Simply

Good and Beautiful

MATH 5

COURSE BOOK

The Good and the Beautiful
CURRICULUM

Table of Contents

ABOUT THE COURSE

Supplies Needed

- *Simply Good and Beautiful Math 5 Course Book*
- *Simply Good and Beautiful Math 5 Answer Key*
- *Math 5 Mental Math Map Mysteries*
- *Simply Good and Beautiful Math Scratch Pad* or other scratch paper
- Device to access videos (highly recommended)
- Pencils
- Colored pencils
- Scissors
- Protractor
- Standard dice
- Paper clip
- Coin
- Ruler
- 1 index card or cardstock
- Tape

Course Overview

Math 5 consists of 120 lessons divided into four units. Each unit ends with a unit 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 three pages and consist of four parts: video lesson, mini 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/Math5 to access the videos.

Mini Lesson: A concise written lesson on the topic.

Practice: Practice that is dedicated to the lesson topic.

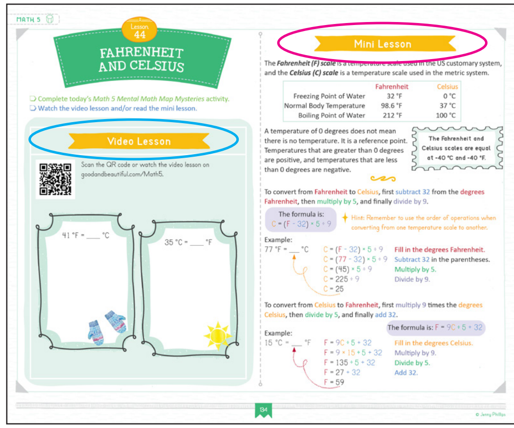
Review: Daily review of topics from previous lessons.

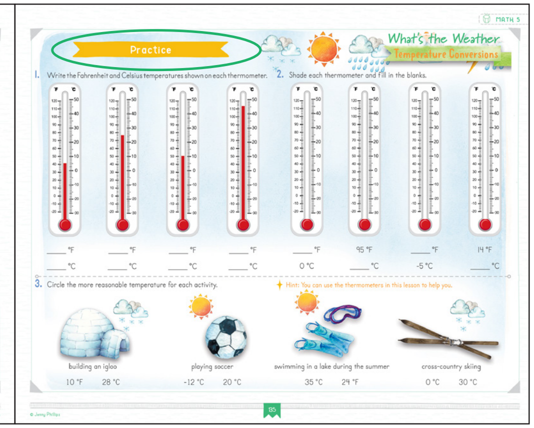
A Reference Guide is included at the end of the course book.

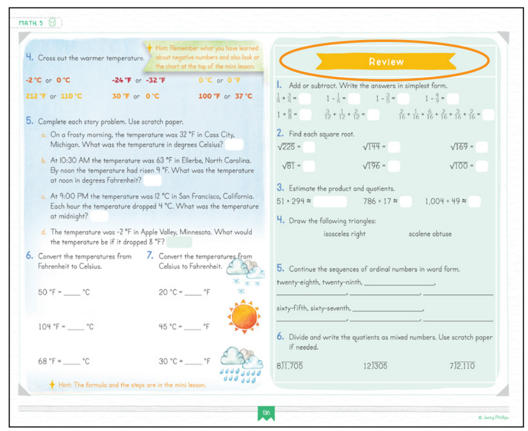
Getting Started

Simply open the course book. Students may choose to watch the video lesson or to just read the mini lesson if they feel confident in the lesson topic. 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 the 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 5 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 and complete the practice and review sections.

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 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 4, and it's expected that most students will know the information already.

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.

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 5 completed independently by the child?

- Yes, Math 5 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 the child's work and should do so on a daily basis when possible, providing immediate feedback.

Is Math 5 a spiral or mastery program?

- Math 5 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.

Is a calculator used in Math 5?

- Calculators are not used in this course. By Math 5, students are expected to have their multiplication facts mastered. If they do not, we strongly recommend spending extra time each day to work on this skill as the child may have difficulty until the facts are memorized.

UNIT 1 OVERVIEW

LESSONS 1–30

Extra Supplies Needed

- ruler
- protractor
- colored pencils

New Concepts Taught

- angle measurements with protractors
- divisibility rules for dividing by 3, 4, 6, and 9
- double and triple line graphs
- double bar graphs
- estimation of products and quotients with area
- infinite sequences
- multiplication and division with powers of 10
- order of operations with exponents greater than 2
- ordered pairs on a coordinate grid with four quadrants
- perfect squares to 225
- prime factorization
- square roots

Concepts Reviewed and Expanded Upon

- associative property of multiplication
- divisibility rules for dividing by 2, 5, and 10
- exponents
- geometric figures and solids
- long division with remainders; checking quotients
- mean, median, mode, and range
- missing factors
- number patterns
- positive and negative numbers
- prime and composite numbers
- short division
- similar and congruent shapes
- single line graphs and bar graphs
- units of length conversions
- zero in a quotient

Lesson 1

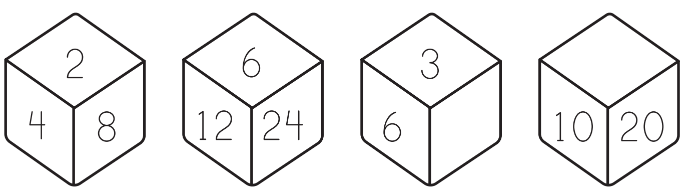
NUMBER PATTERNS

- Read the instructions and complete today's activity in your *Math 5 Mental Math Map Mysteries* book.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math5. The section below is used during the video.

3, 6, 9, ___, 15, 18, 21, ___, ___, ___



Mini Lesson

Number patterns are numbers arranged following a rule or rules. There are so many beautiful patterns in our universe!



A sequence is a list of numbers following a certain pattern. Each number in a sequence is called a term. The sequence of odd numbers below has four terms.

1, 3, 5, 7

When a sequence continues on without stopping, it is called an infinite sequence. Three dots (called an ellipsis) are used to show that this sequence of even numbers continues on.

2, 4, 6, 8, 10, . . .

Math patterns follow rules. Once you figure out the rule, you can fill in or continue a pattern or sequence.

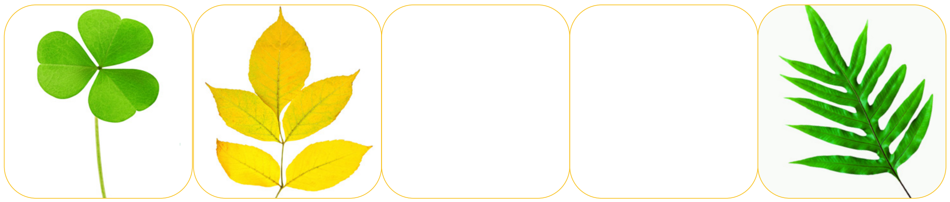
The sequence below is missing four terms. To complete the sequence, look at the numbers to see how they change from one number to the next. Are they increasing or decreasing? By how much? Fill in the blanks below.

30, 27, 24, ___, 18, 15, 12, ___, ___, ___

Let's check it! The numbers are going down by 3, so the rule is subtract 3. Using the rule, the missing terms in the sequence can now be filled in: 30, 27, 24, <u>21</u>, 18, 15, 12, <u>9</u>, <u>6</u>, <u>3</u>.

Practice

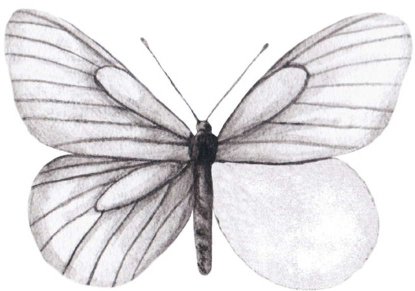
1. Count the number of leaves in each box to find the number pattern. Then draw the two missing pictures. Use your imagination!



2. Complete the sequence.

4, 12, 20, ___, 36, ___, ___, ___

3. Finish the pattern.



4. Write a sequence of odd numbers, starting with 1.

___, ___, ___, ___, ___, ___, ___, ___

5. Finish the pattern.

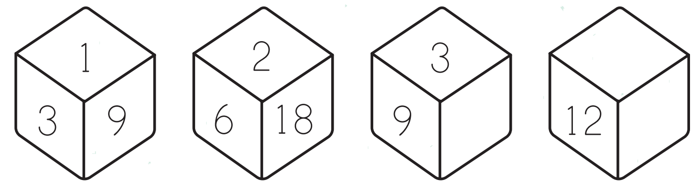
		817		
		203		
	77	126		
23	41	36	90	54

Hint: Use addition!

6. Complete the sequence.

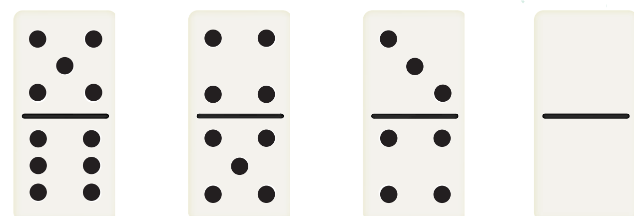
54, 45, 36, ___, ___, ___, ___

7. Fill in the missing numbers.

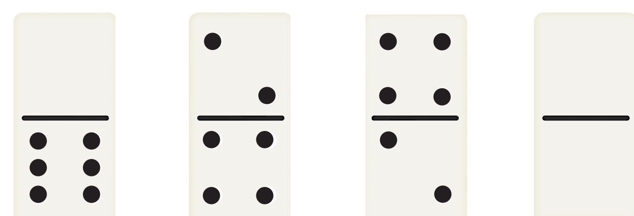


8. Finish the three patterns by drawing the correct number of dots.

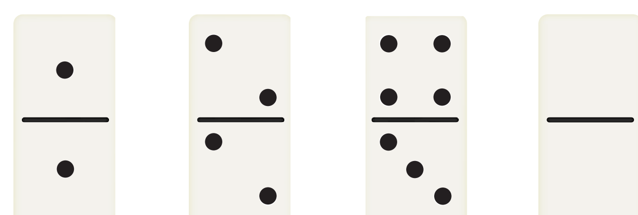
a.



b.



c.



9. Write a sequence of even numbers starting at 22 and ending with 10.

10. You mow a neighbor's lawn each week and earn $12 each time. Complete the sequence showing how much you will earn after working 9 weeks.

$12, $24, ____, ____, ____,

____, ____, ____, ____

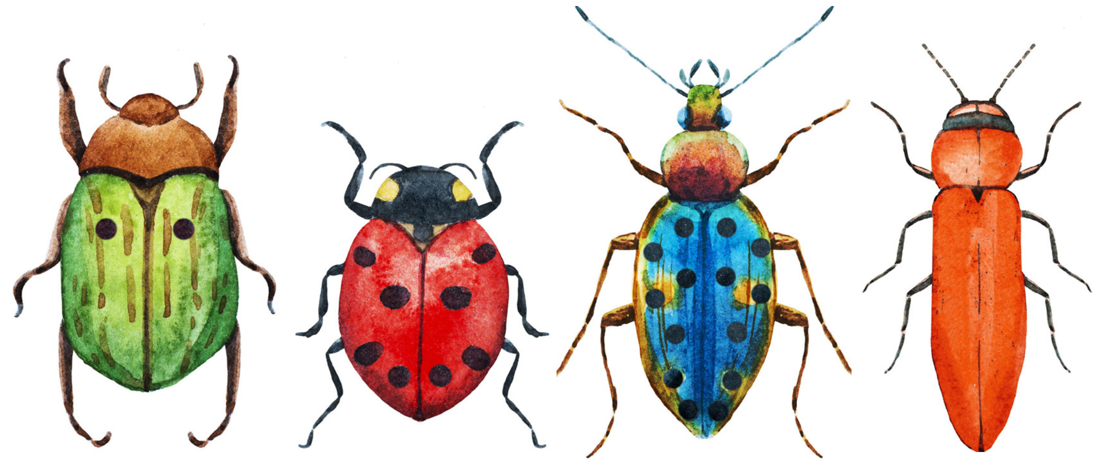
Week 9

11. Every month you donate $7 to help families in need. For how many months can you donate if you start with $91? (You'll need to add more lines until you get to $7. Then count the number of terms—or months—in your sequence.)

$91, ____, ____, ____,

Think: Why did you stop at $7 instead of $0?

12. Follow the pattern to draw the correct number of spots on the fourth insect.



Review

1. Draw a **circle** around the **odd** numbers and draw an **X** on the **even** numbers.

Hint: If the last digit is 0, 2, 4, 6, or 8, the number is even. If not, it is odd.

732   15   1,844   621   5,730

2. Complete the problems.

$12 \times 12 =$ $11 \times 12 =$ $121 \div 11 =$

$\begin{array}{r} 24 \\ \times\ 3 \\ \hline \end{array}$ $\begin{array}{r} 61 \\ \times 42 \\ \hline \end{array}$ $5\overline{)125}$

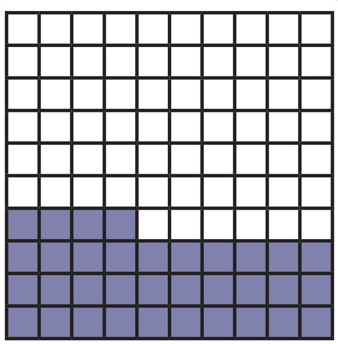
Lesson 9

FRACTIONS AND PERCENTS

- [ ] Complete today's *Math 5 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/Math5. This section is used during the video.

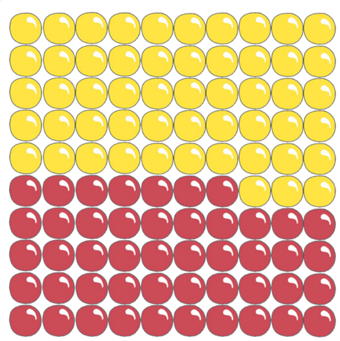


Fraction: _______

Percent: _______

Fraction: _______

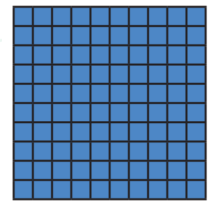
Percent: _______



Mini Lesson

Fractions and percents show parts of a whole. A ***percent*** is the number of parts per hundred. This is a percent symbol: %. Pictures are helpful to see the relationship between fractions and percents.

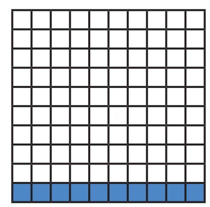
A whole is one hundred percent. This can be written as 100%. The picture below shows that 100% of the boxes are filled in. When the numerator and the denominator of a fraction are the same, the fraction equals one whole, or 100%. Some examples of fractions that equal a whole are $\frac{2}{2}$, $\frac{30}{30}$, and $\frac{100}{100}$.



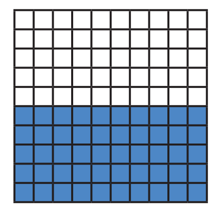
$\frac{100}{100}$ is shaded.

$\frac{100}{100} = 100\%$

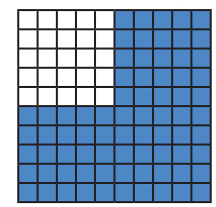
Below are other examples of fractions and percents:



$\frac{10}{100} = 10\%$



$\frac{50}{100} = 50\%$



$\frac{75}{100} = 75\%$

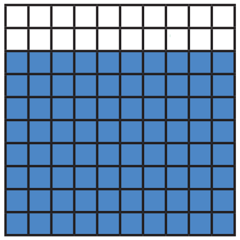
Money Connection:

There are 100 cents in a dollar. Each cent is $\frac{1}{100}$ of a dollar and can be written as 1%.

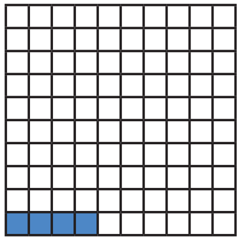
Cents	Fraction of a Dollar	Percent of a Dollar
3¢	$\frac{3}{100}$	3%
25¢	$\frac{25}{100}$	25%
100¢	$\frac{100}{100}$	100%

Practice

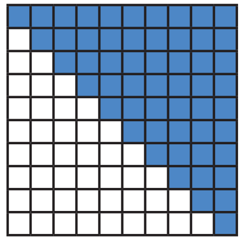
1. Write the amount shaded as a fraction and a percent.



fraction: ______
percent: ______

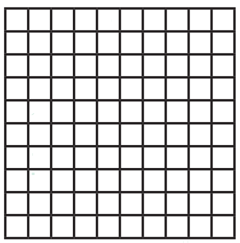


fraction: ______
percent: ______



fraction: ______
percent: ______

2. Shade $\frac{30}{100}$ of the whole. What percent is $\frac{30}{100}$?

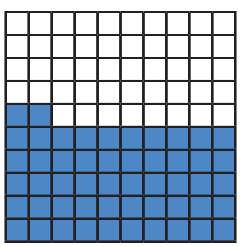


percent: ______

3. Dara gathered 100 toys in her neighborhood and donated them to a local children's hospital. The shaded part of the chart below shows how many toys went to boys. Find the fraction and percent of toys that went to boys and the fraction and percent of toys that went to girls.

Toys That Went to Boys

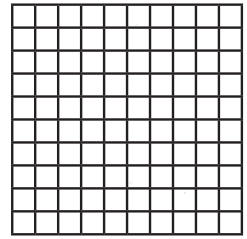
fraction: ______
percent: ______



Toys That Went to Girls

fraction: ______
percent: ______

4. Tomas collects marbles. He now has 100 marbles in his collection. All his marbles are very colorful except 8 of them, which are completely clear. Find the fraction and percent of marbles that are completely clear and the fraction and percent of marbles that are colorful. If needed, use the blank grid below to help you solve the problem.



Clear Marbles

fraction: ______
percent: ______

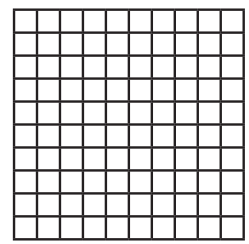
Colorful Marbles

fraction: ______
percent: ______

5. Out of 100 kids at the soccer park, 74 of them brought a water bottle. Find the fraction and percent of kids who brought a water bottle and the fraction and percent of kids who didn't bring a water bottle. If needed, use the blank grid below to help you solve the problem.

Kids with Water Bottles

fraction: ______
percent: ______



Kids without Water Bottles

fraction: ______
percent: ______

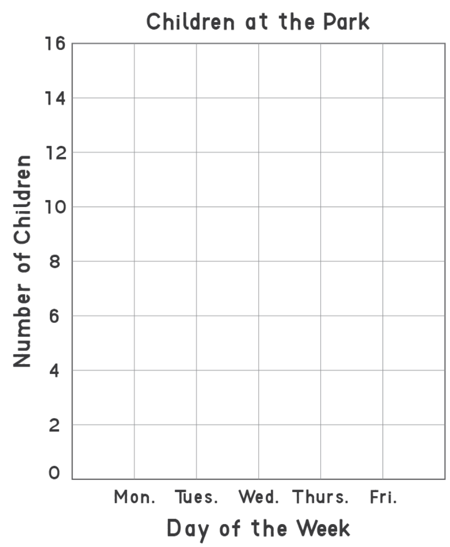
6. Fill in the chart to the right. The first row is given as an example.

Cents	Fraction of a Dollar	Percent of a Dollar
7¢	$\frac{7}{100}$	7%
		33%
	$\frac{16}{100}$	
99¢		
	$\frac{6}{100}$	

Review

1. Create a line graph by using the data in the chart below.

Day of the Week	# of Children
Monday	2
Tuesday	8
Wednesday	6
Thursday	12
Friday	14



2. Circle the numbers that are divisible by 5.

320 947,035

875 2,635

60,236 402

3. Complete each problem.

$44 \times 10^4 =$

$395 \times 10^3 =$

$570{,}000 \div 10^3 =$

4. Continue each sequence, and then write the rule.

800, 750, 700, ___, ___, ___, ___

rule:

36, 48, 60, ___, ___, ___, ___

rule:

5. Write the exponent form for each factored form. The first one is given as an example.

$3 \times 3 \times 3 \times 3 = 3^4$

$4 \times 4 =$

$8 \times 8 \times 8 \times 8 \times 8 =$

$12 \times 12 \times 12 \times 12 =$

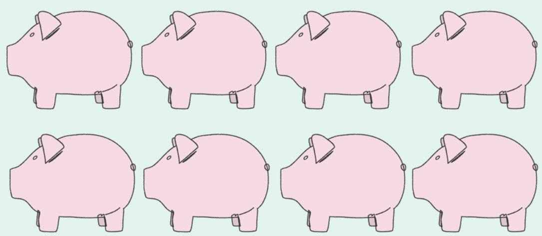
$5 \times 5 \times 5 =$

$11 \times 11 \times 11 =$

6. Find each quotient.

$6\overline{)384}$ $9\overline{)144}$ $8\overline{)256}$ $7\overline{)616}$

7. List all the prime numbers between 1 and 20 inside the piggy banks below.



Lesson 12

SHORT DIVISION

- Complete today's *Math 5 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson. There is no review.

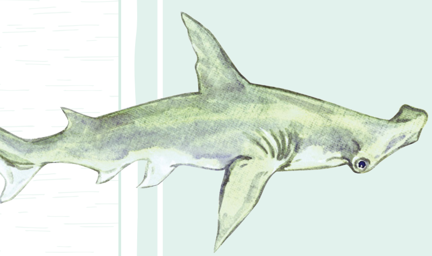
Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math5. This section is used during the video.

$6\overline{)3{,}660}$

$8\overline{)520}$

$3\overline{)55}$



Mini Lesson

Mental math is when you complete math problems in your head. Short division is a method for completing a division problem that uses mental math as you go through the long division steps. You will not write out every step, but you will write down small numbers to help you keep track of the steps as you go.

Example 1:

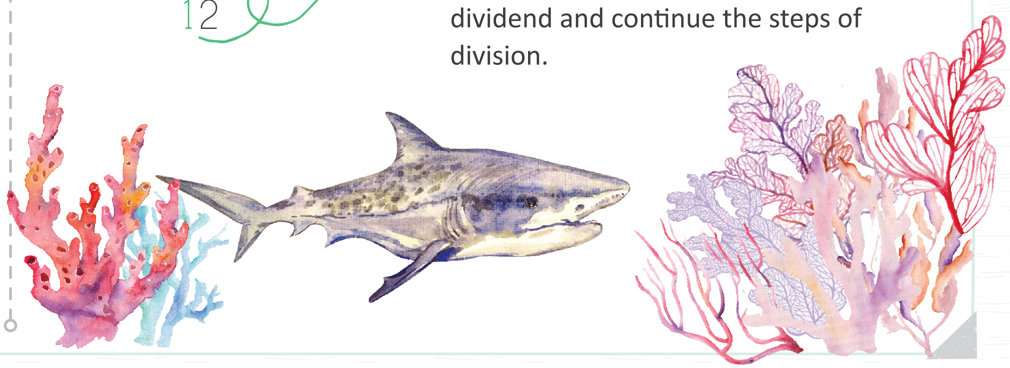
$$\begin{array}{r} 203 \\ 2\overline{)406} \end{array}$$

- How many times does 2 go into 4? Two times. Write 2 as the first digit of the quotient (above the 4).
- How many times does 2 go into 0? Zero times. Write 0 as the next digit of the quotient.
- How many times does 2 go into 6? Three times. Write 3 as the last digit of the quotient. The answer is 203.

Example 2:

$$\begin{array}{r} 14 \\ 3\overline{)42} \\ -3 \\ \hline 12 \end{array} \qquad \begin{array}{r} 14 \\ 3\overline{)4{}^{1}2} \end{array}$$

Divide, multiply, and subtract. Instead of bringing down the next digit, write the subtraction answer in front of the next digit in the dividend and continue the steps of division.



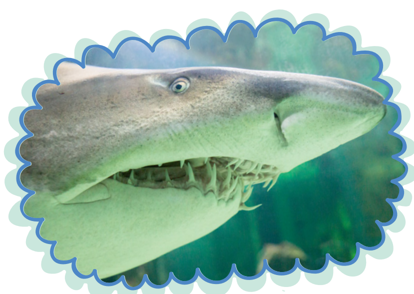
Practice

1. Complete the problems using short division. (The answers will not have remainders.)

$3\overline{)63}$	$2\overline{)24}$	$4\overline{)84}$	$5\overline{)50}$
$3\overline{)123}$	$6\overline{)186}$	$8\overline{)816}$	$7\overline{)490}$
$9\overline{)1,179}$	$8\overline{)2,488}$	$5\overline{)4,100}$	$6\overline{)1,740}$

2. A bull shark often has a grand total of 350 teeth in its mouth at any given time! It has 7 teeth in each row. How many rows of teeth does a bull shark have?

Hint: Make sure to label your answer.



3. Blue sharks live in groups called schools, which are usually all male or all female. Female blue sharks can give birth to a lot of pups (shark babies)! If there are 6 females in a school, each one has the same number of pups, and they have a total of 810 pups, how many pups does each shark have? Show your work. Check your answer.

4. Here are pictures of nine real shark teeth. Complete the problems next to the teeth using short division. (The answers will have remainders.)

 $3\overline{)47}$

 $4\overline{)55}$

 $6\overline{)74}$

 $7\overline{)750}$

 $5\overline{)514}$

 $7\overline{)802}$

 $9\overline{)379}$

 $5\overline{)1,602}$

 $3\overline{)701}$

Lesson 20

PERFECT SQUARES TO 225 AND LOGIC GAME

- Complete today's *Math 5 Mental Math Map Mysteries* activity.
- There is no video for this lesson. Read the short mini lesson, and complete the practice and logic game. There is no review.

Mini Lesson

You have already learned the first 12 perfect squares and their square roots. Here are the next three perfect squares and their square roots.

$13^2 = 169$ $\sqrt{169} = 13$

$14^2 = 196$ $\sqrt{196} = 14$

$15^2 = 225$ $\sqrt{225} = 15$

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	**1**	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	2	**4**	6	8	10	12	14	16	18	20	22	24	26	28	30
3	3	6	**9**	12	15	18	21	24	27	30	33	36	39	42	45
4	4	8	12	**16**	20	24	28	32	36	40	44	48	52	56	60
5	5	10	15	20	**25**	30	35	40	45	50	55	60	65	70	75
6	6	12	18	24	30	**36**	42	48	54	60	66	72	78	84	90
7	7	14	21	28	35	42	**49**	56	63	70	77	84	91	98	105
8	8	16	24	32	40	48	56	**64**	72	80	88	96	104	112	120
9	9	18	27	36	45	54	63	72	**81**	90	99	108	117	126	135
10	10	20	30	40	50	60	70	80	90	**100**	110	120	130	140	150
11	11	22	33	44	55	66	77	88	99	110	**121**	132	143	154	165
12	12	24	36	48	60	72	84	96	108	120	132	**144**	156	168	180
13	13	26	39	52	65	78	91	104	117	130	143	156	**169**	182	195
14	14	28	42	56	70	84	98	112	126	140	154	168	182	**196**	210
15	15	30	45	60	75	90	105	120	135	150	165	180	195	210	**225**

Practice

Write the square or square root of each number. The first two are given as examples.

Hint: To square a number, multiply the number by itself. To find the square root, ask yourself, "What number multiplied by itself equals the number under the square root symbol?"

$4^2 =$ 16	$\sqrt{9} =$ 3	$5^2 =$	$\sqrt{36} =$
$2^2 =$	$\sqrt{81} =$	$7^2 =$	$\sqrt{100} =$
$6^2 =$	$\sqrt{16} =$	$11^2 =$	$\sqrt{4} =$
$13^2 =$	$\sqrt{64} =$	$8^2 =$	$\sqrt{49} =$
$9^2 =$	$\sqrt{25} =$	$10^2 =$	$\sqrt{121} =$
$3^2 =$	$\sqrt{1} =$	$12^2 =$	$\sqrt{196} =$
$15^2 =$	$\sqrt{169} =$	$14^2 =$	$\sqrt{225} =$
$1^2 =$	$\sqrt{144} =$		

Number Neighborhood

Write the house numbers (the answers to the math problems on the previous page) on the lines below, in order from least to greatest.

_____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____

Using the numbers listed above, read each clue to fill out the chart and determine which house each child lives in. Sometimes you will use the clues to write numbers on the chart, and sometimes you will use the clues to cross numbers off the chart. Circle the correct house number for each child. The first clue is done for you.

Mia	80	225	500	720	735
McKay			Hint: Some of the rows, like McKay's, won't have numbers all the way across.		
Heidi					
Grayson					
Sawyer					
Elijah					
Domenic					

Clues:

- [x] Mia's address is divisible by 5.
- [ ] McKay's address is divisible by 6.
- [ ] Heidi's address is divisible by 10.
- [ ] Grayson's address is divisible by 4.
- [ ] Sawyer's address is odd and greater than 100.
- [ ] Elijah's address is a two-digit prime number.
- [ ] If you multiply the digits of Domenic's address, the product is 0.
- [ ] Mia's address is 15 squared.
- [ ] Elijah's address is greater than 4^2 and less than 3^3.
- [ ] If you multiply the digits of Grayson's address, the product is greater than 2 and less than 10.
- [ ] McKay's address is less than the quotient of $5{,}000 \div 10^2$.
- [ ] Heidi's address is divisible by 8 and greater than 100.
- [ ] Domenic's address is less than the sum of $4^2 + 5^2 + 6^2 + 4$.
- [ ] Sawyer's address is greater than 8^3.

All done! No review.

LESSONS 29-30

UNIT ASSESSMENT

Parent/Teacher

Read the following information aloud to the child: Unit assessments give you practice with the math concepts learned in this unit, without having you overpractice concepts that you have mastered. These assessments also give you practice working on math problems for an extended period of time. This helps you to extend focus and attention span and to be better prepared for any type of testing you will have to do in the future. Here are some tips: First, make sure to always read the instructions carefully. Sometimes you can get answers wrong simply because you did not understand the instructions. Second, do not rush through exercises you think you already know. Instead, make sure to do your work carefully. Sometimes you can get answers wrong, even though you understand the concept, just because you rushed. 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, mini lessons, or practice problems for Lessons 29–30.

For Lesson 29, have the child complete all the exercises with purple headers only. Correct the work. If the child makes any mistakes in a section, check the orange "Additional Practice" checkbox for that section.

For Lesson 30, have the child complete all the orange sections **that are checked**. If the child still makes multiple mistakes, make sure the child understands why. All the principles will be reviewed again in upcoming units. If the child has only a few or no orange sections to practice, the child may spend time doing math games or move on to the next lesson.

Student

NUMBER PATTERNS/DIVISIBILITY STRATEGIES (LESSONS 1 & 3)

Complete the number pattern and write the rule.

110, 125, 140, ______, ______, ______, ______ rule: ______________

Circle the numbers that 9,640 is divisible by.

2 3 4 5 6 9 10

☐ Additional Practice

Look at the numbers to see how they change from one number to the next. Are they increasing or decreasing? By how much? Complete the number pattern and write the rule.

99, 88, 77, ______, ______, ______, ______ rule: ______________

Divisibility rules review: **2** (even number), **3** (sum of digits divisible by 3), **4** (last two digits are divisible by 4), **5** (ends with 0 or 5), **6** (divisible by 2 & 3), **9** (sum of digits divisible by 9), **10** (ends in 0)

Circle the numbers that 4,824 is divisible by.

2 3 4 5 6 9 10

FACTORS OF PRIME & COMPOSITE NUMBERS (LESSON 2)

List the factors of each number. Then circle the factors that are prime numbers.

17: ____________________ 20: ____________________

35: ____________________ 41: ____________________

☐ Additional Practice

Prime numbers have only two factors: the number itself and 1. Composite numbers have more than two factors. List the factors of each number. Then circle the factors that are prime numbers.

30: ____________________ 55: ____________________

18: ____________________ 43: ____________________

PRIME FACTORIZATION
(LESSON 4)

Find the prime factorization for each number by creating a factor tree.

24

60

______________________ ______________________

Additional Practice

Use lines to separate each number into factor pairs. Circle any prime factors. Continue finding factors until you have only prime numbers left. Write the prime factors as a multiplication problem in order from least to greatest.

28

80

______________________ ______________________

EXPONENTS/MULTIPLY & DIVIDE BY POWERS OF 10 (LESSONS 5 & 6)

Complete.

$7^2 =$ ____ $2^4 =$ ____ $3^3 =$ ____ $12^0 =$ ____

$53 \times 10^6 =$ ____ $9{,}000{,}000 \div 10^5 =$ ____

Additional Practice

An exponent represents the number of times a base number is multiplied by itself. Any number to the power of zero is 1.

$2^3 =$ ____ $3^4 =$ ____ $13^0 =$ ____ $4^3 =$ ____

When you multiply by a power of 10, the exponent shows how many zeros to write. When you divide by a power of 10, the exponent shows how many zeros to take off.

$64 \times 10^8 =$ ____ $750{,}000 \div 10^4 =$ ____

ORDER OF OPERATIONS
(LESSON 13)

$16 + 3 \times 2 - 3^2 =$ ____ $(10 - 2) \times 2^3 + 5 =$ ____

$2 \times 11 - 12 \div 3 =$ ____ $12 \div 2^2 \times 7 - 5 =$ ____

Additional Practice

Perform the operations in the correct order by remembering “Please Excuse My Dear Aunt Sally” (parentheses, exponents, multiplication and division, addition and subtraction).

$70 - (6 \times 10) \div 2 =$ ____ $8 \times 2^2 - 12 + 3 =$ ____

$(35 - 5) \div 3 + 3^2 =$ ____ $15 + 4 - 14 \div 7 =$ ____

Long Division & Short Division (Lessons 10–12)

Complete the division problems. Some have remainders.

- Use long division. Check your answers.

6)724 Check: 21)8,421 Check:

- Use short division to find each quotient.

5)140 8)5,209 11)2,321

Additional Practice

If you cannot divide a number even once by the divisor, write 0 in the quotient.

Check a Division Answer

multiply, then add

Quotient Remainder

Divisor) Dividend

Short Division

$$\begin{array}{r} 14 \\ 3\overline{)42} \\ -3 \\ \hline 12 \end{array} \qquad \begin{array}{r} 14 \\ 3\overline{)4^{1}2} \end{array}$$

- Use long division. Check your answers.

3)2,372 Check: 20)4,600 Check:

- Use short division to find each quotient.

7)750 6)1,506 12)2,532

Perfect Squares & Square Roots (Lessons 15, 16 & 20)

Find each perfect square or square root.

$8^2 =$ ___ $5^2 =$ ___ $13^2 =$ ___ $15^2 =$ ___ $11^2 =$ ___

$\sqrt{49} =$ ___ $\sqrt{81} =$ ___ $\sqrt{196} =$ ___ $\sqrt{144} =$ ___

Additional Practice

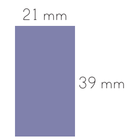
A perfect square is a whole number multiplied by itself. To find a square root, ask yourself, "What number multiplied by itself equals the number under the square root symbol?"

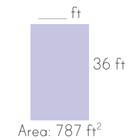
$10^2 =$ ___ $4^2 =$ ___ $6^2 =$ ___ $9^2 =$ ___ $14^2 =$ ___

$\sqrt{121} =$ ___ $\sqrt{169} =$ ___ $\sqrt{225} =$ ___ $\sqrt{64} =$ ___

Estimate Products & Quotients Using Area (Lesson 19)

Use rounding to estimate the area and side length.

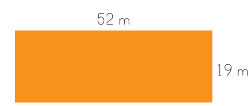


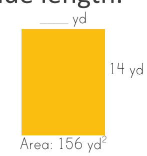


_____ × _____ = _____ _____ ÷ _____ = _____

Additional Practice

To estimate the area, round the lengths and multiply them. To estimate a side length, round the area and the side you know (using numbers that can divide easily). Divide the area by the side length.





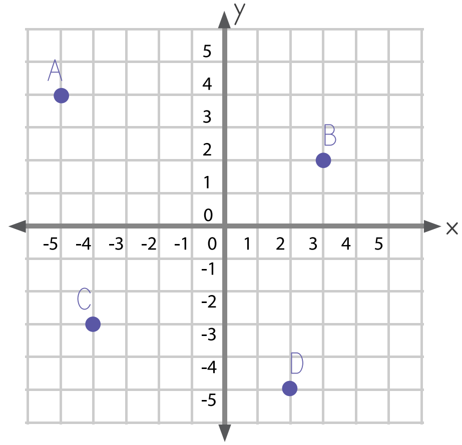
_____ × _____ = _____ _____ ÷ _____ = _____

GRAPHING ORDERED PAIRS (LESSON 23)

Write the coordinates for each point.

A: B:

C: D:



Plot and label the following points on the coordinate plane on the right.

E: (1, 4) F: (-3, 0)

G: (-2, 2) H: (1, -3)

I: (-2, -4)

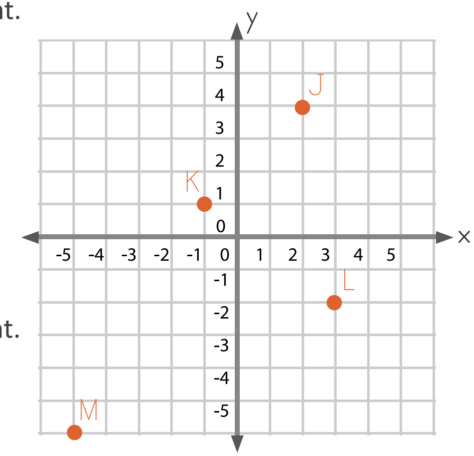
Additional Practice

Start at the origin (0, 0). The first coordinate of the ordered pair shows the position horizontally (left and right) along the x-axis. The second coordinate shows the vertical (up and down) position along the y-axis. Write the coordinates for each point.

Hint: Positives go up or right, and negatives go down or left.

J: K:

L: M:



Plot and label the following points on the coordinate plane on the right.

N: (1, 2) O: (0, -5)

P: (-3, 4) Q: (-4, 0)

R: (5, -3)

IDENTIFY, DRAW & NAME GEOMETRIC FIGURES (LESSONS 24 & 25)

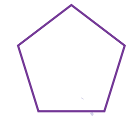
Draw lines.

1 vertical:

2 parallel:

Name the ray.

What is this shape?



Additional Practice

Polygons are usually named by the number of sides they have. Use any two points to name a line. Start with the endpoint to name a ray. To name a polygon, start at any vertex (corner) and name each vertex in order around the shape until all the vertices are named.

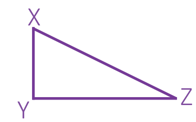
Draw the lines.

a horizontal line:

an oblique line:

perpendicular lines:

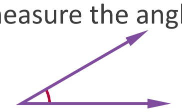
Name the following.



MEASURING & DRAWING ANGLES (LESSON 26)

Use a protractor to . . .

measure the angle.

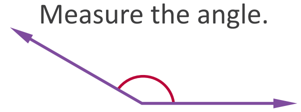


draw an angle that is 75°.

Additional Practice

Place the vertex (corner) of the angle in the midpoint of the protractor. Line up a side on the baseline. Use the other side of the angle to find the degrees.

Measure the angle.



Draw an angle that measures 120°.

UNIT 2 OVERVIEW

LESSONS 31–60

Extra Supplies Needed

- scissors
- ruler
- protractor
- colored pencils
- coin
- 1 standard dice
- paper clip

New Concepts Taught

- conversions between degrees Fahrenheit and Celsius
- conversions of decimal numbers and percents to fractions
- decimal number comparisons through the ten-thousandths place
- decimal numbers on a number line
- decimal numbers rounded to the hundredths place
- decimal numbers to the ten-thousandths place
- least common multiples
- measurement with a ruler to an eighth of an inch
- multiplication of two fractions
- ordinal numbers to 100th
- place value through the billions
- subtraction of fractions and mixed numbers from whole numbers
- translational symmetry

Concepts Reviewed and Expanded Upon

- addition and subtraction with decimal numbers
- addition and subtraction with mixed numbers
- conversions between units of weight
- equivalent decimal numbers
- equivalent fractions
- fraction comparisons
- fractions and mixed numbers on a number line
- fractions in simplest form
- fractions with wholes
- lines of symmetry
- perimeter and area of irregular shapes
- probability
- quadrilateral classification
- quotients as mixed numbers
- reflectional and rotational symmetry
- scales
- transformations
- triangle classification by angles and sides

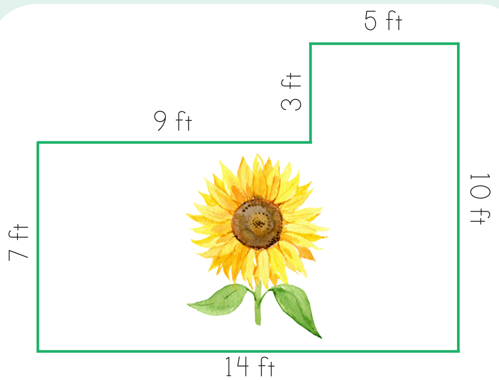
Lesson 37

PERIMETER AND AREA OF IRREGULAR SHAPES

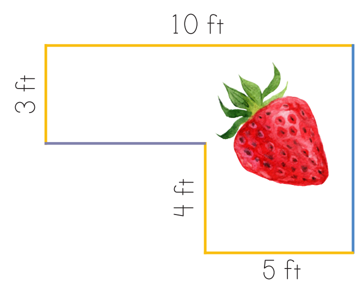
- Complete today's *Math 5 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson. There is no review in this lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful .com/Math5.



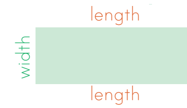
perimeter = __________ area = __________

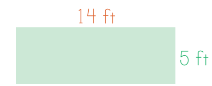


Length of the blue side: ______ Length of the purple side: ______

Mini Lesson

Perimeter is the total length of all sides of a two-dimensional shape. The longer side of a rectangle is the length. The shorter side of a rectangle is the width.

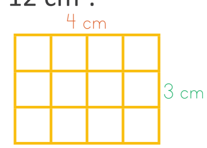




P = 14 ft + 5 ft + 14 ft + 5 ft = 38 ft

Area is the number of square units needed to cover the surface of an object.

This rectangle is covered with 12 square centimeters. This can be written as 12 cm^2.



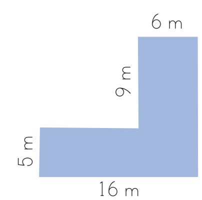
To find the **area of a rectangle**, multiply the length times the width. A = L × W

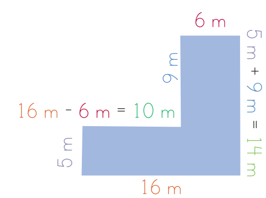
Remember that the answer will be in square units.

Irregular Shapes

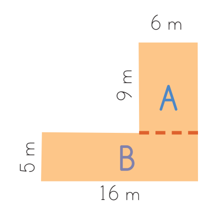
To find the **perimeter of an irregular shape**, add the lengths of all the sides. Use clues from other sides to find missing side lengths.

To find the **area of an irregular shape**, divide the shape into smaller rectangles. Then add the areas of the smaller rectangles.





P = 5 m + 10 m + 9 m + 6 m + 14 m + 16 m = 60 m

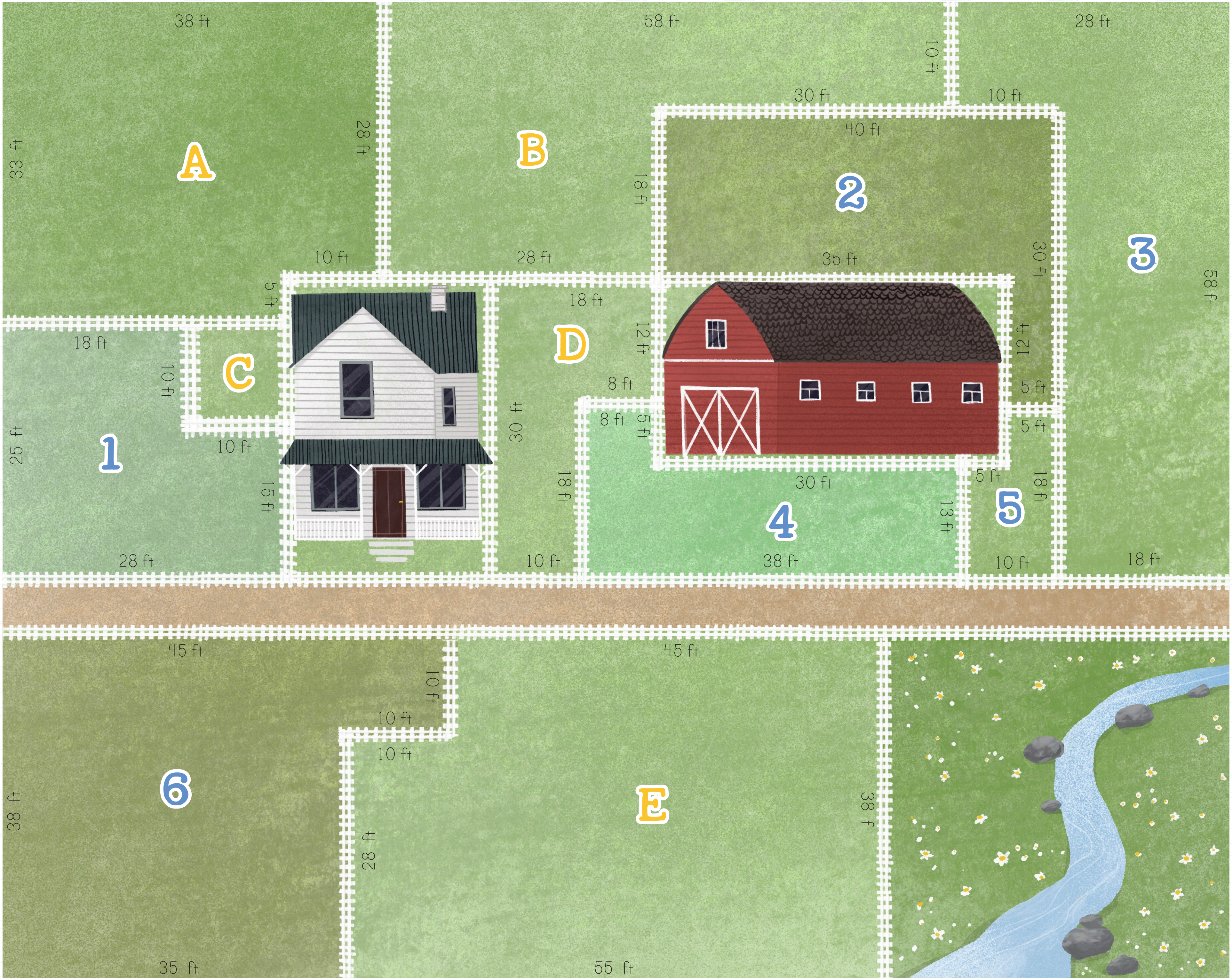


Area A: 6 m × 9 m = 54 m^2

Area B: 16 m × 5 m = 80 m^2

Area of irregular shape:

54 m^2 + 80 m^2 = 134 m^2



38 ft
58 ft
28 ft
10 ft
30 ft
10 ft
40 ft
33 ft
28 ft
A
B
18 ft
2
30 ft
3
58 ft
10 ft
28 ft
35 ft
5 ft
18 ft
18 ft
D
12 ft
12 ft
C
10 ft
8 ft
5 ft
8 ft
5 ft
5 ft
30 ft
1
25 ft
10 ft
15 ft
18 ft
30 ft
5 ft
18 ft
13 ft
4
5
28 ft
10 ft
38 ft
10 ft
18 ft
45 ft
45 ft
10 ft
10 ft
10 ft
6
38 ft
E
38 ft
28 ft
35 ft
55 ft

Build-a-Farm Practice

The lengths on the farm are measured in feet. Find the **area** of each shape with a **letter**. Find the **perimeter** of each shape with a **number**. Then read the clues to discover where the crops and animals belong on the farm. Write the correct letter or number in the box next to each clue. Use the Lesson 37 stickers from the back of your Math 5 book to mark each place.

Find the Areas

To determine the area of an irregular shape, either divide the shape into two rectangles and add the two areas OR add a corner to create a larger rectangle and then subtract the area of the smaller corner from the area of the larger rectangle.

+ or -

A: ______ ○ ______ = __________

B: ______ ○ ______ = __________

C: __________

D: ______ ○ ______ = __________

E: ______ ○ ______ = __________

Find the Perimeters

1: ______ + ______ + ______ + ______ + ______ + ______ = ______

2: ______ + ______ + ______ + ______ + ______ + ______ = ______

3: ______ + ______ + ______ + ______ + ______ + ______ = ______

4: ______ + ______ + ______ + ______ + ______ + ______ = ______

5: ______ + ______ + ______ + ______ + ______ + ______ = ______

6: ______ + ______ + ______ + ______ + ______ + ______ = ______

Clues

- ☐ The pigs belong in the shape with a perimeter of 56 ft. ☐
- ☐ Alfalfa grows in the shape with an area of 1,204 ft^2. ☐
- ☐ There is an orchard with an area of 1,084 ft^2. ☐
- ☐ The llamas have a fence with a perimeter of 166 ft. ☐
- ☐ Horses roam in a perimeter of 140 ft. ☐
- ☐ The fence for the goats has a perimeter of 112 ft. ☐
- ☐ The family garden has an area of 396 ft^2. ☐
- ☐ You can find chickens in an area of 100 ft^2. ☐
- ☐ Oats grow in an area of 1,990 ft^2. ☐
- ☐ Cows are in a pasture with a perimeter of 172 ft. ☐
- ☐ Sheep are within a perimeter of 106 ft. ☐

All done! No review.

Lesson 45

MIXED NUMBERS AND WHOLE NUMBERS GREATER THAN 1

- Complete today's *Math 5 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson. There is no review in this lesson.

Video Lesson

Scan the QR code or watch the video lesson on goodandbeautiful .com/Math5.

$2\frac{1}{5} + 5\frac{4}{5} =$

$12 - \frac{2}{3} =$

Mini Lesson

Adding Mixed Numbers

Add the whole numbers, and then add the fractions. Write the answer in simplest form.

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

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

$4\frac{1}{2}$

Add the whole numbers.
Add the fractions.
Write the answer in simplest form.

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

$6\frac{3}{3} =$

7

Add the whole numbers.
Add the fractions.
Write the answer in simplest form.

Subtracting a Fraction or Mixed Number from a Whole Number Greater Than 1

Rename the whole number as a mixed number by taking 1 from the whole number and making it a fraction that is equal to 1; use the same denominator as the fraction being subtracted. Then subtract. Write the answer in simplest form.

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

$9\frac{5}{5} - \frac{2}{5} =$

$9\frac{3}{5}$

Take one from the whole and make it a fraction with a common denominator.
Subtract the fractions.

$8 - 2\frac{5}{6} =$

$7\frac{6}{6} - 2\frac{5}{6} =$

$5\frac{1}{6}$

Take one from the whole and make it a fraction with a common denominator.
Subtract the whole numbers and subtract the fractions.

Woodland Mystery Practice

(game on next pages)

Instructions: Andrea and her family love to fill bird feeders with tasty sunflower seeds to help animals find enough food in the winter. Each morning Andrea discovers that all the sunflower seeds are gone, so she decides to watch the bird feeders throughout the next day to see what is happening. Complete the problems to determine if clue a or b is correct. The clues will help you discover where animals live, which animals Andrea saw coming for the sunflower seeds, and what fraction of the seeds each animal took. Using the clues, write the name of the animal in the title box by its home. Write the fraction of seeds it took in the fraction box. Hint: Not all boxes will be filled in.


Woodland
Mystery
Practice
See instructions on previous page.

Read the instructions on page 137. Then complete these problems to fill in the Woodland Mystery Practice page on the left.

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

a. $5\frac{1}{2}$: Near the lake are trees where raccoons live.

b. $5\frac{3}{4}$: Near the lake are trees where deer live.

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

a. $11\frac{3}{4}$: A chipmunk lives in the hollow tree south of the rock.

b. $11\frac{1}{2}$: A chipmunk lives in the old log by the meadow.

3. $5\frac{1}{3} + 4\frac{2}{3} =$

a. $9\frac{2}{3}$: Squirrels live in the oak trees east of the hollow tree.

b. 10: Nuthatches live in the oak trees east of the hollow tree.

4. $14\frac{2}{5} + 15\frac{3}{5} =$

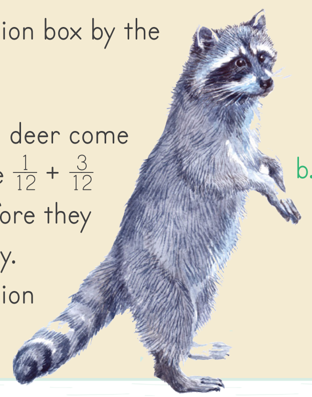
a. 30: A raccoon lives in the hollow tree.

b. $29\frac{4}{5}$: A beaver lives in the lake.

5. $9 - \frac{4}{7} =$

a. $9\frac{3}{7}$: Andrea saw a chipmunk come to the feeder. It ate $\frac{1}{12} + \frac{2}{12}$ of the sunflower seeds. Write the sum in the fraction box by the chipmunk's home.

b. $8\frac{3}{7}$: Andrea saw two young deer come to the bird feeder. They ate $\frac{1}{12} + \frac{3}{12}$ of the sunflower seeds before they were startled and ran away. Write the sum in the fraction box by the deer's home.



6. $15 - \frac{10}{11} =$

a. $14\frac{1}{11}$: Next Andrea saw nuthatches come to the feeder. They ate $\frac{11}{12} - \frac{10}{12}$ of the sunflower seeds. Write the difference in the fraction box by the nuthatches' homes.

b. $15\frac{1}{12}$: Next Andrea saw a raccoon eating $\frac{1}{12} + \frac{1}{12}$ of the sunflower seeds. Write the sum in the fraction box by the raccoon's home.

7. $9 - 1\frac{1}{2} =$

a. $7\frac{1}{2}$: Later, Andrea noticed a fat little chipmunk scurrying about. It was eating busily and stuffing its cheeks with extra seeds. Time after time it returned to the bird feeder. It ate $\frac{5}{12} - \frac{3}{12}$ of the seeds. Write the difference in the fraction box by the chipmunk's home.

b. $8\frac{1}{2}$: Later, Andrea noticed deer coming to eat the sunflower seeds. They ate $\frac{8}{12} - \frac{3}{12}$ of the seeds before they ran to the woods. Write the difference in the fraction box by the deer's home.

8. $13 - 1\frac{5}{6} =$

a. $12\frac{1}{6}$: Next on the scene were nuthatches. They pecked at the seeds and carried some back to their oak trees. In all, they took $\frac{5}{12} - \frac{4}{12}$ of the seeds. Write the difference in the fraction box by their homes.

b. $11\frac{1}{6}$: The chipmunk skittered away when it saw a large raccoon approach. The raccoon helped itself to $\frac{1}{12} + \frac{2}{12}$ of the sunflower seeds. Write the sum in the fraction box by the raccoon's home.

9. Add all the fractions from the fraction boxes here.

____ + ____ + ____ + ____ =

10. Does the sum equal one whole?

Andrea knew at least one other animal must be coming by to eat the sunflower seeds, so she kept watching. When it started to get dark, another animal did appear and ate the rest of the seeds. Can you guess what it was? Complete the problems below to find the letters that spell the animal's name. List the letters here: ___ ___ ___ ___ ___.

11.	$18 - 3\frac{2}{9} =$	$14\frac{7}{9}$ K	or	$15\frac{7}{9}$ U
12.	$12\frac{5}{8} + 8\frac{2}{8} =$	$21\frac{7}{8}$ O	or	$20\frac{7}{8}$ N
13.	$32\frac{1}{4} + 25\frac{1}{4} =$	$56\frac{2}{4}$ S	or	$57\frac{1}{2}$ K
14.	$11\frac{2}{7} + 3\frac{5}{7} =$	15 U	or	$14\frac{5}{7}$ M
15.	$16 - \frac{7}{10} =$	$16\frac{3}{10}$ E	or	$15\frac{3}{10}$ S

16. Unscramble the letters.

17. Complete the problem to see where this animal lives. Then write its name by its home on the map. $20 - \frac{8}{17} =$

a. $19\frac{9}{17}$: It lives in a hole north of the house.

b. $18\frac{9}{17}$: It lives under a rock south of the lake.

18. To find out the fraction of sunflower seeds this animal took, subtract the answer to Problem 9 from 1 whole. 1 - ___ = Write that fraction by the animal's home.

19. Now add all the fraction boxes from the map.

____ + ____ + ____ + ____ + ____ =

20. Does the sum equal one whole?

Andrea smiled as she thought of all the animals her family had helped that day.

Egyptian Math Practice

Directions: Discover more about Egypt as you learn interesting facts and solve problems. Read each story problem carefully to know which operation and unit to use.

Great Pyramid of Giza

One of Cairo's most popular attractions is the Great Pyramid of Giza, one of the Seven Wonders of the Ancient World. The blocks used to build this pyramid weigh an average of 2.5 tons! The pyramid is 137.008 m (449.5 ft) tall, and its base is 230.429 m (756 ft) long. How much longer is the base than the height in meters?

The base of the Great Pyramid of Giza is almost the shape of a perfect square. If one side is 230.429 m (756 ft) long, use addition to find the perimeter in meters if it were a perfect square. (This massive pyramid was built thousands of years ago, and its side measurements are off by only a few inches.)

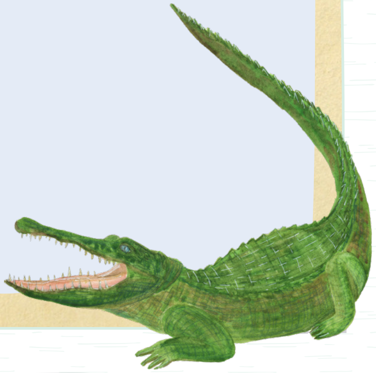
Great Sphinx

The Great Sphinx is one of the world's oldest and largest statues. Look at the eyes. They are six feet tall! The statue faces east and is carved from solid limestone. The Great Sphinx is 20.12 m (66 ft) high. It is 18.9 m (62 ft) wide and 73.152 m (240 ft) long. Using the width and the length, what is the perimeter of the base of the Great Sphinx in meters?

Nile River

The Nile is the world's longest river at 6,649.809 km (4,132 mi). It provides fertile land for growing all sorts of fruits and vegetables, like pomegranates, oranges, peaches, plums, melons, tomatoes, and sweet potatoes. The Nile flows north through Egypt and ten other countries and has an average depth of approximately 0.011 km (36 ft). What is the difference between the Nile's length and depth in kilometers?

The Nile is home to many animals, including birds, fish, snakes, turtles, hippos, and Nile crocodiles. Adult male Nile crocodiles measure about 4.42 m (14.5 ft) long, while females measure about 2.77 m (9.1 ft) long. The largest Nile crocodile ever recorded was 6.17 m (20.243 ft) long. How much longer in feet was that crocodile than an average male crocodile?

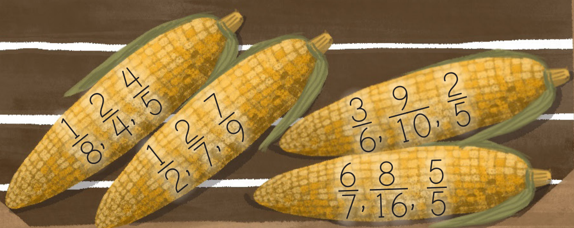


Lesson 58

UNIT 2 REVIEW: COUNTY FAIR FUN

Welcome to the county fair! Visit each exhibit or activity and complete the problems. Use the Lesson 58 stickers from the back of your Math 5 book to add the correct county fair winner ribbons to the pages. There is no video, mini lesson, or practice. Enjoy the fair!

Circle the greatest fraction and cross off the least fraction on each corn cob. Then give the pink ribbon to the corn cob with the greatest fraction.

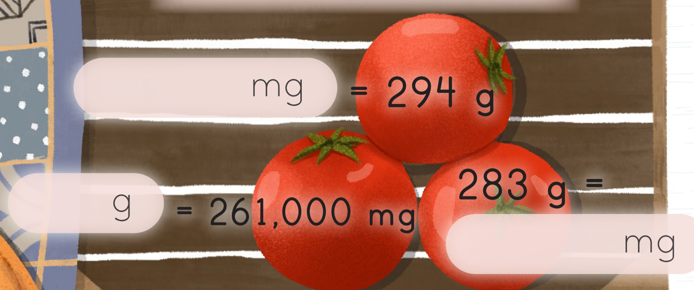


Find the perimeters and areas of the outlined shapes. The quilt blocks are perfectly square, although they may not look that way when the quilt is hanging.

The pie was weighed in grams four times. Write the greatest weight on the pie. Label the other numbers 1–3, with 1 being the least.

623.7, 623.07, 623.701, 623.77

Convert the weight of each tomato. Give the silver ribbon to the tomato that weighs the most.



Round the weight of each pumpkin (in pounds) to the place value shown. Then give the red ribbon to the heaviest pumpkin.

Barn of Champions

Multiply. Award the chicken with a product of $\frac{1}{4}$ the light-blue ribbon.

$\frac{2}{3} \times \frac{4}{9} =$

$\frac{7}{8} \times \frac{2}{7} =$

$\frac{5}{6} \times \frac{2}{5} =$

$\frac{6}{7} \times \frac{3}{8} =$

Add or subtract the decimal numbers by each steer. Award the steer with the greatest decimal number the purple ribbon.

$142.904 - 38.31 =$

$15.82 + 89.067 =$

$99.5259 + 4.8942 =$

Simplify each fraction. Award the rabbit with the smallest fraction the orange ribbon.

$\frac{8}{10}$

$\frac{20}{100}$

$\frac{12}{24}$

$\frac{11}{33}$

Read the scale by each pig. Award the pig that weighs the most the yellow ribbon.

$8\overline{)79}$

$7\overline{)64}$

Write each quotient as a mixed number. Award the goat with the greater quotient the green ribbon.

0014.2

14.200

14.20

014.2

14.02

14.2

Cross off the equivalent decimal numbers. The sheep with the remaining number wins the brown ribbon.

What is the cost of 1 cotton candy, 2 corn dogs, and 1 lemonade?

A ticket to the fair for an adult is $5.25 and for a child is $3.75. What is the price difference?

If you have a 47% chance of sitting in a blue car on the Ferris wheel, what is your chance of NOT sitting in a blue car?

What is the cost of 3 lemonades and a cotton candy?

Convert the decimals on the horse riders' tags to mixed numbers. The horse whose rider has a tag with a mixed number of $5\frac{3}{5}$ wins the dark-blue ribbon.

All done! No review.

UNIT 3 OVERVIEW

LESSONS 61–90

Extra Supplies Needed

- protractor
- 1 standard dice
- scissors
- tape
- index card or cardstock
- colored pencils

New Concepts Taught

- circumference and area of circles
- conversions between decimal numbers and percents
- creation of irregular tessellations
- decimal number multiplication and division by powers of 10
- division by unit fractions
- division with reciprocals
- elapsed time past 12 hours, crossing AM and PM
- formula to convert mixed numbers to improper fractions
- fraction multiplication with cancellations
- fractions to percents conversions
- greatest common factors
- least common multiple to find common denominators
- multiplication of fractions and whole numbers
- multiplication of two decimal numbers
- pi
- proper fractions, improper fractions, and mixed numbers rounded to the nearest whole
- ratios
- reciprocals
- reflections, rotations, and translations with graphing
- surface area of geometric solids

Concepts Reviewed and Expanded Upon

- conversions between improper fractions and whole or mixed numbers
- conversions between units of capacity
- distributive property
- multiplication of decimal numbers and whole numbers
- parts of a circle: center, radius, diameter
- regular and semi-regular tessellations
- time

Lesson 65

FRACTION PRACTICE

- Complete today's *Math 5 Mental Math Map Mysteries* activity.
- There is no video, mini lesson, or review for this lesson.

Welcome to Fractions Archipelago!

Instructions: An archipelago [ark–uh–PELL–uh–go] is a group of islands. On the next two pages, you will visit the imaginary Fractions Archipelago. On each island is a set of fraction problems. If you need hints to remind you how to complete each set, look at the instructions on each island's map. Write each answer in simplest form.

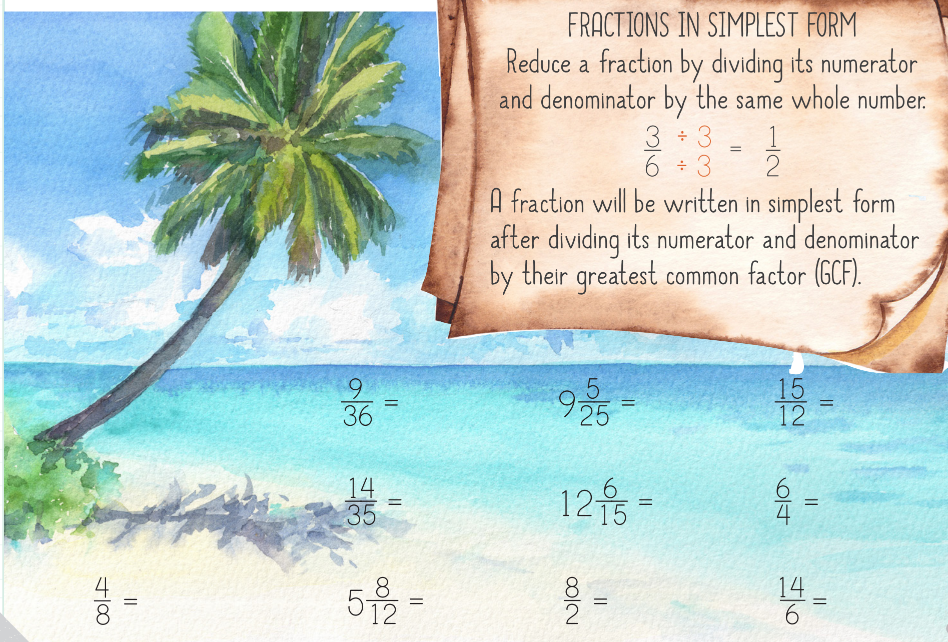
To be prepared for your adventure, first practice writing fractions, mixed numbers, and improper fractions in simplest form. Then, before you depart, practice the language of fractions.

FRACTIONS IN SIMPLEST FORM

Reduce a fraction by dividing its numerator and denominator by the same whole number.

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

A fraction will be written in simplest form after dividing its numerator and denominator by their greatest common factor (GCF).



$\frac{9}{36} =$ $\qquad$ $9\frac{5}{25} =$ $\qquad$ $\frac{15}{12} =$

$\frac{14}{35} =$ $\qquad$ $12\frac{6}{15} =$ $\qquad$ $\frac{6}{4} =$

$\frac{4}{8} =$ $\qquad$ $5\frac{8}{12} =$ $\qquad$ $\frac{8}{2} =$ $\qquad$ $\frac{14}{6} =$

Practice

Language of Fractions

Use the word bank at the bottom to complete the fraction definitions.

common denominators	________________ that are the same in two or more fractions Example: $\frac{1}{5}$ and $\frac{3}{5}$
equivalent fractions	fractions with different numerators and denominators that represent the same ____________ Example: $\frac{2}{3} = \frac{4}{6}$
fraction	part of a ______________ Example: $\frac{1}{2}$
greatest common factor	the greatest number that is a __________ of two or more numbers Example: GCF of 8 and 12 is 4
improper fraction	a fraction with a numerator that is equal to or ______________ than the denominator Example: $\frac{7}{2}$
least common multiple	the smallest positive number that is a ______________ of two or more numbers Example: LCM of 4 and 6 is 12
mixed number	a number that includes a whole number and a ______________ Example: $2\frac{4}{5}$
proper fraction	a fraction with a numerator that is ______________ than the denominator Example: $\frac{5}{6}$

Word Bank

greater, less, amount, multiple, denominators, factor, whole, fraction

FRACTIONS ARCHIPELAGO

Explore the chain of islands starting at Turtle Island. Study the map to learn how to do the island's problems then complete them. Move to the next island as directed until all islands are finished.

TURTLE ISLAND

WHOLE NUMBERS & FRACTIONS

$4 + \frac{1}{5} = 4\frac{1}{5}$

WHOLE NUMBERS & MIXED NUMBERS

Add the whole numbers. Add the fractions.

$4 + 2\frac{1}{5} = 6\frac{1}{5}$

FRACTIONS WITH COMMON DENOMINATORS

Add or subtract the numerators and write the answer over the common denominator.

$\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$

$5 + \frac{1}{6} =$

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

$6 + 2\frac{3}{8} =$

$4 + 9\frac{1}{2} =$

$\frac{4}{9} + \frac{1}{9} =$

$\frac{7}{10} - \frac{3}{10} =$ (Simplify.)

You did it! Swim like a turtle to Coconut Island.

COCONUT ISLAND

FRACTIONS WITHOUT COMMON DENOMINATORS

If fractions do not have common denominators, rewrite one (or more) of the fractions as an equivalent fraction with a common denominator before adding or subtracting them.

$\frac{2}{5} + \frac{1}{2} =$

$\frac{2}{5} \times \frac{2}{2} + \frac{1}{2} \times \frac{5}{5} =$

$\frac{4}{10} + \frac{5}{10} = \frac{9}{10}$

$\frac{1}{5} + \frac{1}{4} =$

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

$\frac{3}{8} + \frac{1}{6} =$

$\frac{1}{2} - \frac{2}{7} =$

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

$\frac{5}{6} + \frac{1}{2} =$

Float like a coconut to Shipwreck Island.

SHIPWRECK ISLAND

MIXED NUMBERS & FRACTIONS

Add or subtract the whole numbers. Add or subtract the fractions.

$4\frac{2}{3} - 1\frac{1}{6} =$ Find a common denominator.

$4\frac{4}{6} - 1\frac{1}{6} =$ Subtract the whole numbers.

$3\frac{3}{6}$ Subtract the fractions.

$3\frac{1}{2}$ Write the answer in simplest form.

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

$7\frac{5}{6} - \frac{2}{3} =$

$6\frac{3}{4} + \frac{1}{5} =$

$4\frac{2}{3} - 2\frac{1}{5} =$

$5\frac{3}{4} + 1\frac{2}{3} =$

$9\frac{4}{5} - 3\frac{1}{3} =$

Whew, you made it! Now sail your ship safely to Jellyfish Island.

FRACTIONS WITH WHOLES

When the numerator and denominator of a fraction are the same, the fraction equals one whole. $\frac{4}{4} = 1$

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

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

Write 1 as a fraction equal to 1 with a common denominator.

Subtract the fractions.

$8 - 2\frac{5}{6} =$

$7\frac{6}{6} - 2\frac{5}{6} = 5\frac{1}{6}$

Take 1 from the whole and make it a fraction with a common denominator.

Subtract the whole numbers and subtract the fractions.

JELLYFISH ISLAND

$1 - \frac{7}{8} =$ $\qquad 4 - \frac{6}{11} =$

$10 - 3\frac{1}{4} =$ $\qquad 5 - \frac{3}{2} =$

$6 - \frac{5}{3} =$ $\qquad 8 - \frac{9}{4} =$

You didn't get stung! Let the waves push you to Coral Island.

CORAL ISLAND

Convert the mixed number to an improper fraction. Find common denominators, and then add.

$3\frac{4}{5} + \frac{7}{5} =$ $\qquad \frac{4}{3} + 7\frac{1}{2} =$ $\qquad 2\frac{1}{4} + \frac{5}{3} =$

Convert the improper fraction to a mixed number. Find common denominators, and then add.

$2\frac{2}{3} + \frac{7}{3} =$ $\qquad \frac{5}{2} + 4\frac{4}{5} =$

$\frac{14}{3} + 5\frac{3}{5} =$

Snorkel over the coral reef on your way to Volcano Island.

CONVERTING FRACTIONS

Improper Fraction to a Whole or Mixed Number:
Divide the numerator by the denominator and write the quotient as a mixed number if there is a remainder.

Convert $\frac{11}{4}$ to a mixed number.

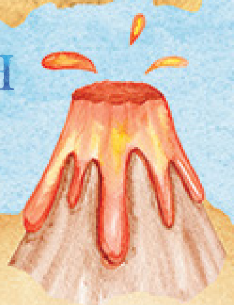
$$\begin{array}{r} 2\frac{3}{4} \\ 4\overline{)11} \\ -\ 8 \\ \hline 3 \end{array} \qquad \frac{11}{4} = 2\frac{3}{4}$$

Mixed Number to an Improper Fraction:
Multiply the denominator by the whole number, add the product to the numerator, and write the sum over the denominator.

Convert $2\frac{3}{4}$ to an improper fraction.

$$\frac{\text{denominator} \times \text{whole number} + \text{numerator}}{\text{denominator}}$$

$$2\frac{3}{4} = \frac{11}{4}$$



VOLCANO ISLAND

YOU CHOOSE! Use any method to correctly subtract the mixed numbers and improper fractions.

$5\frac{3}{8} - \frac{9}{4} =$ $\qquad \frac{12}{5} - 1\frac{2}{5} =$

$7\frac{7}{8} - \frac{15}{2} =$ $\qquad \frac{11}{4} - 1\frac{1}{4} =$

$6\frac{4}{5} - \frac{10}{3} =$ $\qquad \frac{10}{3} - 1\frac{1}{4} =$

You are an island explorer! Now you may head for home.

All done! No review.

Lesson 69

CANCELING BEFORE MULTIPLYING FRACTIONS

Supplies

1 standard dice

- Complete today's *Math 5 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/Math5.

$$\frac{3}{8} \times \frac{2}{15} =$$

$$\frac{4}{5} \times \frac{2}{3} \times \frac{15}{22} =$$

Mini Lesson

Canceling is a way to simplify fractions before multiplying them. To cancel, find one numerator and one denominator that are divisible by the same factor. Divide both the numerator and the denominator by that factor and write the quotients in place of the canceled numbers. Then multiply the fractions.

Reducing after Multiplying

$$\frac{3}{5} \times \frac{1}{9} = \frac{3}{45}\begin{matrix}\div 3\\ \div 3\end{matrix} = \frac{1}{15}$$

Canceling before Multiplying

$$\frac{\overset{1}{\cancel{3}}}{5} \times \frac{1}{\underset{3}{\cancel{9}}} = \frac{1}{15}$$

(a numerator and a denominator are divided by 3)

It is possible to have multiple cancellations in one problem. Cancellations may be performed in any order; just make sure to divide both a numerator and a denominator by the same number.

Examples:

$$\frac{\overset{1}{\cancel{5}}}{\underset{3}{\cancel{9}}} \times \frac{\overset{1}{\cancel{3}}}{\underset{1}{\cancel{5}}} = \frac{1}{3}$$

(divided by 5)
(divided by 3)

$$\frac{\overset{1}{\cancel{2}}}{\underset{1}{\cancel{3}}} \times \frac{\overset{2}{\cancel{6}}}{7} \times \frac{1}{\underset{1}{\cancel{2}}} = \frac{2}{7}$$

(divided by 3)
(divided by 2)

Cancellations can also be performed with new numerators and denominators.

$$\frac{4}{9} \times \frac{6}{5} \times \frac{1}{8} = \frac{24}{360}$$

$$\frac{\overset{1}{\cancel{4}}}{\underset{3}{\cancel{9}}} \times \frac{\overset{2}{\cancel{6}}}{5} \times \frac{1}{\underset{2}{\cancel{8}}} = \frac{2}{30}$$

$$\frac{\overset{1}{\cancel{4}}}{\underset{3}{\cancel{9}}} \times \frac{\overset{1}{\cancel{\overset{2}{\cancel{6}}}}}{5} \times \frac{1}{\underset{1}{\cancel{\underset{2}{\cancel{8}}}}} = \frac{1}{15}$$

All three products are equivalent.

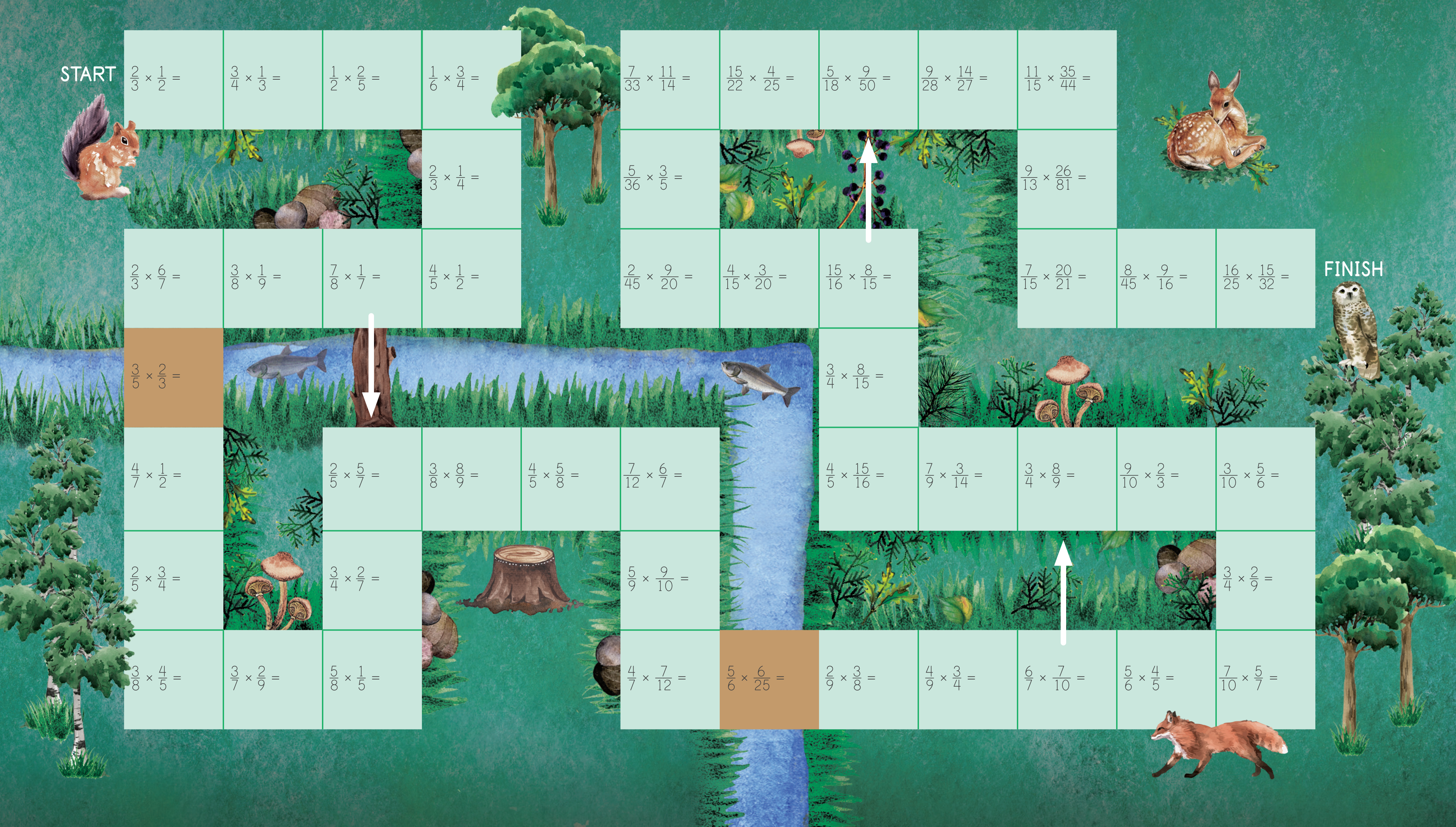
$$\frac{24}{360} = \frac{2}{30} = \frac{1}{15}$$

Canceling first makes multiplying fractions easier. If all common factors are canceled before multiplying, the answer will be in simplest form.

HIKE THE FOREST PATH

Roll a dice, move forward that number of spaces from START, and use cancellations to complete the problem you land on. Write the answer in the box. If you land on a box with an arrow, take a shortcut to the box it is pointing to. Write the answer to that problem, and then roll again. Continue playing until you reach FINISH.

Then play a second time! For this round, if you land on a box with an answer you've already written, advance to the next unanswered box and write the answer. Continue rolling the dice and writing the answers until you reach FINISH.



Perform cancellations first, and then multiply the fractions.

$\frac{2}{3} \times \frac{3}{5} \times \frac{1}{4} =$

$\frac{3}{4} \times \frac{2}{5} \times \frac{4}{9} =$

$\frac{2}{5} \times \frac{3}{14} \times \frac{7}{9} =$

$\frac{4}{9} \times \frac{3}{8} \times \frac{2}{7} =$

$\frac{5}{8} \times \frac{4}{15} \times \frac{3}{2} =$

$\frac{7}{10} \times \frac{9}{14} \times \frac{2}{3} =$

$\frac{9}{15} \times \frac{6}{5} \times \frac{5}{9} =$

$\frac{6}{11} \times \frac{5}{18} \times \frac{22}{25} =$

$\frac{3}{5} \times \frac{1}{4} \times \frac{5}{6} \times \frac{8}{11} =$

$\frac{1}{3} \times \frac{3}{4} \times \frac{2}{7} \times \frac{14}{15} =$

$\frac{5}{9} \times \frac{5}{7} \times \frac{9}{25} \times \frac{7}{9} =$

$\frac{9}{10} \times \frac{8}{21} \times \frac{7}{8} \times \frac{5}{18} =$

$\frac{8}{15} \times \frac{7}{12} \times \frac{5}{8} \times \frac{9}{4} \times \frac{6}{7} =$

$\frac{20}{11} \times \frac{4}{9} \times \frac{33}{40} \times \frac{9}{10} =$

$\frac{3}{4} \times \frac{5}{6} \times \frac{7}{3} \times \frac{4}{5} \times \frac{6}{7} =$

$\frac{15}{22} \times \frac{5}{14} \times \frac{11}{20} \times \frac{7}{5} =$

Review

1. Multiply.

Hint: Convert the whole numbers to fractions before multiplying.

$8 \times \frac{1}{4} =$ $\frac{6}{5} \times 10 =$ $9 \times \frac{2}{3} =$ $\frac{5}{14} \times 7 =$

2. Write the number of faces for each geometric solid.

3. Write the area formula for a . . .

rectangle. ______________ triangle. ______________

4. Round the fractions, mixed numbers, and decimal numbers to the nearest whole number.

$\frac{7}{10}$ $4\frac{5}{12}$ 53.5 $9\frac{8}{15}$ $6\frac{1}{2}$

5. Determine each missing factor.

12B = 144 15K = 225 8P = 240

B = _____ K = _____ P = _____

6. Add or subtract.

$\frac{7}{10} - \frac{2}{3} =$ $\frac{5}{6} + \frac{3}{4} =$ $\frac{8}{9} - \frac{4}{5} =$

$\frac{3}{8} + \frac{1}{4} + \frac{5}{16} =$ $\frac{2}{5} + \frac{1}{3} + 4 =$ $6 - 2\frac{5}{7} =$

$8 - 3\frac{4}{5} =$ $9 - 5\frac{2}{3} =$ $5\frac{3}{8} + 2\frac{5}{8} =$

108.5892 + 0.049 + 11.7021 = 72.4138 - 3.602 =

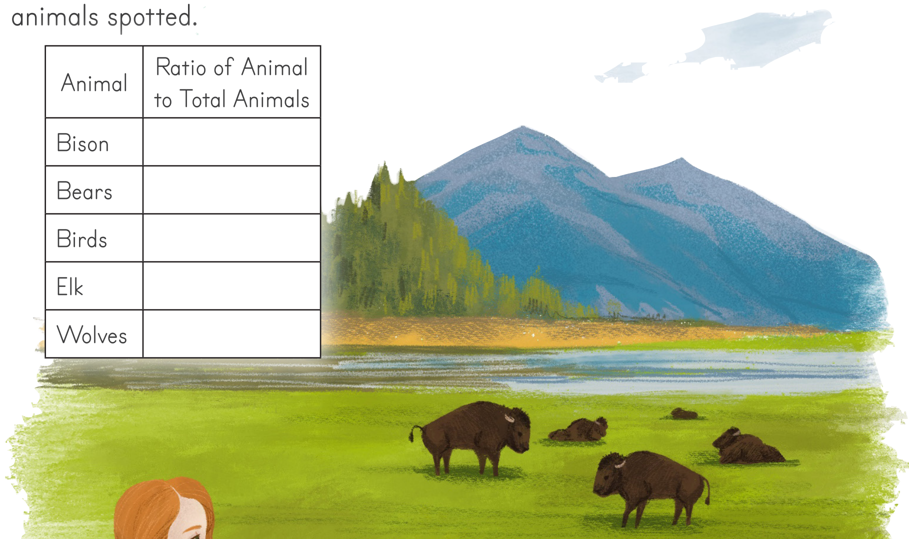
Lesson 80

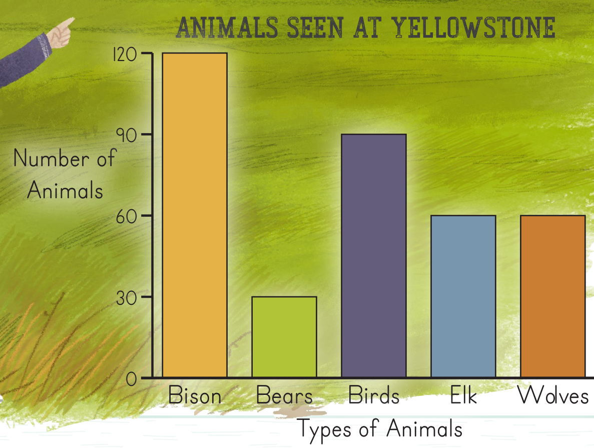
MATH PUZZLES

- Complete today's *Math 5 Mental Math Map Mysteries* activity.
- This lesson has no video lesson, mini lesson, or review—just puzzles!

Alice and her family visited Yellowstone National Park. The bar graph shows the number of each type of animal spotted by visitors. For each animal, write a ratio (in fraction form) of the number of that animal to the total number of animals spotted.

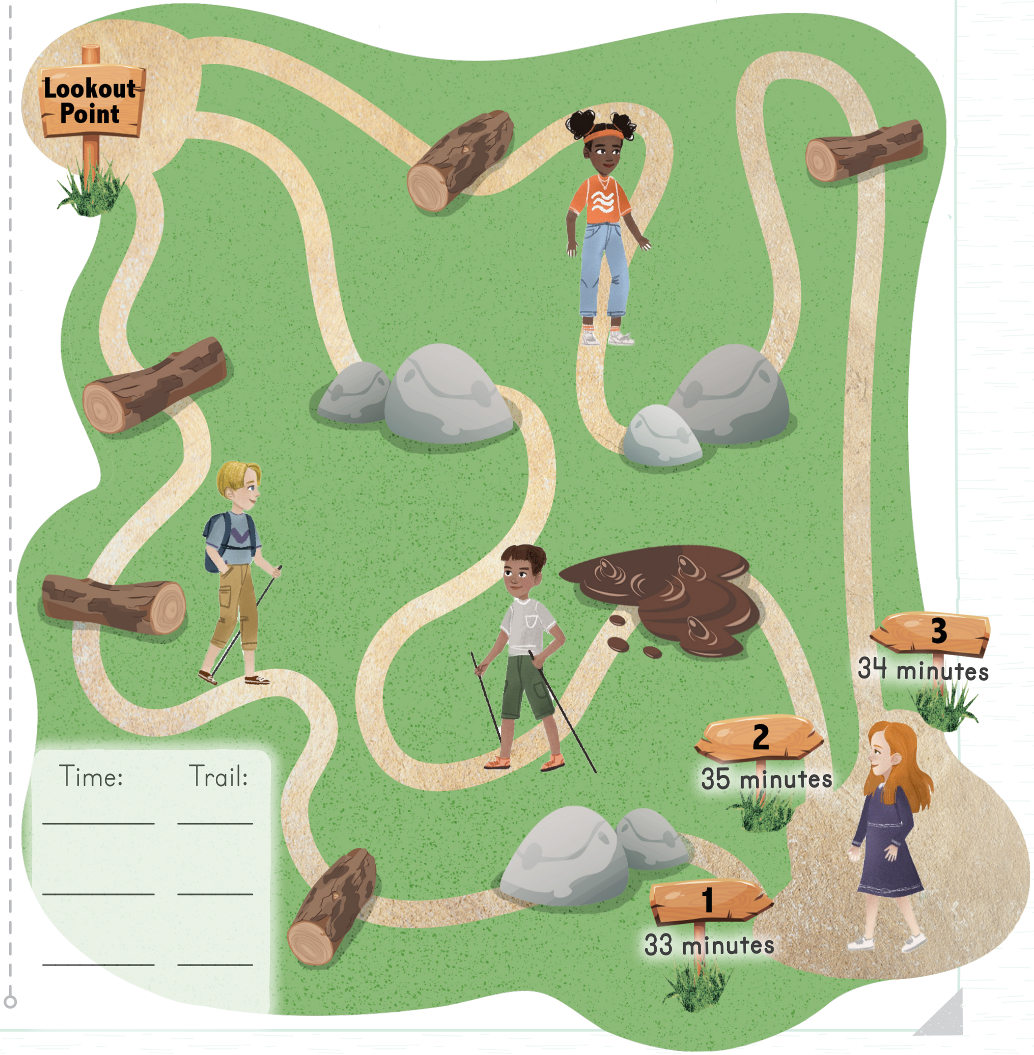
Animal	Ratio of Animal to Total Animals
Bison	
Bears	
Birds	
Elk	
Wolves	





Alice's family wanted to hike to a beautiful lookout, but each trail had obstacles. The average time to complete each hike is listed by the trailhead signs. Use the key to add the number of minutes each obstacle would add to the hike time. Then list the times to complete each hike in order from least to greatest.

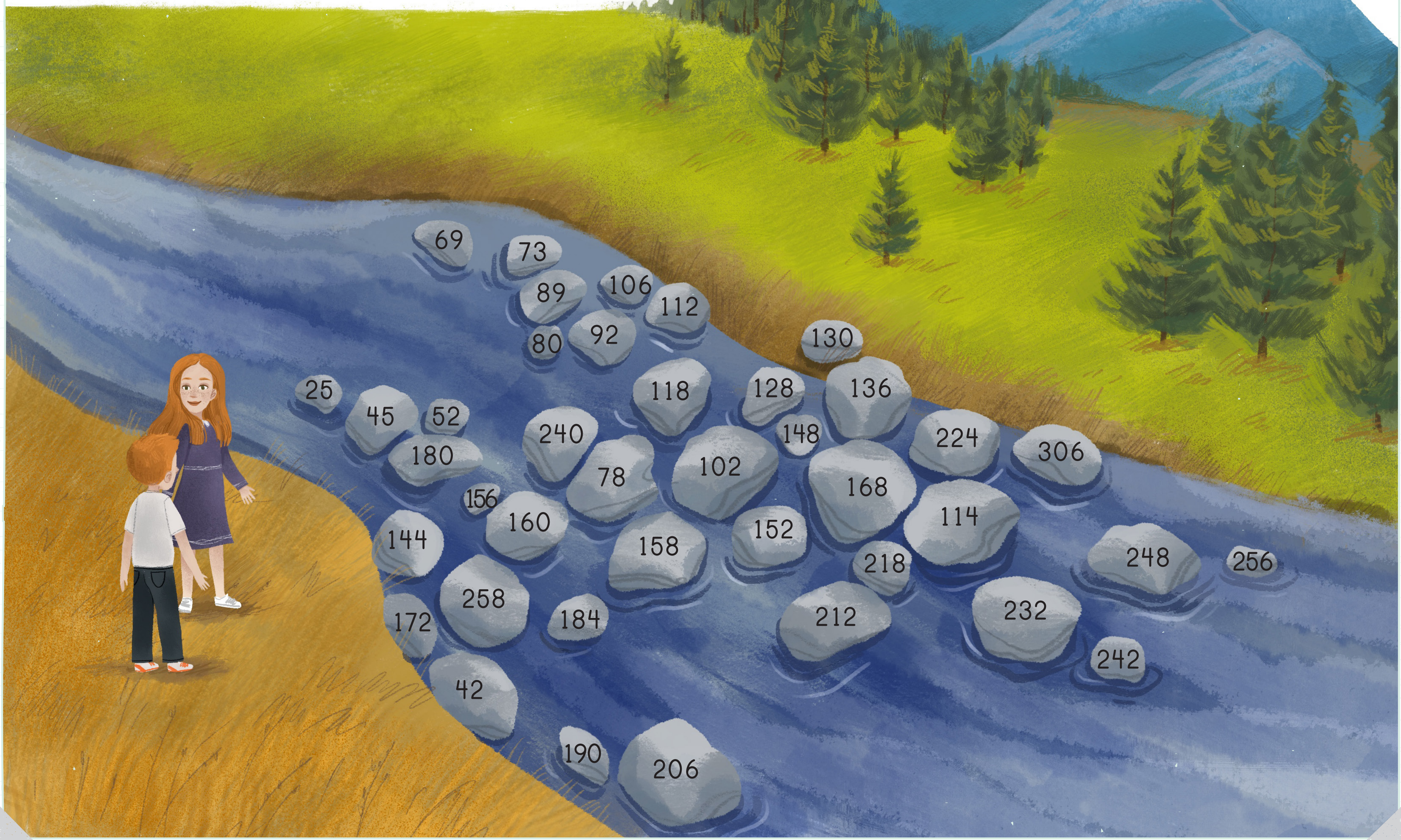
Fallen Log	Big Rocks	Mud Puddles	Other Visitors
0.023 minutes	1.209 minutes	0.21 minutes	0.407 minutes



Time:	Trail:
______	______
______	______
______	______

Help Alice and her brother hop across the stream. They can only hop on rocks with a number that is divisible by 6. Circle the rocks to show their path.

Hint: Remember the strategy? If the number is divisible by both 2 and 3, it is also divisible by 6.



UNIT 4 OVERVIEW

LESSONS 91–120

Extra Supplies Needed

- 1 standard dice
- colored pencils
- ruler or straightedge
- protractor

New Concepts Taught

- averages with remainders
- base-5 number system
- circle graphs
- conversions between fractions, decimals, and percents
- conversions from fractions to decimals
- division by decimal numbers
- division with terminating and repeating decimals
- expressions and equations
- histograms
- line plots
- multiplication of mixed numbers
- number categories (natural numbers, whole numbers, and integers)
- percent of a number
- proportions
- Roman numerals to 1,000,0000
- scale drawings
- solutions to equations
- stem and leaf plots
- time zones
- Venn diagrams with sets
- volume of cylinders

Concepts Reviewed and Expanded Upon

- division of decimal numbers by whole numbers
- pictographs
- problem solving with multiple steps
- volume of cubes
- volume of rectangular prisms

Lesson 96

CONVERTING FRACTIONS TO DECIMALS AND PERCENTS

Supplies
colored pencils

- Complete today's *Math 5 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/Math5.

Mini Lesson

To convert a fraction to a decimal number, divide the numerator by the denominator.

Examples:

$\frac{4}{5} \rightarrow$

$$\begin{array}{r} 0.8 \\ 5\overline{)4.0} \\ \underline{-4\,0} \\ 0 \end{array}$$

$\frac{7}{4} \rightarrow$

$$\begin{array}{r} 1.75 \\ 4\overline{)7.00} \\ \underline{-4} \\ 3\,0 \\ \underline{-2\,8} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

$\frac{8}{11} \rightarrow$

$$\begin{array}{r} 0.727 \\ 11\overline{)8.000} \\ \underline{-7\,7} \\ 30 \\ \underline{-2\,2} \\ 80 \\ \underline{-77} \\ 3 \end{array}$$

$\boxed{\frac{4}{5} = 0.8}$ $\boxed{\frac{7}{4} = 1.75}$ $\boxed{\frac{8}{11} \approx 0.73}$

(rounded to the hundredths place)

To convert a fraction to a percent,

1. convert the fraction to a decimal number, and
2. move the decimal point two places to the right and write a percent sign.

Examples:

$\frac{4}{5} = 0.8$	$\frac{7}{4} = 1.75$	$\frac{8}{11} \approx 0.73$
$0.8 \rightarrow 0.80\%$	$1.75 \rightarrow 1.75\%$	$0.73 \rightarrow 0.73\%$
$\frac{4}{5} = 80\%$	$\frac{7}{4} = 175\%$	$\frac{8}{11} \approx 73\%$

Common Conversions

$\frac{1}{2} = 0.5 = 50\%$ $\frac{1}{4} = 0.25 = 25\%$

$\frac{1}{3} = 0.\overline{3} = 33.\overline{3}\%$ $\frac{3}{4} = 0.75 = 75\%$

$\frac{2}{3} = 0.\overline{6} = 66.\overline{6}\%$ $\frac{1}{5} = 0.2 = 20\%$

$\frac{1}{8} = 0.125 = 12.5\%$

Practice

1. Convert the fractions to decimals.

a. $\frac{1}{4}$ = ______ c. $\frac{9}{8}$ = ______ e. $\frac{9}{25}$ = ______

b. $\frac{3}{10}$ = ______ d. $\frac{7}{8}$ = ______ f. $\frac{8}{5}$ = ______

2. Convert the decimals in Problem 1 to percents.

a. ______ (decimal) = ______ (percent) c. ______ = ______ e. ______ = ______

b. ______ = ______ d. ______ = ______ f. ______ = ______

3. Write each fraction as a decimal and a percent.

Fraction	Decimal	Percent
$\frac{9}{10}$		
$\frac{4}{25}$		
$\frac{6}{5}$		
$\frac{3}{4}$		
$\frac{1}{8}$		
$\frac{15}{16}$		
$\frac{5}{4}$		
$\frac{17}{4}$		

4. Convert the fractions to percents. Follow the instructions below to round the repeating decimals before converting them to percents.

a. Round the decimals to the tenths place.

$\frac{2}{9}$ $\frac{5}{6}$ $\frac{9}{14}$

b. Round the decimals to the hundredths place.

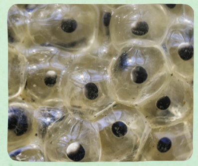
$\frac{7}{12}$ $\frac{4}{9}$ $\frac{7}{15}$

c. Round the decimals to the nearest whole (the ones place).

$\frac{11}{3}$ $\frac{9}{7}$ $\frac{2}{13}$

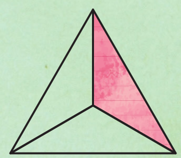
5. Complete each story problem.

The Chinese giant salamander is the world's largest living amphibian! It is around 1.6 meters (5 feet) long and usually hunts for food at night. If $\frac{6}{7}$ of the salamanders are already hunting for food, what percent of the salamanders are NOT hunting for food? (Round the decimal number to the hundredths place.)



Some frog species lay thousands of eggs. This is because only about $\frac{1}{50}$ of the eggs survive long enough to grow into tadpoles. What percent of frog eggs become tadpoles?

6. Write a fraction, decimal, and percent to represent each shaded part. Round repeating decimals to the thousandths place.



fraction ______

decimal ______

percent ______

fraction ______

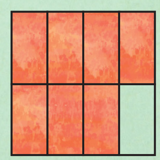
decimal ______

percent ______

fraction ______

decimal ______

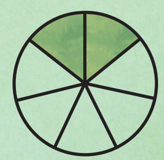
percent ______



fraction ______

decimal ______

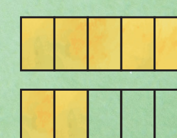
percent ______



fraction ______

decimal ______

percent ______



fraction ______

decimal ______

percent ______

7. Look on the salamander to find equivalent numbers for each fraction listed below. Then color the sections to match the color by each fraction.

$\frac{3}{2}$ → yellow

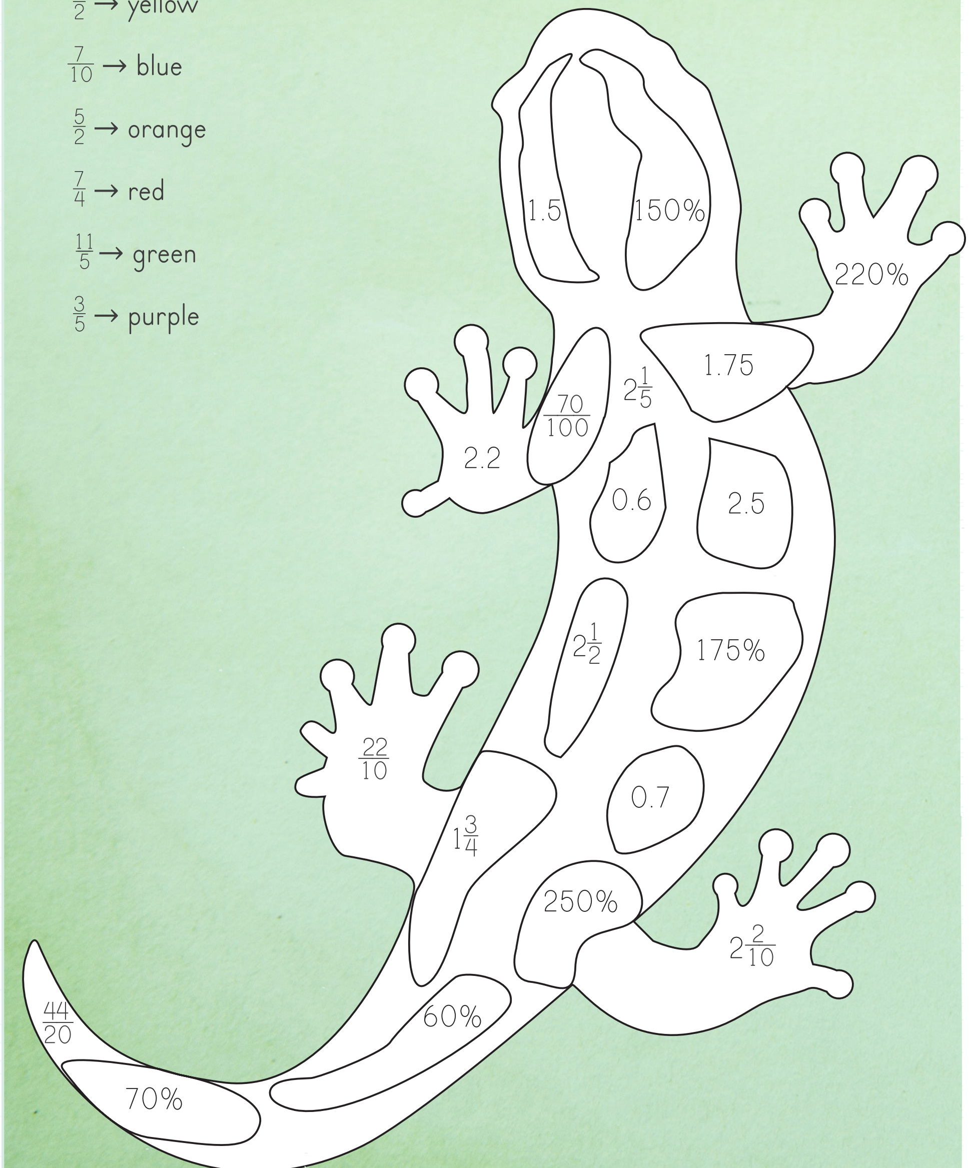
$\frac{7}{10}$ → blue

$\frac{5}{2}$ → orange

$\frac{7}{4}$ → red

$\frac{11}{5}$ → green

$\frac{3}{5}$ → purple



Review

1. Create a Venn diagram showing Set A and Set B. Then find the union and intersection of the sets.

A = {4, 8, 12, 16, 20}   B = {4, 9, 16, 25}

$A \cup B$ = ____________________

$A \cap B$ = ____________________

2. Find the mean, median, mode, and range of this data set: 35, 61, 55, 92, 35.

mean: ________ median: ________ mode: ________ range: ________

3. Divide.

$6\overline{)\$7.68}$ $9\overline{)\$53.91}$ $12\overline{)\$25.92}$

4. Use the distributive property to multiply. Show your work.

3 × 37 =   22 × 43 =

5. Compare the fractions and write <, >, or = between them.

$\frac{3}{5}$ ◯ $\frac{6}{7}$ $\frac{5}{6}$ ◯ $\frac{7}{20}$ $\frac{2}{5}$ ◯ $\frac{5}{11}$

6. Add or subtract.

1.455 - 0.6412 =   93.074 + 5.6081 =   8 - 3.615 =

Lesson 100

PLANETARY PUZZLES

- Complete today's *Math 5 Mental Math Map Mysteries* activity.
- There is no video, mini lesson, or practice.

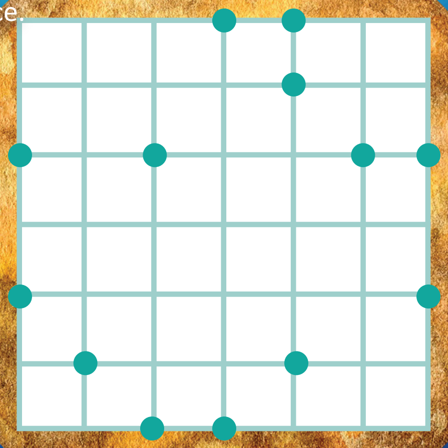
The sun is a star in our solar system.

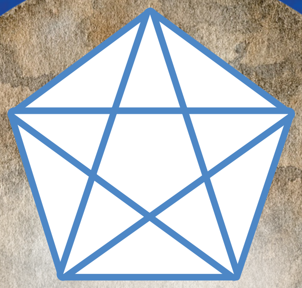
Cross out the star that does not belong in the set below.

Mercury is the closest planet to the sun.

Venus is the hottest planet because its thick atmosphere traps heat.

Use the dots to draw three trapezoids.





Write the number of triangles.

______

When Earth crosses the path of a comet, there is often a meteor shower.

9		1

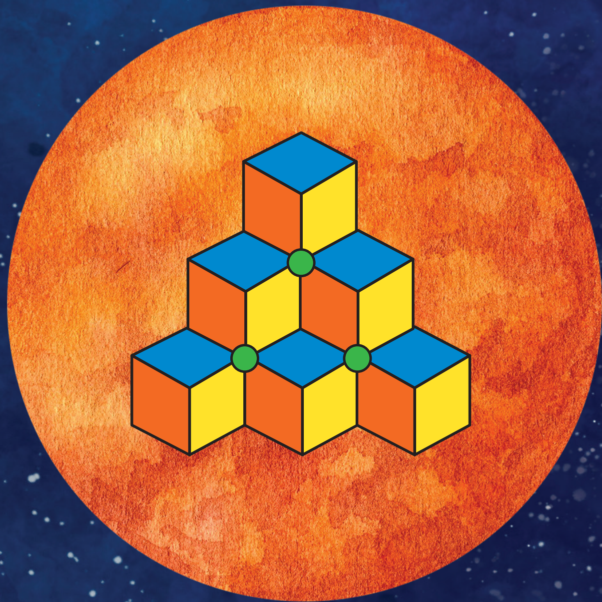
Using only the numbers 2–8 (once each), fill in the rest of the chart so every path (vertically, horizontally, and diagonally) adds up to 15.

Hint: Think of the combinations that could work with 9 and write them on the chart. Then fill in the rest of the numbers.

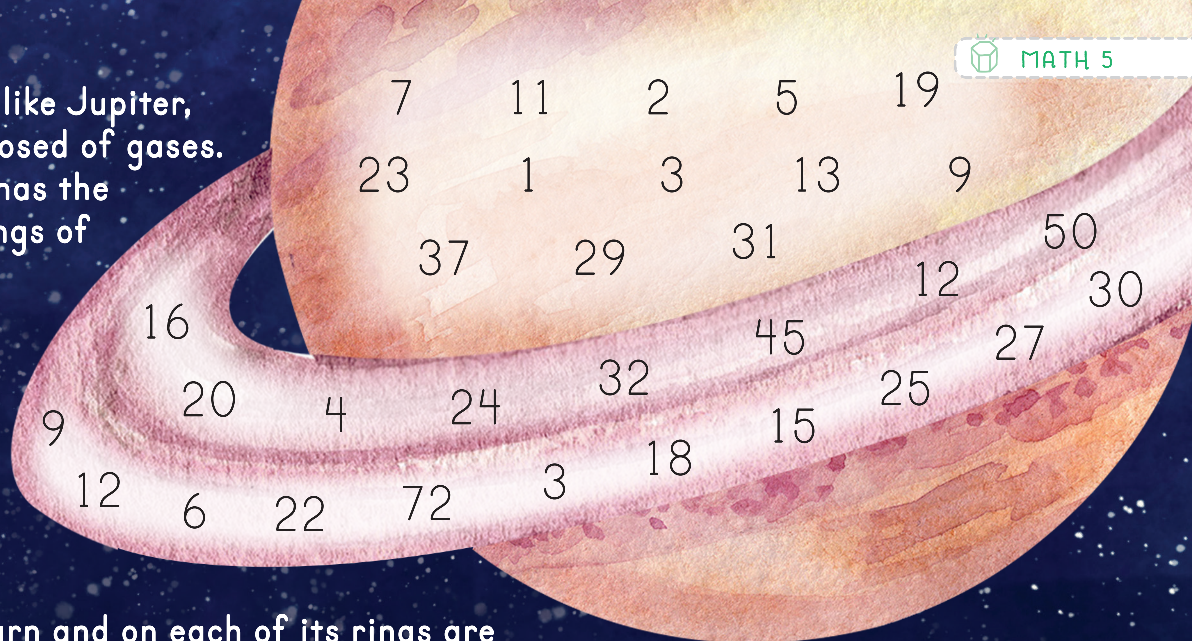
Earth is the densest planet in the solar system.

Write the only whole number in the world that results in a larger number when you add it to itself than when you multiply it by itself.

______



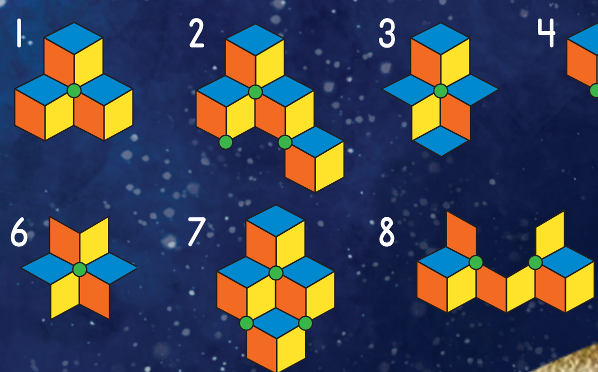
Saturn, like Jupiter, is composed of gases. Saturn has the most rings of all the planets.



On Saturn and on each of its rings are numbers that belong in a set. Cross out two numbers in each set that do not belong.

Olympus Mons is a towering volcano on Mars. It is the tallest mountain in the solar system!

Which two pieces below could be used to create a miniature version of the tower?



$62 \div 2$

2^5

$\sqrt{225}$

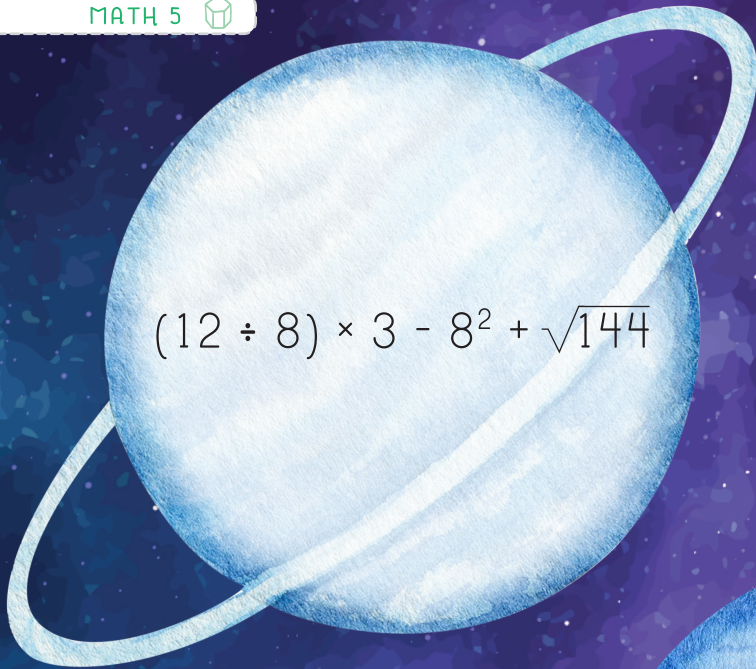
Ganymede is one of Jupiter's moons. It is the largest moon in the solar system.

Circle the expression with the largest value.

Jupiter has the shortest day and the longest diameter of all the planets. It also has at least 79 moons!

Fill in the green circles with +, -, ×, or ÷ to create a long equation with an answer of 79.

$(12 \bigcirc 11) \bigcirc 2 \bigcirc 13 = 79$



$$(12 \div 8) \times 3 - 8^2 + \sqrt{144}$$

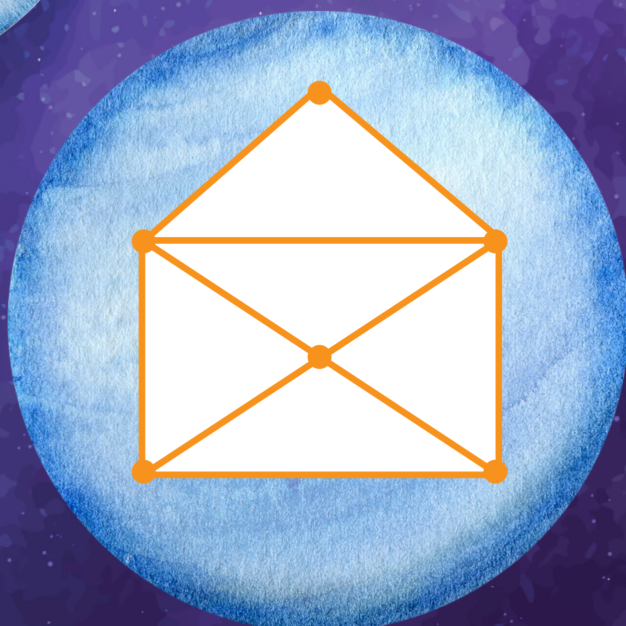
Uranus, like Venus, has a retrograde rotation—it spins in the opposite direction than most other planets.

First, change each operation to the INVERSE operation. Then complete the problem to determine how many Earth years it takes Uranus to orbit the sun one time.

Neptune is home to massive storms. With wind speeds recorded at almost 1,200 miles per hour, these storms can last for years!

Trace every segment on the house without lifting your pencil or retracing any parts.

Hint: Draw lightly in case you need to erase.



Comets orbit the sun. They are sometimes called “dirty snowballs” because they are often made up of frozen water or gases and rocky materials.

Draw six comets on the grid without forming any three-in-a-row combinations.

Pluto, Haumea, and Eris are “dwarf planets.” Scientists believe there are thousands of dwarf planets waiting to be discovered.

How many circles can you discover in the image to the right?

______ circles

Lesson 103

BUILD A HOUSE: DAY 1

- ☐ Complete today's *Math 5 Mental Math Map Mysteries* activity.
- ☐ Complete Day 1 of the Build-a-House activity below. There is no video, mini lesson, or review.

In the book of Matthew in scripture, we read about the wise man who built his house upon the rock. When the storms came, the house did not fall because of its strong foundation. We also read in the book of Ephesians about Christ being the chief cornerstone. A cornerstone is a stone at the base of a building that is often the first stone placed. It is very important because it marks the location and orientation of the building, and all other stones are placed using that stone as a guide. We should live our lives with Christ as our cornerstone, with everything in our lives built around Him!

In this project you are going to create plans for building a house. Complete all the Day 1 tasks. Complete the Day 2 tasks the next day.

Day 1 Tasks (check when completed):

- ☐ sketch floor plan
- ☐ find actual dimensions

SKETCH A FLOOR PLAN for the ground floor of your house on the grid on page 320. The entire house must be rectangular. The rooms listed in the purple box must be included, but you can include others if you would like. The rooms may be any size you choose but should be rectangular. Be as creative as you would like! There is already a pond and a garden on the floor plan.

Rooms to include:

kitchen	bedroom #1	living room	dining room
bathroom	bedroom #2	office	garage
	bedroom #3		

Use this scale and write it on your floor plan: **1 unit : 3 feet**

FIND THE ACTUAL DIMENSIONS for each room using the chart below. First, record the length and width of each room in units. Then convert each dimension to its actual measurement using the scale and a proportion. Also, find the actual measurements for the pond and the garden in the charts below.

Room	Length on Drawing (in units)	Width on Drawing (in units)	Actual Length (in feet)	Actual Width (in feet)
kitchen				
bathroom				
bedroom #1				
bedroom #2				
bedroom #3				
living room				
office				
dining room				
garage				

Object	Diameter on Drawing (in units)	Actual Diameter (in feet)
pond		

Object	Height on Drawing (in units)	Base on Drawing (in units)	Actual Height (in feet)	Actual Base (in feet)
garden				

Lesson 108

CAMPGROUND PROBLEM SOLVING

- Complete today's *Math 5 Mental Math Map Mysteries* activity.
- Complete the practice and review. There is no video or mini lesson.

Practice

1. The Hernandez family is going camping and wants to make s'mores. They need to know how many ingredients to bring so there are enough ingredients for all 6 members of their family to have 5 s'mores each.

   Each s'more needs
   - 1 graham cracker
   - $\frac{1}{3}$ of a chocolate bar
   - 1 regular size marshmallow

Use the information above and the chart below to answer the questions.

Ingredients	Package size	Items per package
Marshmallows	10 oz bag	40 marshmallows
Chocolate bars	9 oz package	8 bars
Graham crackers	1 box has 3 packs in it	9 crackers per pack

a. How many packages of each item are needed?

marshmallows _____ chocolate bars _____

graham crackers _____

b. If 2 packages of each item are purchased, how many s'mores can be made? _____

2. While on a short nature walk, the children spotted ants on a log. Carlos counted 5^3 ants, and Matias counted $3^4 + 2^5$ ants. Who counted more ants, and how many more did he count?

3. The Hernandez family is having tin foil dinners tonight. The dinners still need two more vegetables: potatoes and carrots. If each dinner needs 75% of a potato and 1.75 carrots, how many potatoes and carrots are needed to make 6 tin foil dinners?

4. Peach cobbler is planned for dessert one evening, and the family plans to eat it at 6:00 PM. The cobbler will cook for 50 minutes and needs to cool for 15 minutes before it can be eaten. When does the cobbler need to be started if it takes $\frac{2}{3}$ of the cooling time to mix it up?

5. Dad told stories and Mom led the family in songs around the campfire for 1.5 hours. If the family sang songs 40% of the time, for how many minutes did Dad tell stories?
   ✦ Hint: Convert the hours to minutes.

6. The next morning the family went on a hike to a beautiful waterfall. The waterfall was $\frac{1}{4}$ of the way to a lake. The trail sign said the hike to the lake was 3 miles long. If the family went only to the waterfall and back, how far did they hike?

7. While enjoying the waterfall, they saw 2 birds for every 3 hikers. If there were 15 hikers, how many birds did they see?

8. Isabella sketched 42 flowers that she saw while camping. One-third of the flowers Isabella sketched were purple, and $\frac{1}{6}$ of the flowers she sketched were red. How many flowers did Isabella sketch that were not purple or red?

9. Carlos took 40 pictures of his favorite things. If 45% of the pictures were of birds, 15% were of rocks, 20% were of the campfire, and the rest were of people, how many pictures did he take of living things? How many pictures did he take of non-living things?

10. Amelia and Matias want to go on a 3-hour (total time there and back) hike with their dad to a lake. The sun sets at 7:28 PM. At what time would Amelia, Matias, and their dad need to start the hike if they want to be back 30 minutes before sunset and they stay at the lake for 50 minutes?

Lesson 114

SOLVING EQUATIONS

- Complete today's *Math 5 Mental Math Map Mysteries* activity.
- Watch the video lesson and/or read the mini lesson.

Video Lesson

$w - 62 = 26$ $\qquad$ $g^2 = 121$

Scan the QR code or watch the video lesson on goodandbeautiful.com/Math5.

Mini Lesson

An ***equation*** is two expressions joined by an equal sign. It is a math sentence that shows an equal relationship between the expressions on both sides of the equal sign. Both sides of an equation have the same value.

$11 + 3 = 14$ $\qquad$ $17 - 10 = 7$ $\qquad$ $24 = 8 \times 3$

$t = 30 \div 5$ $\qquad$ $5 = \sqrt{25}$ $\qquad$ $10^2 = 100$

On the blue scale above, t equals 30 ÷ 5. Since 30 ÷ 5 is 6, t equals 6.

Inverse operations can be helpful when solving equations.

Operation	+	–	×	÷	$\sqrt{n}$	n^2
Inverse Operation	–	+	÷	×	n^2	$\sqrt{n}$

To check if a value is a solution, write the value in place of the variable. If both sides are equal, it is a solution. If the sides are not equal, it is not a solution.

Examples:
- Rewrite the equation to solve for the variable.
- Perform the calculation.
- Check the answer.

$n + 15 = 20$ $20 - 15 = n$ $\boldsymbol{n} = 5$ Check: $5 + 15 \stackrel{?}{=} 20$ $20 = 20$ ✓	$s - 7 = 15$ $15 + 7 = s$ $\boldsymbol{s} = 22$ Check: $22 - 7 \stackrel{?}{=} 15$ $15 = 15$ ✓	$40m = 80$ $80 \div 40 = m$ $\boldsymbol{m} = 2$ Check: $40 \times 2 \stackrel{?}{=} 80$ $80 = 80$ ✓
$r \div 3 = 9$ $9 \times 3 = r$ $\boldsymbol{r} = 27$ Check: $27 \div 3 \stackrel{?}{=} 9$ $9 = 9$ ✓	$b^2 = 16$ $\sqrt{16} = b$ $\boldsymbol{b} = 4$ Check: $4^2 \stackrel{?}{=} 16$ $16 = 16$ ✓	$\sqrt{d} = 8$ $8^2 = d$ $\boldsymbol{d} = 64$ Check: $\sqrt{64} \stackrel{?}{=} 8$ $8 = 8$ ✓

Practice

1. Use the words to write an equation. Use "k" for any variables.

The sum of eleven and twenty-eight is thirty-nine. ________

The difference between a number and twelve is six. ________

The product of thirteen and ten is one hundred thirty. ________

The total of fourteen and a number equals eighty. ________

One-fifth of a number equals twenty. ________

The quotient of a number and three equals nine. ________

2. Write the inverse operation below each operation.

Operation	÷	+	×	$\sqrt{n}$	−	n^2
Inverse Operation						

3. Rewrite each equation using the inverse operation. The first one shows two examples.

$63 + 8 = 71$ $71 - 8 = 63$ or $71 - 63 = 8$

$90 \div 5 = 18$ ________

$84 - 17 = 67$ ________

$\sqrt{169} = 13$ ________

$6^2 = 36$ ________

$15 \times 4 = 60$ ________

$59 - 28 = 31$ ________

$112 \div 28 = 4$ ________

$21 \times 14 = 294$ ________

$8^2 = 64$ ________

4. Find the value of each variable.

$y - 9 = 22$	y = ____	$15 + r = 32$	r = ____
$s \div 4 = 42$	s = ____	$6h = 72$	h = ____
$\sqrt{a} = 12$	a = ____	$p^2 = 100$	p = ____
$81 \div u = 9$	u = ____	$w \times 14 = 196$	w = ____
$f \div 12 = 9$	f = ____	$7b = 84$	b = ____
$\sqrt{g} = 15$	g = ____	$v^2 = 81$	v = ____

5. An equation and the value of a variable are given. Check to see if the value is a solution by writing the value in place of the variable. If it is a solution, write a ✓ in the box. If it is not a solution, write an ✗ in the box. The first one is given as an example.

$c - 89 = 37$

$c = 126$ ☑

$126 - 89 \stackrel{?}{=} 37$

$37 = 37$

$42 \div t = 7$

$t = 6$ ☐

$\sqrt{u} = 9$

$u = 3$ ☐

$16 + y = 45$

$y = 61$ ☐

$16p = 48$

$p = 3$ ☐

$r^2 = 25$

$r = 5$ ☐

$a \div 8 = 24$

$a = 192$ ☐

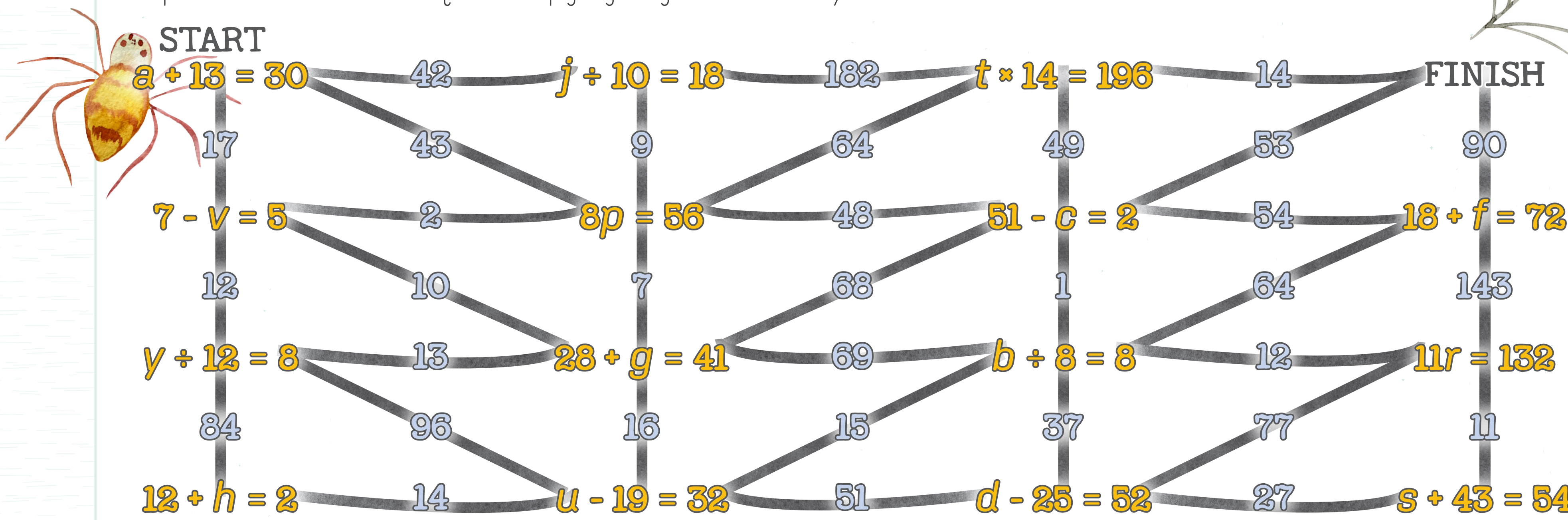
$64 - z = 53$

$z = 12$ ☐

$\sqrt{m} = 4$

$m = 16$ ☐

6. Help the spider make its way to the finished web in the corner. Start with the first equation. Find the value of the variable and continue on the spiderweb strand to the next equation. Keep going along the strands until you reach FINISH.



Review

1. Circle the equations and cross out the expressions.

$\sqrt{121}$ $5^2 = 25$ $y + 4$ $\frac{9}{x}$ $42 - n = 8$

2. Create a stem and leaf plot using the monthly average high temperatures in °F in Greenland throughout a year. Remember to add a title. Then answer the questions. Data set: 20, 19, 21, 28, 37, 48, 55, 48, 41, 34, 28, 24

What is the median?

What is the mode?

What is the range?

3. The circle graph below shows the favorite berries of 20 children. Answer the questions.

What percent of the children chose blueberries or blackberries?

What percent of the children did not choose strawberries?

Which berry was most popular?

How many children chose raspberries?

Hint: The answer is not a percent.

How many children chose cranberries?

Favorite Berries