\overrightarrow{AE}$ $\overrightarrow{BD}$
Lines are named using any two points found on the line. The order of the letters does not matter. The name of a line can be abbreviated by drawing a line above the letters.	 $\overleftrightarrow{WY}$ $\overleftrightarrow{WX}$ $\overleftrightarrow{XY}$ $\overleftrightarrow{XW}$ $\overleftrightarrow{YX}$ $\overleftrightarrow{YW}$
Angles are named using the letter at the vertex or the letter at the vertex and one letter from each ray. Order does not matter if you use three letters; however, the vertex should always be listed as the middle letter. The abbreviation for an angle uses an angle symbol before the letter or letters.	 ∠B ∠ABC ∠CBA ∠E ∠DEF ∠FED
Polygons are named using the letters found at each vertex. Start at any vertex, and then list the letters in order around the polygon until you list all the vertices. When reading the name, say the name of the polygon, and then say the vertices in order.	 triangle LMN triangle MNL triangle NLM triangle LNM triangle NML triangle MLN

Lesson Practice

1. For each geometric figure below, circle ALL correct names.

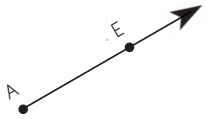


∠Y
∠YXZ
∠ZYX

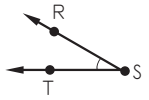


square GIHJ
square IHGJ
square GHIJ

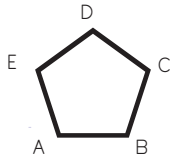
$\overline{ST}$
$\overleftrightarrow{ST}$
$\overline{TS}$
$\overrightarrow{ST}$



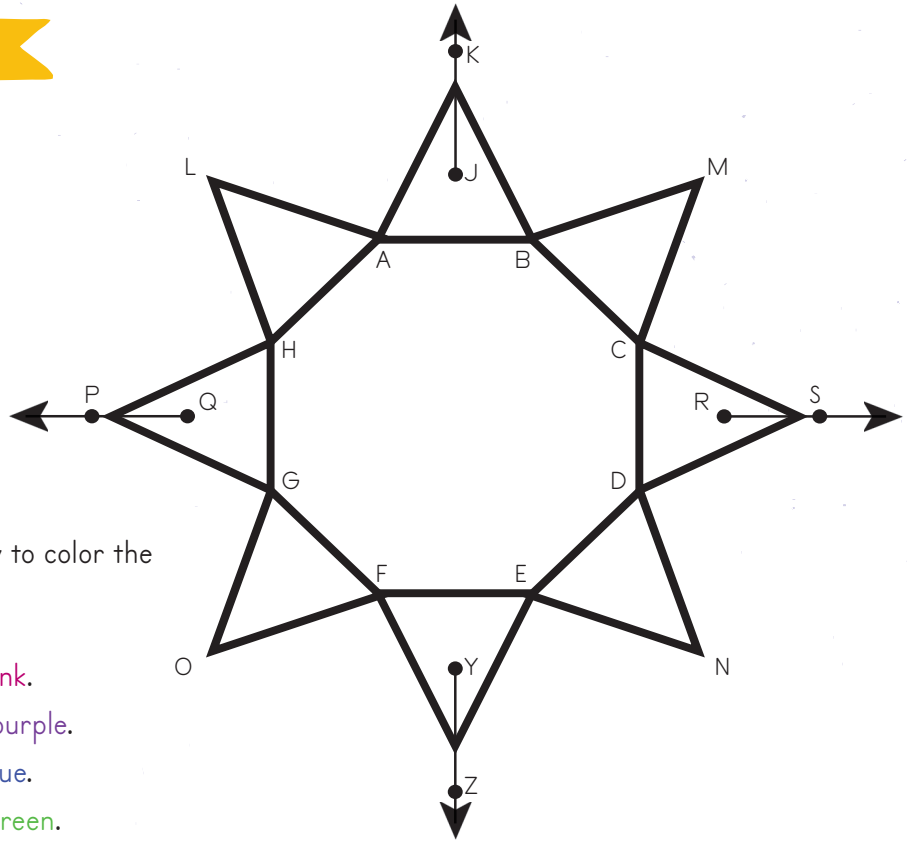
$\overleftrightarrow{AE}$
$\overrightarrow{EA}$
$\overrightarrow{AE}$



∠STR
∠SRT
∠S



hexagon ABCDE
octagon BCDEA
pentagon AEDCB
pentagon DEABC



2. Use the directions below to color the design to the right.

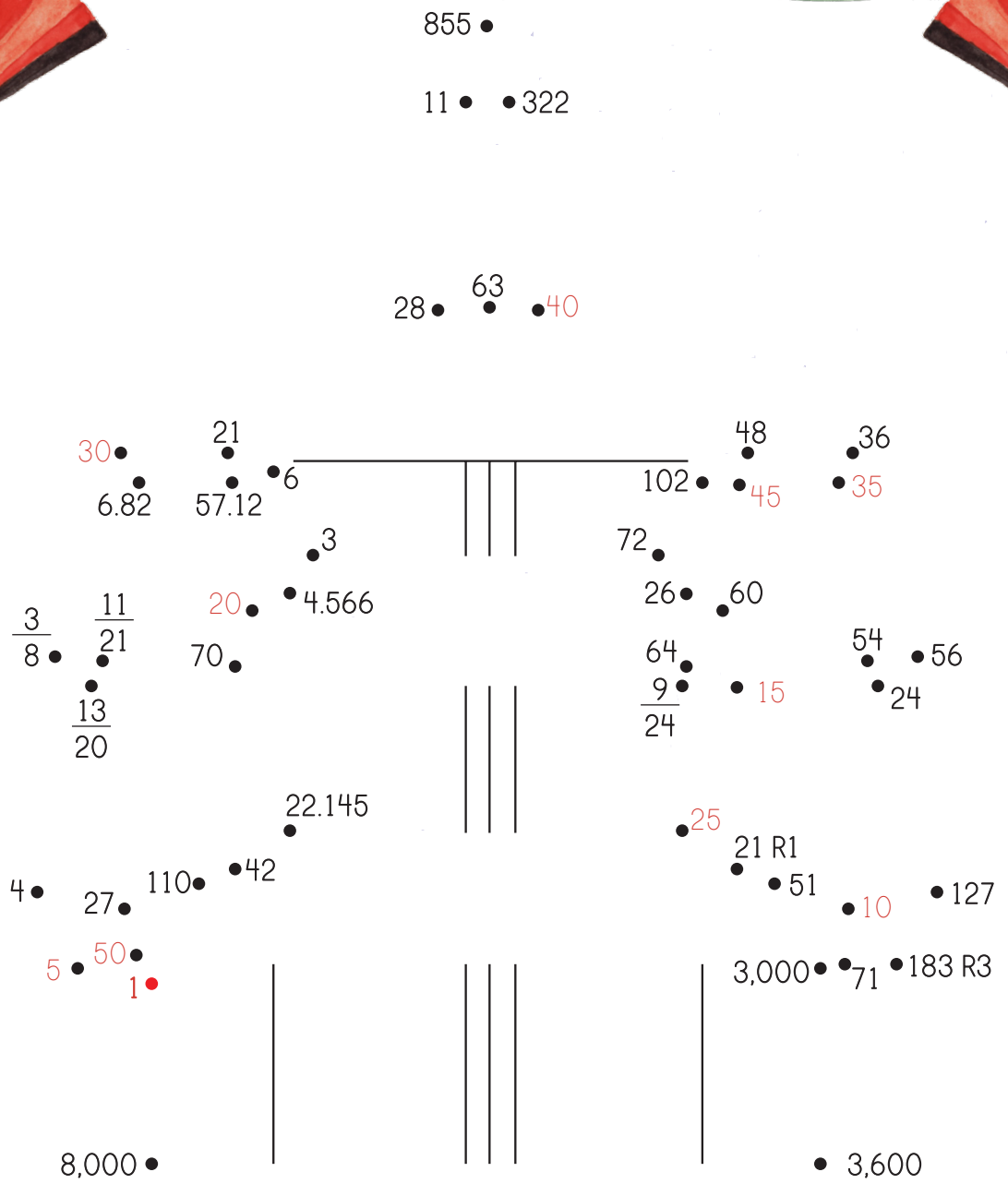
a) Color triangle HLA pink.
b) Color triangle BCM purple.
c) Color triangle DNE blue.
d) Color triangle OGF green.
e) Trace $\overrightarrow{JK}$ and $\overrightarrow{YZ}$ in yellow.
f) Trace $\overrightarrow{QP}$ and $\overrightarrow{RS}$ in red.
g) Color octagon ABCDEFGH orange.
h) Color the rest of the shapes in the design any color you want.

3. In the design above, triangle DEN is made up of line segments $\overline{DE}$, $\overline{EN}$, and $\overline{ND}$. Write the names of the three line segments that make up triangle ALH.

Dot • To • Dot Review

Complete each problem below. Then use the answers to complete the dot-to-dot picture on the next page. Start at the red number 1. Draw a line to the answer to Problem 2, and then draw a line to the answer to Problem 3. The numbers in red have been done for you; simply find that number on the dot-to-dot.

1. 1	2. 400 × 20 =	3. 12 × 300 =	4. 60 × 50 =	5. 5
6. IV -	7. XXVII -	8. CX -	9. LI -	10. 10
11. $2\overline{)254}$	12. $4\overline{)735}$	13. $5\overline{)355}$	14. $8\overline{)169}$	15. 15
16. 6 × 4 =	17. 8 × 7 =	18. 6 × 9 =	19. 5 × 12 =	20. 20
21. $\frac{1}{3}+\frac{4}{21}=$ —	22. $\frac{7}{8}-\frac{1}{2}=$ —	23. $\frac{9}{20}+\frac{1}{5}=$ —	24. $\frac{4}{6}-\frac{7}{24}=$ —	25. 25
26. 31.745 - 9.6 =	27. 4.57 - 0.004 =	28. 61.9 - 4.78 =	29. 8.32 - 1.5 =	30. 30
31. 3 × 7 =	32. 9 × 7 =	33. 12 × 4 =	34. 6 × 6 =	35. 35
36. 34 yd = _____ ft	37. 6 ft = _____ in	38. 30 mm = _____ cm	39. 600 cm = _____ m	40. 40
41. 23 × 14 =	42. 45 × 19 =	43. 27, 23, 19, 15, _____	44. 7, 14, 21, _____	45. 45
46. Radius = 13 cm Diameter = _____ cm	47. Radius = 32 ft Diameter = _____ ft	48. Radius = _____ in Diameter = 140 in	49. Radius = _____ m Diameter = 84 m	50. 50



UNIT 4 OVERVIEW

LESSONS 91–120

Extra Supplies Needed

- 2 standard dice
- 1 quarter
- colored pencils or crayons

New Concepts Taught

- add/subtract mixed numbers (uncommon denominators)
- compare decimal numbers to the thousandths place
- estimation (multiplication and division)
- long division (check quotients using multiplication)
- long division (decimal numbers)
- long division (two-digit divisor)
- mean, median, mode, and range
- mental math (multiplication)
- multiplication (decimal numbers)
- multiplication (three-digit by two-digit)
- percents
- round decimal numbers to the ones and tenths place
- short division
- write fractions and mixed numbers as decimals

Concepts Reviewed and Expanded Upon

- compare positive and negative numbers
- conversion (units of weight)
- coordinate graph
- fractions of a set
- identify positive and negative numbers

Parent/Teacher Tips

Students are not expected to completely master all the concepts taught in Unit 4, especially toward the end of the unit. Some concepts are presented to give the student familiarity with topics that will be taught and expanded on in Math 5.

Lesson 96

ADDING AND SUBTRACTING MIXED NUMBERS

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math4.

$4\frac{3}{8} + 2\frac{1}{8} =$

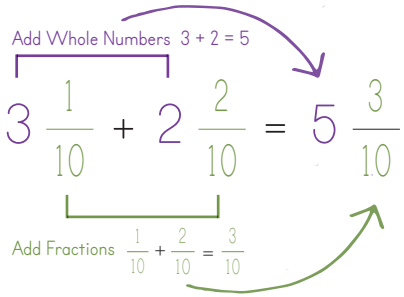
$3\frac{4}{5} - 2\frac{2}{5} =$

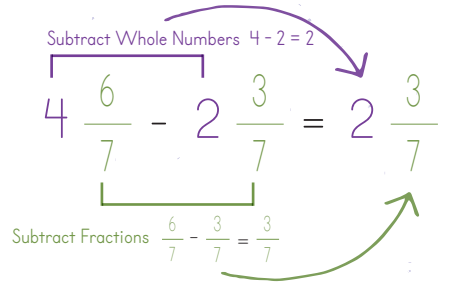
$7\frac{2}{3} + 2\frac{1}{9} =$

$6\frac{4}{5} - 3\frac{3}{10} =$

Mini Lesson

Adding and subtracting mixed numbers is similar to adding and subtracting fractions. In these two problems, the fractions have common denominators. For the addition problem, add the whole numbers, and then add the fractions. For the subtraction problem, subtract the whole numbers, and then subtract the fractions.

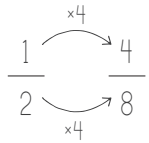




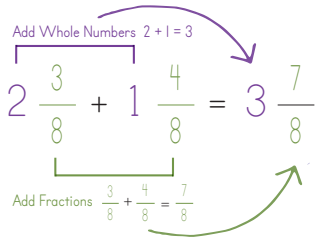
Sometimes the fraction parts will not have a common denominator. Before any addition or subtraction can take place, the fraction parts of the mixed numbers must have a common denominator. Once a common denominator is found, the mixed numbers can be added or subtracted by first adding or subtracting the whole numbers and then adding or subtracting the fractions.

$2\frac{3}{8} + 1\frac{1}{2} =$

In this problem the fractions do not have a common denominator. We must find a common denominator before adding.

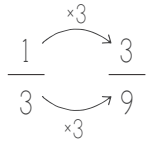


We find an equivalent fraction for one-half with a denominator of eight and replace one-half with four-eighths.

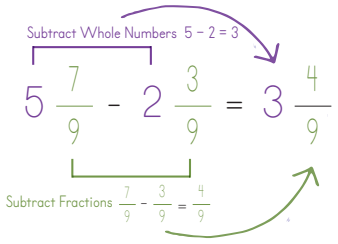


$5\frac{7}{9} - 2\frac{1}{3} =$

In this problem the fractions do not have a common denominator. We must find a common denominator before subtracting.



We find an equivalent fraction for one-third with a denominator of nine and replace one-third with three-ninths.



Help each bird get back to its birdhouse by completing each problem and then drawing a line from the bird to the birdhouse with the correct answer.

Review

1. Complete each problem.

$3\overline{)2{,}275}$ $6\overline{)517}$ $7\overline{)492}$

372 × 28 693 × 18 121 × 66

2. Continue each pattern.

24, 18, 12, ___ , ___ , ___ , ___

-35, -28, -21, -14, ___ , ___ , ___

11, 7, 3, -1, ___ , ___ , ___ , ___

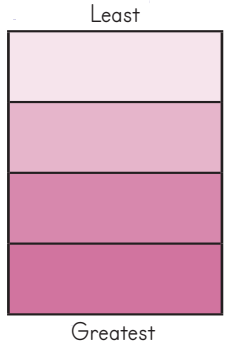
-13, -9, -5, -1, ___ , ___ , ___ , ___

3. Round each decimal number to the nearest whole number.

24.8 ☐ 7.5 ☐ 58.6 ☐

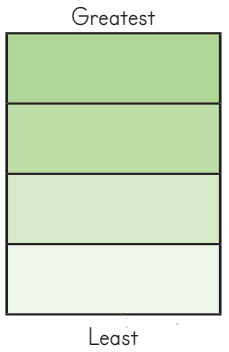
4. Arrange these decimal numbers from least to greatest.

57.024
57.240
57.042
57.204

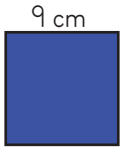


5. Arrange these decimal numbers from greatest to least.

115.389
115.938
115.983
115.398



6. Find the perimeter and area of this square.



7. List all the factors of 18. Hint: Find all the pairs of numbers that equal 18 when multiplied, and then list those factors from least to greatest.

8. List all the factors of 24.

9. List all the factors of 30.

$4\overline{)32}$ $7\overline{)56}$ $5\overline{)30}$ $12\overline{)72}$ $8\overline{)64}$ $4\overline{)28}$ $6\overline{)42}$ $12\overline{)108}$ $9\overline{)81}$ $9\overline{)45}$ $7\overline{)63}$ $12\overline{)84}$

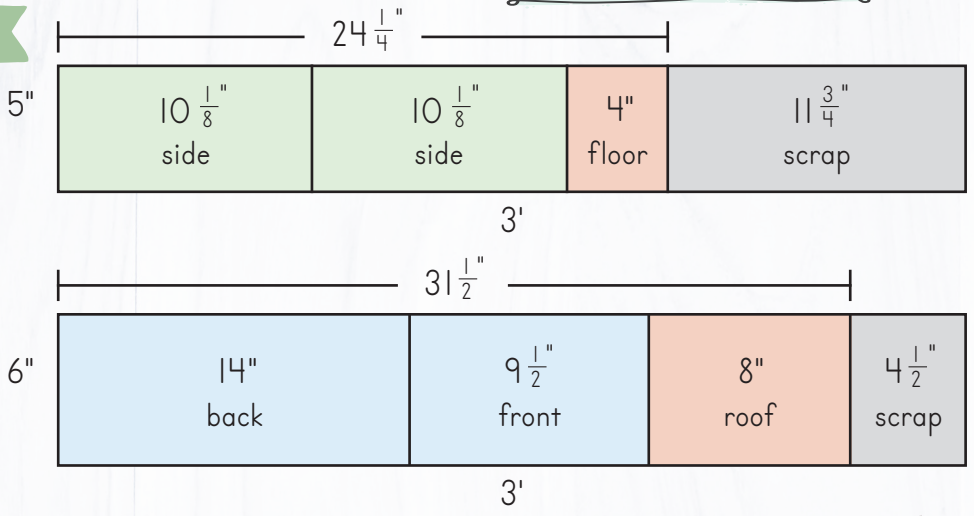
WREN BIRDHOUSE BLUEPRINTS

Optional Extension Project
Ask your parent for permission and supervision for this project.

Materials

- Common board 1" x 6" x 3'
- Common board 1" x 5" x 3'
- #8 x 1 3/4" outdoor or galvanized screws (qty. 15)
- #108 square bend screw hook
- Power drill
- 1 1/8" wood-boring spade drill bit
- 3/32" twist drill bit
- Handsaw (or chop saw)

Cut List



Preparation

1. Measure and cut pieces for birdhouse using a handsaw or chop saw (see cut list).
2. Measure and cut side piece angles and corners of floor piece (see figure #1).
3. Measure and mark center of bird hole. Use wood-boring spade to drill the hole (see figure #2).
4. Measure and mark screw holes. Predrill holes using twist drill bit (see figure #3).

Figure #1

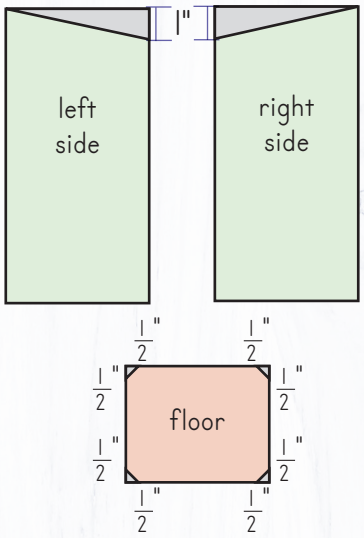
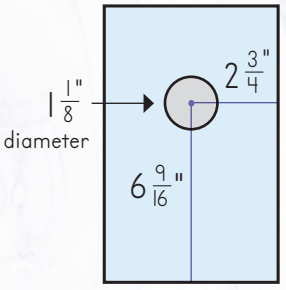
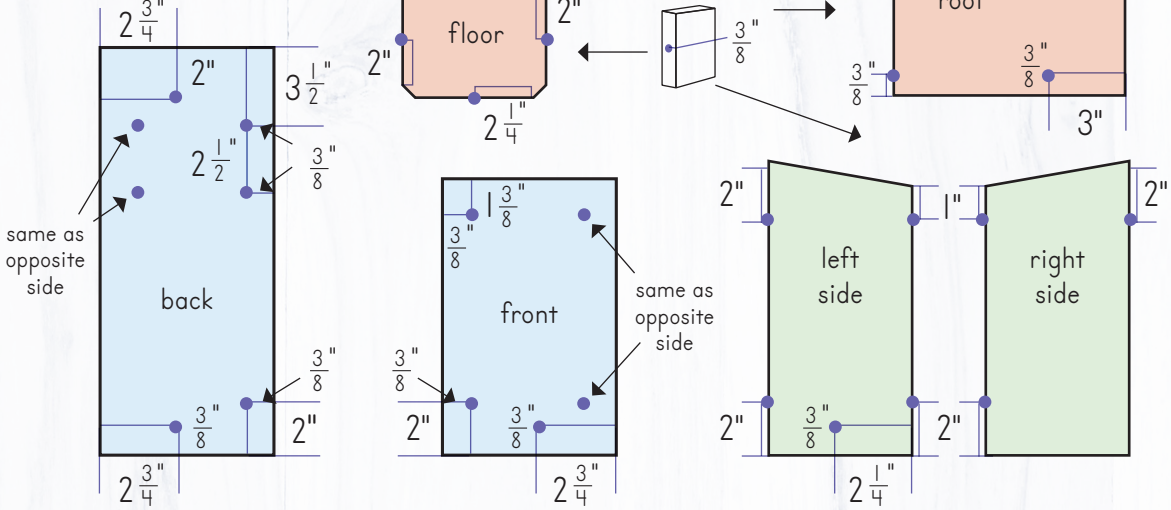


Figure #2



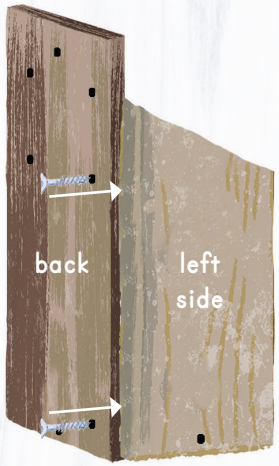
Line up the tip of the spade drill bit with the center of the bird hole, and then drill through until the spade comes out the other side.

Figure #3

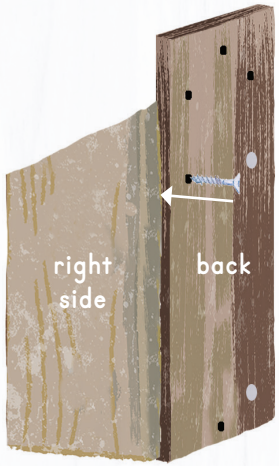


Instructions

1. Attach back piece to left side. Make sure the left side's top slants down away from back piece.

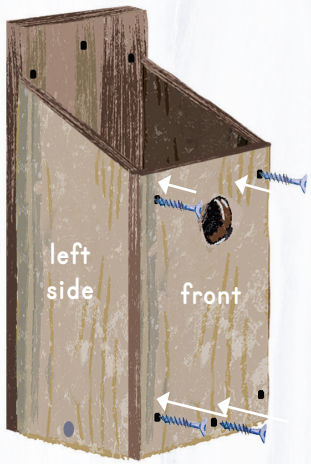


2. Attach right side to back. Drill screw into hole so it is not snug. This screw will act as a hinge.



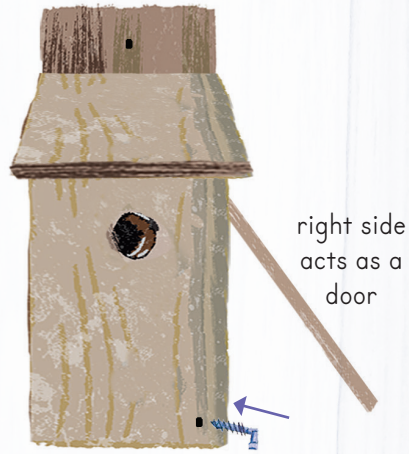
3. Slide floor piece in position. Drill screws into back and left side.

4. Attach front to left side and floor. Drill screw into top hole only for right side, making sure it is not snug. This screw will act as another hinge.



5. Attach roof to front, and then to back. There will be a $\frac{1}{4}$" gap between roof and top of sides to allow for airflow.

6. Use pliers to screw the square bend screw hook clockwise into bottom right hole on front piece. This will lock the right side in place. To unlock, twist screw counterclockwise enough so that the right side can be opened.



7. Attach birdhouse to tree, post, or fence. In early winter, ease the side door open to clean out old nests. Make sure there are no birds still living in the nest before removing it.

Lesson 109

PROBABILITY

Supplies: 1 quarter

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

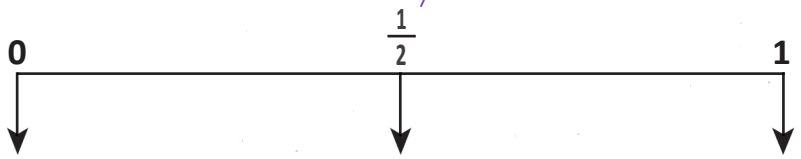
Scan the QR code or watch the video lesson on goodandbeautiful.com/Math4.

- There is no student practice section for this video.

Mini Lesson

Probability is the likelihood that an event will happen. Outcomes are the possible results of a probability experiment. The probability of an event can be expressed using the numbers 0, 1, or a fractional amount between 0 and 1.

Probability Scale



impossible	unlikely	equally likely	likely	certain
never will happen	probably won't happen	equal chance of happening or not happening	probably will happen	always will happen

Look at the scale above. When an event has a probability of 0, that means it is impossible. The event cannot happen. When an event has a probability of 1, that means it is certain. The event will definitely happen. An event is equally likely when it has an equal chance of happening or not happening. Equally likely events have a probability of $\frac{1}{2}$. An event is unlikely if the probability falls between 0 and $\frac{1}{2}$, and it is likely if the probability falls between $\frac{1}{2}$ and 1.

When we write a fraction to show probability, the number of desired outcomes is the numerator, and the number of possible outcomes is the denominator. This spinner has eight possible outcomes. Look at the probabilities listed below for each event.

Probability of spinning a number less than 10: $\frac{8}{8} = 1$

Probability of spinning a number greater than 20: $\frac{0}{8} = 0$

Probability of spinning an even number: $\frac{4}{8} = \frac{1}{2}$

Probability of spinning an odd number: $\frac{4}{8} = \frac{1}{2}$

Probability of spinning a number less than 3: $\frac{2}{8} = \frac{1}{4}$

Probability of spinning a number greater than 3: $\frac{5}{8}$

Lesson Practice

Read each scenario below, and then decide whether the probability of that event occurring is impossible, unlikely, likely, or certain.

1. I will eat dinner tonight.
   impossible unlikely likely certain

2. I will eat pizza for dinner tonight.
   impossible unlikely likely certain

3. Tomorrow will be Friday.
   impossible unlikely likely certain

4. Tomorrow I will read a book.
   impossible unlikely likely certain

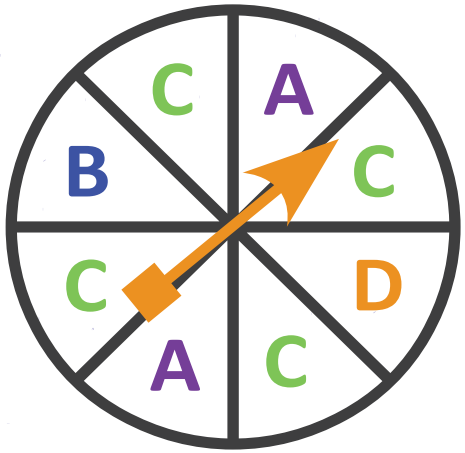
5. I will do chores today.
   impossible unlikely likely certain

6. I will wash a car today.
   impossible unlikely likely certain

7. Someday I will learn to fly like a bird.
   impossible unlikely likely certain

8. Someday I will learn to drive a car.
   impossible unlikely likely certain

Use the spinner to answer the following questions.



1. What is the probability of landing on A? _____

2. What is the probability of landing on either A or C? _____

3. What is the probability of not landing on C? _____

4. Is there an equal chance of landing on B or D? _____

5. Is the spinner more likely to land on A or B? _____

6. What is the probability of not landing on C or D? _____

7. What is the probability of landing on E? _____

8. What is the probability of landing on D? _____

These toy cars are stored in this basket. Answer the questions below. Write your answers as a fraction when necessary.

1. Which color is most likely to be picked? _____
2. What is the probability of picking a yellow car? _____
3. What is the probability of picking a red car? _____
4. What is the probability of picking a blue car? _____
5. Which color is least likely to be picked? _____
6. What is the probability of picking a car that is not green? _____
7. What is the probability of picking a car that is not red? _____
8. What is the probability of picking a car that is blue, red, or green? _____

If you flip a quarter or drop it on a table, what is the probability that it will land heads up?

What is the probability that it will land tails up?

When you flip a coin, it is equally likely that it will land heads up or tails up. Let's test it out! You will flip a quarter, or drop it onto a table, 20 times and record the results on the chart below.

Make a prediction! Out of 20 flips, how many times do you think it will land heads up? _____ Tails up? _____

Flip #	Heads	Tails
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Flip #	Heads	Tails
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

How many times did it land heads up?

How many times did it land tails up?

Were the results different than your prediction?

Review

1. Complete each conversion.

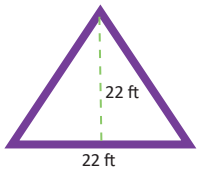
6 gal = _____ pt

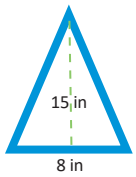
5 qt = _____ c

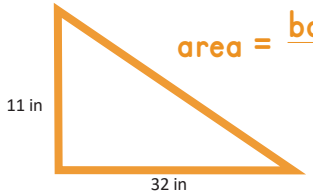
8 pt = _____ qt

16 c = _____ gal

2. Find the area of each triangle.

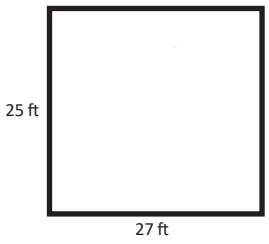






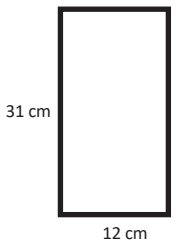
area = $\frac{\text{base} \times \text{height}}{2}$

3. Find the perimeter and area of the shapes below.



Perimeter =

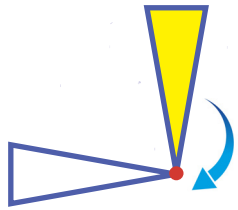
Area =



Perimeter =

Area =

4. Each yellow shape below has been rotated. Label each rotation with the direction and degree of the turn.



5. Convert each improper fraction to a mixed number.

$\frac{17}{6}$ ____ $\frac{7}{2}$ ____ $\frac{23}{4}$ ____

6. Continue each pattern.

66, 55, 44, 33, ___, ___, ___ Rule: _____

103, 109, 115, ___, ___, ___ Rule: _____

24, 18, 12, 6, ___, ___, ___ Rule: _____

-25, -18, -11, -4, ___, ___, ___ Rule: _____

$12\overline{)36}$ $7\overline{)49}$ $4\overline{)16}$ $8\overline{)64}$ $7\overline{)63}$ $3\overline{)27}$ $9\overline{)81}$ $6\overline{)18}$ $4\overline{)20}$ $6\overline{)36}$ $12\overline{)72}$ $3\overline{)15}$

Lesson 114

AVERAGE AND MEAN

- Complete today's *Math 4 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com /Math4.

Joy

11, 10, 9, 10

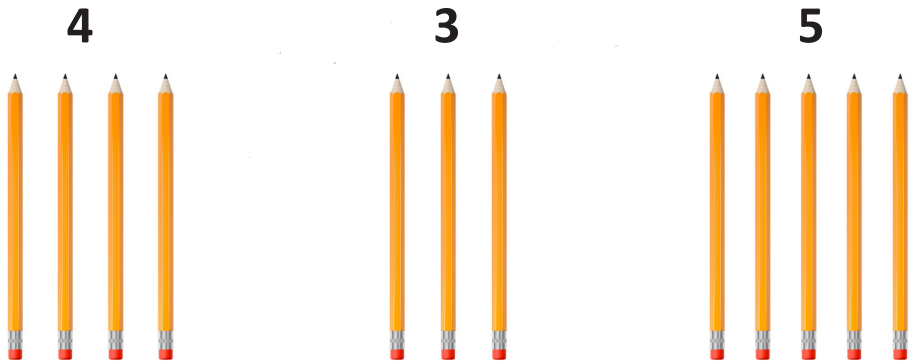
Grace

13, 11, 9, 11

Mini Lesson

When we work with a group of numbers, it can be helpful to find the average of that group. An average is a number that represents a typical value in a group of numbers. One type of average is called the **mean**.

Look at this example. Suppose there are three boxes of pencils that each have a different number of pencils in them. The first box has 4 pencils, the second box has 3 pencils, and the third box has 5 pencils.



The mean is the number of pencils in each box if all the pencils were divided equally among the three boxes. To find the mean, the pencils can be rearranged to have an equal number in each box. Each box would have 4 pencils. The mean is 4.

Sometimes the mean is referred to as the average.

Continued on the next page ➔

There are two steps for finding the mean of a group of numbers:

1. Find the sum of all the numbers in the group.
2. Divide the sum by the number of addends.

Look at the pencil box example again. The number of pencils in each box was 4, 3, and 5. To find the mean, first find the sum of these numbers.

$$4 + 3 + 5 = 12$$

Now divide the sum (12) by the number of addends. There are 3 numbers that we added, so divide 12 by 3.

$$12 \div 3 = 4$$

The mean is 4.

Find the mean of the children's ages above.

1. Find the sum of all the ages in the group.

$$4 + 8 + 7 + 6 + 9 + 8 = 42$$

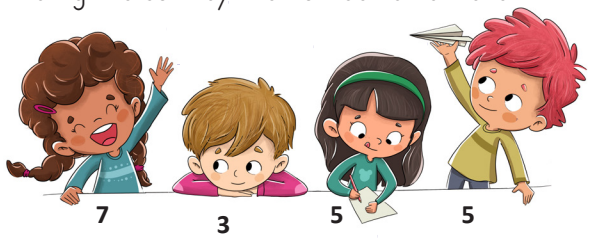
2. Divide the sum by the number of addends, in this case the number of children.

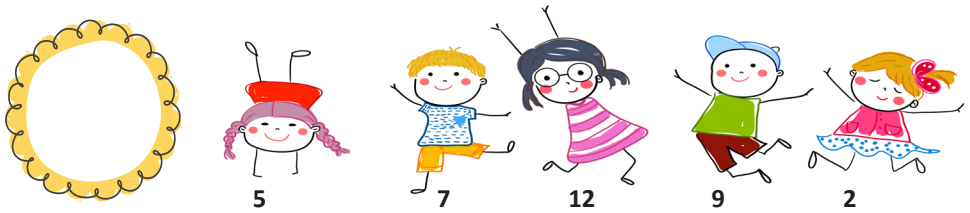
$$42 \div 6 = 7$$

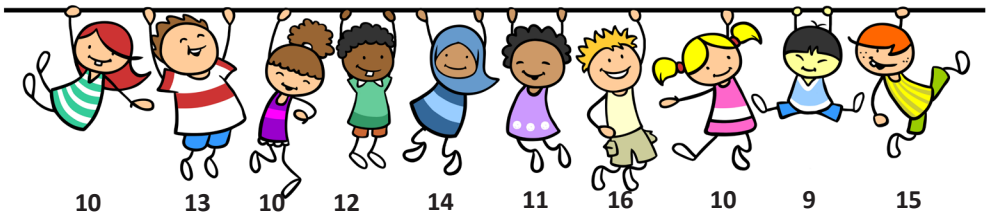
The mean, or average age, for this group of children is 7 years old.

Lesson Practice

For each group of children below, find the mean of the children's ages by adding all the ages together and then dividing the sum by the number of children in the group.







Review

16 oz = 1 lb
2,000 lb = 1 tn
1,000 g = 1 kg

1. Complete each conversion.

5 tn = _____ lb	32 oz = _____ lb	8,000 lb = _____ tn
11 lb = _____ oz	3 kg = _____ g	12,000 g = _____ kg

2. Complete each problem. Write the decimal point in the quotient directly above the decimal point in the dividend.

$8\overline{)33.68}$ $5\overline{)6.75}$ $8\overline{)12.8}$

3. Complete each problem by multiplying and then writing the decimal point in the correct place.

$$\begin{array}{r} 42.7 \\ \times\ 12 \\ \hline \end{array} \qquad \begin{array}{r} 3.457 \\ \times\ 5 \\ \hline \end{array} \qquad \begin{array}{r} 227 \\ \times\ 3.4 \\ \hline \end{array}$$

4. Multiply each decimal number by moving the decimal point.

72.7 × 10 =
12.78 × 100 =
8.32 × 1,000 =

5. Convert each improper fraction to a mixed number.

$\frac{7}{4}$ $\frac{13}{8}$ $\frac{22}{5}$

6. Use the box to help answer the questions.

What is $\frac{2}{4}$ of 16? What is $\frac{3}{4}$ of 16?

7. Round each decimal number to the nearest whole number.

72.14 3.71 67.35 42.33

8. Now round each decimal number to the nearest tenth.

72.14 3.71 67.35 42.33

Read with your parent or teacher

It's time to review Multiplication Set D using the Multiplication Mastery Chart on page 395 with your parent or teacher.

Parent/Teacher: Quiz your child on Set D facts and indicate which facts your child has mastered in the "Reviewed" column on page 395. Practice any missed facts.

REFERENCE Guide

Polygons

- 3 — triangle
- 4 — quadrilateral
- 5 — pentagon
- 6 — hexagon
- 7 — heptagon
- 8 — octagon
- 9 — nonagon
- 10 — decagon

Long Division

1. Divide ÷
2. Multiply x
3. Subtract -
4. Bring Down ↓

(Repeat)

Formulas

Area of a Rectangle

Area = Length × Width

Area of a Triangle

$$\text{Area} = \frac{\text{Base} \times \text{Height}}{2}$$

Volume of a Rectangular Prism

Volume = Length × Width × Height

Order of Operations

Roman Numerals

1	I	50	L
2	II	100	C
3	III	500	D
4	IV	1,000	M
5	V	67	LXVII
6	VI	250	CCL
7	VII	501	DI
8	VIII	620	DCXX
9	IX	705	DCCV
10	X	916	CMXVI

Conversions

Volume

Weight

16 oz = 1 lb
2,000 lb = 1 tn
1,000 g = 1 kg

Length

1 km = 1,000 m 1 m = 100 cm

1 cm = 10 mm 1 m = 1,000 mm

12 inches = 1 foot	3 feet = 1 yard
36 inches = 1 yard	5,280 feet = 1 mile

Improper Fractions

$\frac{9}{4}$

The divisor is the **denominator** of the fraction part.

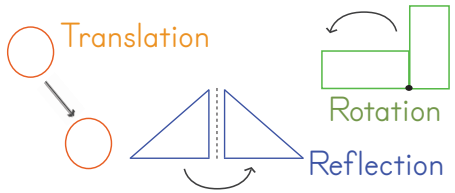
$4\overline{)9}$ → $2\frac{1}{4}$ ← When there is a remainder, the quotient is a mixed number.

-8

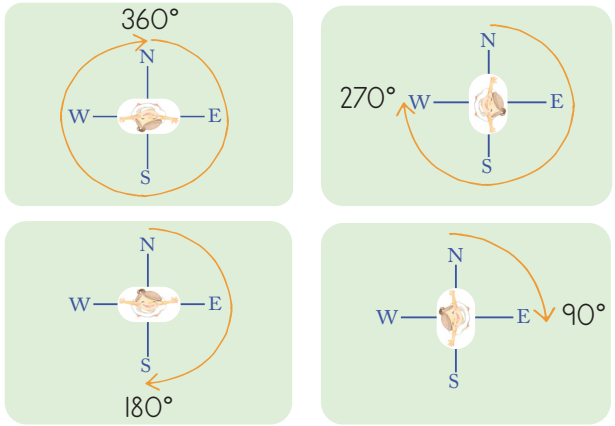
1 ← The remainder is the **numerator** of the fraction part.

$2\frac{1}{4}$

Transformations



Measuring Turns



Angle Classification

Acute less than 90°

Right 90°

Obtuse between 90° & 180°

Straight 180°

MULTIPLICATION
Mastery Chart

Set A	Mastered	Reviewed
3 × 3		
6 × 6		
5 × 3		
8 × 4		
8 × 8		
3 × 4		
5 × 5		
9 × 9		
6 × 4		
3 × 5		
4 × 8		
4 × 3		
4 × 6		

Set B	Mastered	Reviewed
4 × 4		
4 × 5		
7 × 3		
7 × 4		
8 × 5		
8 × 7		
9 × 3		
9 × 4		
9 × 5		
5 × 4		
3 × 7		
4 × 7		
5 × 8		
7 × 8		
3 × 9		
4 × 9		
5 × 9		

Set C	Mastered	Reviewed
5 × 6		
5 × 7		
6 × 3		
6 × 8		
7 × 6		
7 × 7		
7 × 9		
8 × 3		
9 × 6		
9 × 8		
6 × 5		
7 × 5		
3 × 6		
8 × 6		
6 × 7		
9 × 7		
3 × 8		
6 × 9		
8 × 9		

Set D	Mastered	Reviewed
12 × 3		
12 × 4		
12 × 5		
12 × 6		
12 × 7		
12 × 8		
12 × 9		
12 × 11		
12 × 12		
3 × 12		
4 × 12		
5 × 12		
6 × 12		
7 × 12		
8 × 12		
9 × 12		
11 × 12		

SKU 573

Math 4

MENTAL MATH

Map Mysteries

The Good and the Beautiful
CURRICULUM

Math 4

MENTAL MATH

Map Mysteries

The Good and the Beautiful
CURRICULUM

Created by the Simply Good and Beautiful Math Team

About This Book

This mental math book correlates with the *Simply Good and Beautiful Math 4 Course Book*, which directs the child to do a lesson box in this mental math book for each lesson (except for lessons that are assessments).

To complete the mental math, the parent or teacher should hold up the book so that the child sees the Questions page and the parent or teacher sees the Answer Key page (or it can be laid flat with the parent or teacher covering the answers with a paper or sticky note). The child should then complete the lesson box number that correlates to his or her lesson in the *Simply Good and Beautiful Math 4 Course Book*, giving the answers aloud. As the child gives the answers, the parent or teacher checks the answers and gives any correction needed. Upon completion of the lesson box, both the parent or teacher and student should place a check mark in the box to mark it as completed.

At the end of each page of four or five lesson boxes, the student is directed to place a sticker from page 71 onto a designated space on the map on page 69. At the end of the course, the student will have a completed picture of the map, and as a reward for completing the course, the child is then able to read the "You-Choose" book included in the course: *Hayden and the Hidden Village*. The map that the child created shows places included in the book.

Students who struggle with a mental math concept should be encouraged to continue through the lesson boxes as several skills will be repeated throughout the book.

Each mental math lesson box is designed to take less than five minutes to complete.

It is most desirable for mental math to be done without the aid of writing anything down. However, if needed, the child may use paper and pencil to help with the problems, with the goal of discontinuing the use of the paper and pencil at some point in the book.

The mental math lesson boxes do not correlate directly with the lessons taught in the *Simply Good and Beautiful Math 4 Course Book*.

QUESTIONS

LESSON 1

COMPLETE

Add 10 to a Number

Increase the digit in the tens place by 1. (The tens place is shown in red.)

23 + 10 45 + 10 37 + 10 82 + 10

Skip Count

- by 3s from 30 to 60
- by 25s from 400 to 500

LESSON 2

COMPLETE

Add 10 to a Number

Increase the digit in the tens place by 1. (The tens place is shown in red.)

220 + 10 341 + 10 673 + 10 384 + 10

Skip Count

- by 3s from 120 to 150
- backward by 25s from 500 to 400

LESSON 3

COMPLETE

Add 9 to a Number

Mentally add 10, and then subtract 1 from the sum.

33 + 9 19 + 9 35 + 9 17 + 9 78 + 9

Calendar

Name the months of the year.

LESSON 4

COMPLETE

Add 10 to a Number

Increase the digit in the tens place by 1.

347 + 10 222 + 10 119 + 10 147 + 10

Skip Count

- by 3s from 210 to 240
- backward by 25s from 625 to 525

LESSON 5

COMPLETE

Subtract 10 from a Number

Decrease the digit in the tens place by 1.

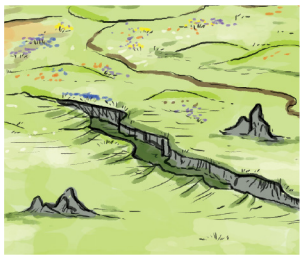
24 - 10 45 - 10 37 - 10 16 - 10

Calendar

There are 12 months in a year. How many months are in 2 years? _____

Twenty-four months from January is January. What is 25 months from January? _____ What is 14 months from January? _____

After completing Lesson 5, place this piece onto your map on D-3.



ANSWER KEY

LESSON 1

COMPLETE

Add 10 to a Number

Increase the digit in the tens place by 1. (The tens place is shown in red.)

23 + 10 33 45 + 10 55 37 + 10 47 82 + 10 92

Skip Count

- by 3s from 30 to 60 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60
- by 25s from 400 to 500 400, 425, 450, 475, 500

LESSON 2

COMPLETE

Add 10 to a Number

Increase the digit in the tens place by 1. (The tens place is shown in red.)

220 + 10 230 341 + 10 351 673 + 10 683 384 + 10 394

Skip Count

- by 3s from 120 to 150 120, 123, 126, 129, 132, 135, 138, 141, 144, 147, 150
- backward by 25s from 500 to 400 500, 475, 450, 425, 400

LESSON 3

COMPLETE

Add 9 to a Number

Mentally add 10, and then subtract 1 from the sum.

33 + 9 42 19 + 9 28 35 + 9 44 17 + 9 26 78 + 9 87

Calendar

Name the months of the year. January, February, March, April, May, June, July, August, September, October, November, December

LESSON 4

COMPLETE

Add 10 to a Number

Increase the digit in the tens place by 1.

347 + 10 357 222 + 10 232 119 + 10 129 147 + 10 157

Skip Count

- by 3s from 210 to 240 210, 213, 216, 219, 222, 225, 228, 231, 234, 237, 240
- backward by 25s from 625 to 525 625, 600, 575, 550, 525

LESSON 5

COMPLETE

Subtract 10 from a Number

Decrease the digit in the tens place by 1.

24 - 10 14 45 - 10 35 37 - 10 27 16 - 10 6

Calendar

There are 12 months in a year. How many months are in 2 years? 24
Twenty-four months from January is January. What is 25 months from January? February What is 14 months from January? March

NOTES

QUESTIONS

LESSON 53

COMPLETE

Shapes

Which number does each root word represent?

quad oct dec pent hex

Change from a Dollar

Determine the change from a dollar for each amount. Count up to the next ten, and then count by tens to 100.

13¢ 42¢ 72¢ 21¢ 63¢ 73¢

LESSON 54

COMPLETE

Add or Subtract a Number Ending in 9

48 - 29 99 + 32 55 - 49 26 + 139

Add 52 to a Number

Mentally add 50, and then add 2 to the sum.

132 + 52 68 + 52 227 + 52 325 + 52

LESSON 55

COMPLETE

Story Problems

- You have 4 dozen eggs and sell 29 individual eggs. How many eggs do you have left?
- Davis has 65¢ + 25¢. Oscar has 69¢ + 22¢. Who has more money?

Spell Numbers Aloud

Spell 100 | 1,000 | 1,000,000

LESSON 56

COMPLETE

Skip Count

- backward by 50,000s from 450,000 to 100,000
- by 25s from 575 to 725

Add 1, Subtract 1

Sometimes it is easier to add 1 to a number, find the sum, and then subtract 1.

24 + 75 74 + 125 25 + 124 124 + 75

LESSON 57

COMPLETE

Add 100,000

Increase the digit in the one hundred thousands place by 1.

408,008 3,323,053 34,456,000 987,000

Factor and Product

Point to each number and state whether it is a factor or product:

$$\begin{array}{r} 9 \\ \times\ 2 \\ \hline 18 \end{array}$$

Shapes

State the name of each shape.

After completing Lesson 57, place this piece onto your map on B–4.

ANSWER KEY

LESSON 53

COMPLETE

Shapes

Which number does each root word represent?

quad four oct eight dec ten pent five hex six

Change from a Dollar

Determine the change from a dollar for each amount. Count up to the next ten, and then count by tens to 100.

13¢ 87¢ 42¢ 58¢ 72¢ 28¢ 21¢ 79¢ 63¢ 37¢ 73¢ 27¢

LESSON 54

COMPLETE

Add or Subtract a Number Ending in 9

48 - 29 19 99 + 32 131 55 - 49 6 26 + 139 165

Add 52 to a Number

Mentally add 50, and then add 2 to the sum.

132 + 52 184 68 + 52 120 227 + 52 279 325 + 52 377

LESSON 55

COMPLETE

Story Problems

- You have 4 dozen eggs and sell 29 individual eggs. How many eggs do you have left? 19 eggs
- Davis has 65¢ + 25¢. Oscar has 69¢ + 22¢. Who has more money? Oscar

Spell Numbers Aloud

Spell 100 one hundred | 1,000 one thousand | 1,000,000 one million

LESSON 56

COMPLETE

Skip Count

- backward by 50,000s from 450,000 to 100,000
  450,000, 400,000, 350,000, 300,000, 250,000, 200,000, 150,000, 100,000
- by 25s from 575 to 725
  575, 600, 625, 650, 675, 700, 725

Add 1, Subtract 1

Sometimes it is easier to add 1 to a number, find the sum, and then subtract 1.

24 + 75 99 74 + 125 199 25 + 124 149 124 + 75 199

LESSON 57

COMPLETE

Add 100,000

Increase the digit in the one hundred thousands place by 1.

408,008	3,323,053	34,456,000	987,000
508,008	3,423,053	34,556,000	1,087,000

Factor and Product

Point to each number and state whether it is a factor or product:

9 factor
× 2 factor
18 product

Shapes

State the name of each shape.

hexagon

pentagon

trapezoid

octagon

NOTES

QUESTIONS

LESSON 115

COMPLETE

Change from a Dollar

Determine the change from a dollar for each amount. Count up to the next ten, and then count by tens to 100.

12¢ 47¢ 39¢ 24¢ 61¢ 81¢

Add Money Amounts

Add $2.00, and then subtract 2 cents from the sum.

$4.15 + $1.98 $6.37 + $1.98 $9.29 + $1.98 $1.98 + $2.75

Skip Count

- by 25s from 500 to 700
- backward by 25s from 700 to 500

LESSON 116

COMPLETE

Roman Numerals

State the number for each Roman numeral.

XXXII XLIV LXVII XLII XCVI XCIV

Add 29 to a Number

Mentally add 30, and then subtract 1 from the sum.

13 + 29 78 + 29 29 + 175 29 + 90

Factor and Product

Point to each number and state whether it is a factor or product:

$$\begin{array}{r} 4 \\ \times\ 3 \\ \hline 12 \end{array}$$

Add 4 Numbers

25 + 25 + 15 + 15 25 + 150 + 75 + 15 30 + 40 + 20 + 16

LESSON 117

COMPLETE

Roman Numerals

State the number for each Roman numeral.

LVII LXXII LIII XXXV LXVI XXXI

Add 4 Numbers

25 + 25 + 15 + 50 25 + 125 + 75 + 15 25 + 75 + 15 + 50

LESSON 118

COMPLETE

Skip Count

- backward by 3s from 105 to 90
- by 20s from 20 to 200

Story Problems

- Each pair of students needs a jump rope. There are 36 students. How many jump ropes are needed?
- How many inches are in 4 feet 2 inches?

There are no mental math lesson boxes
for Lessons 119 and 120 as they are assessments.

After completing Lesson 118,
place the pieces below onto your map where indicated.

B–2

B–1

ANSWER KEY

LESSON 115

COMPLETE

Change from a Dollar

Determine the change from a dollar for each amount. Count up to the next ten, and then count by tens to 100.

12¢ 88¢ 47¢ 53¢ 39¢ 61¢ 24¢ 76¢ 61¢ 39¢ 81¢ 19¢

Add Money Amounts

Add $2.00, and then subtract 2 cents from the sum.

$4.15 + $1.98 $6.13 $6.37 + $1.98 $8.35 $9.29 + $1.98 $11.27 $1.98 + $2.75 $4.73

Skip Count

- by 25s from 500 to 700 500, 525, 550, 575, 600, 625, 650, 675, 700
- backward by 25s from 700 to 500 700, 675, 650, 625, 600, 575, 550, 525, 500

LESSON 116

COMPLETE

Roman Numerals

State the number for each Roman numeral.

XXXII 32 XLIV 44 LXVII 67 XLII 42 XCVI 96 XCIV 94

Add 29 to a Number

Mentally add 30, and then subtract 1 from the sum.

13 + 29 42 78 + 29 107 29 + 175 204 29 + 90 119

Factor and Product

Point to each number and state whether it is a factor or product:

4 factor
× 3 factor
12 product

Add 4 Numbers

25 + 25 + 15 + 15 80 25 + 150 + 75 + 15 265 30 + 40 + 20 + 16 106

LESSON 117

COMPLETE

Roman Numerals

State the number for each Roman numeral.

LVII 57 LXXII 72 LIII 53 XXXV 35 LXVI 66 XXXI 31

Add 4 Numbers

25 + 25 + 15 + 50 115 25 + 125 + 75 + 15 240 25 + 75 + 15 + 50 165

LESSON 118

COMPLETE

Skip Count

- backward by 3s from 105 to 90 105, 102, 99, 96, 93, 90
- by 20s from 20 to 200 20, 40, 60, 80, 100, 120, 140, 160, 180, 200

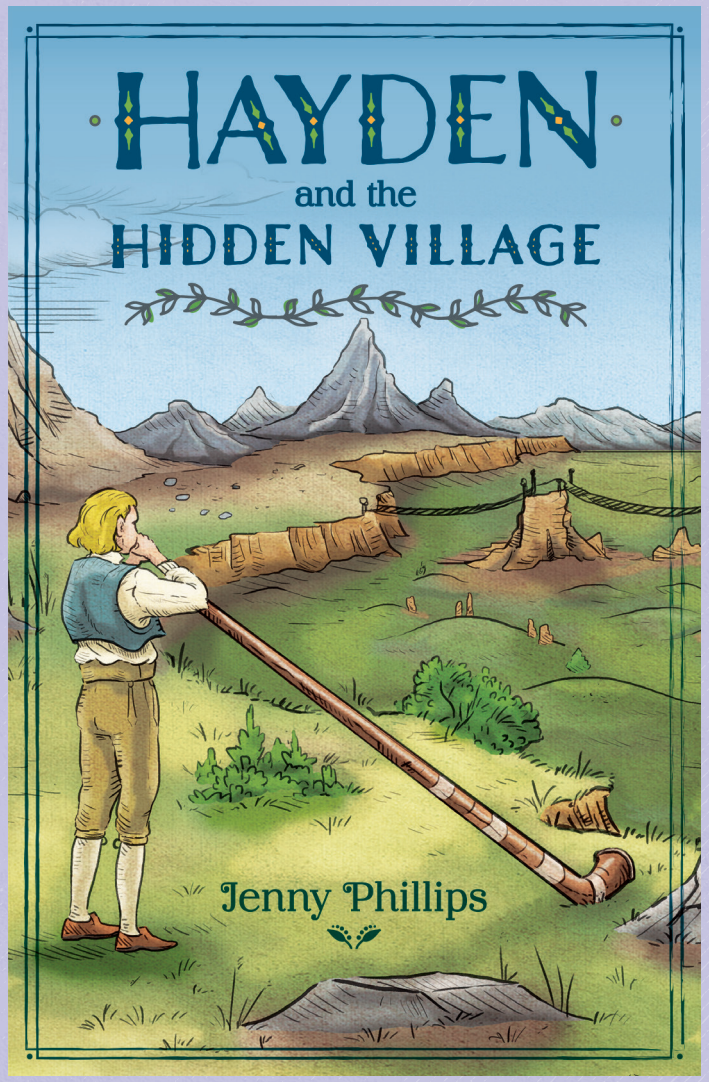
Story Problems

- Each pair of students needs a jump rope. There are 36 students. How many jump ropes are needed? 18 jump ropes
- How many inches are in 4 feet 2 inches? 50 inches

There are no mental math lesson boxes
for Lessons 119 and 120 as they are assessments.

NOTES

Wait to read this book until after you have completed the course book!



The Adventure Begins

Long ago, a boy named Hayden was about to have an adventure. He had no idea, however, because this summer day started out calmly. The sweet melody of cowbells and the whispering wind gave no hint of anything unique or unusual about this day. Hayden lay back on the mountain grass and folded his hands across his stomach, using his rolled-up sweater as a pillow. As he stared up at the clouds collecting into big puffs, he began to sing the song he had been making up in his mind about homophones. For, you see, he did most of his schoolwork each day up in the high pasture as he tended the cows and made sure they did not get close to the cliffs.

"H - a - i - r" is how I say
Something that I brush each day.
"H - a - r - e" is a mammal that I love to see.
"B - r - a - k - e" makes the wagon stop for me.
"B - r - e - a - k" is not good for my knee.

Hayden repeated the song again and then smiled proudly. His mother, who had passed away a couple of years ago, had loved learning. She had collected as many books as she could for their small home library. The family had tried to follow her love of learning after she was gone, and Father took up the role of teacher.

One of the cows had come near Hayden, and he spoke to her, as he often spoke to his cows. "It might be lonely up here in the high pasture," he said to the dark tan cow named Buttercup, "but it sure is beautiful."

Buttercup didn't even look up as she feasted on mouthfuls of green, dew-covered grass.

"Hey! 'Beautiful' is one of my spelling words," said Hayden, still talking to the cow. "Father said to practice my spelling words three times today. Tell me, Buttercup, if I get it right: b - e - a - u - t - i - f - u - l. And here it is in syllables: beau - ti - ful. Are you impressed?"

The cow looked up and let out a short moo, looking as if she were not impressed.

"OK, if you think it is easy, you try to spell 'beautiful,' Buttercup. Try breaking it into syllables: beau - ti - ful."

The cow turned, flipped its tail at an annoying fly, and ambled away.

Hayden laughed and rolled onto his stomach. Resting his chin on his hands, he gazed out across the familiar but stunning landscape. His soul soaked in all the wonders around him—a little piece of heaven. He followed the outlines of the jagged mountain peaks, and he viewed the rolling hills carpeted in softly blowing grass and the sweeping fields of pretty yellow and white wildflowers in the valley. He spotted a group of deer by the church in the valley. Hayden had grown so fond of this area since his family had moved here four years ago. Slowly, Hayden turned his gaze far into the distance to admire the pretty Silver Falls cascading majestically off a cliff into Emerald Lake. Today, he also dared to study the thick pine forest in the valley past the waterfall, a sight he usually avoided because it made him so nervous.

"The Forest of Fog," Hayden said aloud. He pondered what he had heard about the forest. No one he knew had ever gone into that forest. Supposedly, there was a fog in the

Hayden had not ridden a horse since he had fallen off one last year. He was scared. However, little Chloe's happy face appeared in his mind. What a dear girl with her swinging braids and her rosy cheeks. The siblings had grown so close after their mother's death. Chloe was in danger. "I don't care if I break a bone; I'm going to ride to Farmer Bilxby's. Maybe he can help me. He has helped our family with past emergencies." He quickly collected a loaf of bread, a rope, a pocketknife, and a jug of water. He wrapped the items in a blanket and threw them in a basket on the horse's side. Then he rode off, following the narrow road to Mr. Bilxby's farm with his hair flying in the wind.

Farmer Bilxby was not home, and Hayden saw no sign of Chloe or Thomas. Once again, he found himself not knowing what to do as he tried to collect his thoughts.

You Choose

If Hayden rides his horse to Abe's home to find help, skip to **Part C** on page 58.

OR

If Hayden goes to the church and climbs the bell tower to see if he can see Chloe or Thomas somewhere in the valley, skip to **Part E** on page 64.

Hayden heard the trickle of a small stream nearby. Slowly, he led the limping horse to it, cleaned the wound, and then tore part of his shirt into strips and bound them around the wound. After tying his horse to a large boulder that was nearby, he patted the horse lovingly and said, "I will be back to collect you as soon as I can."

Hayden tore off a piece of bread and ate it as he walked quickly toward the Forest of Fog, not even giving his mind a place to think of all the stories he had heard about that mysterious forest. Instead, he thought just of Chloe. Sofia had said she was sure her father could help. He must find him.

Hayden did hesitate when he got to the edge of the forest, but only for a moment. With determination, he entered the thick trees. Instantly, he heard a crashing noise in the bushes, and he froze in place. Two deer bounded out of the bushes and disappeared into the thick trees.

It was just a couple of cute deer, Hayden reassured himself. He looked around. There was no fog—at least not yet. The birds chirped merrily in the treetops, and the pine branches moved peacefully in the breeze. There was no path . . . for the first minute. Then, Hayden discovered a wide and relatively smooth dirt road. He started running down the middle of it, hoping to catch up with Abe, although he felt that that was unlikely to happen.

After five minutes passed, he heard a voice floating to him from a distance. "Is that you, Hayden? Where are you going?"

Hayden stopped in his tracks and looked around. Abe was walking toward him. The short, kind-looking man had unhitched his horses and was letting them drink at a nearby creek.

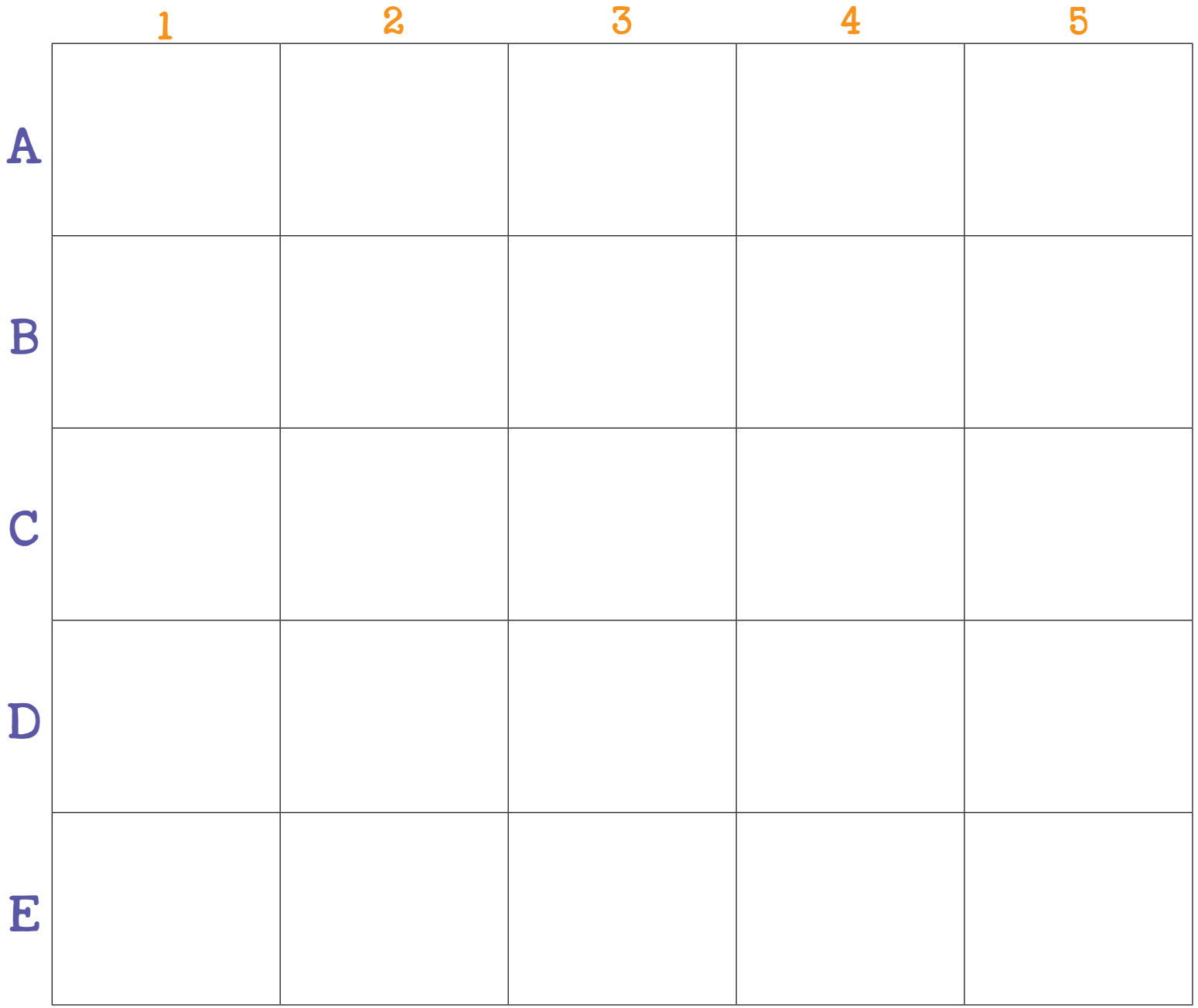
Within a few minutes, the horses were hitched again, and Hayden rode in the wagon on the seat next to Abe.

"Now, don't you worry," Abe reassured him after hearing Hayden's story. "If your sister was following Thomas, everything is OK. I know Thomas and his village. Chloe is likely in no danger."

"But *we* are in danger," said Hayden. "This forest is full of fog and quicksand."

"There is no fog or quicksand," said Abe. Then he sighed. "I guess I'm going to have to tell you the story. This forest

Map



The Good AND THE Beautiful

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SKU 575

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MATH 4

ANSWER KEY

The Good and the Beautiful

CURRICULUM

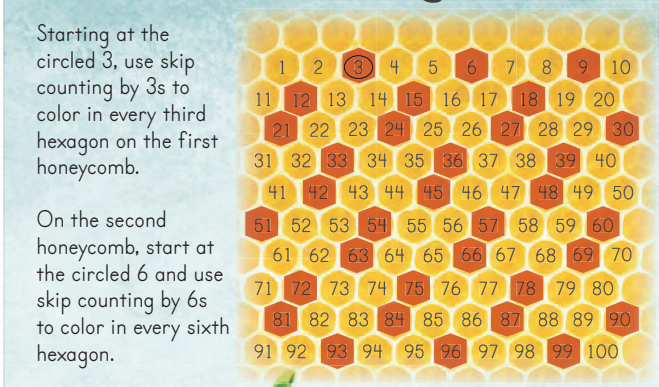
Simply Good and Beautiful

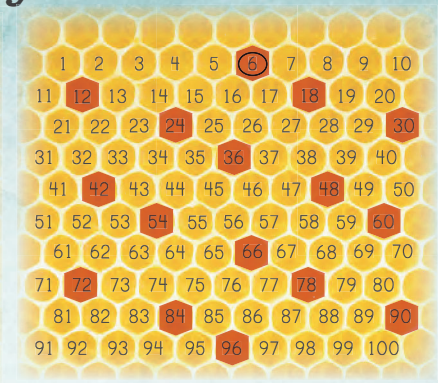
MATH 4 ANSWER KEY

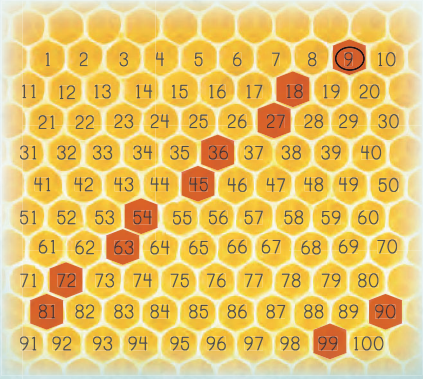
Hexagonal Honeycombs

Starting at the circled 3, use skip counting by 3s to color in every third hexagon on the first honeycomb.

On the second honeycomb, start at the circled 6 and use skip counting by 6s to color in every sixth hexagon.







Starting at the circled 9, use skip counting by 9s to color in every ninth hexagon on the third honeycomb.

Look at the numbers you colored in the last honeycomb. Which number pattern do they follow?

EVEN, EVEN, EVEN, EVEN

EVEN, ODD, EVEN, ODD

Lesson Practice

1. Write a sequence by skip counting by 7s.

7, 14, 21, 28, 35, 42, 49, 56, 63

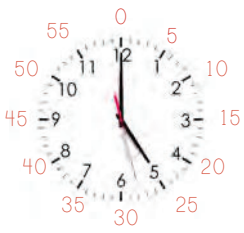
2. Circle the correct pattern for the sequence above.

EVEN, EVEN, EVEN, EVEN EVEN, ODD, EVEN, ODD

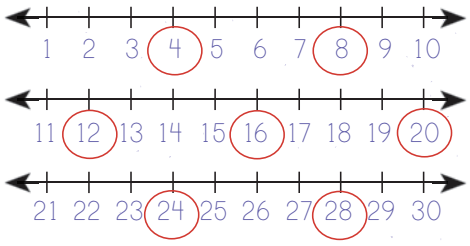
3. Fill in the missing numbers for the following sequence:

8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88

4. Write the minutes around the outside of the clock by skip counting by 5s. The first two have been done for you.

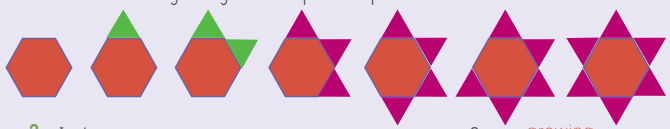


5. Circle the numbers on the number lines that follow the pattern of skip counting by 4s.



Review

1. Continue adding triangles to complete the pattern.



2. Is this pattern a growing pattern or a repeating pattern? growing

3. Complete the multiplication problems.

1 × 9 = 9	3 × 1 = 3	8 × 1 = 8	1 × 1 = 1	5 × 1 = 5	1 × 7 = 7	1 × 0 = 0	2 × 1 = 2

Lesson Practice

1. Complete the problem and label it with these terms: minuend, difference, subtrahend.

```
  368   Minuend
- 237   Subtrahend
  131   Difference
```

2. Complete the problems.

648 − 335 = 313	91 − 53 = 38	$27.65 − $9.58 = $18.07
753 − 382 = 371	64 − 29 = 35	$76.22 − $6.47 = $69.75

3. In the ancient Mayan civilization, maize (corn) was a staple part of a family's everyday diet and would also be sold to support the family. One Mayan family harvested 324 ears of maize. They need to keep 87 to eat this week. How many ears can they sell?

```
  324
-  87
  237
```

4. The Mayans would eat some maize fresh, but most was boiled with lime, drained, and then crushed with a stone to become a type of dough. If the Mayan family uses 62 of their 87 ears of maize for dough, how many will they have left to eat fresh?

```
  87
- 62
  25
```

5. Each ear of maize can be traded for 7 cacao beans. If you trade 9 ears of maize, how many cacao beans will you receive?

7, 14, 21, 28, 35, 42, 49, 56, 63

Review

1. On the calendar below, skip count by 5s aloud and circle each number you say.

2. On the calendar above, skip count by 6s and draw an X on each of the numbers you say.

3. Which number has both a circle and an X? 30

4. Complete the problems.

259 + 137 = 396	885 − 467 = 418	45 + 39 = 84	62 − 29 = 33

5. What is the eighth month of the year? August

6. Insert greater than, less than, or equal to symbols (>, <, =) in the circles to show comparisons.

320 (>) 302 1,010 (<) 1,100 89 (<) 98

4 + 6 + 9 (>) 3 × 5 3 × 9 (>) 8 + 3 + 7

7. Complete the multiplication problems.

5 × 1 = 5	2 × 5 = 10	7 × 2 = 14	0 × 6 = 0	1 × 8 = 8	4 × 2 = 8	5 × 0 = 0

Lesson Practice

MATH MYSTERIES

Solve the problems below to find the answer for each unknown letter. Then use those letters and their values to answer the riddle at the bottom. Try using inverse operations to solve the problems!

8 + T = 20 20 - 8 = T T = 12	B - 7 = 6 6 + 7 = B B = 13	M - 10 = 15 15 + 10 = M M = 25	A + 8 = 16 16 - 8 = A A = 8	12 + P = 23 23 - 12 = P P = 11
E - 13 = 5 5 + 13 = E E = 18	16 + S = 22 22 - 16 = S S = 6	F - 15 = 15 15 + 15 = F F = 30	5 + E = 19 19 - 5 = E E = 14	T + 4 = 11 11 - 4 = T T = 7
H - 8 = 7 7 + 8 = H H = 15	14 + N = 24 24 - 14 = N N = 10	R - 1 = 8 8 + 1 = R R = 9	O + 9 = 12 12 - 9 = O O = 3	V - 2 = 20 20 + 2 = V V = 22

People lose me more than any other item. What am I?

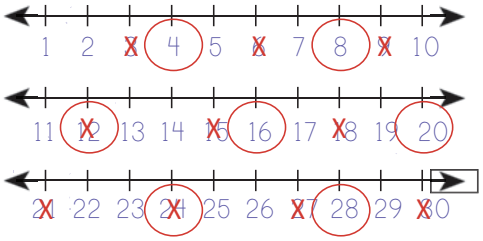
A	T	V	R	E	M	O	T	E
8	7	22	9	14	25	3	12	18

Review

1. Write a fact family for each set of numbers. Each fact family has two addition equations and two subtraction equations.

3, 9, 12	5, 8, 13	9, 13, 22
3 + 9 = 12	5 + 8 = 13	9 + 13 = 22
9 + 3 = 12	8 + 5 = 13	13 + 9 = 22
12 - 3 = 9	13 - 5 = 8	22 - 9 = 13
12 - 9 = 3	13 - 8 = 5	22 - 13 = 9

2. Circle the numbers on the number lines that follow the pattern of skip counting by 4s.



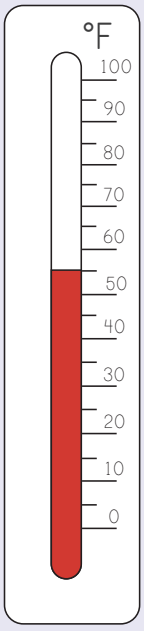
3. On the number lines above, put an X on the numbers that follow the pattern of skip counting by 3s. Which numbers have both a circle and an X?

12, 24

4. Your mom is trying to decide if she wants to make pumpkin pie or apple pie for dessert on Thanksgiving. You volunteer to ask everyone in your entire family which type of pie he or she prefers. You talk to all 23 people who are coming. If 17 of them choose apple pie and the rest choose pumpkin pie, how many people choose pumpkin pie? Show your work in the box to the right.

23 = 17 + X
23 - 17 = X
X = 6

OR 23-17=6



5. Shade the thermometer to show 55 °F.

6. What is the eleventh month of the year?

November

7. Multiply.

5 × 0 = 0	2 × 4 = 8	7 × 0 = 0	5 × 4 = 20
6 × 1 = 6	0 × 4 = 0		
2 × 8 = 16	4 × 1 = 4		

Multiplication patterns follow similar rules to addition patterns. While multiplication is adding equal groups together to find the total amount, skip counting is a number pattern with multiples. A multiple of a number is the product of a number and an integer.

Multiplication Rules:

Even × Even = Even
Even × Odd = Even
Odd × Odd = Odd

Notice that any number multiplied by an even number will equal an even number. Multiples of 4 follow two of the multiplication rules listed above. Each multiple of 4 is an even number because 4 is an even number.

Even × Even = **Even** & Even × Odd = **Even**

Multiples of 4	Multiplication Problem	Rule
4	4 × 1	even × odd = even
8	4 × 2	even × even = even
12	4 × 3	even × odd = even
16	4 × 4	even × even = even
20	4 × 5	even × odd = even
24	4 × 6	even × even = even
28	4 × 7	even × odd = even

Lesson Practice

1. Put a box around the factors and find the product.

$\begin{array}{r} \boxed{2} \\ \times\ \boxed{5} \\ \hline 10 \end{array}$ $\begin{array}{r} \boxed{5} \\ \times\ \boxed{10} \\ \hline 50 \end{array}$ $\begin{array}{r} \boxed{1} \\ \times\ \boxed{9} \\ \hline 9 \end{array}$

2. Use the commutative property to rewrite this equation by changing the order of the factors.

12 × 10 = 120

10 × 12 = 120

3. Write a multiplication equation for each array.


2 × 3 = 6


3 × 9 = 27


8 × 8 = 64

4. Write a multiplication problem to represent multiplying groups of objects.




3 × 6 = 18

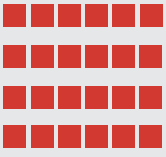

5 × 4 = 20

Read with your parent or teacher

5. Complete the chart.

Multiples of 7	Multiplication Problem	Rule
7	7 × 1	odd × odd = odd
14	7 × 2	odd x even = even
21	7 x 3	odd × odd = odd
28	7 x 4	odd x even = even
35	7 × 5	odd x odd = odd
42	7 x 6	odd × even = even
49	7 x 7	odd x odd = odd

6. Draw an array of squares for the multiplication problem 4 × 6. How many squares did you draw? 24



Multiplication Mastery

Memorizing multiplication facts is an essential part of this course. Knowing the answers to multiplication problems instantly makes many math concepts much easier to teach and to learn.

You will work on memorizing Set A and Set B during this first unit. You will use the Multiplication Mastery Chart on page 395 in the back of the book to keep track of your progress. The course will tell you when to use the chart. In most lessons the course book will instruct you to work for 10 minutes or more on multiplication facts. You will be practicing Set A in this lesson. Ask your parent or teacher which resource from page 5 you will use to practice the facts.

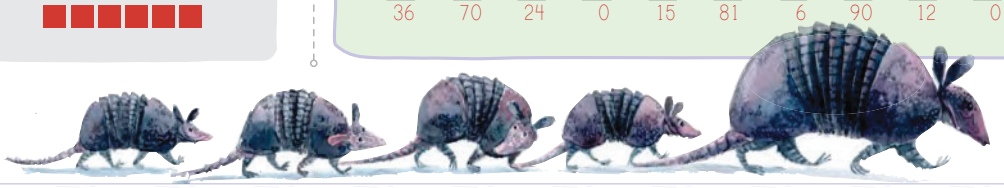
If you already have these multiplication facts memorized, you do not need to complete the 10 minutes of multiplication facts practice, but you will still write the answers to all the problems in the "Multiplication Fact Practice" boxes in each lesson.

In addition to the facts in Set A, you will also practice the 0s, 1s, 10s, and 11s facts in the colored boxes in each review section.

✧ Multiplication Fact Practice ✧

Practice Set A for 10 minutes or more by doing *Musical Multiplication* or flashcards. Then complete the problems in this section.

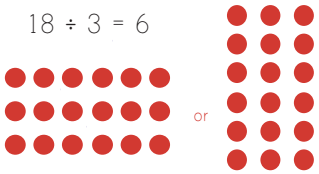
3 × 3 = 9	1 × 6 = 6	8 × 4 = 32	5 × 3 = 15	8 × 8 = 64	9 × 10 = 90	5 × 5 = 25	4 × 6 = 24	4 × 8 = 32	1 × 3 = 3
6 × 6 = 36	10 × 7 = 70	6 × 4 = 24	4 × 0 = 0	3 × 5 = 15	9 × 9 = 81	6 × 1 = 6	10 × 9 = 90	3 × 4 = 12	0 × 8 = 0



Lesson Practice

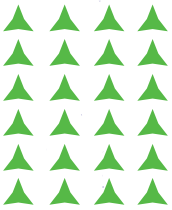
1. Draw an array for the division equation.

18 ÷ 3 = 6



or

2. Write a division equation for this array.



24 ÷ 6 = 4

or

24 ÷ 4 = 6

3. Write a division equation for this array.

9 ÷ 3 = 3

4. Draw an array for the division equation.

10 ÷ 5 = 2

or

5. The terra-cotta warriors in China (pictured below) were discovered in 1974 when workers digging a well stumbled upon the buried figures. There are an estimated 8,000 warriors at the site.

Let's divide a group of 12 warriors into 2 equal groups. How many warriors are in each group? 6

Now divide the 12 warriors into 4 equal groups. How many warriors are in each group? 3

Can you divide the 12 warriors into 3 equal groups? How many warriors are in each group? 4

6. What is the divisor in this equation? 5
What is the quotient? 6

30 ÷ 5 = 6

Review

1. Shade half of each shape.

2. What time is it when someone says it is "quarter to eight"?

7:45

3. Complete the chart.

Multiples of 9	Multiplication Problem	Rule
9	9 × 1	odd × odd = odd
18	9 × 2	odd × even = even
27	9 × 3	odd × odd = odd
36	9 × 4	odd × even = even
45	9 × 5	odd × odd = odd
54	9 × 6	odd × even = even
63	9 × 7	odd × odd = odd

4. Change these addition problems to multiplication problems.

12 + 12 + 12 + 12 4 × 12

3 + 3 + 3 + 3 + 3 + 3 + 3 7 × 3

5. Complete each problem.

526 − 248 = 278	$35.35 + $17.62 = $52.97	999 + 999 = 1,998
Q + 4 = 18; Q = 18 − 4; Q = 14	P − 7 = 18; P = 18 + 7; P = 25	
379 + 181 = 560	$25.86 − $13.95 = $11.91	888 + 777 = 1,665

✧ Multiplication Fact Practice ✧

Practice Set A for 10 minutes or more by doing *Musical Multiplication* or flashcards. Then complete the problems in this section.

8 × 8 = 64	4 × 6 = 24	3 × 5 = 15	1 × 2 = 2	6 × 6 = 36	9 × 10 = 90	5 × 1 = 5	0 × 4 = 0
6 × 4 = 24	3 × 3 = 9	10 × 1 = 10	5 × 5 = 25	5 × 3 = 15	9 × 9 = 81	8 × 4 = 32	6 × 10 = 60

The value of each digit can be found by multiplying the digit and its place value.

3	1	9	,	7	6	2	,	4	5	8
hundred millions	ten millions	millions		hundred thousands	ten thousands	thousands		hundreds	tens	ones

PLACE VALUE

3 × 100,000,000 = 300,000,000
1 × 10,000,000 = 10,000,000
9 × 1,000,000 = 9,000,000
7 × 100,000 = 700,000
6 × 10,000 = 60,000
2 × 1,000 = 2,000
4 × 100 = 400
5 × 10 = 50
8 × 1 = 8

Math Tip

Multiplying a number by one does not change the value of the number.

Lesson Practice

1. Read the following numbers aloud to your parent or teacher.
   375,000 16,400 8,650,108 65,240,312

2. Write commas in the following numbers. The first one has been done for you.
   4,895,217 21,487 5,790 355,018 541,235,017

3. Write the missing labels on the place value chart. Then write this number at the bottom of the chart: 214,786,345

Billions			Millions			Thousands			Ones		
Hundred Billions	Ten Billions	Billions	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
			2	1	4	7	8	6	3	4	5

4. Which digit in the number above is in the hundred thousands place? 7

5. Which digit in 24,578,105 is in the ten millions place? 2

6. Which digit in 68,741,024 is in the ten thousands place? 4

✧ Multiplication Fact Practice ✧

Practice Set A for 10 minutes or more by doing *Musical Multiplication* or flashcards. Then complete the problems in this section.

5 × 3 = 15	8 × 4 = 32	5 × 1 = 5	3 × 3 = 9	9 × 10 = 90	5 × 5 = 25
9 × 9 = 81	4 × 3 = 12	8 × 8 = 64	0 × 4 = 0	6 × 6 = 36	6 × 4 = 24

African Art

Complete the math problems to discover the colors you need to complete the picture. You can color in all the small spaces without numbers with any color you'd like.

53 − 37 = 16 Light Brown

6 × 2 = 12 Orange

94 − 87 = 7 Dark Blue

10 × 5 = 50 Light Purple

36 + 34 = 70 Dark Green

7 × 0 = 0 Yellow

69 − 55 = 14 Light Green

3 × 2 = 6 Dark Brown

19 + 11 = 30 Light Blue

5 × 1 = 5 Dark Purple

Lesson Practice

ALL ABOARD!

Write each number in expanded form above the trains. Write one number for each train car. You do not need to write anything for place values of 0.

22

256,039

7,817

3,480

69,448

2,146,830

Lesson Practice Continued

1. Write the following numbers in expanded form.

24,312 — 20,000 + 4,000 + 300 + 10 + 2

65,108 — 60,000 + 5,000 + 100 + 8

5,877 — 5,000 + 800 + 70 + 7

2. Write the standard form for each number.

6,000 + 300 + 40 + 2 — 6,342

300,000 + 6,000 + 500 + 20 — 306,520

90,000 + 8,000 + 70 + 4 — 98,074

20,000 + 6,000 + 100 + 20 — 26,120

Review

1. Write the missing labels on the place value chart. Then write this number at the bottom of the chart: 248,147,890

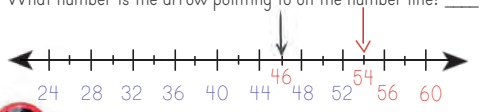
Billions			Millions			Thousands			Ones		
Hundred Billions	Ten Billions	Billions	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
			2	4	8	1	4	7	8	9	0

2. Which digit in 415,201,325 is in the ten millions place? 1

3. Write commas in the following numbers.

9,814,526 25,741 8,547 584,765,012

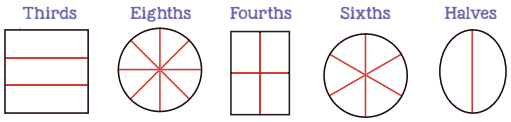
4. What number is the arrow pointing to on the number line? 46



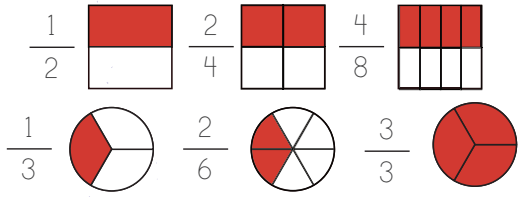
5. Fill in the last two numbers on the number line.

6. Draw an arrow to indicate the number 54 on the number line.

5. Draw lines to divide each shape into the fractional amount listed.



6. Divide and shade the shapes to show the indicated fractions.



7. What fraction of the letters in the word MISSISSIPPI are the letter I? 4/11

8. What fraction of your family is younger than 14? Answers may vary.

Read with your parent or teacher

You are now ready to take your first Multiplication Mastery Assessment. Have your parent or teacher quiz you on Multiplication Set A using the Multiplication Mastery Chart on page 395.

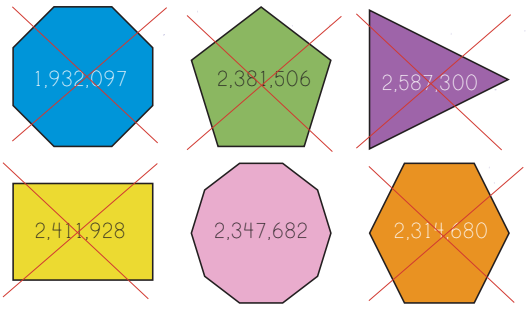
Parent/Teacher: Indicate which facts from Set A the student has mastered in the "Mastered" column on page 395. The student will continue to review and practice these facts throughout the course.

Review

MATH MYSTERIES

Who Am I?

Read the clues below to determine the mystery number.



- I am more than 2,000,000.
- I am less than 2,500,000.
- I have a 3 in the hundred thousands place.
- Rounded to the nearest hundred thousand, I'm 2,300,000.
- I am not inside the hexagon.
- Who am I? 2,347,682

What is the name of the shape the mystery number is in?

decagon

Lesson 16

REVIEW GAMES

Complete *Mental Math Map Mysteries*.
There is no video for this lesson.

Number Search

(Writing and Reading Numbers)

Write each number using digits, and then circle it in the puzzle below. Don't forget the commas! Hint: Numbers are vertical and horizontal only.

a. thirty-six thousand, four hundred eighty-two 36,482
b. fifty-seven million, twenty-eight thousand, two hundred fifty-nine 57,028,259
c. two million, eight hundred nineteen thousand, six hundred seven 2,819,607
d. fifty-one thousand, four hundred twenty-six 51,426
e. thirty-two thousand, four hundred ninety-five 32,495
f. nine million, six hundred five thousand, one hundred fifty-three 9,605,153
g. four million, two hundred forty-eight thousand, eight hundred thirteen 4,248,813
h. forty-one million, four hundred fifty-eight thousand, two hundred fifty-eight 41,458,258

5	1	9	7	8	5	4	2
9	4	2	4	8	8	1	3
6	4	8	2	1	3	4	9
0	5	1	4	2	6	5	3
5	8	9	0	3	4	8	2
1	5	6	7	9	8	2	4
5	7	0	2	8	2	5	9
3	2	7	1	5	3	8	5

Gifts Galore

(Adding and Subtracting)

In Japan at midsummer, people give each other gifts to show love and appreciation. These gifts are called *ochugen*. Does Niko have enough money to buy ochugen for all of her family and friends? Add and subtract to find out.

1. Niko earned $78.45 babysitting and $46.28 weeding gardens. How much does she have to spend?
$ 78.45 + $ 46.28 = $ 124.73

2. Niko purchased a box of *higashi*, molded candies, for her older brother for $18.22.
$ 124.73 - $ 18.22 = $ 106.51

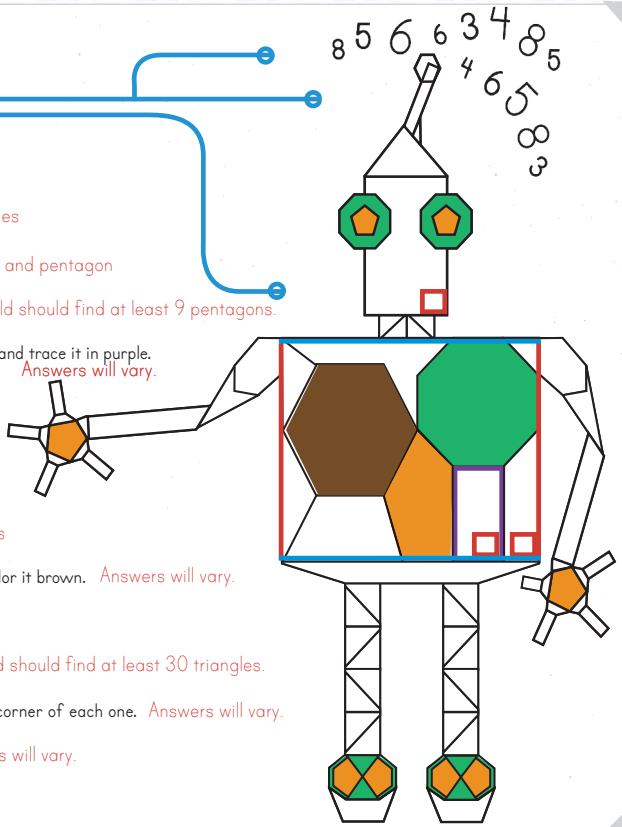
3. Next Niko bought *manjū*, steamed buns filled with red bean paste, for her parents for $32.68.
$ 106.51 - $ 32.68 = $ 73.83

4. Niko picked up a bouquet of *ajisai* flowers for her church teacher for $27.56.
$ 73.83 - $ 27.56 = $ 46.27

5. Finally, Niko bought a *shuji*, or calligraphy brush, for her grandmother for $39.27.
$ 46.27 - $ 39.27 = $ 7.00

How much money does Niko have left? $ 7.00

ROBOT REVIEW



- How long are the robot's legs to the nearest inch? 2 inches
- Which two polygons make up the robot's eyes? octagon and pentagon
- How many pentagons can you find on the robot? The child should find at least 9 pentagons.
- Find a polygon on the robot made up of four right angles and trace it in purple. Answers will vary.
- Color five octagons green. Answers will vary.
- Find and trace a pair of vertical parallel lines in red. Answers will vary.
- Which four polygons make up the robot's feet? octagon, pentagon, triangle, hexagon
- How tall is the robot to the nearest half inch? 6.5 inches
- Find a polygon on the robot with six obtuse angles and color it brown. Answers will vary.
- Color nine pentagons orange. Answers will vary.
- How many triangles did you find on the robot? The child should find at least 30 triangles.
- Find three right angles and draw a small square in the corner of each one. Answers will vary.
- Trace a pair of horizontal parallel lines in blue. Answers will vary.

LESSONS 29-30

UNIT ASSESSMENT

Supplies
12-inch ruler

Parent/Teacher

Read the following information aloud to the child: Unit assessments give you practice with the mathematical concepts learned in this course without having you overpractice concepts that you have mastered. These assessments also give you practice working on exercises for an extended period of time. This helps you to extend your 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 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. And finally, if you feel you are having trouble focusing, take a quick break to do something else, like ten jumping jacks. There are no videos for Lessons 29–30.

For Lesson 29 complete all the exercises with PURPLE headers ONLY. Your parent or teacher will correct the work. If you make one or more mistakes in a section, your parent or teacher will check the orange "Additional Practice" checkbox for that section.

For Lesson 30 complete all the orange sections **that are checked**. If you still miss multiple problems, go back and rewatch the video or reread the mini lesson for that topic. All the principles will be reviewed again in future units. If you have only a few or no orange sections to practice, you may move on to the next unit.

Student

READING SCALES & MEASURING (LESSON 23)

1. Label the inch scale below with the missing half-inch and quarter-inch measurements.

2. Measure this line segment to the nearest quarter inch. $3\frac{3}{4}$ in

3. How long is the lollipop? $2\frac{1}{4}$ in

Additional Practice

1. Draw a line segment that is $2\frac{3}{4}$ inches long.

2. Measure the following line segment to the nearest inch. 3 in

3. Find an object in your house that measures between 3 inches and 4 inches. Show it to your parent or teacher.

Answers will vary.

ADDITION, SUBTRACTION & WRITING NUMBERS
(LESSONS 19 & 20)

1. Complete each problem.

7,000,000 − 5,347,501 = 1,652,499

32,461,084 + 41,372,407 = 73,833,491

172,681,364 + 441,132,737 = 613,814,101

20,000,000 − 8,274,391 = 11,725,609

2. Write the following numbers using digits.

Twenty-four million, six hundred seventy-two thousand, nine hundred thirty-one 24,672,931

Seven billion, three hundred nineteen million, nine hundred forty-six thousand, two hundred four 7,319,946,204

3. Write the following number using words.

357,618,452

three hundred fifty-seven million, six hundred eighteen thousand, four hundred fifty-two

Additional Practice

Use the chart to answer the following questions.

Object	Number
	48,304,971
	22,374,019
	60,000,000
	35,476,945

1. How many cacao beans are there? Write the number in word form.
thirty-five million, four hundred seventy-six thousand, nine hundred forty-five

2. How many rubber ducks and bees are there in total? 70,678,990

3. How many more bottles of milk are there than rubber ducks? 37,625,981

4. How many cacao beans and bees are there in total? 83,781,916

MULTIPLYING
(LESSONS 5 & 26)

3,193 × 3 = 9,579

144 × 2 = 288

3,425 × 5 = 17,125

439 × 4 = 1,756

6,072 × 3 = 18,216

834 × 2 = 1,668

3,492 × 9 = 31,428

460 × 6 = 2,760

Additional Practice

134 × 2 = 268

362 × 5 = 1,810

493 × 4 = 1,972

271 × 3 = 813

421 × 2 = 842

1,204 × 2 = 2,408

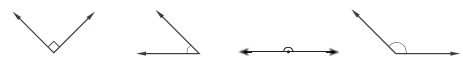
3,641 × 4 = 14,564

5,432 × 5 = 27,160

7,260 × 3 = 21,780

ANGLES
(LESSON 13)

Name the types of angles below.



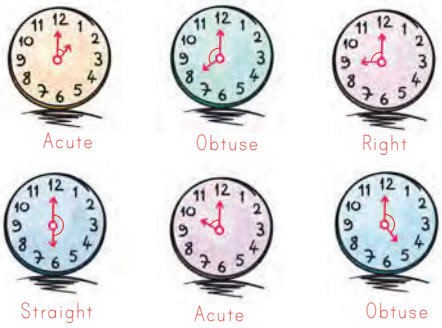
Right Acute Straight Obtuse

Look at each angle measurement and match it with the angle type. Some angle types will match more than one measurement.

22° — acute
90° — right
141° — obtuse
69° — acute
180° — straight
102° — obtuse

Additional Practice

Label each clock with the type of angle formed by its hands.



Acute | Obtuse | Right | Straight | Acute | Obtuse

ELAPSED TIME
(LESSONS 18 & 25)

1. At 7:24 AM you started your math lesson. At 8:48 AM you finished the last problem. How long did the lesson take you to complete?

1 hour 24 minutes

2. Next, you started working on your science project. You started at 9:12 AM, and it took 2 hours and 7 minutes to complete. What time did you finish your science project?

11:19 AM

3. Mary and her family are driving from Kansas to Colorado. They leave at 7:35 AM and arrive at 11:23 AM. How long did the drive take?

3 hours 48 minutes

4. Takeshi ran in a race for a local charity. It took him 2 hours and 27 minutes to complete the race, and he finished at 4:38 PM. What time did the race start?

2:11 PM

Additional Practice

Fill in the missing start and end times for each flight. Show your work on a separate piece of paper.

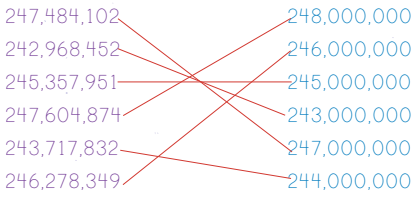
Destination	Start Time	Flight Duration	End Time
Hamburg, Germany	8:31 AM	3 hours 13 minutes	11:44 PM
Vancouver, Canada	2:36 PM	7 hours 39 minutes	10:15 PM
Nairobi, Kenya	1:50 PM	2 hours 52 minutes	4:42 PM
Nong Kai, Thailand	1:47 AM	8 hours 24 minutes	10:11 AM
Buenos Aires, Argentina	5:57 PM	2 hours 42 minutes	8:39 PM

PLACE VALUE & ROUNDING
(LESSONS 7, 11 & 19)

1. Round each number below to the place values indicated.

	Ten Thousands	Millions	Ten Millions
51,487,354	51,490,000	51,000,000	50,000,000
88,274,650	88,270,000	88,000,000	90,000,000
37,623,013	37,620,000	38,000,000	40,000,000
15,378,634	15,380,000	15,000,000	20,000,000

2. Match each number with its value rounded to the nearest million.



3. Circle the digit in the thousands place. Put a box around the digit in the ten millions place. Underline the digit in the hundred thousands place. Round the number to the hundred millions place.

347,612,854

300,000,000

Additional Practice

1. Round the number in red to each value listed in the chart.

347,612,854

round to the nearest 100,000	round to the nearest 1,000,000	round to the nearest 10,000,000	round to the nearest 100,000,000
347,600,000	348,000,000	350,000,000	300,000,000

2. Write the missing labels on the place value chart. Then write this number at the bottom of the chart: 841,067,247

Millions			Thousands			Ones		
Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
8	4	1	0	6	7	2	4	7

3. Round 37,691,452 to the nearest ten million. 38,000,000

4. Round 7,121,547 to the nearest hundred thousand. 7,100,000

5. Write the place value of each red digit.

4,874,352 thousands

271,684,025 ten millions

54,309,754 hundred thousands

GEOMETRIC FIGURES & POLYGONS (LESSONS 10 & 14)

Answers will vary.

1. Follow the directions.
   - Trace a horizontal line segment in green.
   - Trace a vertical line segment in red.
   - Trace an oblique line segment in blue.
   - Trace a pair of perpendicular line segments in yellow.
   - Trace a pair of parallel line segments in orange.
   - Trace a pair of intersecting line segments in purple.

2. Answer the questions by writing the names of the polygons shown above.

Which polygon has right angles? square

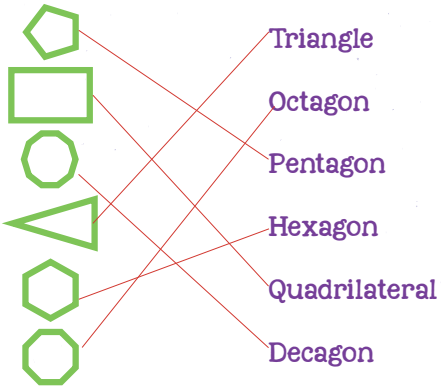
Which polygon has only acute angles? triangle

Which polygon has four sets of parallel lines? octagon

Which polygons are left? pentagon and hexagon

Additional Practice

1. Draw a line from each polygon to its name.



2. Use the clues to identify the mystery letter.

A M F L G X Z O H J T

I have no oblique line segments.

I have only straight line segments.

I have a set of parallel line segments.

I have a set of perpendicular line segments.

I have two horizontal line segments and one vertical line segment.

Which letter am I?

COMPARE, ORDER & ESTIMATE NUMBERS (LESSONS 22 & 24)

1. Grace completed the problem below. Round both numbers to the nearest ten thousand and estimate the answer. Based on your estimation, is Grace's answer likely right or wrong?

```
 913413
 833,349
-344,917
 690,432
```

```
 840,000
-340,000
 500,000
```

likely wrong

2. Order the numbers below from greatest (on top) to least.

347,287,104	347,841,358
347,841,358	347,764,020
347,231,985	347,287,104
347,764,020	347,234,765
347,234,765	347,231,985

Additional Practice

1. Compare the two numbers and fill in the <, >, or = symbol.

39,715,624 < 39,717,842	2,629,374 < 2,629,719
84,617,619 > 84,617,270	492,726,311 < 492,746,997
2,674,824 > 677,917	3,374,035 < 21,379,674

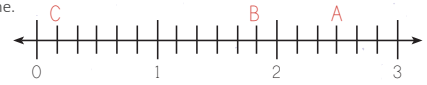
2. Round to the nearest hundred thousand and estimate the sum.

```
 2,631,049
+1,282,437
```

```
 2,600,000
+1,300,000
 3,900,000
```

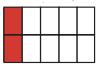
FRACTIONS & MIXED NUMBERS (LESSONS 15 & 21)

1. Plot and label the following mixed numbers and fraction on the number line.

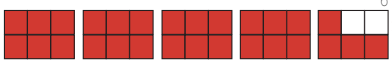


A = $2\frac{3}{6}$ B = $1\frac{5}{6}$ C = $\frac{1}{6}$

2. Divide and shade each shape to match the fraction listed.

$\frac{2}{4}$  $\frac{2}{3}$  $\frac{2}{8}$  $\frac{2}{10}$ 

3. Draw a picture to represent the mixed number $4\frac{4}{6}$.



Shapes will vary.

Additional Practice

1. Write the location of each point shown on the number line.

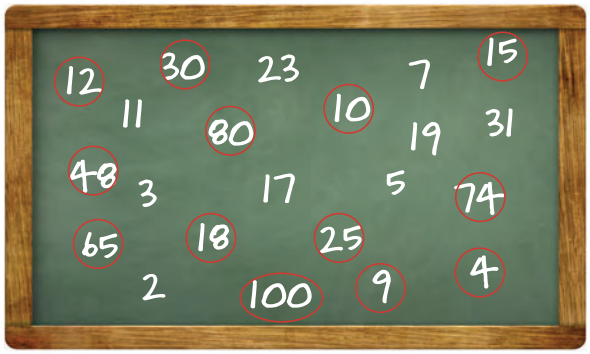
B = $2\frac{1}{4}$ K = $\frac{1}{4}$ T = $1\frac{3}{4}$

2. Draw a picture to represent the mixed number $2\frac{1}{4}$.

Shapes will vary.

Review

1. Circle all the composite numbers on the board. There are 13.



2. List the composite numbers you found above in order from least to greatest. Then circle all the odd composite numbers listed below.

4, (9), 10, 12, (15), 18, (25), 30, 48, (65), 74, 80, 100

3. Complete each division problem on scratch paper.

$6\overline{)246}$ = 41 $\quad 4\overline{)168}$ = 42

$3\overline{)219}$ = 73 $\quad 7\overline{)357}$ = 51

1. Divide ÷
2. Multiply x
3. Subtract -
4. Bring Down ↓

Repeat

4. Ralph and Ernesto are collecting rocks for a rock collection. Today at the park, they found 4 black rocks and 6 shiny multicolored rocks. What fraction of their rock collection is made up of black rocks?

$\frac{4}{10}$

Targeted Multiplication Fact Practice

Practice any problems you missed in your Set D quiz in Lesson 49. Then complete the problems in this section.

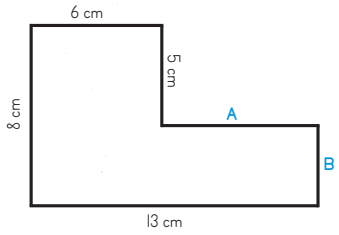
12 × 3 = 36	4 × 8 = 32	12 × 8 = 96	7 × 3 = 21	8 × 6 = 48	9 × 9 = 81	12 × 4 = 48	12 × 11 = 121	12 × 6 = 72	12 × 12 = 144	12 × 5 = 60	12 × 7 = 84	12 × 9 = 108
9 × 12 = 108	6 × 3 = 18	11 × 12 = 132	3 × 3 = 9	5 × 12 = 60	5 × 7 = 35	4 × 12 = 48	7 × 12 = 84	2 × 12 = 24	6 × 7 = 42	3 × 12 = 36	8 × 12 = 96	6 × 12 = 72

Better Butterflies

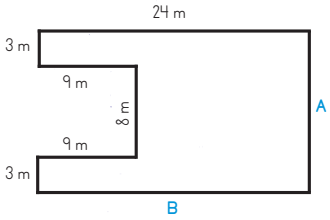
Find the missing factor on each butterfly for the number at the top of the column. Use your multiplication facts or long division on scratch paper, if necessary.
Note: Not every factor is shown for each number.

Lesson Practice

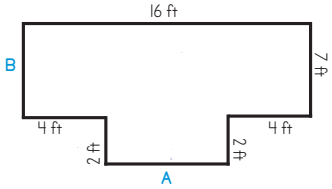
1. Find the lengths of the missing sides. Then find the perimeter of each irregular shape.



A = 7 cm
B = 3 cm
Perimeter = 42 cm

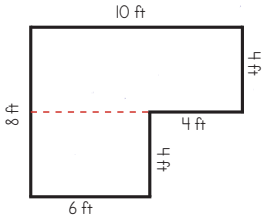


A = 14 m
B = 24 m
Perimeter = 94 m

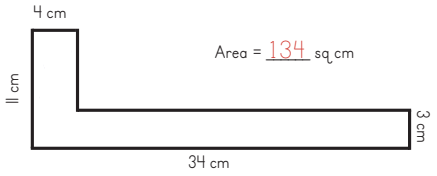


A = 8 ft
B = 7 ft
Perimeter = 50 ft

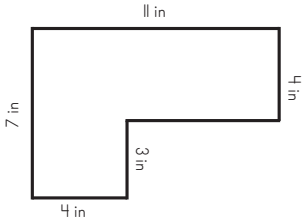
2. Find the area of each irregular shape by dividing it into smaller shapes, finding the area of each shape, and adding those areas together. The first shape has been divided for you.



Area = 64 sq ft



Area = 134 sq cm



Area = 56 sq in

Review

1. Circle the fraction that is not in simplest form and reduce it.

$\frac{3}{4}$ $\frac{1}{15}$ $\frac{2}{3}$ $\frac{2}{8}$ $\frac{1}{2}$ $\frac{3}{25}$ → $\frac{1}{4}$

2. Reduce each fraction to its simplest form.
Remember, you may need to divide more than once.

$\frac{3}{9}$ → $\frac{1}{3}$ $\frac{4}{12}$ → $\frac{1}{3}$ $\frac{2}{8}$ → $\frac{1}{4}$ $\frac{5}{15}$ → $\frac{1}{3}$

3. Find a common denominator to add or subtract the fractions.

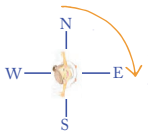
$\frac{1\cancel{4}}{\cancel{3}12} + \frac{3}{12} = \frac{7}{12}$ $\frac{12}{48} + \frac{1\cancel{6}}{\cancel{8}48} = \frac{18}{48}$ $\frac{\cancel{3}15}{\cancel{4}20} + \frac{2}{20} = \frac{17}{20}$

$\frac{9}{15} - \frac{\cancel{2}6}{\cancel{5}15} = \frac{3}{15}$ $\frac{16}{24} - \frac{\cancel{2}8}{\cancel{6}24} = \frac{8}{24}$ $\frac{5}{8} - \frac{1\cancel{4}}{\cancel{2}8} = \frac{1}{8}$

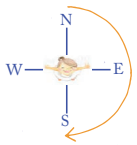
4. Write all the multiples of 6 between 24 and 66.

24, 30, 36, 42, 48, 54, 60, 66

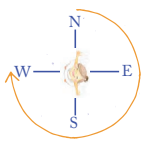
5. Write the measurement of each clockwise turn in degrees.



90°

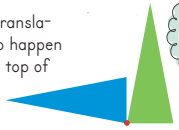


180°



270°

6. Which geometric transformation (translation, rotation, or reflection) needs to happen to move the blue triangle directly on top of the green triangle?



rotation

See the Reference Guide on page 394.

7. Complete each problem. Use scratch paper if necessary.

$2\overline{)136}$ = 68 $7\overline{)238}$ = 34 $4\overline{)252}$ = 63 $9\overline{)513}$ = 57

3 × 3 = 9	9 × 5 = 45	5 × 6 = 30	6 × 6 = 36	12 × 4 = 48	5 × 3 = 15	12 × 12 = 144	6 × 3 = 18	12 × 5 = 60	7 × 3 = 21	5 × 7 = 35	4 × 5 = 20	12 × 3 = 36	9 × 8 = 72	4 × 4 = 16