Simply Good and Beautiful

MATH 5

COURSE BOOK

The Good and the Beautiful Curriculum

Simply Good and Beautiful MATH 5

COURSE BOOK

Created by the Simply Good and Beautiful Math Team

Reviewed by Deanna Dreher, PhD in mathematics; Tamara Stark, MA in mathematics education;
Nicki Savinda, BS in mathematics with secondary education certification;
Jennifer Christensen, BS in elementary education; Amber Dzubinski, BA in elementary education

The Good and the Beautiful Curriculum
goodandbeautiful.com

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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.

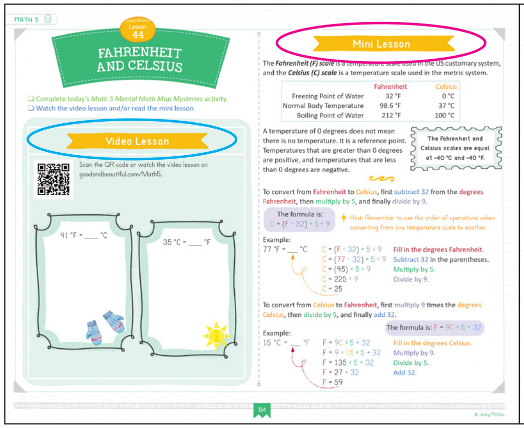
Review: Daily review of topics from previous lessons.

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.



MATH 5

Lesson 44

FAHRENHEIT AND CELSIUS

❍ 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.

41 °F = ____ °C

35 °C = ____ °F

Mini Lesson

The ***Fahrenheit (F) scale*** is a temperature scale used in the US customary system, and the ***Celsius (C) scale*** is a temperature scale used in the metric system.

	Fahrenheit	Celsius
Freezing Point of Water	32 °F	0 °C
Normal Body Temperature	98.6 °F	37 °C
Boiling Point of Water	212 °F	100 °C

A temperature of 0 degrees does not mean there is no temperature. It is a reference point. Temperatures that are greater than 0 degrees are positive, and temperatures that are less than 0 degrees are negative.

The Fahrenheit and Celsius scales are equal at -40 °C and -40 °F.

To convert from Fahrenheit to Celsius, first subtract 32 from the degrees Fahrenheit, then multiply by 5, and finally divide by 9.

The formula is: $C = (F - 32) \times 5 \div 9$

Hint: Remember to use the order of operations when converting from one temperature scale to another.

Example:
77 °F = ___ °C
$C = (F - 32) \times 5 \div 9$ Fill in the degrees Fahrenheit.
$C = (77 - 32) \times 5 \div 9$ Subtract 32 in the parentheses.
$C = (45) \times 5 \div 9$ Multiply by 5.
$C = 225 \div 9$ Divide by 9.
$C = 25$

To convert from Celsius to Fahrenheit, first multiply 9 times the degrees Celsius, then divide by 5, and finally add 32.

The formula is: $F = 9C \div 5 + 32$

Example:
15 °C = ___ °F
$F = 9C \div 5 + 32$ Fill in the degrees Celsius.
$F = 9 \times 15 \div 5 + 32$ Multiply by 9.
$F = 135 \div 5 + 32$ Divide by 5.
$F = 27 + 32$ Add 32.
$F = 59$

134

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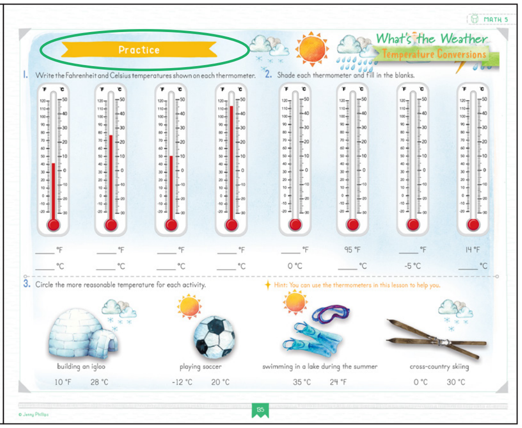

MATH 5

Practice

What's the Weather
Temperature Conversions

1. Write the Fahrenheit and Celsius temperatures shown on each thermometer.

2. Shade each thermometer and fill in the blanks.

____ °F ____ °C
____ °F ____ °C
____ °F ____ °C
____ °F ____ °C
____ °F 0 °C
95 °F ____ °C
____ °F -5 °C
14 °F ____ °C

3. Circle the more reasonable temperature for each activity.

Hint: You can use the thermometers in this lesson to help you.

building an igloo: 10 °F 28 °C
playing soccer: -12 °C 20 °C
swimming in a lake during the summer: 35 °C 24 °F
cross-country skiing: 0 °C 30 °C

135

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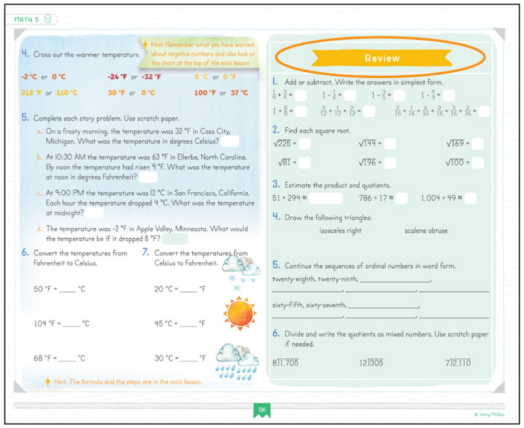

MATH 5

4. Cross out the warmer temperature.

Hint: Remember what you have learned about negative numbers and also look at the chart at the top of the mini lesson.

-2 °C or 0 °C
-24 °F or -32 °F
0 °C or 0 °F
212 °F or 110 °C
30 °F or 0 °C
100 °F or 37 °C

5. Complete each story problem. Use scratch paper.
   a. On a frosty morning, the temperature was 32 °F in Cass City, Michigan. What was the temperature in degrees Celsius?
   b. At 10:30 AM the temperature was 63 °F in Ellerbe, North Carolina. By noon the temperature had risen 9 °F. What was the temperature at noon in degrees Fahrenheit?
   c. At 9:00 PM the temperature was 12 °C in San Francisco, California. Each hour the temperature dropped 4 °C. What was the temperature at midnight?
   d. The temperature was -2 °F in Apple Valley, Minnesota. What would the temperature be if it dropped 8 °F?

6. Convert the temperatures from Fahrenheit to Celsius.
50 °F = ____ °C
104 °F = ____ °C
68 °F = ____ °C

7. Convert the temperatures from Celsius to Fahrenheit.
20 °C = ____ °F
45 °C = ____ °F
30 °C = ____ °F

Hint: The formula and the steps are in the mini lesson.

Review

1. Add or subtract. Write the answers in simplest form.
$\frac{1}{4} + \frac{3}{4} =$ $1 - \frac{1}{6} =$ $1 - \frac{3}{5} =$ $1 - \frac{4}{9} =$
$1 + \frac{8}{8} =$ $\frac{3}{12} + \frac{1}{12} + \frac{2}{12} =$ $\frac{2}{16} + \frac{1}{16} + \frac{6}{16} + \frac{2}{16} + \frac{3}{16} + \frac{2}{16} =$

2. Find each square root.
$\sqrt{225} =$ $\sqrt{144} =$ $\sqrt{169} =$
$\sqrt{81} =$ $\sqrt{196} =$ $\sqrt{100} =$

3. Estimate the product and quotients.
$51 \times 294 \approx$ $786 \div 17 \approx$ $1{,}004 \div 49 \approx$

4. Draw the following triangles:
isosceles right
scalene obtuse

5. Continue the sequences of ordinal numbers in word form.
twenty-eighth, twenty-ninth, ________________,
________________, ________________, ________________
sixty-fifth, sixty-seventh, ________________,
________________, ________________, ________________

6. Divide and write the quotients as mixed numbers. Use scratch paper if needed.
8)1,705 12)305 7)2,110

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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
3

DIVISIBILITY STRATEGIES

☐ 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. The section below is used during the video.

243,201,311,040

2 3 4 5 6 9 10

Mini Lesson

When a number can be evenly divided by another number without a remainder, we say that it is divisible by that number. For example, 15 ÷ 3 = 5 (with no remainder), so 15 is divisible by 3.

Knowing your multiplication facts and using long division can help you find all the factors of a number. You can also use divisibility rules as a strategy to help you find factors quickly.

DIVISIBILITY RULES

DIVISIBLE BY

2 A number is divisible by 2 if it is an even number. Even numbers end in 0, 2, 4, 6, or 8. *(Examples: 2, 56, 214)*

3 A number is divisible by 3 if the sum of the digits is divisible by 3. For example, to check if 231 is divisible by 3, first add the digits. 2 + 3 + 1 = 6. Is 6 divisible by 3? Yes, so 231 is divisible by 3.

4 A number is divisible by 4 if the last two digits of the number are divisible by 4. Look at the last two digits in the number 3,028. Is 28 divisible by 4? Yes, so 3,028 is also divisible by 4.

5 A number is divisible by 5 if it ends in either 0 or 5. *(Examples: 75, 130, 610)*

6 A number is divisible by 6 if it is divisible by both 2 and 3. For example, 312 is an even number, so it is divisible by 2. Now check divisibility by 3. 3 + 1 + 2 = 6. The sum is 6, and it is divisible by 3, so 312 is divisible by 3. Since 312 is divisible by both 2 and 3, it is divisible by 6.

9 A number is divisible by 9 if the sum of the digits is divisible by 9. For example, to check if 576 is divisible by 9, first add the digits. 5 + 7 + 6 = 18. Since 18 is divisible by 9, 576 is also divisible by 9.

10 A number is divisible by 10 if the number ends in 0. *(Examples: 100, 870, and 1,520)*

Do you remember what factors of a number are? They are the whole numbers that can be multiplied together to make the given number.

$$\underbrace{3 \times 8}_{\text{factors}} = \underbrace{24}_{\text{product}}$$

A ***factor pair*** is two factors of a number whose product is the given number. Divisibility rules help you find one factor. To find the other factor in that factor pair, divide the number by the factor you already found. The answer to the division problem (the ***quotient***) is the second factor.

For example, 15 is divisible by 3, so one of the factors of 15 is 3. To find the other factor, divide 15 by 3. 15 ÷ 3 = 5. One factor pair is 3 × 5.

Practice

1. Use the strategy of your choice to answer the following questions. Refer to the divisibility rules in the mini lesson as often as you would like.

   a. **Circle** the numbers that are divisible by 3.

   41 90 111 213 1,407 5,123

   b. **Cross out** the numbers that are divisible by 4.

   116 243 332 536 2,020 7,108

   c. **Underline** the numbers that are divisible by 9.

   117 443 621 1,107 3,816 8,010

2. Suppose you collected sticks to build a fort. You can group the sticks into equal piles of 1 or 2 or 3 or 4 or 6 or 12. If these are the only factors of the number of sticks you collected, how many sticks did you collect?

3. Use the strategy of your choice to find all the factor pairs of each of the following numbers. Then write the factors in order from least to greatest. The first one is given as an example.

Number	Factor Pairs	Factors
10	1 × 10, 2 × 5	1, 2, 5, 10
15		
28		
30		
12		
17		

4. Suppose you and your 8 friends collect 189 rocks. Is it possible to divide the rocks equally among all of you?

Hint: Don't forget to count yourself with your eight friends!

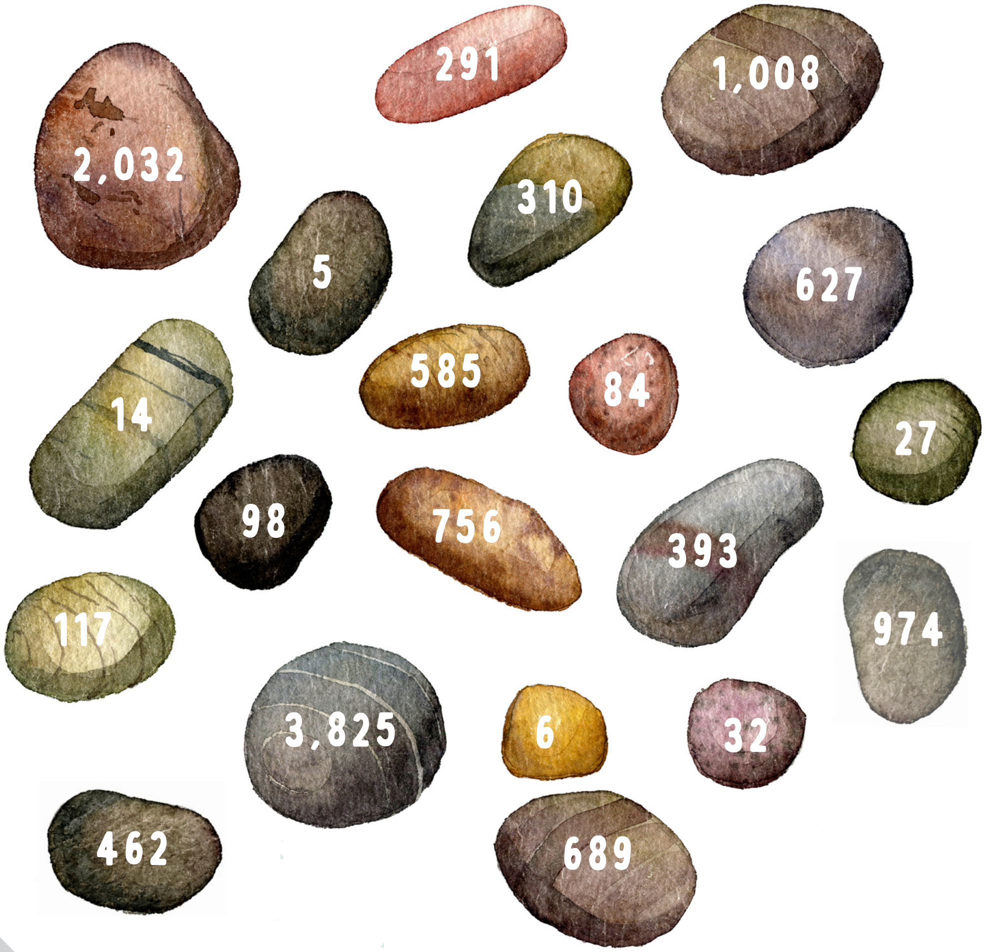
If you each get an equal share of rocks and leave none behind, how many rocks will each of you get?

5. Solve the puzzle by using the facts below.

- I am greater than 100.
- I am divisible by 3.
- I am not divisible by 5.
- I have fewer than four digits.
- I am not an even number.
- Two of my digits are the same.
- If you divide my second digit by my first digit, you get my last digit.

Try different strategies, such as crossing off the wrong numbers or deciding which clues you want to use first.

WHICH NUMBER AM I?



Review

1. Complete each sequence and state the rule for each pattern. The first rule is given as an example.

72, 81, 90, ____, ____, ____ rule: add 9

156, 144, 132, ____, ____, ____ rule: ________

1, 3, 9, ____, ____, ____ rule: ________

2. Complete the problems.

$$\begin{array}{r} 134 \\ \times\quad 8 \\ \hline \end{array} \qquad \begin{array}{r} 55 \\ \times 48 \\ \hline \end{array} \qquad 7\overline{)175}$$

3. There are equal numbers of dragonflies and butterflies in the meadow. Which of the following numbers could not be the total number of dragonflies and butterflies?

16 28 35 42 50

Lesson
4

PRIME FACTORIZATION

☐ 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. The section below is used during the video.

Mini Lesson

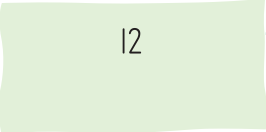
Let's review! A ***prime number*** is a whole number that has exactly two factors: the number itself and the number 1. ***Factors of a number*** are the whole numbers that can be multiplied together to make the given number. A ***product*** is the answer to a multiplication problem.

Prime factorization is a number written as the product of its prime factors.

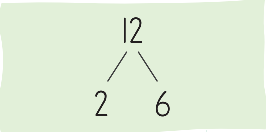
A factor tree can be used to find the prime factors of a number.

Let's make a factor tree for the number 12.

Start by writing the number you are factoring at the top.

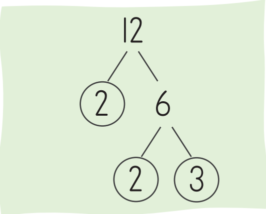


Then use lines to separate the number into a factor pair. Do not use 1 and the original number as a factor pair when factoring; choose other factor pairs.



Circle any factors that are prime numbers. If a factor isn't prime, don't circle it.

Keep separating each composite number into factor pairs until every factor is a prime number.



List the prime factors (the circled numbers) as a multiplication problem in order from least to greatest to keep it organized.

The prime factorization of 12 is **2 × 2 × 3**.

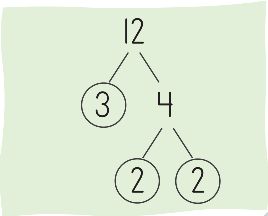
To check your work, multiply the prime factors. The product should equal the number you started with.

Here's another way you can make a factor tree for the number 12.

Notice that the answer is still the same: **2** × **2** × **3**.

Each number has a unique prime factorization!

That means one of a kind!



Practice

Factorization Forest

Find your way from tree to tree until you get to the cabin! Fill in the prime factorization on the first tree. Then **circle all the prime numbers**. At the bottom of the tree, **list the prime factors in order from least to greatest**. Then determine whether you should go up, down, left, or right to the next tree by using the number in the ☐ and the key below.

2 = move right
5 = move left
3 = move down
7 = move up

Hint: Go that way!

You won't have to fill in the prime factorization for all the trees, just for the ones on the path. But you can if you want to!

All done! No review.

Lesson 7

SINGLE, DOUBLE, AND TRIPLE LINE GRAPHS

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

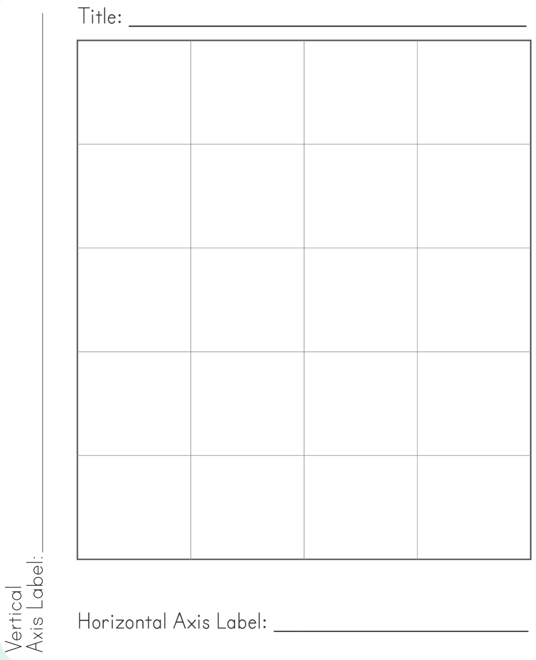
Scan the QR code or watch the video lesson on goodandbeautiful.com/Math5. The section below is used during the video.

How many miles did Juan bike in the third week?

____

Juan biked the most miles in week ______.

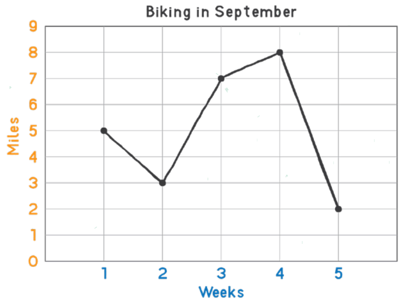
Times Outside	
Monday	9
Tuesday	7
Wednesday	14



Mini Lesson

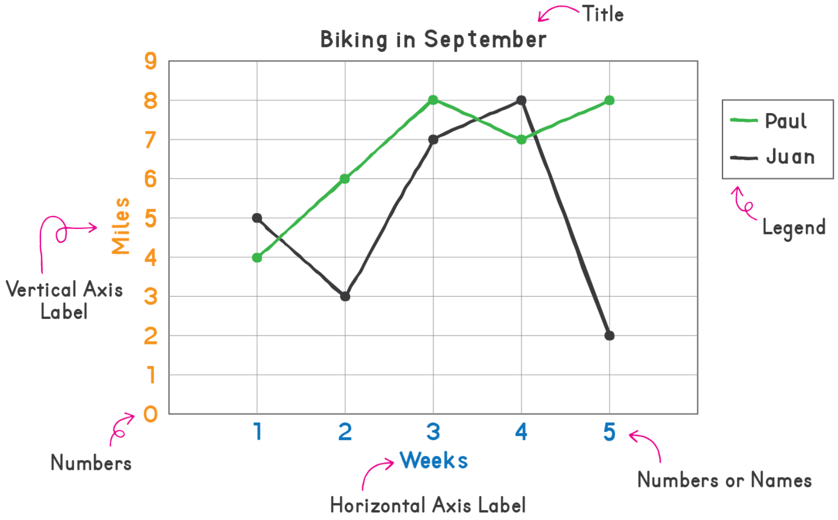
A ***line graph*** is a graph that uses points and line segments to display (or show changes in) data. ***Data*** is a collection of information, such as numbers, measurements, or facts.

On line graphs, each data value is represented by a point on the graph, and the points are connected by line segments. The graph to the right is an example of a line graph.



A double line graph shows how two sets of data compare with each other. A triple line graph shows how three sets of data compare with each other. Double line and triple line graphs have one line for each set of data: double line graphs have two lines, and triple line graphs have three lines.

If more than one line is on the graph, each line is usually made with a different color or a different pattern so you can tell them apart. A legend shows what each line represents. This is an example of a double line graph.



Practice

1. Use the line graph "Weight of Pepper the Puppy" to answer the questions.

What unit of weight is used in this graph? ____________

How much did Pepper weigh in March? ____________

How many pounds did Pepper gain from April to July? ____________

2. Create a line graph by using the blank graph to the right and the data below.

For four weeks, Sarah, Luke, and Mia collected leaves.

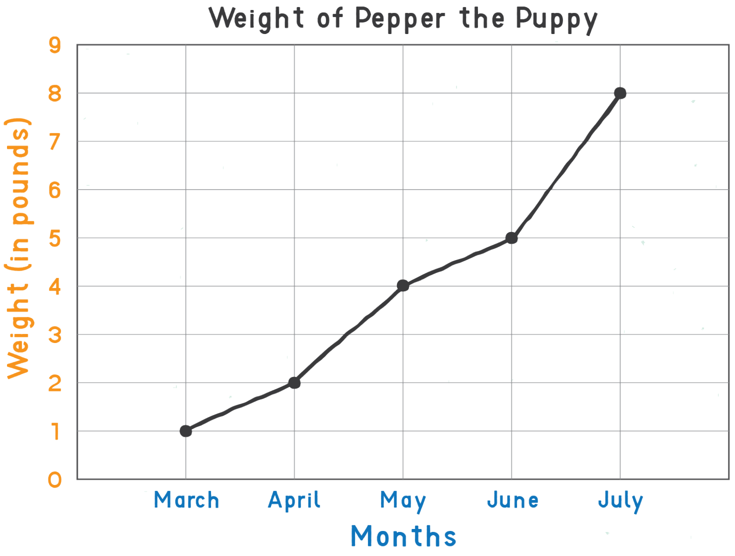
a. Write a title for the graph.
b. Label the horizontal axis "Weeks."
c. Label the vertical axis "Leaves."
d. Fill in the missing numbers on the horizontal axis and the vertical axis.
e. Create a legend in the yellow box by choosing different colors to represent each child.
f. Graph the data for each child.

Hint: Draw the points for one child and connect the points before moving on to the next child.

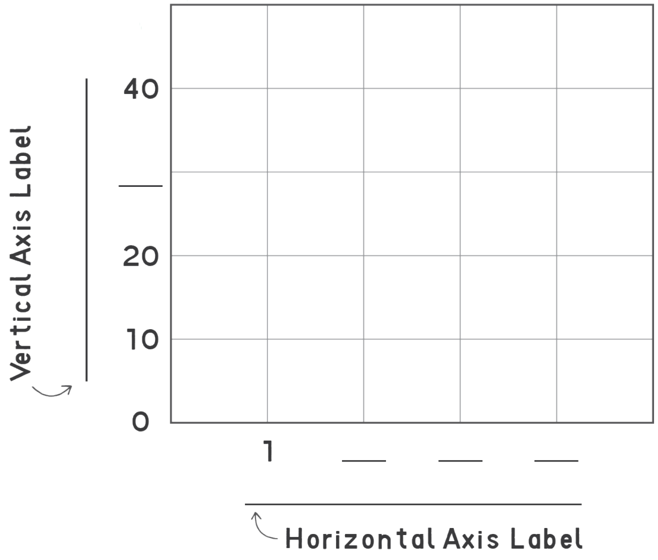
Week	Sarah	Luke	Mia
1	20	40	30
2	35	20	25
3	15	10	20
4	35	20	40

Who collected the most leaves in week 2? ____________

How many more leaves did Luke collect than Mia in week 1? ____________



Title: ____________________



☐ Sarah
☐ Luke
☐ Mia

3. Create your OWN line graph!

a. First, put a pencil on your head. Then record the number of steps you can take without the pencil falling off. Fill in the number of steps in the chart below. You will repeat this for a total of 5 rounds.

b. Write a title at the top of your graph.

c. Label the horizontal axis "Rounds." Write the numbers on the horizontal axis to show rounds 1–5.

d. Label the vertical axis "Steps." In the lower left-hand corner, start with 0 for your numbers. You'll have to decide what number comes next, depending on how many steps you made. Will the numbers go up by 2s? 3s? 5s? You decide! Just make sure each line goes up by the same amount.

e. Draw the points on your graph showing your successful steps for each round.

f. Connect the points with line segments.

Rounds	Steps
1	
2	
3	
4	
5	

Review

1. Find each product.

$72 \times 10^4 =$

$1,180 \times 10^5 =$

$2,973 \times 10^3 =$

2. Find each quotient.

$42,000 \div 10^2 =$

$5,050,000 \div 10^3 =$

$3,000,000,000 \div 10^7 =$

3. Find each sum.

$5^2 + 2^4 =$ $4^2 + 3^3 =$ $1^8 + 11^2 =$

4. Find each difference.

$8^2 - 2^3 =$ $2^5 - 5^2 =$ $7^2 - 12^0 =$

5. Create a factor tree for 54. Then write the prime factorization for 54 on the line below.

54

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.

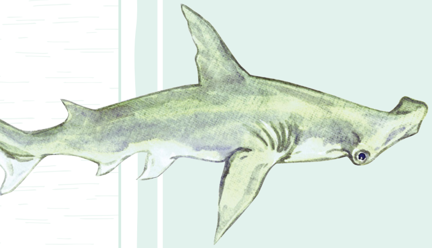
Video Lesson

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:

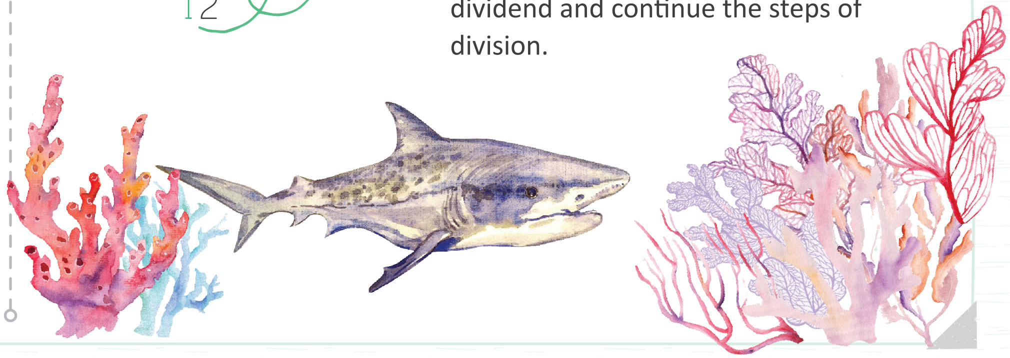
$$\begin{array}{r} 203 \\ 2\overline{)406} \end{array}$$

- 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.)

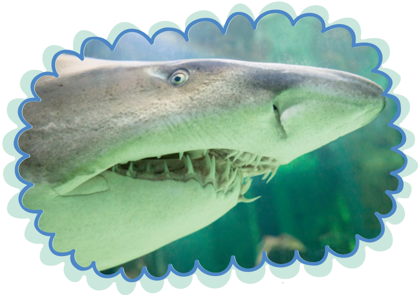
3)63 2)24 4)84 5)50

3)123 6)186 8)816 7)490

9)1,179 8)2,488 5)4,100 6)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)47


4)55


6)74


7)750

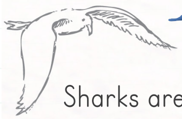

5)514


7)802


9)379


5)1,602


3)701



FINS & FACTS

Sharks are amazing fish! The quotients for the problems below show the life span (in years) of five various sharks. Use any strategy to find the quotients.

Your challenge is to find the life span of Greenland sharks. There will be two fins that don't show life spans between 20 and 100 years. Write those quotients on the blank lines in the chart.

If the quotient is . . .	write this at the top of the fin,	which stands for this shark.
20–30 years	H	Hammerhead
40–50 years	T	Tiger Shark
60–70 years	GW	Great White
80–100 years	W	Whale Shark
_____–_____ years	G	Greenland

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.

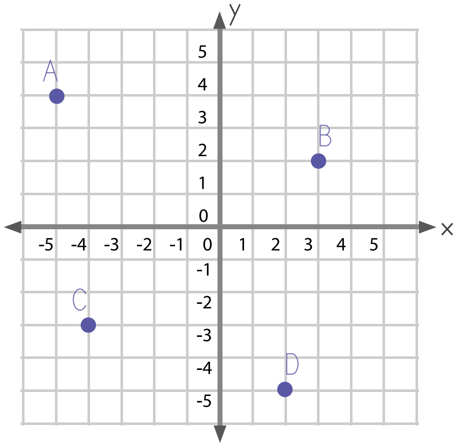
30: ______________ 55: ______________

18: ______________ 43: ______________

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.

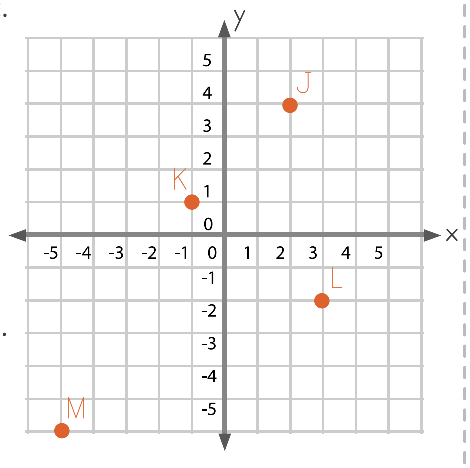
E: (1, 4)
F: (-3, 0)
G: (-2, 2)
H: (1, -3)
I: (-2, -4)

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)

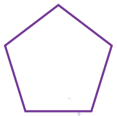
Draw lines.

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.

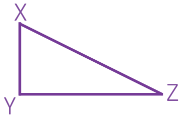
Draw the lines.

a horizontal line:

an oblique line:

perpendicular lines:

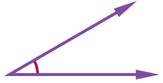
Name the following.



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

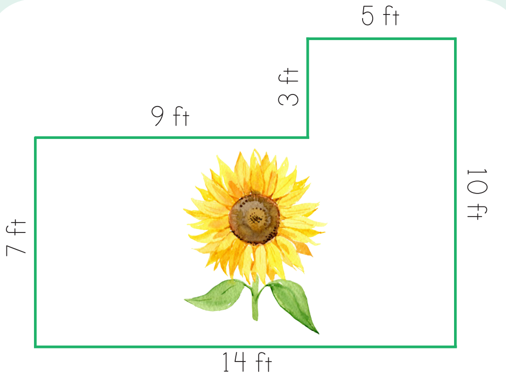
Lesson 37

PERIMETER AND AREA OF IRREGULAR SHAPES

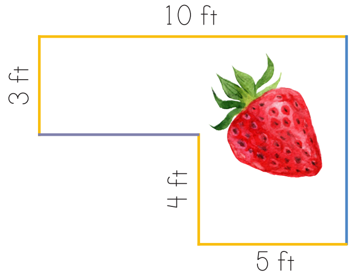
- ☐ Complete today's *Math 5 Mental Math Map Mysteries* activity.
- ☐ Watch the video lesson and/or read the mini lesson. There is no review in this lesson.

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: ______

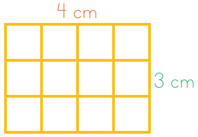
Mini Lesson

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.



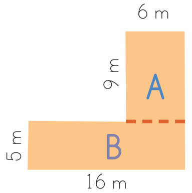
To find the **area of a rectangle**, multiply the length times the width. A = L × W
Remember that the answer will be in square units.

Irregular Shapes

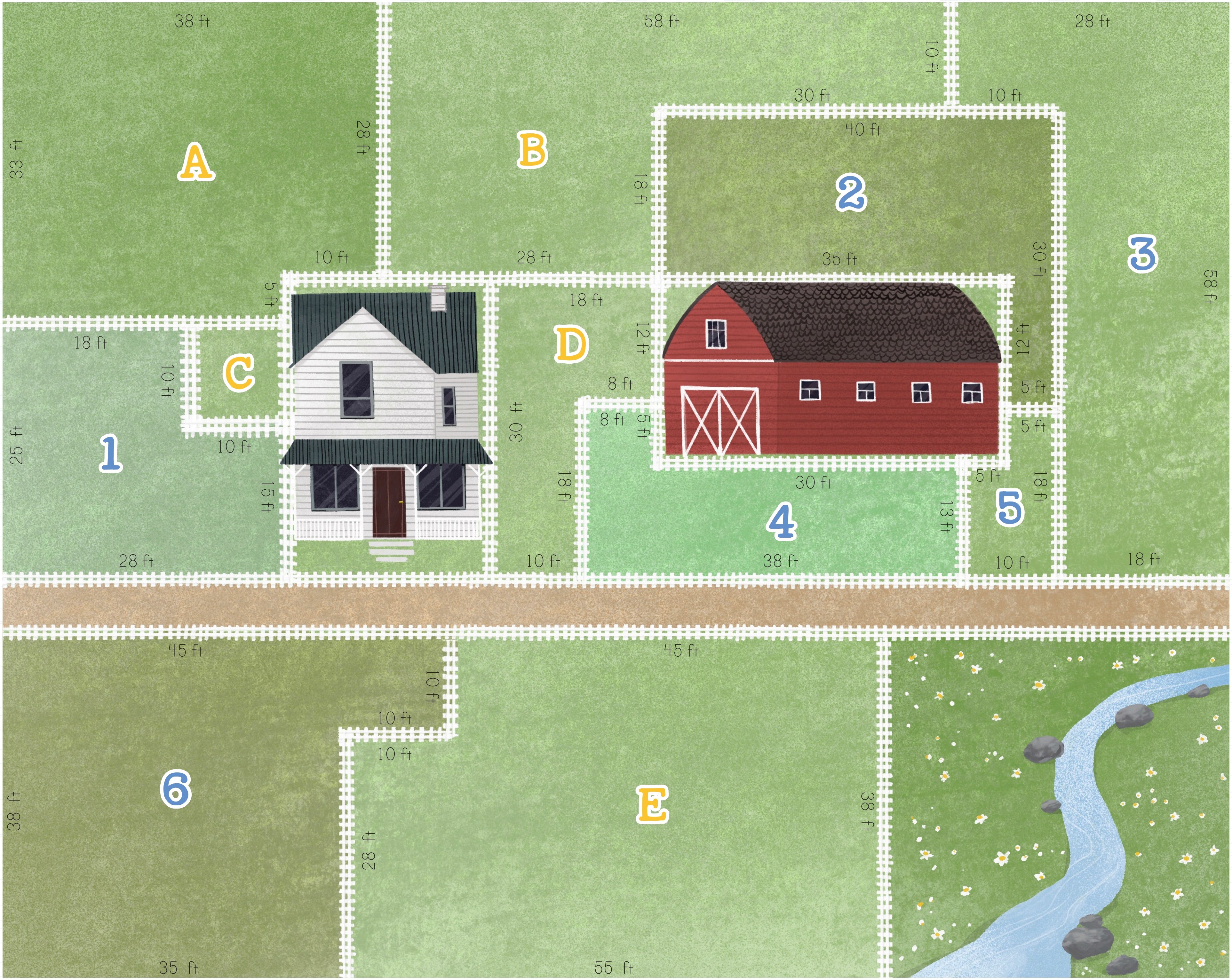
To find the **perimeter of an irregular shape**, add the lengths of all the sides. Use clues from other sides to find missing side lengths.

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
33 ft
A
28 ft
B
40 ft
18 ft
2
3
10 ft
28 ft
35 ft
30 ft
58 ft
5 ft
18 ft
D
12 ft
12 ft
18 ft
C
10 ft
8 ft
5 ft
8 ft
5 ft
1
25 ft
10 ft
30 ft
5 ft
15 ft
18 ft
30 ft
5 ft
18 ft
5
4
13 ft
28 ft
10 ft
38 ft
10 ft
18 ft
45 ft
45 ft
10 ft
10 ft
10 ft
6
E
38 ft
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
46

PLACE VALUE WITH DECIMALS

☐ 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.

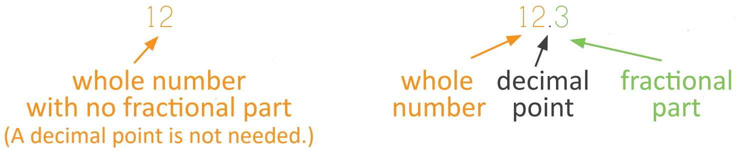
44.521 sec

69.528 sec

Mini Lesson

The value of a digit depends on its place in a number. Place values to the right of the ones column are less than one whole. They are fractional parts called decimals. A ***decimal number*** is a number that has a decimal point. A ***decimal point*** is a dot that separates a whole number from a fractional part. If there are no fractional parts, a decimal point is not needed.

Examples:



12

whole number
with no fractional part
(A decimal point is not needed.)

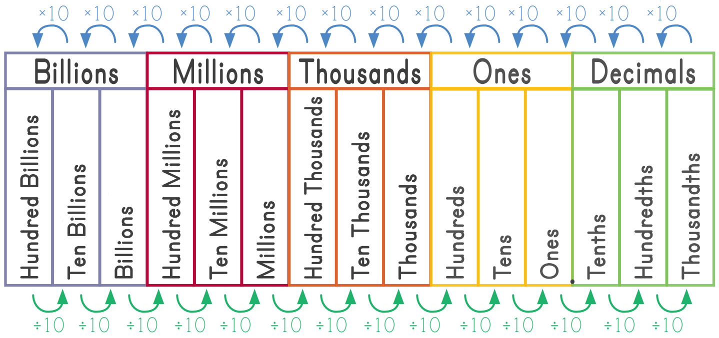
12.3

whole number

decimal point

fractional part

Here is the place value chart with decimals. Multiply by 10 to move one place value to the left.



Billions			Millions			Thousands			Ones			Decimals		
Hundred Billions	Ten Billions	Billions	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths

Divide by 10 to move one place value to the right. To find the first three place values to the right of the ones, continue to divide by ten.

$1 \div 10 = \frac{1}{10}$ This is called a tenth.

$\frac{1}{10} \div 10 = \frac{1}{100}$ This is called a hundredth.

$\frac{1}{100} \div 10 = \frac{1}{1{,}000}$ This is called a thousandth.

The first three decimal place values are tenths, hundredths, and thousandths. Notice the pattern:

thousands	hundreds	tens	ones	tenths	hundredths	thousandths
1,000	100	10	1	$\frac{1}{10}$ or 0.1	$\frac{1}{100}$ or 0.01	$\frac{1}{1{,}000}$ or 0.001

Whole number place values have "s" at the end; decimal place values have "ths" at the end.

Practice

1. Name the place value of the 5 in each number.

546,902,378 ______________________________

77**5**,830,072,004 ______________________________

860,489,694,201.**5** ______________________________

2,604,843.7**5**1 ______________________________

493.80**5** ______________________________

532,140,794,990.134 ______________________________

2. Write each digit in the correct place.

___ ___ ___ , ___ ___ ___ , ___ ___ ___ , ___ ___ ___ . ___ ___ ___

- ☐ 8 in the tens place
- ☐ 1 in the ten thousands place
- ☐ 2 in the hundred millions place
- ☐ 0 in the ten billions place
- ☐ 5 in the hundreds place
- ☐ 9 in the thousandths place and ten millions place
- ☐ 4 in the tenths place and the thousands place
- ☐ 6 in the millions place and hundred billions place
- ☐ 3 in the hundredths place and hundred thousands place
- ☐ 7 in the billions place and the ones place

3. Write the digit in each place value in this number: 3,278,049.516

tenths place ______

ten thousands place ______

thousandths place ______

millions place ______

hundredths place ______

hundred thousands place ______

tens place ______

hundreds place ______

thousands place ______

ones place ______

4. Write the numerical value of each **green** digit. The first one is given as an example.

594,839,012.8**5**3 value: $\frac{5}{100}$ or 0.05

852,926.**3**47 value: ______________________________

12,0**4**8,302.83 value: ______________________________

672,950,311,842.798 value: ______________________________

46**0**,714,299,861.15 value: ______________________________

926,637,598.03**7** value: ______________________________

834,823,093,582.5**9**2 value: ______________________________

5. Write each world record time or distance in expanded form. Write the decimal parts as fractions on the first line and as decimal numbers on the second line. The first one is given as an example.

Joseph Schooling—swimming the 100 m butterfly in 2016

50.39 seconds $50 + \frac{3}{10} + \frac{9}{100}$

$50 + 0.3 + 0.09$

Emily Seebohm—swimming the 100 m backstroke in 2012

58.23 seconds ________________________

____

Kim Boutin—speed skating 500 m in 2019

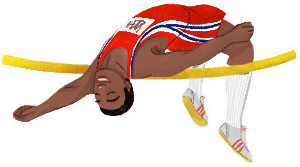
41.936 seconds ________________________

____

Pavel Kulizhnikov—speed skating 500 m in 2019

33.61 seconds ________________________

____



Javier Sotomayor—high jump in 1993

8.038 feet ________________________

____

Review

1. Find each sum or difference. Write the answer in simplest form.

$5\frac{1}{3} + 2\frac{2}{3} =$ ☐ $12\frac{1}{4} + 3\frac{1}{4} =$ ☐ $31\frac{4}{9} + 22\frac{5}{9} =$ ☐

$14 - \frac{5}{6} =$ ☐ $9 - 4\frac{3}{4} =$ ☐ $17 - 11\frac{1}{5} =$ ☐

2. Simplify. Use scratch paper if you need extra space.

$12^2 =$ ☐ $3^3 =$ ☐ $2^5 =$ ☐ $14^2 =$ ☐ $4^3 =$ ☐ $5^3 =$ ☐

3. Find the least common multiple of 3, 5, and 6.

3: ________________________________

5: ________________________________

6: ________________________________

LCM:

4. Use the rule to continue each sequence.

3, ________, ________, ________, ________ rule: Multiply by 3.

8, ________, ________, ________, ________ rule: Multiply by 10.

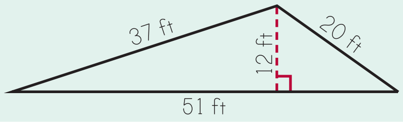
5. Convert.

15 °C = _____ °F

Hint: The formula is F = 9C ÷ 5 + 32.

6. a. Write the area formula for a triangle: ________________

b. Find the area and perimeter of the triangle.



area = __________

perimeter = __________

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

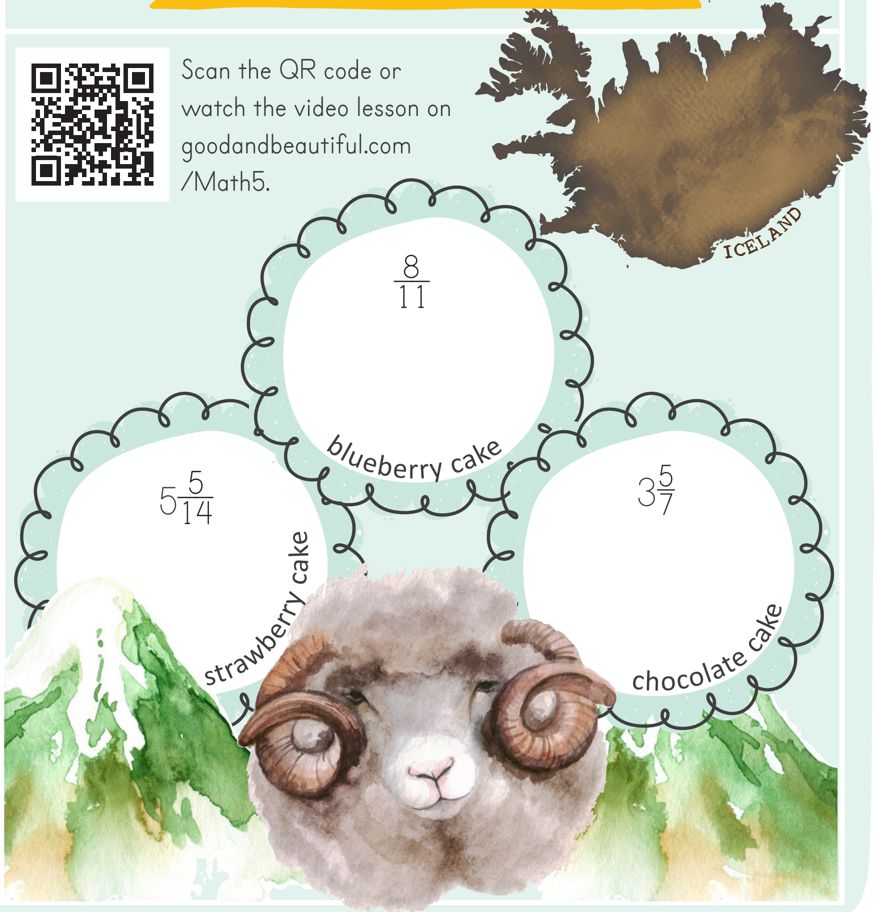
Lesson 67

ROUNDING FRACTIONS AND MIXED NUMBERS TO THE NEAREST WHOLE NUMBER

☐ 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

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

A fraction is

- equal to $\frac{1}{2}$ if the numerator is half of the denominator.
  Example: $\frac{4}{8} = \frac{1}{2}$ The numerator (4) is half of the denominator (8).
- less than $\frac{1}{2}$ if the numerator is less than half of the denominator.
  Example: $\frac{3}{8} < \frac{1}{2}$ The numerator (3) is less than half of the denominator (8).
- greater than $\frac{1}{2}$ if the numerator is greater than half of the denominator.
  Example: $\frac{5}{8} > \frac{1}{2}$ The numerator (5) is greater than half of the denominator (8).

Rounding a proper fraction to the nearest whole number:

■ If a fraction is less than $\frac{1}{2}$, round down to 0. ■ If a fraction is equal to or greater than $\frac{1}{2}$, round up to 1.

Examples:

$\frac{3}{10} \longrightarrow 0$	$\frac{5}{10} \longrightarrow 1$	$\frac{7}{10} \longrightarrow 1$
less than $\frac{1}{2}$ ⟶ round down	$\frac{1}{2}$ ⟶ round up	greater than $\frac{1}{2}$ ⟶ round up

Rounding a mixed number to the nearest whole number:

■ Look at the fraction part. ■ If the fraction is less than $\frac{1}{2}$, round down to the nearest whole number. ■ If the fraction is equal to or greater than $\frac{1}{2}$, round up to the nearest whole number.

Examples: These mixed numbers are between 2 and 3, so they will either round down to 2 or round up to 3.

$2\frac{5}{12} \longrightarrow 2$	$2\frac{6}{12} \longrightarrow 3$	$2\frac{11}{12} \longrightarrow 3$
less than $\frac{1}{2}$ ⟶ round down	$\frac{1}{2}$ ⟶ round up	greater than $\frac{1}{2}$ ⟶ round up

Rounding an improper fraction to the nearest whole number:

■ Convert the improper fraction to a mixed number. Then look at the fraction part. ■ If the fraction is less than $\frac{1}{2}$, round down to the nearest whole number. ■ If the fraction is equal to or greater than $\frac{1}{2}$, round up to the nearest whole number.

Examples: These improper fractions convert to mixed numbers that are between 4 and 5, so they will either round down to 4 or round up to 5.

$\frac{25}{6} = 4\frac{1}{6} \longrightarrow 4$	$\frac{27}{6} = 4\frac{3}{6} \longrightarrow 5$	$\frac{29}{6} = 4\frac{5}{6} \longrightarrow 5$
less than $\frac{1}{2}$ ⟶ round down	$\frac{1}{2}$ ⟶ round up	greater than $\frac{1}{2}$ ⟶ round up

Practice

1. The wool of Icelandic sheep is used to make beautiful yarn, some natural and some dyed. Sometimes knitters use fractions and rounding to tell if there is enough yarn for a project. Circle the fractions that are equivalent to $\frac{1}{2}$, underline the fractions that are less than $\frac{1}{2}$, and cross out the fractions that are greater than $\frac{1}{2}$.

$\frac{5}{9}$	$\frac{3}{4}$	$\frac{2}{5}$	$\frac{8}{11}$	$\frac{9}{18}$	$\frac{6}{19}$
$\frac{3}{8}$	$\frac{4}{7}$	$\frac{5}{8}$	$\frac{7}{14}$	$\frac{7}{12}$	$\frac{5}{11}$
$\frac{5}{10}$	$\frac{6}{12}$	$\frac{7}{13}$	$\frac{4}{11}$	$\frac{9}{20}$	$\frac{3}{7}$
$\frac{8}{15}$	$\frac{11}{22}$	$\frac{4}{5}$	$\frac{9}{19}$	$\frac{5}{7}$	$\frac{12}{24}$
$\frac{7}{10}$	$\frac{47}{80}$	$\frac{13}{26}$	$\frac{31}{60}$	$\frac{25}{50}$	$\frac{19}{40}$
$\frac{50}{100}$	$\frac{17}{30}$	$\frac{22}{44}$	$\frac{37}{70}$	$\frac{43}{90}$	$\frac{25}{48}$

2. Round each proper fraction to the nearest whole number.

$\frac{2}{7}$ ☐	$\frac{5}{6}$ ☐	$\frac{4}{5}$ ☐	$\frac{1}{2}$ ☐
$\frac{8}{16}$ ☐	$\frac{3}{5}$ ☐	$\frac{4}{9}$ ☐	$\frac{7}{11}$ ☐
$\frac{5}{8}$ ☐	$\frac{6}{11}$ ☐	$\frac{9}{22}$ ☐	$\frac{7}{15}$ ☐
$\frac{10}{20}$ ☐	$\frac{12}{25}$ ☐	$\frac{8}{13}$ ☐	$\frac{9}{10}$ ☐

3. Warm, soft sweaters are made from the wool of Iceland's sheep. Help the sweater maker estimate how many boxes are full of sweaters by rounding each mixed number to the nearest whole number.

$3\frac{1}{6}$ ☐	$1\frac{4}{5}$ ☐	$9\frac{2}{3}$ ☐	
$5\frac{3}{5}$ ☐	$4\frac{2}{5}$ ☐	$7\frac{3}{8}$ ☐	$8\frac{4}{7}$ ☐
$10\frac{8}{11}$ ☐	$2\frac{3}{7}$ ☐	$12\frac{3}{4}$ ☐	$11\frac{9}{20}$ ☐
$8\frac{5}{8}$ ☐	$6\frac{6}{11}$ ☐	$3\frac{11}{20}$ ☐	$4\frac{12}{24}$ ☐
$9\frac{6}{13}$ ☐	$10\frac{4}{9}$ ☐	$7\frac{1}{2}$ ☐	$5\frac{15}{26}$ ☐

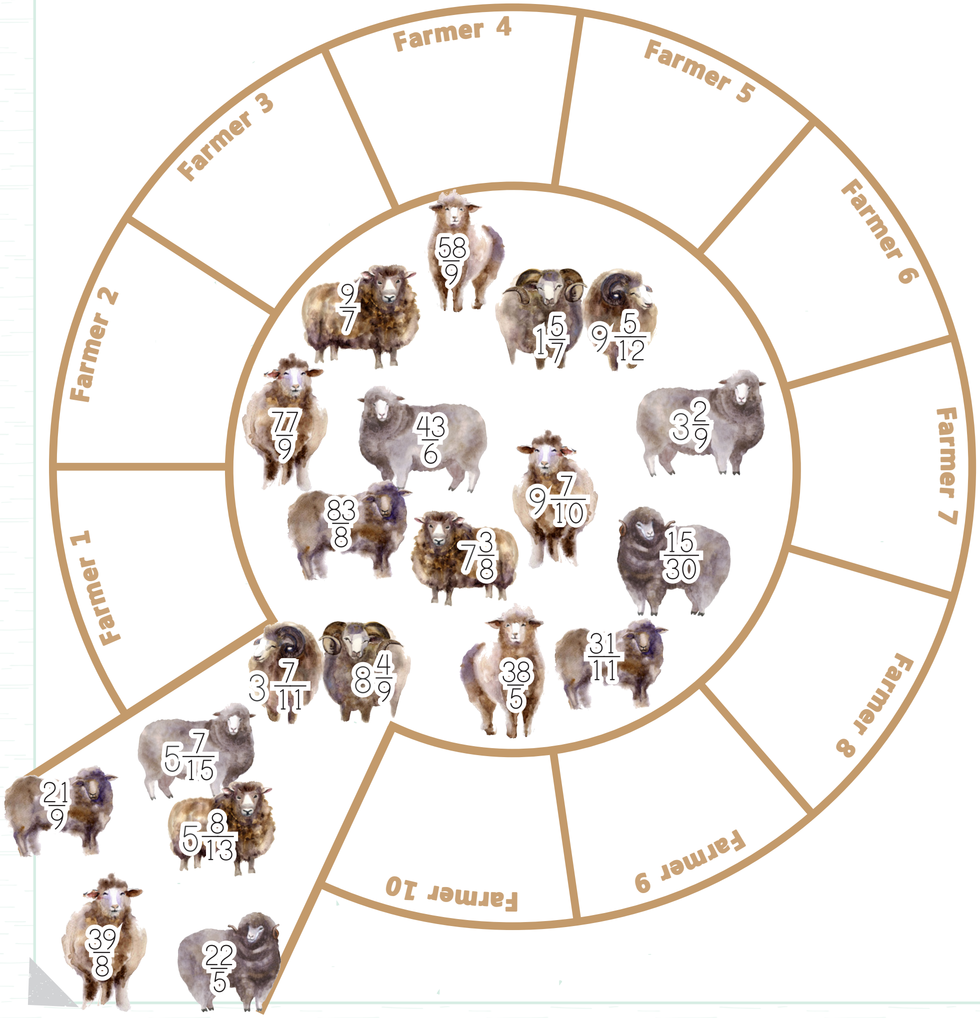
4. Round each improper fraction to the nearest whole number.

✦ Hint: Convert the improper fractions to mixed numbers before rounding.

$\frac{7}{2}$	$\frac{12}{5}$	$\frac{8}{3}$
$\frac{29}{7}$	$\frac{65}{6}$	$\frac{21}{4}$
$\frac{13}{3}$	$\frac{95}{9}$	$\frac{37}{5}$
$\frac{46}{7}$	$\frac{53}{8}$	$\frac{59}{6}$
$\frac{73}{7}$	$\frac{87}{10}$	$\frac{52}{9}$

Rounding Roundup

5. When Icelandic sheep come down from the mountains after a summer of grazing, they are placed in a round pen and sorted out so each farmer can take home the correct animals. First, round each sheep's fraction or mixed number to the nearest whole number. Then round up each sheep into the correct pen by writing its fraction or mixed number in the pen of the farmer whose whole number matches the rounded number.



Review

1. Convert each fraction to a percent.

$\frac{9}{10}$ $\frac{4}{5}$ $\frac{13}{20}$ $\frac{7}{50}$

2. Convert each percent to a fraction. Write each fraction in simplest form.

95% 28% 56% 45%

3. Add or subtract using common denominators.

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

$\frac{1}{10} + \frac{2}{5} + \frac{2}{15} =$

$\frac{9}{10} - \frac{5}{8} =$

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

4. Convert each decimal number to a mixed number. Write each mixed number in simplest form.

3.4 10.85 9.05 4.64

5. Write each mixed number as an improper fraction.

$2\frac{7}{9}$ $3\frac{3}{8}$ $1\frac{9}{10}$ $4\frac{5}{9}$

6. Find the greatest common factor (GCF) of the set of numbers.

factors of 10: ____________________

factors of 15: ____________________

factors of 30: ____________________

GCF of
10, 15, 30:

Lesson 71

RATIOS

- ☐ 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.

ratio of men to women:

____

ratio of men to people:

____

Mini Lesson

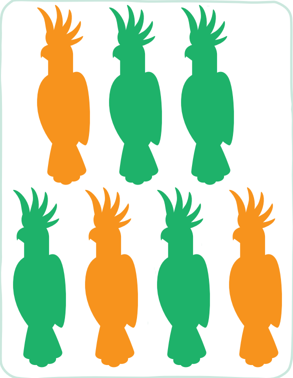
A ***ratio*** is a relationship between two quantities.

A ratio can be expressed in several forms:

- with a colon 3 : 5
- as a fraction $\frac{3}{5}$
- with the word "to" 3 to 5

All three forms are read "three to five."

Write the terms of a ratio in the order they are given. When a ratio is written as a fraction, the first number becomes the numerator, and the second number becomes the denominator.



Examples:

ratio of orange parrots to green parrots:
3 : 4 $\frac{3}{4}$ 3 to 4

ratio of green parrots to orange parrots:
4 : 3 $\frac{4}{3}$ 4 to 3

ratio of orange parrots to all the parrots:
3 : 7 $\frac{3}{7}$ 3 to 7

ratio of all the parrots to green parrots:
7 : 4 $\frac{7}{4}$ 7 to 4

Notice that a ratio can compare part of a group with another part of a group or part of a group with a whole group.

Write ratios in simplest form. To reduce a ratio, divide both terms by the same common factor.

Examples:

Ratio		**Ratio in Simplest Form**
10 : 15	divide both	2 : 3
$\frac{10}{15}$	terms	$\frac{2}{3}$
10 to 15	by 5	2 to 3

Do not write a ratio as a mixed number. For example, in fraction form the ratio nine to seven is written $\frac{9}{7}$, not $1\frac{2}{7}$.

Practice

1. Practice writing ratios three different ways by filling in the chart. The first is given as an example.

	Ratio with a Colon	Ratio as a Fraction	Ratio with the Word "to"
two to nine	2 : 9	$\frac{2}{9}$	2 to 9
four to eleven			
ten to seven			
three to thirteen			
fifteen to eight			

2. Write each ratio in simplest form with a colon.

5 : 10 24 : 30 16 : 40

21 : 56 10 : 18 36 : 81

45 : 18 33 : 88 144 : 12

35 : 49 63 : 27 30 : 54

80 : 120 75 : 100 64 : 16

3. Write each ratio first with a colon and then as a fraction. Remember to write ratios in simplest form.

ratio of birds to lizards

ratio of sloths to snakes

ratio of snakes to birds

ratio of sloths to butterflies

ratio of lizards to butterflies

ratio of jaguars to lizards

ratio of birds to sloths

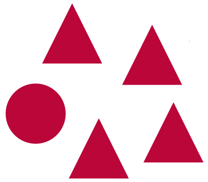
ratio of blue butterflies to total butterflies

ratio of mammals to reptiles

ratio of birds to animals that fly

4. Draw a picture to show each ratio. The first is given as an example.

a. The ratio of circles to triangles is 1 : 4.



b. The ratio of rectangles to ovals is $\frac{5}{3}$.

c. The ratio of hearts to stars is 6 : 7.

d. The ratio of trapezoids to squares is $\frac{2}{5}$.

e. The ratio of Xs to Os is 5 : 4.

f. The ratio of As to Bs is $\frac{3}{7}$.

5. A howler monkey's howl can be heard more than 3 mi (4.8 km) away. One group of howler monkeys has 14 members. Of those members, 9 are females and 5 are males. Write ratios (with a colon and as a fraction) of

males to females.

females to males.

females to the total members.

the total members to males.

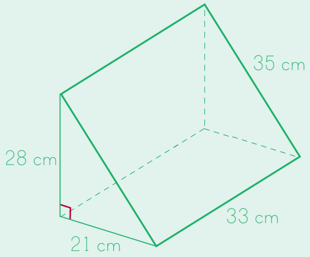
6. Compare the ratios and write = or ≠ between them.

$\frac{3}{9}$ ○ 1 : 3 4 to 8 ○ 8 : 4 36 : 24 ○ 3 : 2 9 : 27 ○ 1 to 3

42 : 18 ○ $\frac{3}{7}$ 15 : 45 ○ 3 to 5 $\frac{77}{22}$ ○ 7 to 2 16 : 18 ○ $\frac{9}{8}$

Review

1. What is the surface area of the triangular prism?



2. Cancel first, and then multiply.

$\frac{7}{20} \times \frac{15}{14} =$ $\frac{4}{7} \times \frac{3}{8} \times \frac{7}{9} =$ $\frac{8}{11} \times \frac{22}{5} \times \frac{25}{4} =$

3. Use the order of operations to find each answer.

$6^2 + (15 - 7) \div 2 =$ $16 \div 4 + 5 \times 3 - 2^3 =$

$(7 + 5) \times 3 \div 3^2 - 4 =$ $(9 \times 12 + 20) \div 2^2 =$

4. Write the numbers in order from least to greatest.

-3, 0, -8, 4, -9, 2 ____________________

5, -16, -2, $\frac{1}{2}$, $-3\frac{1}{2}$, 1 ____________________

5. Multiply. Write answers in simplest form as a whole or mixed number.

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

6. Round the fractions and mixed numbers to the nearest whole number.

$\frac{3}{8}$ $4\frac{4}{7}$ $10\frac{1}{2}$ $14\frac{5}{8}$ $\frac{6}{11}$ $\frac{37}{12}$

Lesson 74

USING THE DISTRIBUTIVE PROPERTY

☐ 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.

5 × 18 =

5 × (20 - 2) =

(____ × ____) - (____ × ____) =

____ - ____ =

____

Mini Lesson

The ***distributive property*** says multiplying by a sum (or difference) is the same as multiplying by each value in the sum (or difference) and combining the products.

One way to simplify a multiplication problem is to write one of the factors as an addition or subtraction problem. Then apply the distributive property by multiplying the other factor by each value in the addition or subtraction problem. Finally, add or subtract the products.

Using the Distributive Property to Determine 3 × 12:

3 × 12 =	Rewrite 12 as (10 + 2).
3 × (10 + 2) =	Multiply 3 by 10. Multiply 3 by 2.
(3 × 10) + (3 × 2) =	Add the products. (If 12 had been written as a subtraction problem, the final step would have been to subtract the products.)
30 + 6 = 36	

Using the Distributive Property to Determine 12 × 19:

The factor 12 or the factor 19 can be written as several different addition or subtraction problems. Look for ways to write a factor that will make multiplication easier to perform. Here are three possibilities:

12 × 19	12 × 19	12 × 19
12 × (10 + 9)	12 × (20 - 1)	(10 + 2) × 19

Now multiply (distribute) the factor outside the parentheses with each value inside the parentheses. Notice the addition or subtraction signs between the multiplication problems. They match the operation used to rewrite the factor.

12 × 19	12 × 19	12 × 19
12 × (10 + 9)	12 × (20 - 1)	(10 + 2) × 19
(12 × 10) + (12 × 9)	(12 × 20) - (12 × 1)	(19 × 10) + (19 × 2)

Multiply the numbers in the parentheses. Then add or subtract the products.

(12 × 10) + (12 × 9)	(12 × 20) - (12 × 1)	(19 × 10) + (19 × 2)
120 + 108	240 - 12	190 + 38
228	228	228

Practice

1. Fill in the missing information and write the answer on the line.

4 × (6 + 9) = (4 ×) + (4 ×) = 24 + 36 = ______

6 × (5 + 8) = (6 ×) + (6 ×) = + 48 = ______

5 × (7 - 3) = (× 7) - (× 3) = 35 - = ______

9 × (8 + 7) = (9 ×) + (× 7) = + = ______

8 × (2 + 9) = (×) + (×) = + = ______

7 × (9 - 2) = (×) - (×) = - = ______

10 × (2 + 9) = (×) + (×) = + = ______

2. Apply the distributive property. Then write the answer. The first one is given as an example.

5(20 + 7) = (5 × 20) + (5 × 7) = 100 + 35 = 135

9(4 + 10) =

8(30 - 1) =

7(10 + 3) =

4(11 + 5) =

6(2 + 40) =

10(30 - 1) =

12(5 + 4) =

3. Match the equivalent expressions.

3 × 84	3 × (80 + 4)
14 × 29	12 × (90 + 2)
9 × 13	14 × (30 - 1)
28 × 5	32 × (20 - 2)
7 × 26	9 × (10 + 3)
32 × 18	7 × (20 + 6)
12 × 92	(20 + 8) × 5

4. Circle one factor. Write two different addition or subtraction problems for that factor and write them in parentheses. Try to think of numbers that would be easy to multiply by the other factor. The first one is given as an example.

7 × 39	15 × 28	31 × 19	8 × 22
(40 - 1)			
(30 + 9)			

23 × 12	9 × 38	45 × 8	14 × 11

5. Follow the guidelines below to use the distributive property to multiply two factors. Show your work. The first one is given as an example.

a. Circle the factor you will break apart.

b. Rewrite the circled factor as an addition or subtraction problem.

c. Multiply the other factor by the numbers in the addition or subtraction problem.

d. Add or subtract the products.

$3 \times \enclose{circle}{17} = 3 \times (20 - 3) = (3 \times 20) - (3 \times 3) = 60 - 9 = 51$

4 × 18 =

12 × 31 =

49 × 8 =

9 × 15 =

16 × 7 =

22 × 41 =

12 × 63 =

6. Use the distributive property to help you solve the story problems.

a. Caleb loves to collect leaves, and so does his big brother Dominic. Yesterday, Caleb collected 41 leaves, and Dominic collected 9 times that number of leaves. How many leaves did Dominic collect yesterday?

b. Kai placed 4 candy bar bits on each cookie she baked. If she baked 98 cookies, how many candy bar bits did she use in all?

Review

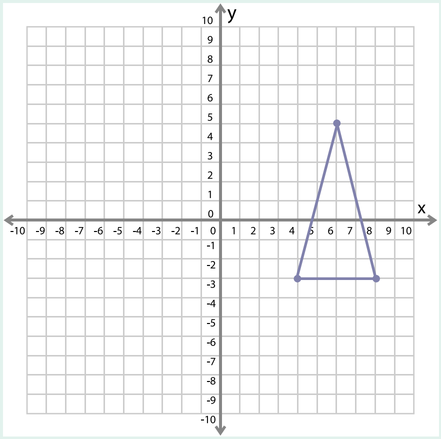
1. Subtract.

8 - 6.3 =

5 - 3.47 =

3.1 - 2.092 =

2. Translate the isosceles triangle 6 units to the left and 1 unit up. Write the coordinates of the translated triangle's vertices.



____

____

____

3. Convert the mixed numbers to improper fractions.

$5\frac{3}{4}$ = _____

$9\frac{4}{5}$ = _____

$7\frac{2}{5}$ = _____

$6\frac{7}{10}$ = _____

4. Add or subtract the fractions.

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

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

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

$\frac{8}{9} - \frac{3}{7} =$

5. Write the probability of rolling one standard dice and having it land on

- a number greater than 1. _____
- a number less than 3. _____
- an even number. _____
- a number greater than 6. _____

Lesson
87

TESSELLATIONS

Supplies
scissors, tape, cardstock or index card, colored pencils (optional)

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

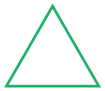
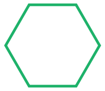
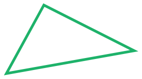
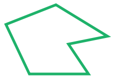
Video Lesson

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

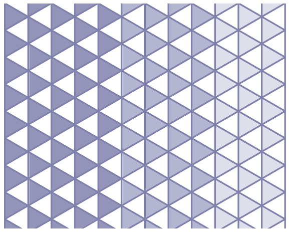
Mini Lesson

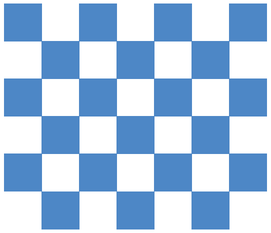
A ***tessellation*** is made by repeating shapes that fit together without overlapping or gaps. Tessellations are formed by rotating, reflecting, or translating shapes.

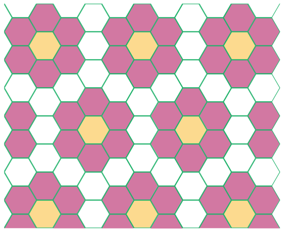
A ***regular polygon*** is a polygon that has all sides of equal length and all angles of equal measure. An irregular polygon is a polygon that is not regular.

Examples:	Triangles	Hexagons
Regular Polygons		
Irregular Polygons		

In regular tessellations just one regular polygon is repeated. Only equilateral triangles, squares, and regular hexagons can be used to form regular tessellations. **Examples of regular tessellations:**

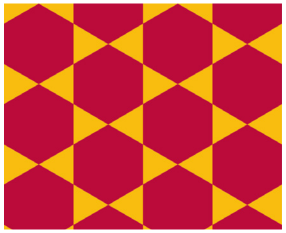


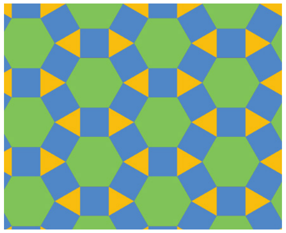


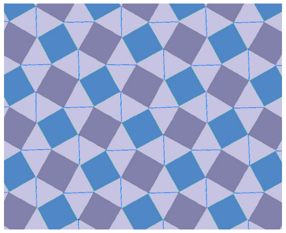


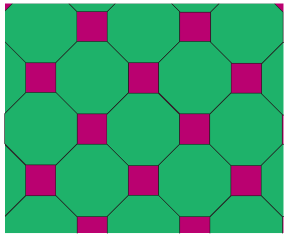
Semi-regular tessellations are created with two or more regular polygons, and the same shapes meet at each vertex. There are eight semi-regular tessellations.

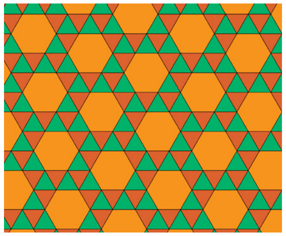
Examples of semi-regular tessellations:

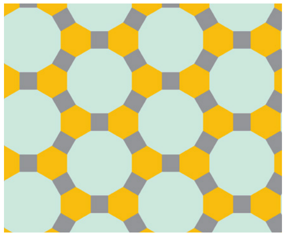


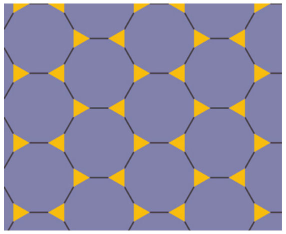


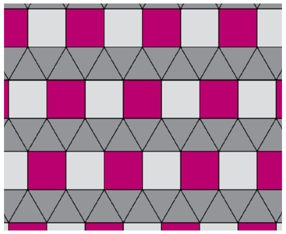






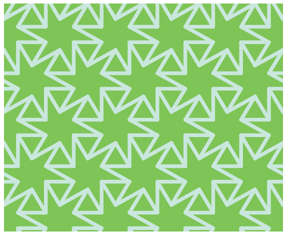


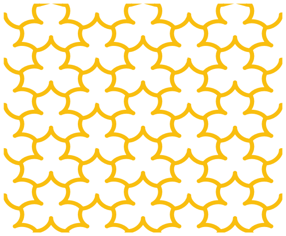


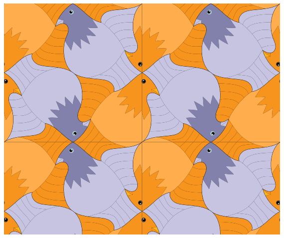


Irregular tessellations include all other tessellations. There are an infinite number of irregular tessellations that can be created with irregular polygons and shapes with curves.

Examples of irregular tessellations:

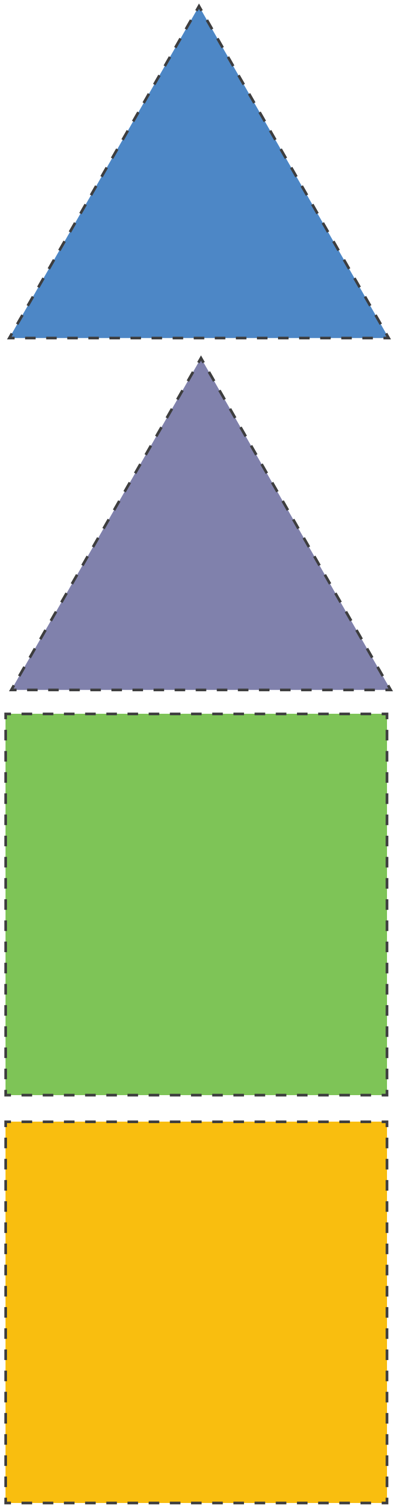






Practice

1. Cut out a shape of your choice on the right. You can modify the shape by cutting from one or more sides and taping the cut-off piece(s) to other sides. Trace it on cardstock or an index card, and then cut that shape out to use as a stencil. Use your stencil to create a tessellation in the space below. To learn how to create fun and unique irregular tessellations, watch the video lesson. If desired, decorate and color your completed tessellation.



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2. Cut out another shape of your choice from the previous page. Follow the same steps as before to create a different tessellation that fills the space below. Be creative and have fun!

All done! No review.

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 95

VENN DIAGRAMS WITH SETS

☐ 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

A ***set*** is a group or collection of objects. Objects in a set are called ***elements***. A list of elements can be written in curly braces (sometimes called curly brackets), and each element is separated by a comma. Three dots, called an ellipsis, can be written to show that numbers continue on.

Example: {2, 4, 6, 8, ...}

curly brace (or bracket)

elements

ellipsis

Elements are not repeated, and order does not matter.

The example above is an infinite set because it continues on forever. A finite set has a limited number of elements.

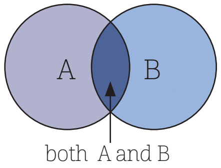
A subset is a set that is entirely part of another set. For example, natural numbers are a subset of whole numbers. Natural numbers and whole numbers are both subsets of integers.

If there is nothing in a set, it is called an empty set. An empty set is shown with this symbol: Ø.

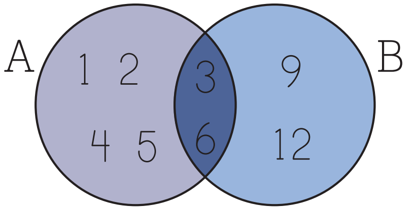
If two or more sets are joined together, it is called a union. The union of multiple sets includes all the elements in each set. This symbol is used to represent a union: ∪.

The intersection of two or more sets includes the elements the sets have in common. This symbol is used to represent an intersection: ∩.

A ***Venn diagram*** (pictured at the right) is a diagram that shows relationships between sets. The area where the circles overlap is the intersection of the sets. It shows what elements the sets have in common.



Example:



A = {1, 2, 3, 4, 5, 6}

B = {3, 6, 9, 12}

A∪B
A **or** B
A∪B = {1, 2, 3, 4, 5, 6, 9, 12}

A∩B
A **and** B
A∩B = {3, 6}

Practice

1. Write whether the following sets are empty, finite, or infinite.

a. A = {multiples of 5} ________________

b. B = {even numbers between 1 and 11} ________________

c. C = {negative numbers that are whole numbers} ________________

d. D = {perfect squares between 2 and 20} ________________

e. E = {proper fractions that are natural numbers} ________________

f. F = {natural numbers that are odd} ________________

g. G = {factors of 100} ________________

2. Write each set. The first one is given as an example.

a. Set A is a set of odd numbers greater than 14. A = {15, 17, 19, 21, ...}

b. Set B is a set of the first five positive multiples of 12. ________________

c. Set C is a set of integers less than -5. ________________

d. Set D is a set of whole numbers less than 4. ________________

e. Set E is a set of natural numbers greater than 12 and less than 15. ________________

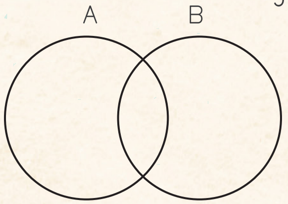
3. Fill in the information and answer the questions about Set A, which is a set of the first six positive multiples of 7.

A = {________________________________}

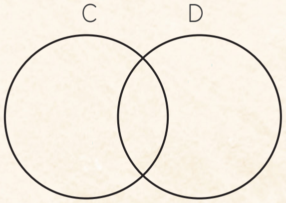
Is 14 an element of Set A? __________ Is 25 an element of Set A? __________

Is 49 an element of Set A? __________ Is 7 an element of Set A? __________

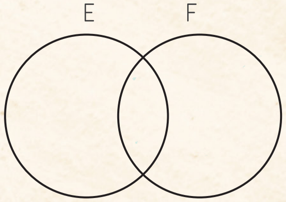
4. Shade the Venn diagrams.



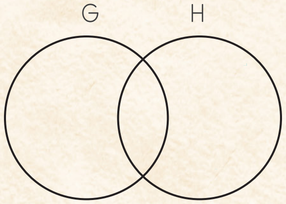
Shade Set A.



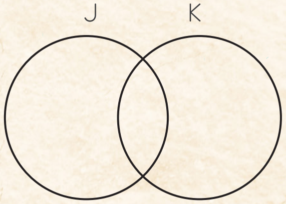
Shade Set D.



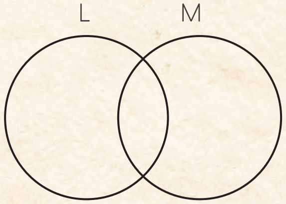
Shade $E \cup F$.



Shade $G \cap H$.

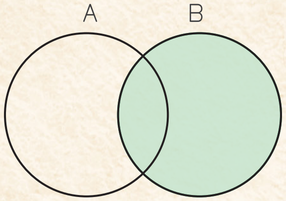


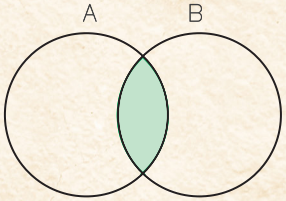
Shade elements that are in Set K but not Set J.

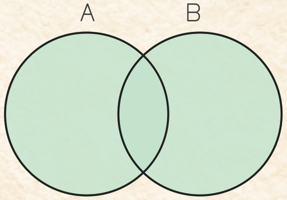


Shade elements that are in Set L but not Set M.

5. Match.

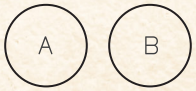






$A \cap B$ Set B $A \cup B$

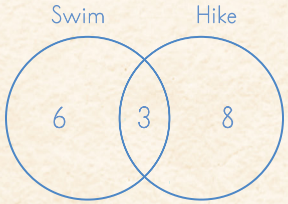
6. Match.



$A \cap B = \emptyset$ A is a subset of B. B is a subset of A.

7. Use the Venn diagrams to answer questions about Erik's family.

At the last family reunion, Erik asked his cousins whether they like to swim or hike. The totals are shown in the Venn diagram.



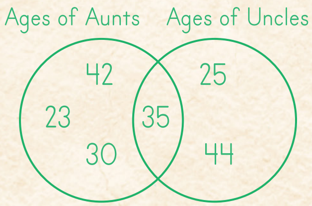
How many cousins like to swim? ______

How many cousins like to hike? ______

How many cousins like to swim and hike? ______

How many cousins were surveyed? ______

Here are the ages (in years) of all Erik's aunts and uncles.



How many aunts does Erik have? ______

How many uncles does Erik have? ______

One aunt and one uncle are the same age. What is that age? ______

8. Create Venn diagrams using the information given. Then find the unions and intersections of the sets.

A = {1, 5, 25} B = {5, 10, 15, 20, 25}

$A \cup B =$ ________________________

$A \cap B =$ ________________________

C = {6, 7, 8, 9} D = {-6, -7, -8, -9}

$C \cup D =$ ________________________

$C \cap D =$ ________________________

E = {2, 4, 6, 8} F = {4, 8, 12, 16}

$E \cup F =$ ________________________

$E \cap F =$ ________________________

Review

1. Write each number in the appropriate category (or categories). If a number does not fit into any category, cross it out.

-5	92	41	$\frac{5}{7}$	-3.3	0
-74	-60	0.4	122	π	$\frac{9}{17}$

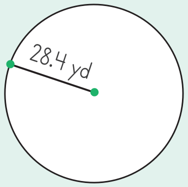
Natural Numbers	Whole Numbers	Integers

2. Divide.

$12\overline{)7}$ $22\overline{)9}$ $16\overline{)35}$

4 ÷ 15   15 ÷ 8   5 ÷ 11

3. Fill in the information about the circle below.



radius = __________ diameter = __________

circumference ≈ ______________

area ≈ _________________

Lesson
99

TIME ZONES

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

Video Lesson

Chichén Itzá

1:00 PM

Machu Picchu

______

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

Mini Lesson

There are 24 hours in one day, and the earth rotates 360° in a 24-hour period. This means the earth rotates 15° each hour.

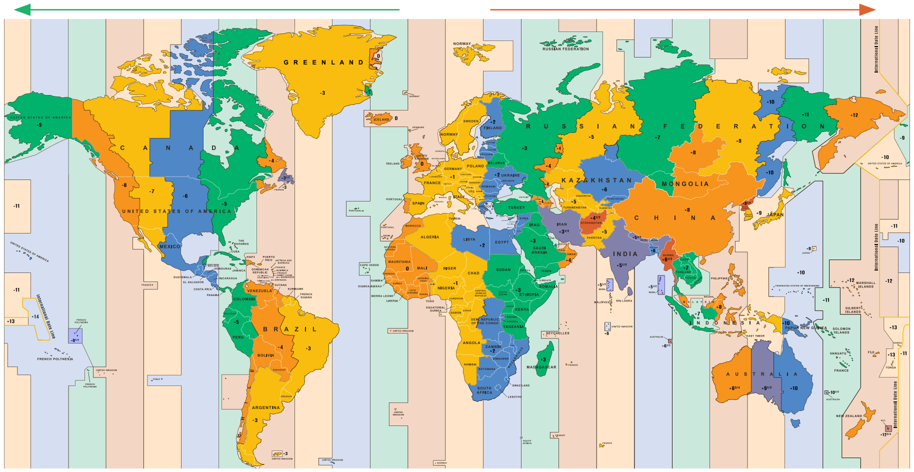
$$\frac{360°}{24\text{ hr}} \rightarrow 15° \text{ rotation each hour}$$

In 1884 a conference was held to standardize time throughout the world, and the earth was divided into 24 time zones. A time zone is an area of land, and within each time zone, the time is the same. Time zones are spaced 15° apart, and there is a one-hour time difference from one time zone to the next. Moving to the east, each time zone is one hour ahead. Moving to the west, each time zone is one hour behind.

World Time Zones Map

Subtract one hour for each time zone.

Add one hour for each time zone.



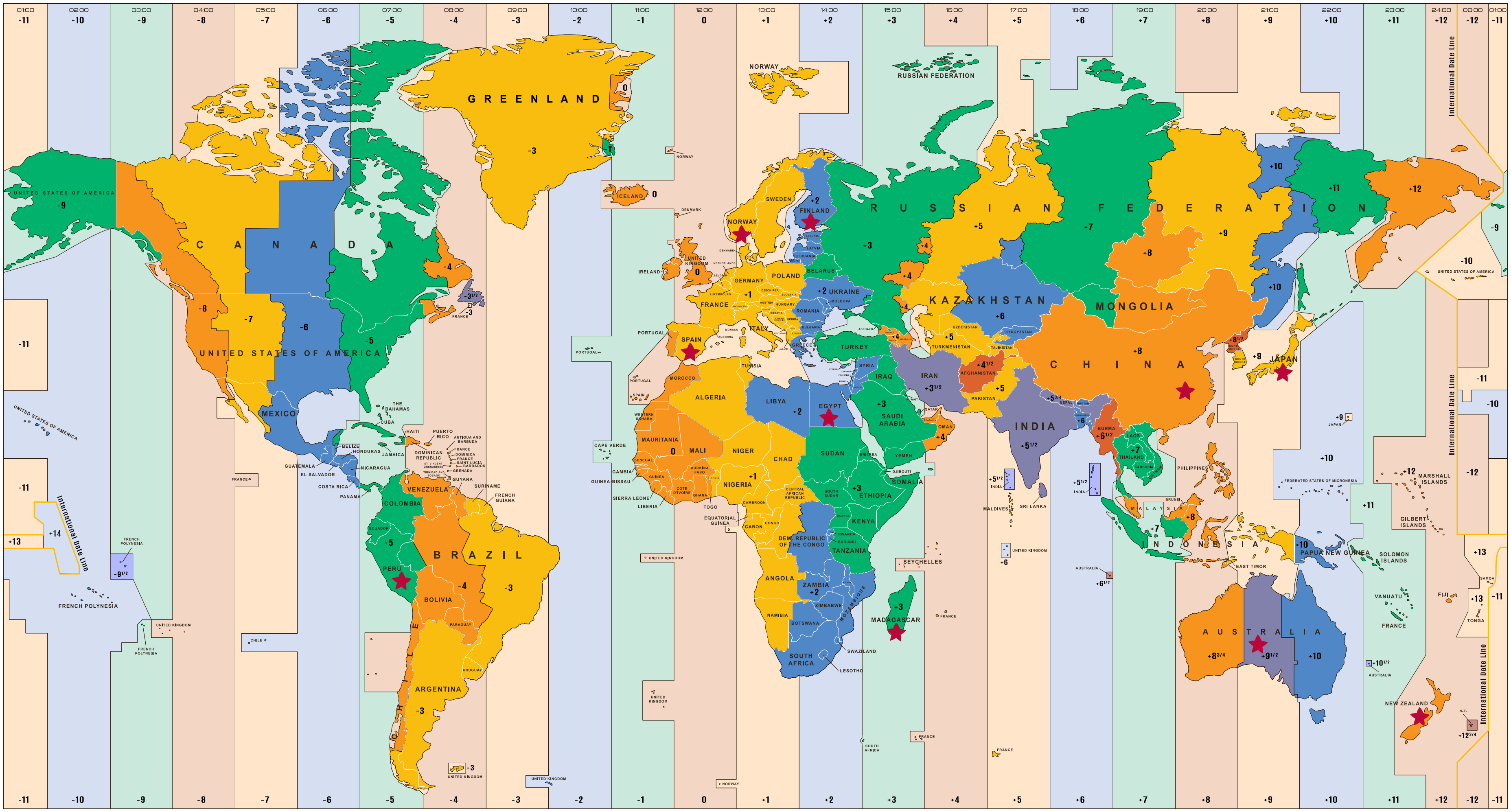
Time zones are measured from a starting point called the prime meridian. The prime meridian is located at 0° longitude. Longitude is the measurement east or west of the prime meridian.

On the opposite side of the world, at 180° longitude, is the international date line. There is a 12-hour time difference between the prime meridian and the international date line. The international date line is a boundary that marks the change from one calendar day to the next. Crossing the international date line going to the west, it is one day later. Crossing it going to the east, it is one day earlier.

Practice

★ Hint: Look for the red stars to find the countries and cities named in the questions.

World Time Zones Map



1. How many time zones are there in the world? ____________

2. What is the time difference from one time zone to the time zone next to it? ____________

3. If it is 4:30 PM in Spain, what time is it in Finland? ____________

4. If it is 11:25 PM on Thursday in Norway, what time and day is it in China? ________________

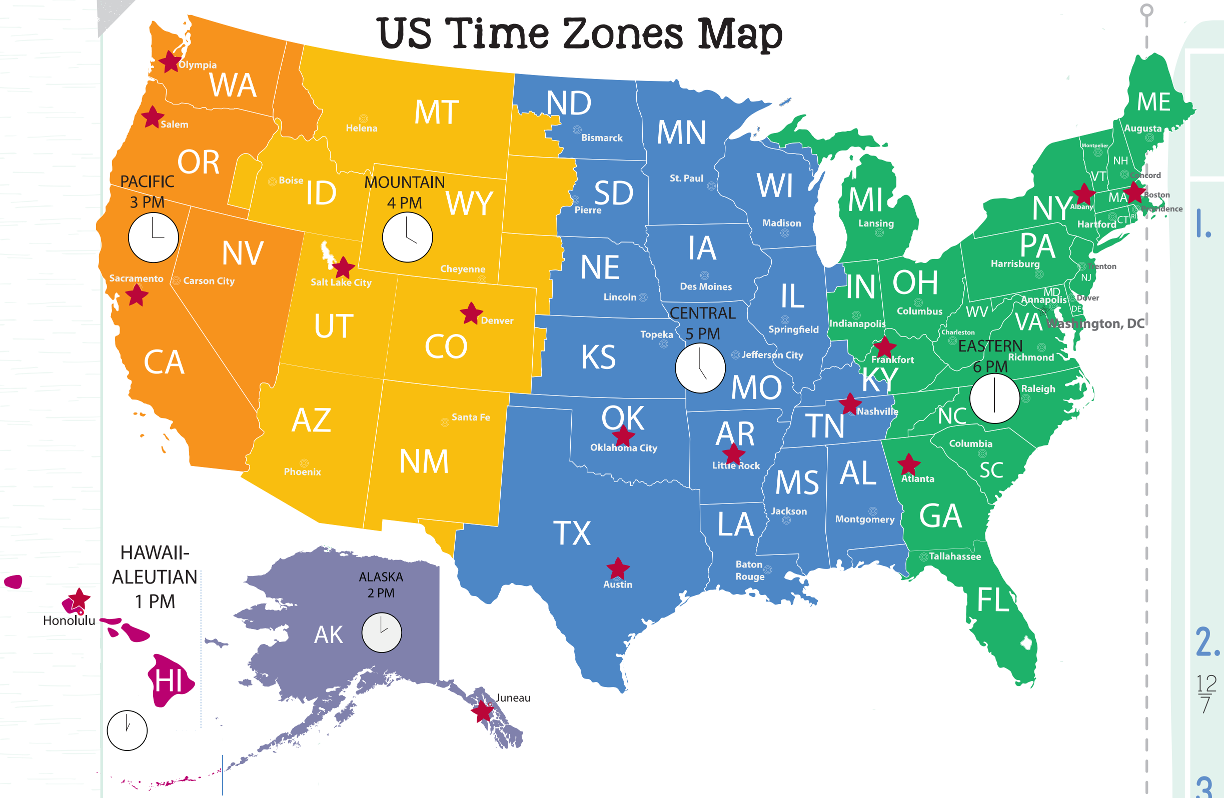
5. If it is 6:03 PM in Japan, what time is it in Egypt? ____________

6. If it is 8:47 AM in Peru, what time is it in Madagascar? ____________

7. How many time zones are there in Australia? ____________

8. If you traveled from New Zealand heading east across the international date line on Tuesday, what day would it be once you passed the international date line? ____________

US Time Zones Map



9. How many different time zones does the United States have? __________

10. If it is 2:38 PM in Olympia, WA, what time is it in the following cities?

Oklahoma City, OK __________ Denver, CO __________ Boston, MA __________

11. If it is 11:45 AM in St. Paul, MN, what time is it in the following cities?

Honolulu, HI __________ Albany, NY __________ Austin, TX __________

12. If it is 8:24 AM in Atlanta, GA, what time is it in the following cities?

Nashville, TN __________ Juneau, AK __________ Sacramento, CA __________

13. If it is 12:55 PM in Salt Lake City, UT, what time is it in the following cities?

Frankfort, KY __________ Salem, OR __________ Little Rock, AR __________

Review

1. Continue dividing until there is a remainder of zero or a repeating decimal. Write repeating decimals with a bar.

$2.3\overline{)4.83}$ $0.08\overline{)0.6024}$

$0.33\overline{)1.3629}$ $0.6\overline{)7.7}$

2. Use reciprocals to divide.

$\frac{12}{7} \div \frac{4}{7} =$ $\frac{23}{30} \div \frac{4}{5} =$ $\frac{45}{46} \div \frac{9}{23} =$

3. Create a Venn diagram for the sets below. Then fill in the blanks.

R = {7, 8, 9, 10, 11} S = {2, 4, 6, 8, 10}

$R \cap S =$ __________________

$R \cup S =$ __________________

4. Subtract.

$\frac{7}{9} - \frac{3}{4} =$ $4\frac{5}{6} - 1\frac{4}{5} =$ $7 - 0.052 =$

5. Compare the fractions by writing <, >, or = between them.

$\frac{5}{7}$ ○ $\frac{22}{35}$ $\frac{13}{15}$ ○ $\frac{5}{6}$ $\frac{5}{12}$ ○ $\frac{4}{9}$

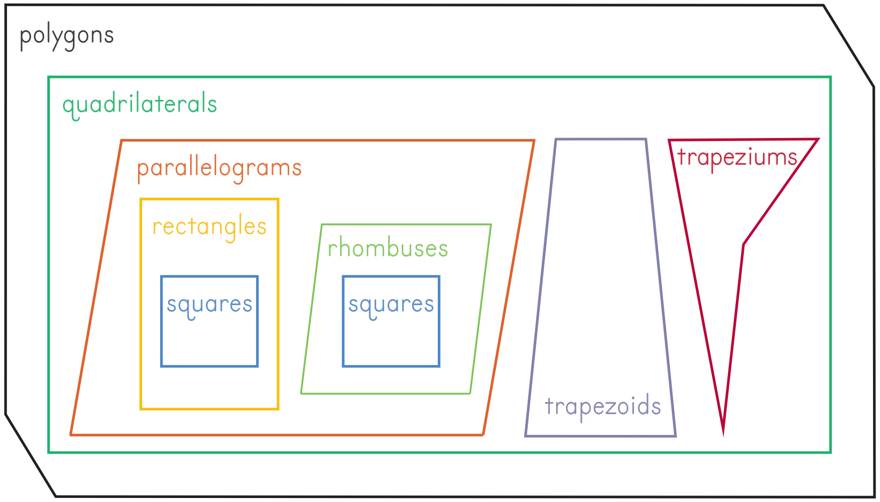
REFERENCE GUIDE

DIVISIBILITY RULES

A number is divisible by . . .

- ② if it is an even number.
- ③ if the sum of the digits is divisible by 3.
- ④ if the last two digits of the number are divisible by 4.
- ⑤ if it ends in either 0 or 5.
- ⑥ if it is divisible by both 2 and 3.
- ⑨ if the sum of the digits is divisible by 9.
- ⑩ if the number ends in 0.

Quadrilateral Classification



Properties

Commutative Property

$2 + 3 = 3 + 2$

$2 \times 3 = 3 \times 2$

Associative Property

$(2 + 3) + 4 = 2 + (3 + 4)$

$(2 \times 3) \times 4 = 2 \times (3 \times 4)$

Distributive Property

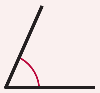
$4(3 + 2) = (4 \times 3) + (4 \times 2)$

$4(3 - 2) = (4 \times 3) - (4 \times 2)$

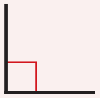
Mean, Median, Mode, and Range

Hey, diddle diddle, the median's the middle.
You add then divide for the mean.
The mode is the one that you see the most,
And the range is the difference between.

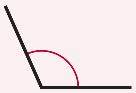
ANGLE CLASSIFICATION



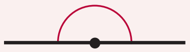
acute
less than 90°



right
90°



obtuse
between 90° & 180°



straight
180°

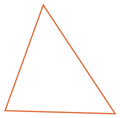
Order of Operations

(Please)
Excuse^{2}
My × Dear ÷
Aunt + Sally -

Triangle Classification **by Angles** **by Sides**

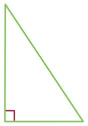
A triangle with . . .

Acute



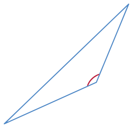
all angles less than 90°

Right



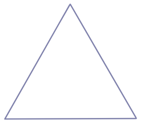
an angle that measures 90°

Obtuse



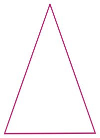
an angle that is greater than 90°

Equilateral



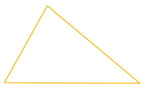
three sides of equal length

Isosceles



two sides of equal length

Scalene



no sides of equal length

REFERENCE GUIDE

CONVERSIONS

US Customary System

Length

1 ft = 12 in

1 yd = 3 ft = 36 in

1 mi = 1,760 yd = 5,280 ft = 63,360 in

Weight

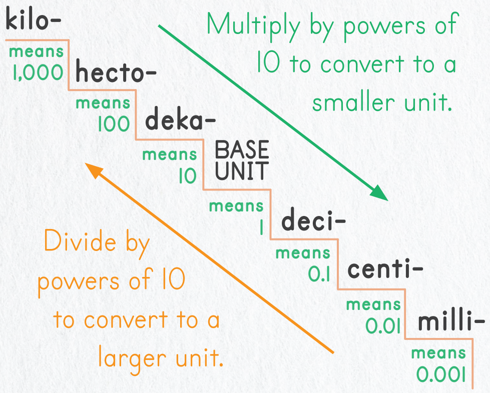
1 lb = 16 oz

1 tn = 2,000 lb

Capacity

3 tsp = 1 Tbsp

Metric System



Multiply by powers of 10 to convert to a smaller unit.

Divide by powers of 10 to convert to a larger unit.

Common Conversions

$\frac{1}{2} = 0.5 = 50\%$

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

$\frac{2}{3} = 0.\overline{6} = 66.\overline{6}\%$

$\frac{1}{4} = 0.25 = 25\%$

$\frac{3}{4} = 0.75 = 75\%$

$\frac{1}{5} = 0.2 = 20\%$

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

Formulas

Area

rectangle: $A = \ell w$

triangle: $A = \frac{bh}{2}$

circle: $A = \pi r^2$

Volume

rectangular prism: $V = \ell w h$

cylinder: $V = \pi r^2 h$

Temperature

$F = 9C \div 5 + 32$

$C = (F - 32) \times 5 \div 9$

circumference of a circle: $C = \pi d$ $C = 2\pi r$

pi (π) $\approx 3.14 \approx \frac{22}{7}$

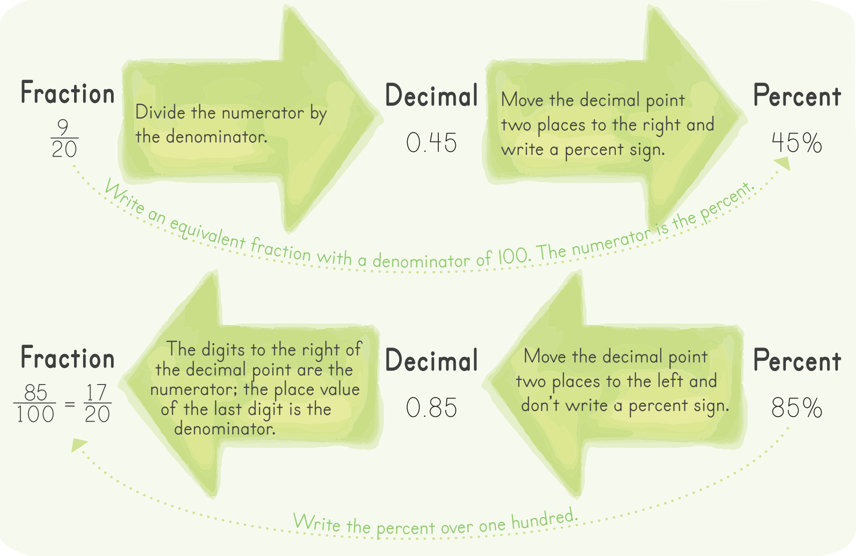
Perfect Squares and Square Roots

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$

$9^2 = 81$
$10^2 = 100$
$11^2 = 121$
$12^2 = 144$
$13^2 = 169$
$14^2 = 196$
$15^2 = 225$

$\sqrt{1} = 1$
$\sqrt{4} = 2$
$\sqrt{9} = 3$
$\sqrt{16} = 4$
$\sqrt{25} = 5$
$\sqrt{36} = 6$
$\sqrt{49} = 7$
$\sqrt{64} = 8$

$\sqrt{81} = 9$
$\sqrt{100} = 10$
$\sqrt{121} = 11$
$\sqrt{144} = 12$
$\sqrt{169} = 13$
$\sqrt{196} = 14$
$\sqrt{225} = 15$



Fraction $\frac{9}{20}$ — Divide the numerator by the denominator. — **Decimal** 0.45 — Move the decimal point two places to the right and write a percent sign. — **Percent** 45%

Write an equivalent fraction with a denominator of 100. The numerator is the percent.

Percent 85% — Move the decimal point two places to the left and don't write a percent sign. — **Decimal** 0.85 — The digits to the right of the decimal point are the numerator; the place value of the last digit is the denominator. — **Fraction** $\frac{85}{100} = \frac{17}{20}$

Write the percent over one hundred.

Place Value

Billions			Millions			Thousands			Ones			Decimals			
Hundred Billions	Ten Billions	Billions	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths	Ten Thousandths

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SKU 580

Math 5

MENTAL MATH

Map Mysteries

The Good and the Beautiful
CURRICULUM

Math 5

MENTAL MATH

Map Mysteries

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CURRICULUM

Created by the Simply Good and Beautiful Math Team

goodandbeautiful.com

About This Book

This mental math book correlates with the *Simply Good and Beautiful Math 5 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 5 Course Book*, giving the answers aloud. As the child gives the answers, the parent or teacher checks the answers and provides any correction needed. Upon completion of the lesson box, both the parent/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 77 onto a designated space on the map on page 76. 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: *Ivy and the Ice Village*. The map that the child creates 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 5 Course Book*.

QUESTIONS

LESSON 1

COMPLETE

Skip Count

- by 6s from 6 to 72
- by 9s from 9 to 108

Add 100,000 to a Number

Increase the digit in the one hundred thousands place by 1. Regroup if needed.

525,525 800,900 1,688,999 1,452,234

Calendar

- A decade is 10 years. If it is 2019, what year will it be 3 decades from now?
- If it is 1846, what year was it $2\frac{1}{2}$ decades ago?

LESSON 2

COMPLETE

Calendar

- A century is 100 years. If it is 1782, what year was it 2 centuries ago?
- If it is 2005, what year will it be 4 centuries from now?
- If it is 1888, what year was it $\frac{1}{2}$ a century ago?

Elapsed Time

State how much time has passed.

5:10 PM to 6:35 PM 12:05 PM to 1:45 PM 8:15 AM to 9:35 AM

Subtract Money Amounts

$8.10 - $2.10 $7.00 - $4.75 $12.00 - $10.02

LESSON 3

COMPLETE

Roman Numerals

State the number for each Roman numeral.

IX XXXVI LXIX XVI XC

Add Money Amounts

$7.25 + $4.10 $3.75 + $5.50 $8.35 + $6.65

LESSON 4

COMPLETE

Fractions

What is $\frac{1}{2}$ of 36? What is $\frac{1}{3}$ of 27?

Calendar

State the month for each ordinal position of months in a year.

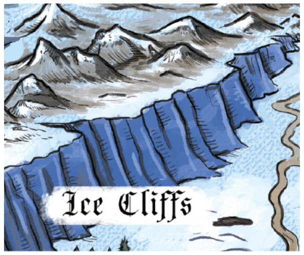
3rd 7th 12th 8th 6th

10th 2nd 4th 11th 5th

Money

How many nickels are in $1.10? How many quarters are in $4.00?

After completing
Lesson 4, place this piece
onto your map on C-4.



ANSWER KEY

LESSON 1

COMPLETE

Skip Count

- by 6s from 6 to 72 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72
- by 9s from 9 to 108 9, 18, 27, 36, 45, 54, 63, 72, 81, 90, 99, 108

Add 100,000 to a Number

Increase the digit in the one hundred thousands place by 1. Regroup if needed.

525,525	800,900	1,688,999	1,452,234
625,525	900,900	1,788,999	1,552,234

Calendar

- A decade is 10 years. If it is 2019, what year will it be 3 decades from now? 2049
- If it is 1846, what year was it $2\frac{1}{2}$ decades ago? 1821

LESSON 2

COMPLETE

Calendar

- A century is 100 years. If it is 1782, what year was it 2 centuries ago? 1582
- If it is 2005, what year will it be 4 centuries from now? 2405
- If it is 1888, what year was it $\frac{1}{2}$ a century ago? 1838

Elapsed Time

State how much time has passed.

5:10 PM to 6:35 PM	12:05 PM to 1:45 PM	8:15 AM to 9:35 AM
1 hour 25 minutes	1 hour 40 minutes	1 hour 20 minutes

Subtract Money Amounts

\$8.10 - \$2.10	\$7.00 - \$4.75	\$12.00 - \$10.02
\$6.00	\$2.25	\$1.98

LESSON 3

COMPLETE

Roman Numerals

State the number for each Roman numeral.

IX	XXXVI	LXIX	XVI	XC
9	36	69	16	90

Add Money Amounts

\$7.25 + \$4.10	\$3.75 + \$5.50	\$8.35 + \$6.65
\$11.35	\$9.25	\$15.00

LESSON 4

COMPLETE

Fractions

What is $\frac{1}{2}$ of 36? 18 What is $\frac{1}{3}$ of 27? 9

Calendar

State the month for each ordinal position of months in a year.

3rd	Mar.	7th	July	12th	Dec.	8th	Aug.	6th	June
10th	Oct.	2nd	Feb.	4th	Apr.	11th	Nov.	5th	May

Money

How many nickels are in \$1.10? 22 How many quarters are in \$4.00? 16

NOTES

QUESTIONS

LESSON 52

COMPLETE

Powers

State the value of each expression.

5^2 3^3 10^3 40^0 4^4 2^3

Measurements

There are 36 inches in 3 feet. How many inches are in 6 feet?

LESSON 53

COMPLETE

Order of Operations

Use the order of operations to complete each problem.

$4 + (10 - 6) \times 2$ $(14 + 6) + 1 \times 3$ $2 \times (18 - 2) + 5$

Skip Count

- by 9s from 9 to 108
- by 150s from 150 to 900

Add Money Amounts

\$30.50 + \$11.75 \$19.65 + \$7.25 \$18.75 + \$14.50

LESSON 54

COMPLETE

Fractions

What is $\frac{1}{10}$ of 30? What is $\frac{1}{3}$ of 15?

Skip Count

- by 4s from 4 to 48
- by 20s from 20 to 240

LESSON 55

COMPLETE

Subtract Numbers Ending in 9

300 - 249 87 - 19 212 - 109 45 - 29

Measurements

There are 1,760 yards in 1 mile. How many yards are in 2 miles?

Square Numbers

List the square numbers from 1 to 49.

LESSON 56

COMPLETE

Roman Numerals

State the number for each Roman numeral.

XIII XCII LXXXVIII XXXI XV

Skip Count

- by 8s from 8 to 96
- by 50s from 50 to 600

Money

How many nickels are in \$3.15? How many dimes are in \$4.00?

After completing Lesson 56, place this piece onto your map on D-4.

ANSWER KEY

LESSON 52

COMPLETE

Powers

State the value of each expression.

5^2 25 3^3 27 10^3 1,000 40^0 1 4^4 256 2^3 8

Measurements

There are 36 inches in 3 feet. How many inches are in 6 feet? 72

LESSON 53

COMPLETE

Order of Operations

Use the order of operations to complete each problem.

$4 + (10 - 6) \times 2$ 12

$(14 + 6) + 1 \times 3$ 23

$2 \times (18 - 2) + 5$ 37

Skip Count

- by 9s from 9 to 108 9, 18, 27, 36, 45, 54, 63, 72, 81, 90, 99, 108
- by 150s from 150 to 900 150, 300, 450, 600, 750, 900

Add Money Amounts

$30.50 + $11.75 $42.25

$19.65 + $7.25 $26.90

$18.75 + $14.50 $33.25

LESSON 54

COMPLETE

Fractions

What is $\frac{1}{10}$ of 30? 3 What is $\frac{1}{3}$ of 15? 5

Skip Count

- by 4s from 4 to 48 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48
- by 20s from 20 to 240 20, 40, 60, 80, 100, 120, 140, 160, 180, 200, 220, 240

LESSON 55

COMPLETE

Subtract Numbers Ending in 9

300 - 249 51 87 - 19 68 212 - 109 103 45 - 29 16

Measurements

There are 1,760 yards in 1 mile. How many yards are in 2 miles? 3,520

Square Numbers

List the square numbers from 1 to 49. 1, 4, 9, 16, 25, 36, 49

LESSON 56

COMPLETE

Roman Numerals

State the number for each Roman numeral.

XIII 13 XCII 92 LXXXVIII 88 XXXI 31 XV 15

Skip Count

- by 8s from 8 to 96 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96
- by 50s from 50 to 600 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600

Money

How many nickels are in $3.15? 63 How many dimes are in $4.00? 40

NOTES

QUESTIONS

LESSON 110

COMPLETE

Subtract Money Amounts

$25.20 - $10.50 $40.20 - $20.20 $15.55 - $14.50

Skip Count

- by 4s from 48 to 96
- by 50s from 50 to 300

Square Numbers

List the square numbers from 1 to 225.

LESSON 111

COMPLETE

Skip Count

- by 12s from 12 to 144
- by 250s from 500 to 3,500

Calendar

A score is 20 years. How many years are 8$\frac{1}{2}$ scores? How many years are 10 scores?

LESSON 112

COMPLETE

Change from $100

Determine the change from $100 for each amount.

$11.89 $82.22 $50.49 $32.77

Skip Count

- by 4s from 4 to 48
- by 7s from 7 to 84

LESSON 113

COMPLETE

Measurements

There are 3 teaspoons in 1 tablespoon. How many teaspoons are in 11 tablespoons?

Skip Count

- by 8s from 80 to 176
- by 50s from 50 to 300

LESSON 114

COMPLETE

Add the Products of 2 Multiplication Problems

Multiply first, and then add the two products together.

(30 × 3) + (9 × 3)   (9 × 5) + (18 × 2)   (6 × 6) + (82 × 1)

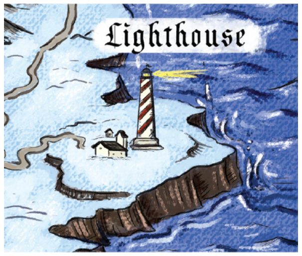
Calendar

State the month for each ordinal position of months in a year.

8th   12th   6th   7th   9th

11th   5th   10th   2nd   4th

After completing
Lesson 114, place this piece
onto your map on C-5.



LESSON 110

COMPLETE

Subtract Money Amounts

$25.20 - $10.50 $14.70

$40.20 - $20.20 $20.00

$15.55 - $14.50 $1.05

Skip Count

- by 4s from 48 to 96 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96
- by 50s from 50 to 300 50, 100, 150, 200, 250, 300

Square Numbers

List the square numbers from 1 to 225. 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225

LESSON 111

COMPLETE

Skip Count

- by 12s from 12 to 144 12, 24, 36, 48, 60, 72, 84, 96, 108, 120, 132, 144
- by 250s from 500 to 3,500 500, 750, 1,000, 1,250, 1,500, 1,750, 2,000, 2,250, 2,500, 2,750, 3,000, 3,250, 3,500

Calendar

A score is 20 years. How many years are 8½ scores? 170 How many years are 10 scores? 200

LESSON 112

COMPLETE

Change from $100

Determine the change from $100 for each amount.

$11.89 $88.11 $82.22 $17.78 $50.49 $49.51 $32.77 $67.23

Skip Count

- by 4s from 4 to 48 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48
- by 7s from 7 to 84 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84

LESSON 113

COMPLETE

Measurements

There are 3 teaspoons in 1 tablespoon. How many teaspoons are in 11 tablespoons? 33

Skip Count

- by 8s from 80 to 176 80, 88, 96, 104, 112, 120, 128, 136, 144, 152, 160, 168, 176
- by 50s from 50 to 300 50, 100, 150, 200, 250, 300

LESSON 114

COMPLETE

Add the Products of 2 Multiplication Problems

Multiply first, and then add the two products together.

(30 × 3) + (9 × 3) 117

(9 × 5) + (18 × 2) 81

(6 × 6) + (82 × 1) 118

Calendar

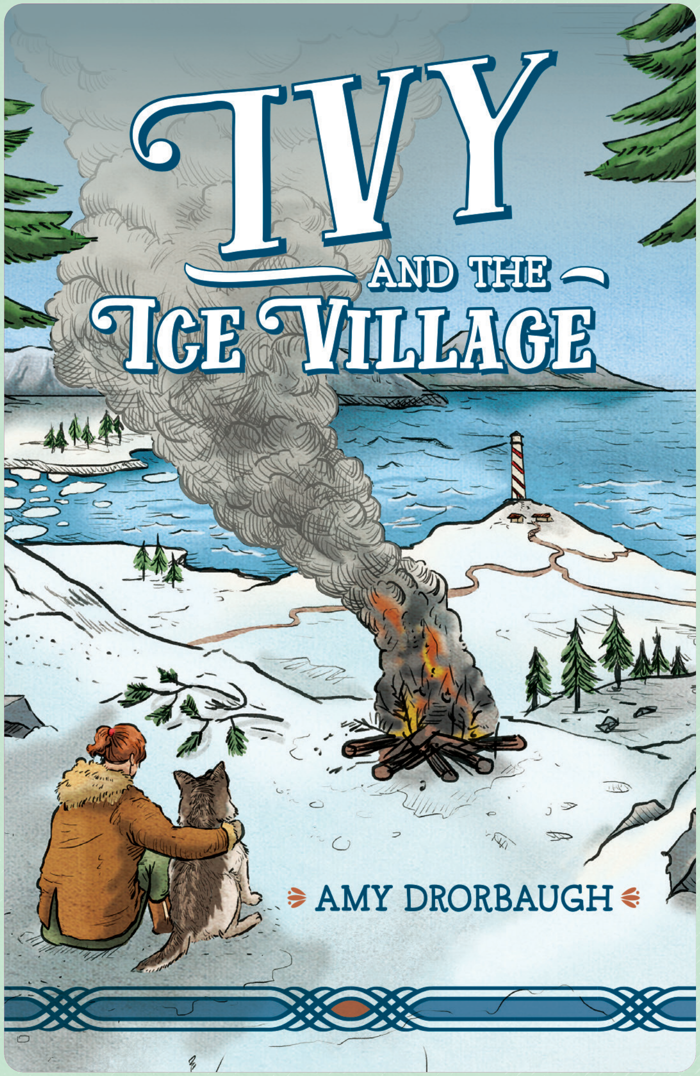
State the month for each ordinal position of months in a year.

8th Aug. 12th Dec. 6th June 7th July 9th Sept.

11th Nov. 5th May 10th Oct. 2nd Feb. 4th Apr.

NOTES

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



IVY RESTED HER CHIN ON HER HAND and stared out the window of her cottage, her bright green eyes unfocused and dreamy. The small cottage was set on the far side of the village, and the scene outside the window was the most beautiful in the whole world. Or at least Ivy thought so. From where Ivy sat, she could see the trees of the Endless Forest, which ran all the way to the Northern Mountains. In good weather she could see the peaks of those mountains, spearing up into the sky. Below the mountains were high cliffs; east of the village they were covered with thick ice, glowing with that deep crystal blue color you only find on glaciers.

But Ivy didn't notice the amazing scenery. She was listening closely for one particular sound under the normal sounds of her village. North Haven was a different type of village, set as it was at the edge of the great ice fields. It was a challenge to try and survive in a location that was so cold and covered in snow and ice more than eight months of the year. The weather here was often cloudy and dark, and in the winter the sun only came up for a few hours before setting again. But Ivy didn't mind the cold and the isolation; she loved her tiny village.

The door to the cottage banged open, bouncing off the wall behind it. Her little brother, Leif, ran in, followed closely by her mother carrying her baby sister, Daisy. Mother had named the girls after plants, claiming she needed to see something alive and growing when everything was covered with snow. In a way, they both looked a little like flowers, with their bright red hair, green eyes, and pale skin. Ivy shivered in the chilly breeze that came through the door with her family and pulled her sweater tighter around her. Even now, at the end of summer, she needed to wear a couple of layers of clothing.

Mother smiled at Ivy as she set Daisy down in her swing. Then she noticed the blank paper in front of her daughter and shook her head.

"Ivy! Have you been daydreaming this whole time instead of doing your lesson?"

Ivy blushed as red as her hair and picked up her pencil quickly. How was she supposed to focus on schoolwork when tomorrow was her birthday and she was listening for her present to arrive!

Mother sighed and then smiled again, "It's all right; put that away for now and go gather some wood. I've got to get supper going, and Leif here needs to work on his addition."

Leif groaned dramatically and fell over on the couch, "Aw, Mom! Can't I work on my spelling instead? I learned a new word today. Assist, A-S-S-I-S-T."

"No, you're going to practice addition, and you can A-S-S-I-S-T me by getting it out."

Leif giggled as he pulled out his math books from the cupboard. Ivy pulled on her coat, making silly faces at baby Daisy, and picked up the pail as she headed out the door. She set off for the small cluster of trees just outside of the village. Her pail was half full when her sharp ears caught the faint sound of bells. She straightened up and listened as closely as she could. Yes, there it was again, getting louder now. She grabbed the pail and started running back to the house, yelling when she was close enough.

her, there were two bedrooms before the stairs continued up to the light platform. Father and Mr. Kala sat at a wide, wooden table in the middle of the room.

"So," Mr. Kala asked when they were done eating, "which route are you going to take tomorrow?"

"I thought I would let Ivy choose," Father smiled at her, "since it's her birthday."

"Is there more than one way to reach Siku?" Ivy asked.

"Yes, there are two possible routes we could take now: River Road or Mountain Pass. River Road takes us north along the seashore until we reach Nanook Point, then we turn inland and follow the river most of the way to Siku. It's the longer route, but it's relatively flat and easier on the dogs. And you may see a polar bear or two on the way. Or we can cut inland and take the mountain pass. It's steep and snowy, but it will have us in Siku a full six hours earlier than River Road. Think about it, and you can choose tomorrow."

Early the next morning, Ivy ate an enormous pile of Mrs. Kala's flapjacks while her father harnessed up the team. They waved goodbye to the Kalas, whom they would see again in two days, and started the dogs off. Ivy walked beside the sled, warming up muscles unusually sore from yesterday's journey.

After about an hour, the trail they were on split: one path headed north and the other west. "Well, Ivy Girl, what's it going to be?" Father asked. "Are we taking River Road or Mountain Pass?"

You Choose

A If Ivy chooses to take River Road, continue to **Part A** on page 59.

OR

B If Ivy chooses Mountain Pass, skip to **Part B** on page 61.

Soon they were on their way again. It was past dinnertime by now, but the sun set late on these summer nights, and they were able to travel in the fading sunshine. Just as the sun sank behind it, Father pointed out a distinctive mountain, sitting above the ice village, that looked like a wolf.

Ivy was starting to wonder if they would have to travel all night to reach Siku when the dogs all started sniffing the air and then surged forward, picking up their pace to almost a full-out run.

"They smell the smoke from the campfires of Siku," Father explained. "We're almost there!"

Sure enough, just a couple minutes later they arrived at the strangest village Ivy had ever seen. She looked around for one of the famous ice houses, but all she could see were little hills of snow, with campfires scattered around them.

The Siku villagers cheered as the dogsled pulled in, rushing up to the sled to help unhook the dogs and pound her father on the back or shake his hand enthusiastically. Ivy tried not to stare at the villagers. They looked so different from the townspeople of North Haven! Their skin was a lustrous dark brown, and everyone had black hair and dark eyes. Ivy noticed a small boy staring at her with his mouth open, and she smiled and hid a chuckle. She realized that maybe she looked just as strange to them with her pale skin and red hair! The small Siku boy smiled back at her impishly, a dimple appearing in his cheek just like the one that Leif had when he smiled.

A Siku man wearing a beautiful parka, covered with embroidery in blue and red and tiny beads made out of bone, approached the sled.

"Ivy, this is Chief Panuk of Siku," said Father.

Chief Panuk smiled broadly, his black eyes twinkling. "I understand you have a very special package for me, Ivy."

Ivy slipped the small pack of medicine off her shoulders and handed it to the chief. She felt so proud of having protected the small pack for the whole trip.

He bowed once, and said solemnly, "My people are in your debt, Ivy."

Later, after a delicious plate of smoked fish, Ivy found herself heading into one of the famous ice houses, which turned out to be the large piles of snow she had seen everywhere.

The little Siku boy, whose name was Nuk Nuk, explained

Ivy, then dash away again, as if hurrying Ivy along. When Ivy took a break, sitting on the side of the path, Star would lay across her feet. Ivy would scratch her neck while she watched the sun dance across the glacier. In the stillness Ivy could hear all kinds of noises around her: pops, cracks, and a low, faint roaring noise. Ivy smiled down at Star.

"It's the glacier, Star; she's talking to me just like Father said."

Star's ears perked up, as if she, too, were listening to the song of the ice. At the thought of her father, alone and injured, Ivy climbed back to her feet and hurried on up the trail.

Finally, in the sunset light, they reached the pass. Ivy could see the beam of the lighthouse rotating slowly to warn the fishermen, and she smiled.

"Time to start a fire, girl," Ivy told Star as she moved to a flat clearing on the side of the path. She quickly scoured the forest floor, looking for wood. She carefully gathered a few good-sized logs and lots of little twigs and branches. Finally she brought over big armfuls of sticky pine needles, which she knew would send up lots of smoke.

First, she took three of the larger logs and stood them up on end, leaning them against each other to form a triangular shape with an empty space underneath. Then she chose several of the smallest twigs and gently slid them underneath the logs. Opening her pack, she pulled out Father's fire-starting kit. Inside were some fluffy pieces of wool from the mountain sheep. She laid a piece of wool next to the twigs and then carefully struck a match and lit the wool on fire. It blazed up instantly, and Ivy slowly pushed a twig into the flame until it, too, was burning. Steadily she fed more of the little twigs until a good-sized fire was licking its way up the outside of the larger logs. Satisfied, Ivy sat back on her heels and smiled at the fire burning merrily.

She had kindled it just in time, too, as the sky was spinning quickly toward nighttime. Ivy picked up handfuls of pine needles and threw them on the fire, where they ignited quickly and sent big plumes of smoke into the air. For an hour she sat there, feeding the fire and sending up her smoke signals, wondering if anyone would notice. Eventually all the light faded from the sky, and she was left

Map

	1	2	3	4	5
A					
B					
C					
D					
E					

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Lesson 1

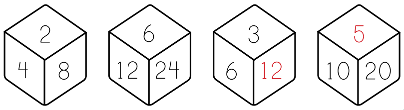
NUMBER PATTERNS

- ☐ 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, 12, 15, 18, 21, 24, 27, 30



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.

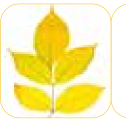
The sequence below is missing four terms. To complete the sequence, look at the numbers to see how they change from one number to the next. Are they increasing or decreasing? By how much? Fill in the blanks below.

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, 21, 18, 15, 12, 9, 6, 3.

Practice

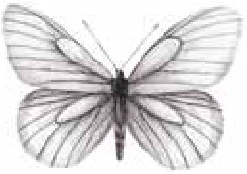
1. Count the number of leaves in each box to find the number pattern. Then draw the two missing pictures. Use your imagination!

		7 Leaves	9 Leaves	

2. Complete the sequence.

4, 12, 20, 28, 36, 44, 52, 60

3. Finish the pattern.



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

1, 3, 5, 7, 9, 11, 13, 15

5. Finish the pattern.

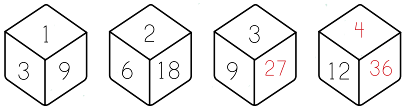
817
344 473
141 203 270
64 77 126 144
23 41 36 90 54

✦ Hint: Use addition!

6. Complete the sequence.

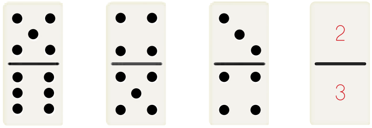
54, 45, 36, 27, 18, 9, 0

7. Fill in the missing numbers.

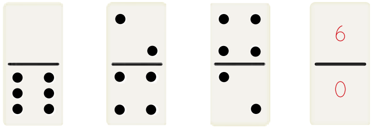


8. Finish the three patterns by drawing the correct number of dots.

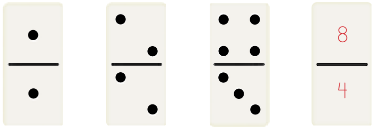
a.



b.



c.



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

Answers may vary. Possible answer:
22, 20, 18, 16, 14, 12, 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, $36, $48, $60,
$72, $84, $96, $108

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.)

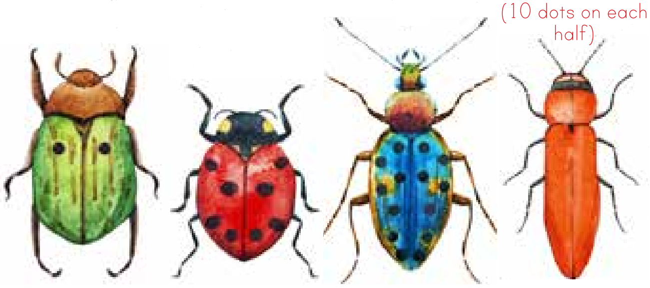
$91, $84, $77, $70,
$63, $56, $49, $42, $35,
$28, $21, $14, $7

13 months

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.

(10 dots on each half)



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 × 12 = 144

11 × 12 = 132

121 ÷ 11 = 11

$$\begin{array}{r} 24 \\ \times\ 3 \\ \hline 72 \end{array} \qquad \begin{array}{r} 61 \\ \times\ 42 \\ \hline 2{,}562 \end{array} \qquad \begin{array}{r} 25 \\ 5\overline{)125} \end{array}$$

Lesson 2

FACTORS OF PRIME AND COMPOSITE NUMBERS

☐ 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. The section below is used during the video.

1 × 3, 3 × 1

1, 3

1 × 6, 6 × 1, 2 × 3, 3 × 2

1, 2, 3, 6

Mini Lesson

Whole numbers are numbers representing a whole amount, not fractions or decimals. Examples of whole numbers are 0, 5, and 126. The following numbers are NOT whole numbers: 1.2 and $3\frac{1}{2}$.

Factors are numbers that are multiplied together to form a product. ***Factors of a number*** refer to the whole numbers that can be multiplied together to make the given number. The answer to a multiplication problem is the ***product***.

$$\underbrace{3 \times 8}_{\text{factors}} = \underbrace{24}_{\text{product}}$$

A ***prime number*** is a whole number that has exactly two factors: the number itself and the number 1. An example of a prime number is 37.

$$37 \times 1 = 37$$

Only the whole number factors 37 and 1 can be multiplied to equal 37. The factors of 37 are written 1, 37.

Remember these rules about listing factors:

- Factors are written in order from least to greatest.
- Factors have commas between them.
- Each factor is written only once.

A ***composite number*** is a whole number that has more than two factors. An example of a composite number is 16. The number 16 has factors other than itself and the number 1.

$$1 \times 16 = 16 \qquad 2 \times 8 = 16 \qquad 4 \times 4 = 16$$

The factors of 16 are written 1, 2, 4, 8, 16. (Remember not to list factors more than once.)

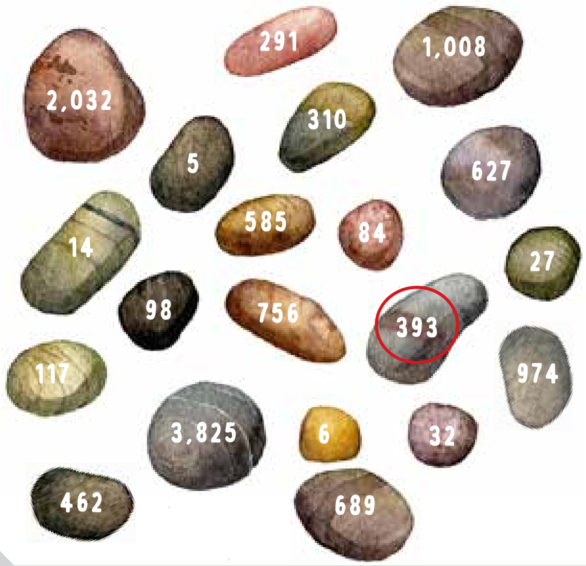
The numbers 0 and 1 are neither prime nor composite. The number 2 is the only even number that is a prime number.

5. Solve the puzzle by using the facts below.

- I am greater than 100.
- I am divisible by 3.
- I am not divisible by 5.
- I have fewer than four digits.
- I am not an even number.
- Two of my digits are the same.
- If you divide my second digit by my first digit, you get my last digit.

Try different strategies, such as crossing off the wrong numbers or deciding which clues you want to use first.

WHICH NUMBER AM I?



Review

1. Complete each sequence and state the rule for each pattern. The first rule is given as an example.

72, 81, 90, 99, 108, 117 rule: add 9

156, 144, 132, 120, 108, 96 rule: subtract 12

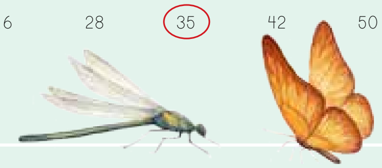
1, 3, 9, 27, 81, 243 rule: multiply by 3

2. Complete the problems.

$$\begin{array}{r} 134 \\ \times\ 8 \\ \hline 1{,}072 \end{array} \qquad \begin{array}{r} 55 \\ \times 48 \\ \hline 2{,}640 \end{array} \qquad \begin{array}{r} 25 \\ 7\overline{)175} \end{array}$$

3. There are equal numbers of dragonflies and butterflies in the meadow. Which of the following numbers could not be the total number of dragonflies and butterflies?

16 28 [✓ 35] 42 50



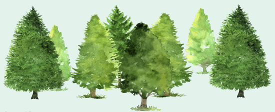
Lesson 4

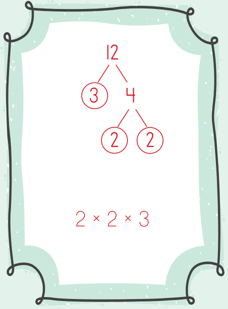
PRIME FACTORIZATION

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

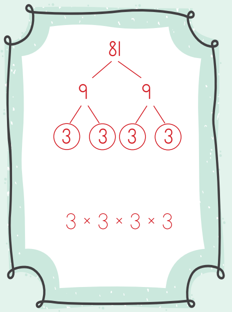
Video Lesson

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





2 × 2 × 3



3 × 3 × 3 × 3

Mini Lesson

Let's review! A ***prime number*** is a whole number that has exactly two factors: the number itself and the number 1. ***Factors of a number*** are the whole numbers that can be multiplied together to make the given number. A ***product*** is the answer to a multiplication problem.

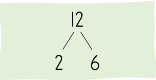
Prime factorization is a number written as the product of its prime factors.

A factor tree can be used to find the prime factors of a number.

Let's make a factor tree for the number 12.

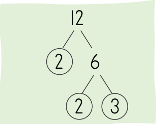
Start by writing the number you are factoring at the top.

Then use lines to separate the number into a factor pair. Do not use 1 and the original number as a factor pair when factoring; choose other factor pairs.



Circle any factors that are prime numbers. If a factor isn't prime, don't circle it.

Keep separating each composite number into factor pairs until every factor is a prime number.



List the prime factors (the circled numbers) as a multiplication problem in order from least to greatest to keep it organized.

The prime factorization of 12 is 2 × 2 × 3.

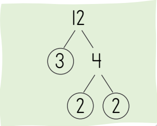
To check your work, multiply the prime factors. The product should equal the number you started with.

Here's another way you can make a factor tree for the number 12.

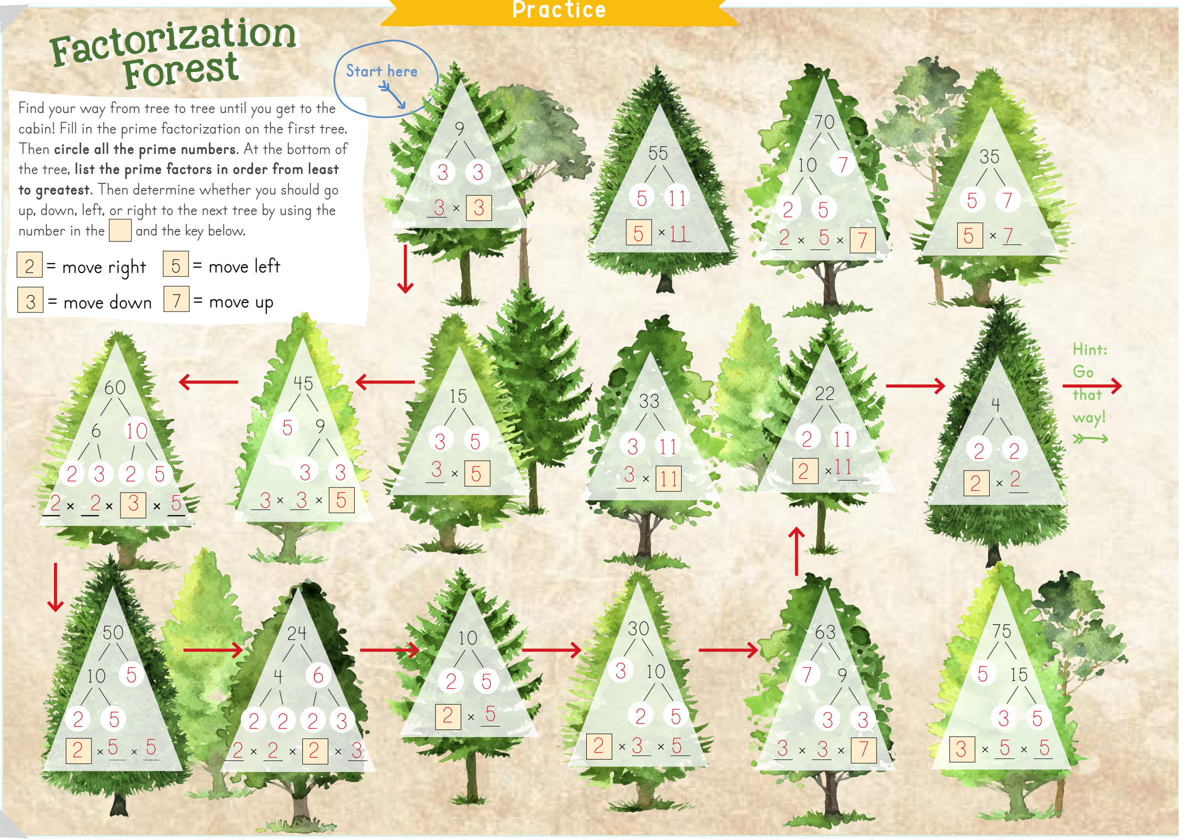
Notice that the answer is still the same: **2** × **2** × **3**.

Each number has a unique prime factorization!

That means one of a kind!



Factorization Forest



Find your way from tree to tree until you get to the cabin! Fill in the prime factorization on the first tree. Then **circle all the prime numbers.** At the bottom of the tree, **list the prime factors in order from least to greatest.** Then determine whether you should go up, down, left, or right to the next tree by using the number in the ☐ and the key below.

2 = move right
5 = move left
3 = move down
7 = move up

You won't have to fill in the prime factorization for all the trees, just for the ones on the path. But you can if you want to!

All done! No review.

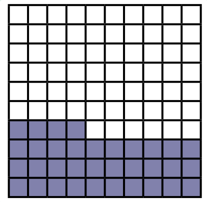
Lesson 9

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.

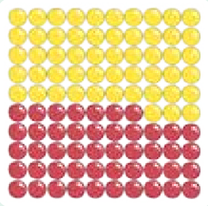


Fraction: $\frac{34}{100}$

Percent: 34%

Fraction: $\frac{47}{100}$

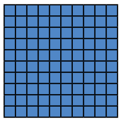
Percent: 47%



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.

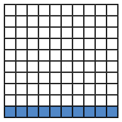
A whole is one hundred percent. This can be written as 100%. The picture below shows that 100% of the boxes are filled in. When the numerator and the denominator of a fraction are the same, the fraction equals one whole, or 100%. Some examples of fractions that equal a whole are $\frac{2}{2}$, $\frac{30}{30}$,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



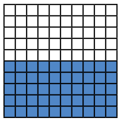
$\frac{100}{100}$ is shaded.

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

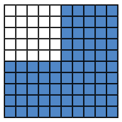
Below are other examples of fractions and percents:



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



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



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

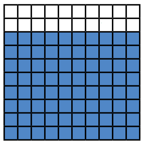
Money Connection:

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%

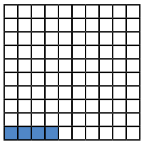
Practice

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



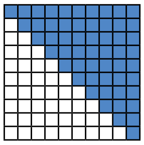
fraction: $\frac{80}{100}$

percent: 80%



fraction: $\frac{4}{100}$

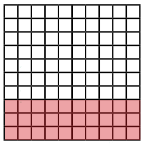
percent: 4%



fraction: $\frac{55}{100}$

percent: 55%

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



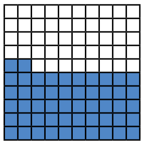
percent: 30%

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: $\frac{52}{100}$

percent: 52%

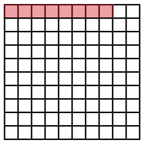


Toys That Went to Girls

fraction: $\frac{48}{100}$

percent: 48%

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: $\frac{8}{100}$

percent: 8%

Colorful Marbles

fraction: $\frac{92}{100}$

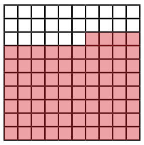
percent: 92%

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: $\frac{74}{100}$

percent: 74%



Kids without Water Bottles

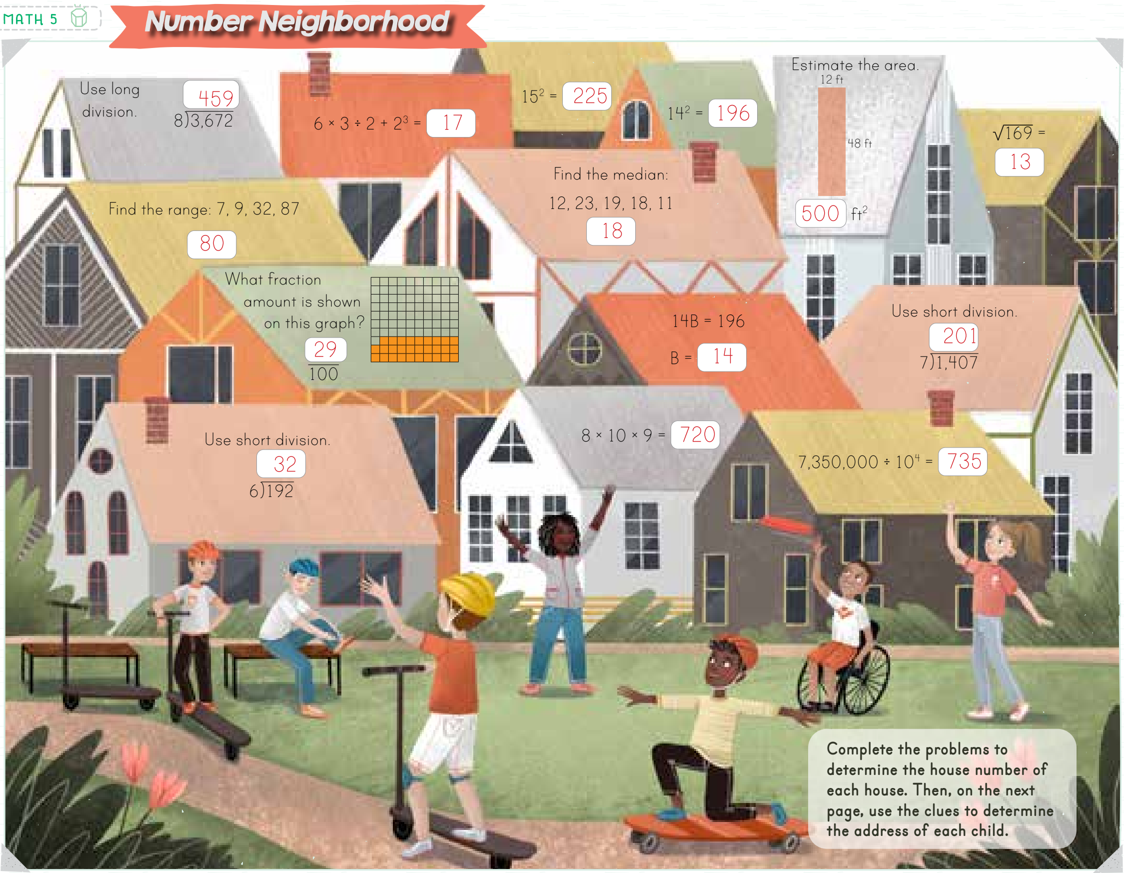
fraction: $\frac{26}{100}$

percent: 26%

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¢	$\frac{33}{100}$	33%
16¢	$\frac{16}{100}$	16%
99¢	$\frac{99}{100}$	99%
6¢	$\frac{6}{100}$	6%

Number Neighborhood



Use long division. 8)3,672 = 459

6 × 3 ÷ 2 + 2³ = 17

15² = 225

14² = 196

Estimate the area. 12 ft, 48 ft: 500 ft²

√169 = 13

Find the range: 7, 9, 32, 87: 80

Find the median: 12, 23, 19, 18, 11: 18

What fraction amount is shown on this graph? 29/100

14B = 196, B = 14

Use short division. 7)1,407 = 201

Use short division. 6)192 = 32

8 × 10 × 9 = 720

7,350,000 ÷ 10⁴ = 735

Complete the problems to determine the house number of each house. Then, on the next page, use the clues to determine the address of each child.

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

13, 14, 17, 18, 29, 32, 80, 196, 201, 225, 459, 500, 720, 735

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.

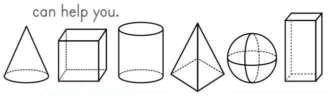
Mia	80	[✓ 225]	500	720	735
McKay	[✓ 18]	720	✦ Hint: Some of the rows, like McKay's, won't have numbers all the way across.		
Heidi	80	500	[✓ 720]		
Grayson	[✓ 32]	80	196	500	720
Sawyer	201	225	459	[✓ 735]	
Elijah	13	[✓ 17]	29		
Domenic	[✓ 80]	201	500	720	

Clues:

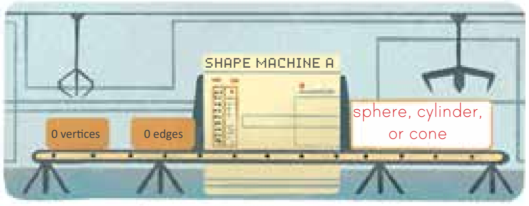
- ☑ Mia's address is divisible by 5.
- ☐ McKay's address is divisible by 6.
- ☐ Heidi's address is divisible by 10.
- ☐ Grayson's address is divisible by 4.
- ☐ Sawyer's address is odd and greater than 100.
- ☐ Elijah's address is a two-digit prime number.
- ☐ If you multiply the digits of Domenic's 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 ÷ 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.

5. Welcome to the Shape Factory! Use the codes to determine what geometric solid will be made from each machine. You may either draw the solid or write the name in the box at the end. If you choose to draw it, these images can help you.

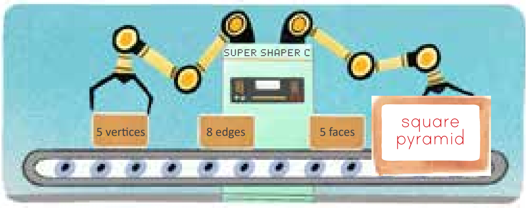


Hint: There may be more than one correct solid for a machine. You need to list only one, but you can list more if you want.



sphere, cylinder, or cone

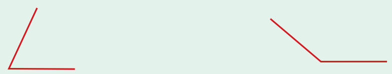
cylinder



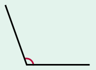
square pyramid

Review

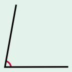
1. Draw an angle that measures 65°. Draw an angle that measures 140°.



2. Measure these angles.



110°



80°

3. Complete each problem.

$(5 - 2) \times 5 + 4^2 =$ 31

$5 \times 17 \times 2 =$ 170

$31 \times 10^5 =$ 3,100,000

4. Find the prime factorization of 40.

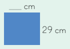
$2 \times 2 \times 2 \times 5$, or $2^3 \times 5$

5. Estimate the area by rounding.

40 × 160 = 6,400

The area is ≈ 6,400 ft^2.

Estimate the missing length by rounding.



Area: 928 cm^2

900 ÷ 30 = 30

The missing length is ≈ 30 cm.

Lesson
28

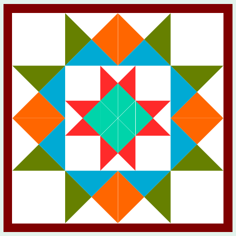
SIMILAR AND CONGRUENT GEOMETRIC FIGURES

Supplies
colored
pencils

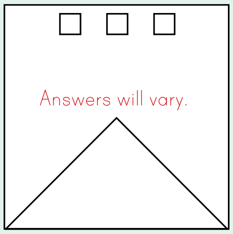
- ☐ Complete today's *Math 5 Mental Math Map Mysteries* activity.
- ☐ Watch the video lesson and/or read the mini lesson.

Video Lesson

Answers will vary.



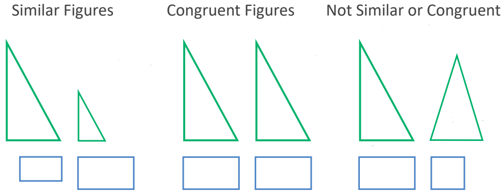
Scan the QR code or watch the video lesson on goodandbeautiful.com/Math5. This section is used during the video.



Answers will vary.

Mini Lesson

Similar figures have the same shape but not necessarily the same size. Similar figures are proportional. In other words, their angles are the same measure, and they have the same relationship between their sides. If you enlarge or reduce one of them, they would match up perfectly. ***Congruent*** figures are shapes with the exact same shape and size.



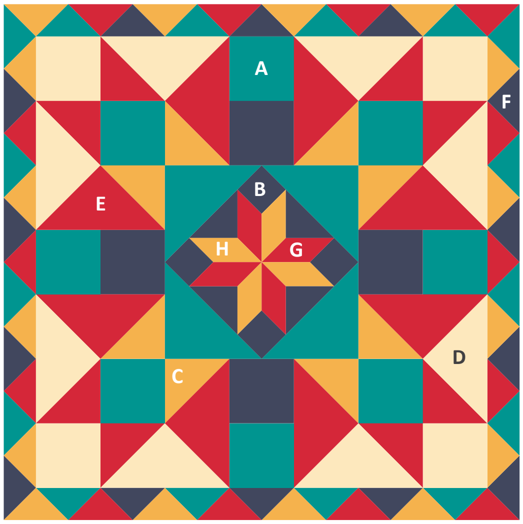
A ***transformation*** is a change in the position of an object by rotation (turn), reflection (flip), or translation (slide). A shape can have a transformation and still be similar or congruent. All of these shapes are congruent:

Notice that the quadrilateral is turned and flipped different ways. The position has changed, but the shape and size are still the same. Having the exact same shape and size is what makes them congruent.

All congruent shapes are similar, but not all similar shapes are congruent.

Practice

1. Practice finding similar and congruent figures in the barn quilt pattern.



☐ Are shapes A and B congruent, similar, or neither? similar

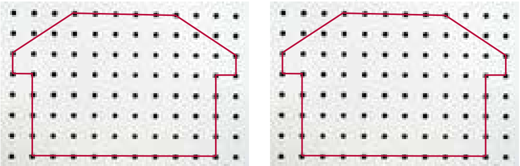
☐ Circle the shapes that are similar to shape E. A B [✓ C] [✓ D] [✓ F]

☐ Are shapes G and F congruent, similar, or neither? neither

☐ Circle the shapes that are congruent to shape D. A B C [✓ E] F

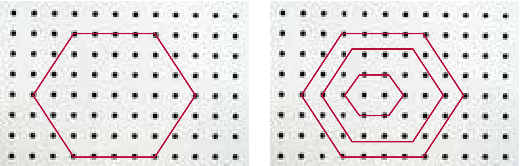
☐ How many total shapes on the quilt can you count that are congruent to shape A? 15

2. Draw a congruent decagon (ten-sided shape).



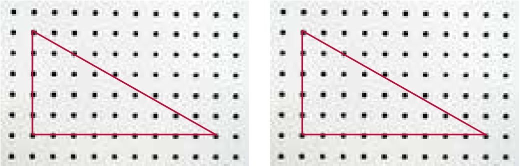
The congruent decagon will have the same size and shape as the original decagon, but it might be turned or flipped.

3. Draw a similar hexagon.



Answers will vary. The shape will be the same, but the size can be larger, smaller, or the same.

4. Draw two congruent triangles.



Answers will vary. The triangles will have the same size and shape but can be turned or flipped.

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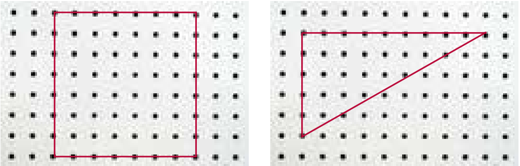
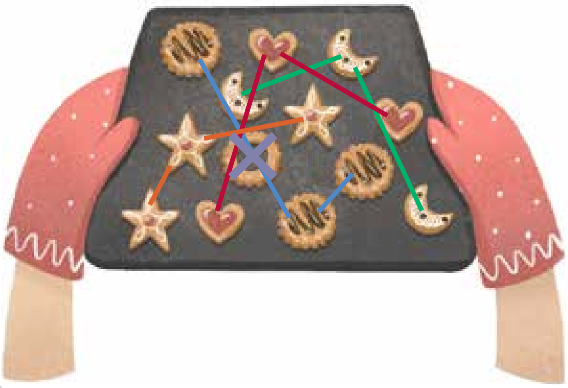
5. Draw shapes that are not similar or congruent.



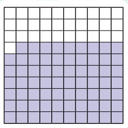
Answers will vary. The shapes will NOT be the same.

6. Below are homemade treats. Connect congruent moon shapes with a green line. Connect congruent star shapes with an orange line. Connect congruent heart shapes with a red line. Connect all other congruent shapes with a blue line. Cross off any leftover shapes that are not congruent with a purple X.



Review

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



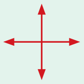
fraction: $\frac{69}{100}$

percent: 69%

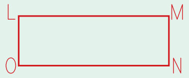
2. Circle each number that is divisible by 2, 3, 4, and 9.

600 624 [✓ 648] 910

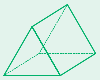
3. Draw perpendicular lines. Draw three vertical lines.



4. Draw and label rectangle LMNO.



5. Fill in the blanks for the triangular prism.



vertices: 6 edges: 9 faces: 5

6. Cross out the prime numbers. Circle the composite numbers. What two numbers are left? 0 and 1 are neither prime nor composite.

0, 1, ~~2~~, ~~3~~, [✓ 4] ~~5~~, [✓ 6], ~~7~~, [✓ 8] [✓ 9] [✓ 10] ~~11~~, [✓ 12] ~~13~~, [✓ 14] [✓ 15] [✓ 16] ~~17~~, [✓ 18] ~~19~~, [✓ 20]

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, 155, 170, 185, 200 rule: add 15

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, 66, 55, 44, 33 rule: subtract 11

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: 1, [✓ 17]

20: 1, [✓ 2], 4, [✓ 5], 10, 20

35: 1, [✓ 5], [✓ 7], 35

41: 1, [✓ 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: 1, [✓ 2], [✓ 3], [✓ 5], 6, 10, 15, 30

55: 1, [✓ 5], [✓ 11], 55

18: 1, [✓ 2], [✓ 3], 6, 9, 18

43: 1, [✓ 43]

PRIME FACTORIZATION (LESSON 4)

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

24

60

Factor trees will vary.

$2 \times 2 \times 2 \times 3$ or $2^3 \times 3$

$2 \times 2 \times 3 \times 5$ or $2^2 \times 3 \times 5$

☐ 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

Factor trees will vary.

$2 \times 2 \times 7$ or $2^2 \times 7$

$2 \times 2 \times 2 \times 2 \times 5$ or $2^4 \times 5$

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

Complete.

$7^2 =$ 49 $2^4 =$ 16 $3^3 =$ 27 $12^0 =$ 1

$53 \times 10^6 =$ 53,000,000 $9{,}000{,}000 \div 10^5 =$ 90

☐ 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.

$2^3 =$ 8 $3^4 =$ 81 $13^0 =$ 1 $4^3 =$ 64

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.

$64 \times 10^8 =$ 6,400,000,000 $750{,}000 \div 10^4 =$ 75

ORDER OF OPERATIONS (LESSON 13)

$16 + 3 \times 2 - 3^2 =$ 13 $(10 - 2) \times 2^3 + 5 =$ 69

$2 \times 11 - 12 \div 3 =$ 18 $12 \div 2^2 \times 7 - 5 =$ 16

☐ Additional Practice

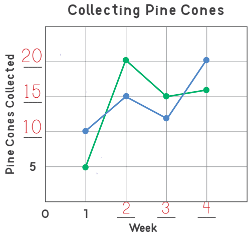
Perform the operations in the correct order by remembering "Please Excuse My Dear Aunt Sally" (parentheses, exponents, multiplication and division, addition and subtraction).

$70 - (6 \times 10) \div 2 =$ 40 $8 \times 2^2 - 12 + 3 =$ 23

$(35 - 5) \div 3 + 3^2 =$ 19 $15 + 4 - 14 \div 7 =$ 17

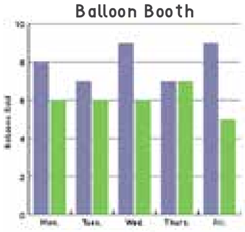
LINE GRAPHS/BAR GRAPHS
(LESSONS 7 & 8)

For four weeks Michael and Ashley collected pine cones. Create a double line graph using the information below.



Week	Pine Cones Michael Collected	Pine Cones Ashley Collected
1	5	10
2	20	15
3	15	12
4	16	20

🟩 Michael
🟦 Ashley



🟩 green balloons 🟪 purple balloons

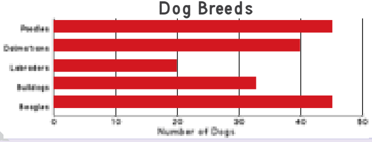
On which day were the most green balloons sold? Thursday

Which balloon color was more popular? purple

On which day were equal numbers of green and purple balloons sold? Thursday

Additional Practice

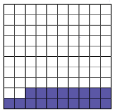
On a line graph, each data value is represented by a point. On a bar graph, bars show the amounts of each type of data. Create a horizontal bar graph for this data.



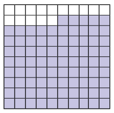
Poodles: 45
Dalmatians: 40
Labradors: 20
Bulldogs: 32
Beagles: 45

FRACTIONS & PERCENTS
(LESSON 9)

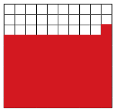
Write the amount shaded as a fraction and a percent of the whole.



fraction: $\frac{18}{100}$
percent: 18%



fraction: $\frac{85}{100}$
percent: 85%



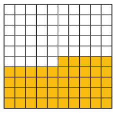
Shade 71%.

Complete the chart.

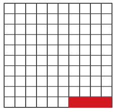
Cents	Fraction of a Dollar	Percent of a Dollar
28¢	$\frac{28}{100}$	28%
99¢	$\frac{99}{100}$	99%
63¢	$\frac{63}{100}$	63%

Additional Practice

A percent is the number of parts per hundred. Fractions and percents are two ways to show parts of a whole.



fraction: $\frac{45}{100}$
percent: 45%



Shade $\frac{4}{100}$.

Complete the chart.

Cents	Fraction of a Dollar	Percent of a Dollar
58¢	$\frac{58}{100}$	58%
3¢	$\frac{3}{100}$	3%
70¢	$\frac{70}{100}$	70%

MULTIPLICATION PROPERTIES/ MISSING NUMBERS (LESSON 14)

5 × 14 × 2 = 140
9 × 6 × 5 = 270
12C = 132 C = 11

Additional Practice

Look for the factors to multiply together first that will make the problem easier to complete. Use skip counting or facts you know to find missing factors.

7 × 5 × 2 = 70
8 × 2 × 5 = 80
20 × 4 × 5 = 400
9D = 54 D = 6
6E = 72 E = 12
11F = 110 F = 10

LONG DIVISION & SHORT DIVISION
(LESSONS 10–12)

Complete the division problems. Some have remainders.

- Use long division. Check your answers.

120 R4
6)724 Check: 6 × 120 + 4 = 724

401
21)8,421 Check: 21 × 401 = 8,421

- Use short division to find each quotient.

28
5)140

651 R1
8)5,209

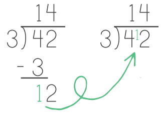
211
11)2,321

Additional Practice

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

Check a Division Answer

Short Division



- Use long division. Check your answers.

790 R2
3)2,372 Check: 3 × 790 + 2 = 2,372

230
20)4,600 Check: 20 × 230 = 4,600

- Use short division to find each quotient.

107 R1
7)750

251
6)1,506

211
12)2,532

PERFECT SQUARES & SQUARE ROOTS (LESSONS 15, 16 & 20)

Find each perfect square or square root.

8^2 = 64
5^2 = 25
13^2 = 169
15^2 = 225
11^2 = 121
$\sqrt{49}$ = 7
$\sqrt{81}$ = 9
$\sqrt{196}$ = 14
$\sqrt{144}$ = 12

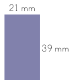
Additional Practice

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?"

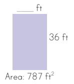
10^2 = 100
4^2 = 16
6^2 = 36
9^2 = 81
14^2 = 196
$\sqrt{121}$ = 11
$\sqrt{169}$ = 13
$\sqrt{225}$ = 15
$\sqrt{64}$ = 8

ESTIMATE PRODUCTS & QUOTIENTS USING AREA (LESSON 19)

Use rounding to estimate the area and side length.



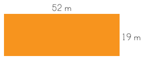
20 mm × 40 mm = 800 mm^2



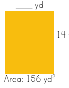
800 ft^2 ÷ 40 ft = 20 ft

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.



50 m × 20 m = 1,000 m^2



150 yd^2 ÷ 15 yd = 10 yd

MEAN, MEDIAN, MODE & RANGE
(LESSONS 17 & 18)

Find the mean, median, mode, and range of this data set:

4, 10, 9, 7, 2, 10

2, 4, 7, 9, 10, 10

mean: 7 median: 8

mode: 10 range: 8

Additional Practice

Mean: add the numbers and divide by the number of addends
Median: the middle number or mean of the middle numbers
Mode: the number or numbers that appear most often; could have no mode
Range: subtract the smallest number from the largest number

Hey, diddle diddle, the median's the middle.
You add then divide for the mean.
The mode is the one that you see the most,
And the range is the difference between.

Find the mean, median, mode, and range of this data set:

10, 8, 5, 12, 20

5, 8, 10, 12, 20

mean: 11 median: 10

mode: no mode range: 15

CONVERTING UNITS OF LENGTH
(LESSON 21)

Convert the units.

2 ft = 24 in 36 in = 3 ft 3 cm = 30 mm

6 m = 600 cm 400 cm = 4 m 50 mm = 5 cm

Additional Practice

1 ft = 12 in 1 yd = 3 ft

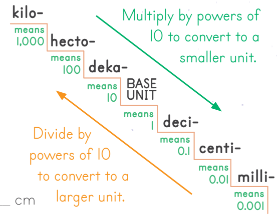
5 ft = 60 in

48 in = 4 ft

8 cm = 80 mm

7 m = 700 cm

200 cm = 2 m 60 mm = 6 cm



POSITIVE & NEGATIVE NUMBERS
(LESSON 22)

List the numbers in order from least to greatest: 5, -1, -6, 8, -12, 0

-12, -6, -1, 0, 5, 8

Compare the numbers.

8 > -3 -1 < 0 -14 < -13 -80 < -11

Additional Practice

Negative numbers are less than zero. On a number line, the leftmost number is always the smallest, and the rightmost number is always the largest.

List the numbers in order from least to greatest: 13, -14, 2, -7, -11

-14, -11, -7, 2, 13

Compare the numbers.

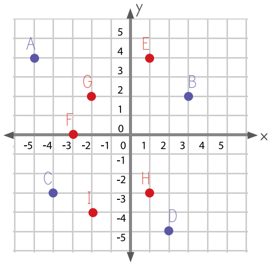
-7 > -17 -3 < 2 0 > -5 -100 < -99

GRAPHING ORDERED PAIRS
(LESSON 23)

Write the coordinates for each point.

A: (-5, 4) B: (3, 2)

C: (-4, -3) D: (2, -5)



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

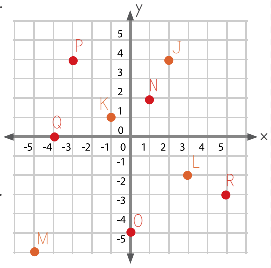
Start at the origin (0, 0). The first coordinate of the ordered pair shows the position horizontally (left and right) along the x-axis. The second coordinate shows the vertical (up and down) position along the y-axis.

Write the coordinates for each point.

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

J: (2, 4) K: (-1, 1)

L: (3, -2) M: (-5, -6)



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.

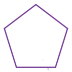
1 vertical:

2 parallel:

Name the ray.

$\overrightarrow{EM}$

What is this shape?



pentagon

Additional Practice

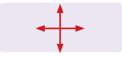
Polygons are usually named by the number of sides they have. Use any two points to name a line. Start with the endpoint to name a ray. To name a polygon, start at any vertex (corner) and name each vertex in order around the shape until all the vertices are named.

Draw the lines.

a horizontal line:

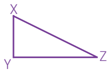
an oblique line:

perpendicular lines:



Name the following.

$\overleftrightarrow{EM}$ or $\overleftrightarrow{ME}$



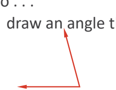
ΔXYZ or any combination of these letters

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°.

Lesson 33

SYMMETRY AND TRANSFORMATIONS

☐ 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.

A, D, E, H, M

H, N, S, Z

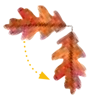
E, H, M, Z

Mini Lesson

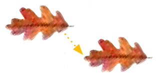
A *transformation* is a change in the position of an object by a

- reflection (flip),
- rotation (turn), or
- translation (slide).

reflection

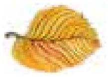


rotation



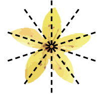
translation

Symmetry is when an object has exactly similar parts after a transformation has been applied. A ***line of symmetry*** is an imaginary line that divides an object into two mirror images. An object may have no line of symmetry, one line of symmetry, or more than one line of symmetry. Lines of symmetry in polygons can go through vertices, sides, or both.

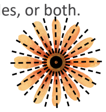


no lines of symmetry

1 line of symmetry



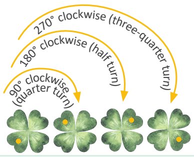
5 lines of symmetry



12 lines of symmetry

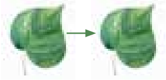
Reflectional symmetry is when sides of an image line up perfectly across a line of symmetry. If an image has reflectional symmetry, it has at least one line of symmetry.

Rotational symmetry is when an image looks the same after a partial turn. A rotation is named by its degree and direction.



A full turn (back to the original position) is 360°.

Translational symmetry is when an image looks the same after a translation. If an image has translational symmetry, it has not been rotated or reflected.

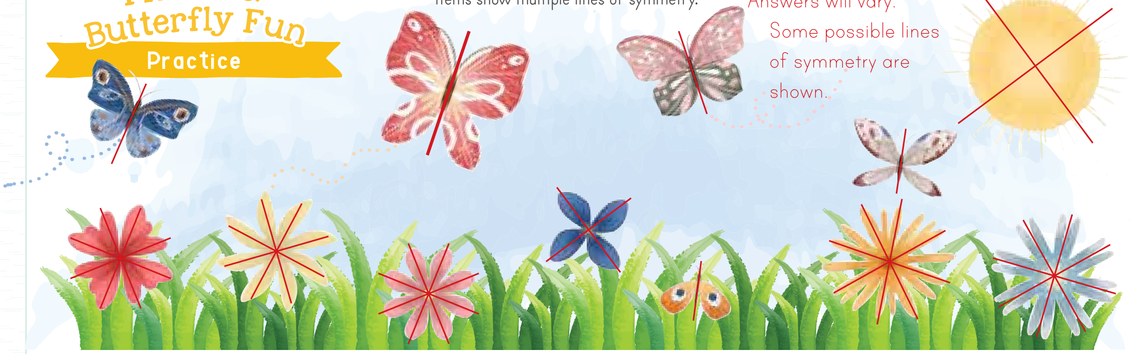


Flower & Butterfly Fun

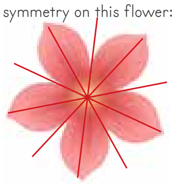
Practice

Draw lines of symmetry on at least ten items in the flower garden. Make sure at least two of the items show multiple lines of symmetry.

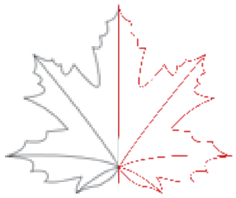
Answers will vary. Some possible lines of symmetry are shown.



1. Draw every line of symmetry on this flower:



2. Create reflectional symmetry by finishing each object.



3. Identify rotational symmetry by naming the dot color that will be on top if the flower is rotated

90° clockwise. yellow

180°. orange

360°. pink

a quarter of a turn counterclockwise. green

three-quarters of a turn clockwise. green

4. Show reflections by flipping the letters two different ways.

L	Γ	⅃
original	across a horizontal line	across a vertical line
P	b	ꟼ
original	across a horizontal line	across a vertical line

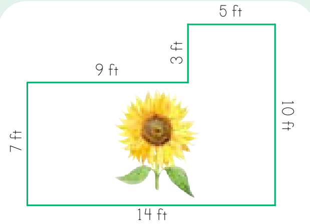
Lesson 37

PERIMETER AND AREA OF IRREGULAR SHAPES

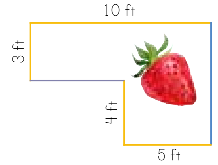
- ☐ Complete today's *Math 5 Mental Math Map Mysteries* activity.
- ☐ Watch the video lesson and/or read the mini lesson. There is no review in this lesson.

Video Lesson

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



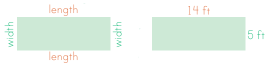
perimeter = 48 ft area = 113 ft²



Length of the blue side: 7 ft Length of the purple side: 5 ft

Mini Lesson

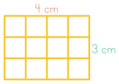
Perimeter is the total length of all sides of a two-dimensional shape. The longer side of a rectangle is the length. The shorter side of a rectangle is the width.



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 cm².



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

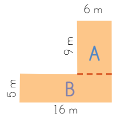
Remember that the answer will be in square units.

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 m²

Area B: 16 m × 5 m = 80 m²

Area of irregular shape:

54 m² + 80 m² = 134 m²

Hexagon Perimeter

Apply What You Have Learned to Hexagons!

An equilateral hexagon is made up of six congruent equilateral triangles. The hexagon below has a perimeter of 36 cm. Write the perimeters of the other shapes. ✦ Hint: The perimeter is the total distance around the outside of each shape.

perimeter = 36 cm

perimeter = 276 cm

perimeter = 108 cm

perimeter = 84 cm

perimeter = 180 cm

perimeter = 228 cm

All done! No review.

Lesson 39

NUMBERS IN THE BILLIONS AND ORDINAL NUMBERS

- ☐ 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.

323,000,000

378,000,000

359,000,000

Word form: one billion, sixty million

Expanded form: 1,000,000,000 + 60,000,000

seventy-seventh

forty-first

ninetieth

Mini Lesson

In the base-10 number system, there are ten different digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. ***Place value*** is the value a digit represents based on its place in a number. The value of each place is ten times greater than the place to the right. The chart shows values from ones to hundred billions.

Starting with the ones, every three digits are part of a group. These groups are separated by commas and follow a pattern of ones, tens, and hundreds.

Billions			Millions			Thousands			Ones		
Hundred Billions	Ten Billions	Billions	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
6	5	1,	2	6	4,	9	8	3,	0	4	2

Each digit's place value can be found by multiplying the digit and the value of the place where the digit is located. A "5" in the ten billions place means 5 × 10,000,000,000, which is 50,000,000,000, or fifty billion.

Standard Form: 651,264,983,042
Expanded Form: 600,000,000,000 + 50,000,000,000 + 1,000,000,000 + 200,000,000 + 60,000,000 + 4,000,000 + 900,000 + 80,000 + 3,000 + 40 + 2
Word Form: six hundred fifty-one billion, two hundred sixty-four million, nine hundred eighty-three thousand, forty-two

★*Notice:* The digit in the hundreds place is a zero. If a digit is zero, you do not need to write it in expanded form or spell it in word form.

Ordinal numbers are numbers that tell position or order.

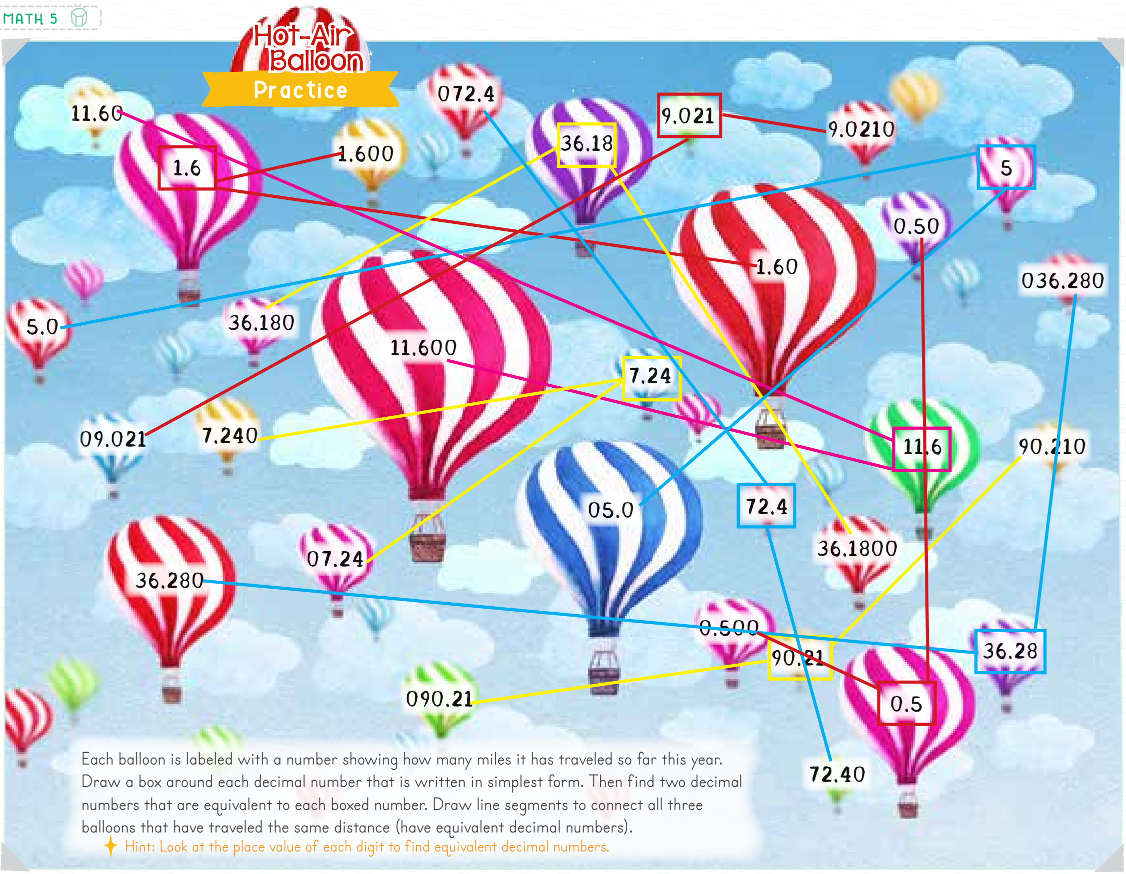
Ordinal numbers beyond 20th that are not tens have a hyphen followed by "first," "second," etc.

21st	twenty-first
22nd	twenty-second
23rd	twenty-third
24th	twenty-fourth
25th	twenty-fifth
26th	twenty-sixth
27th	twenty-seventh
28th	twenty-eighth
29th	twenty-ninth

The tens from 20 to 90 have "eth" written at the end of the word, after the "y" is changed to "i."

20th	twentieth
30th	thirtieth
40th	fortieth
50th	fiftieth
60th	sixtieth
70th	seventieth
80th	eightieth
90th	ninetieth
100th	one hundredth

Hot-Air Balloon Practice

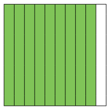


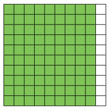
Each balloon is labeled with a number showing how many miles it has traveled so far this year. Draw a box around each decimal number that is written in simplest form. Then find two decimal numbers that are equivalent to each boxed number. Draw line segments to connect all three balloons that have traveled the same distance (have equivalent decimal numbers).

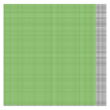
✦ Hint: Look at the place value of each digit to find equivalent decimal numbers.

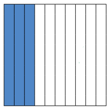
---

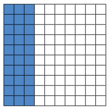
1. Write equivalent decimal numbers to represent the shaded amount.

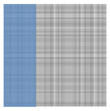

0.9 =


0.90 =


0.900


0.3 =


0.30 =


0.300

2. Compare the numbers. Write = if they are equal and ≠ if they are not equal.

4.20 = 4.2 | 2.02 ≠ 2.20 | 3.5 = 3.50

0.080 ≠ 0.8 | 09.3 = 9.3 | 6.0 = 6.000

71.04 ≠ 71.40 | 5.1520 = 5.152 | 12.10 ≠ 12.01

3. Write each number in simplest form.

0.450 0.45 | 04.5 4.5 | 45.0 45

05.16 5.16 | 51.60 51.6 | 05.10600 5.106

76.9010 76.901 | 0769.010 769.01 | 7,690.1000 7,690.1

Review

1. Fill in the missing decimal numbers on the number line.

7.8, 7.81, 7.82, 7.83, 7.84, 7.85, 7.86, 7.87, 7.88, 7.89, 7.9

2. Write each set of fractions in order from LEAST to GREATEST.

$\frac{1}{2}, \frac{4}{5}, \frac{1}{4}$ — $\frac{1}{4}, \frac{1}{2}, \frac{4}{5}$

$\frac{7}{12}, \frac{1}{2}, \frac{9}{20}$ — $\frac{9}{20}, \frac{1}{2}, \frac{7}{12}$

$\frac{6}{11}, \frac{3}{8}, \frac{1}{2}$ — $\frac{3}{8}, \frac{1}{2}, \frac{6}{11}$

3. Multiply or divide by powers of 10.

$6 \times 10^4 =$ 60,000

$290 \times 10^5 =$ 29,000,000

$40{,}000 \div 10^3 =$ 40

$150{,}000{,}000 \div 10^7 =$ 15

4. Create a factor tree to find the prime factorization of 200.

200

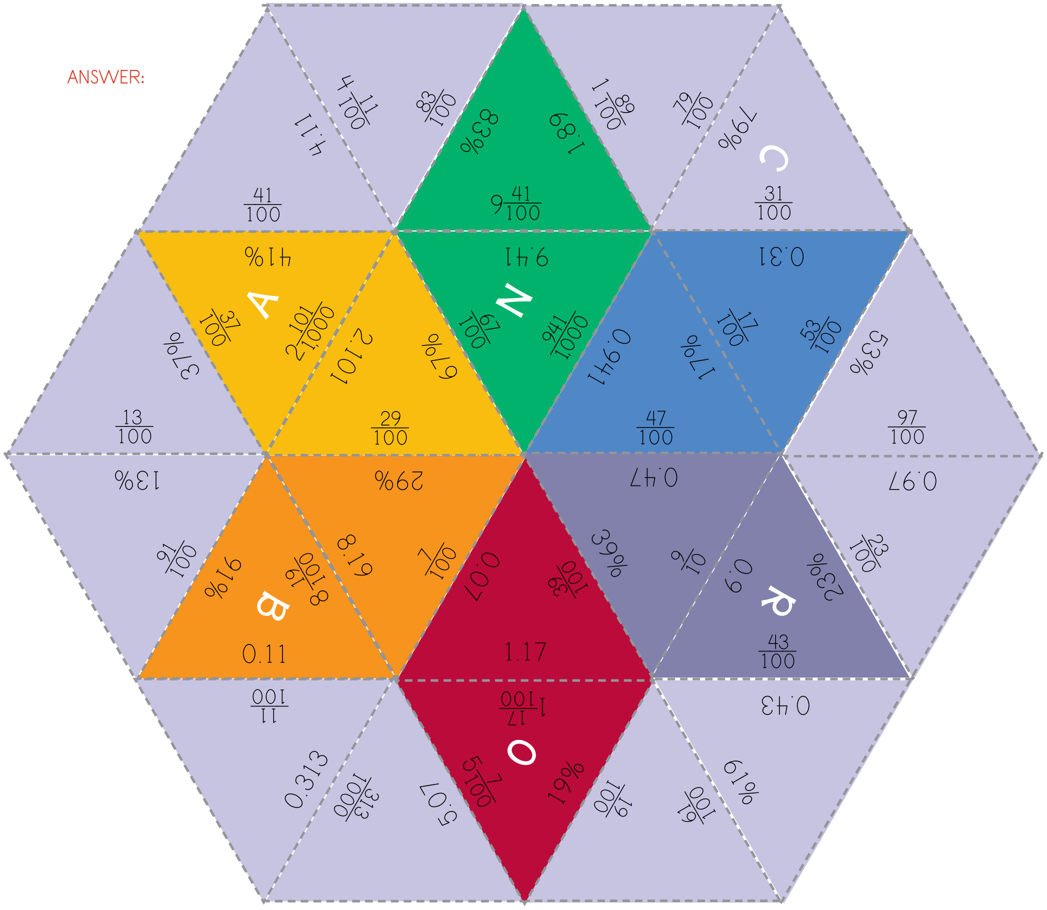
Factor trees will vary. $2 \times 2 \times 2 \times 5 \times 5$ or $2^3 \times 5^2$

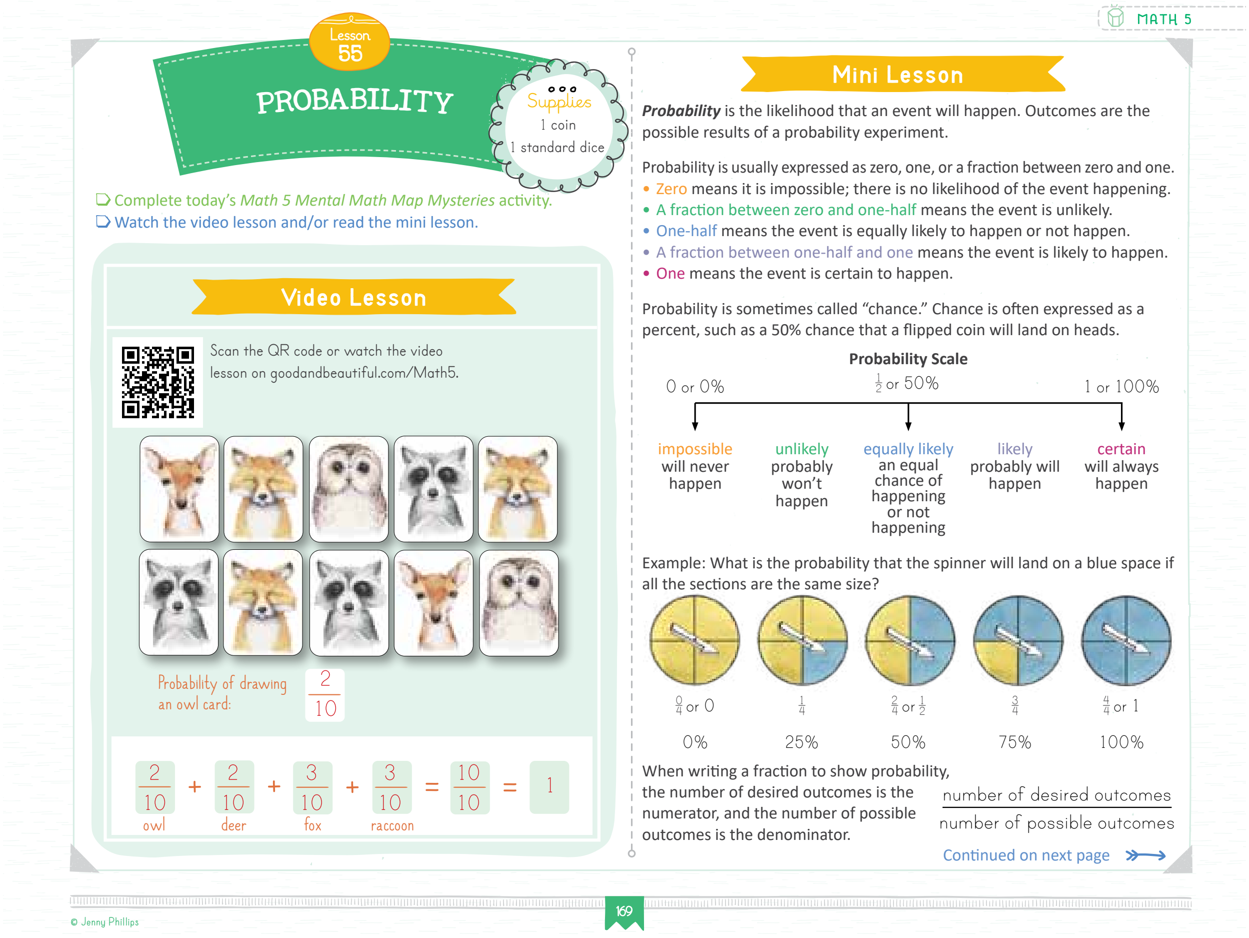
prime factorization: ____________________

5. Cross out the numbers that 36,120 is NOT divisible by.

2 3 4 5 6 ~~9~~ 10

ANSWER:





MATH 5

Lesson 55

PROBABILITY

Supplies
1 coin
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.

Probability of drawing an owl card: $\frac{2}{10}$

$\frac{2}{10} + \frac{2}{10} + \frac{3}{10} + \frac{3}{10} = \frac{10}{10} = 1$

owl deer fox raccoon

Mini Lesson

Probability is the likelihood that an event will happen. Outcomes are the possible results of a probability experiment.

Probability is usually expressed as zero, one, or a fraction between zero and one.

- Zero means it is impossible; there is no likelihood of the event happening.
- A fraction between zero and one-half means the event is unlikely.
- One-half means the event is equally likely to happen or not happen.
- A fraction between one-half and one means the event is likely to happen.
- One means the event is certain to happen.

Probability is sometimes called "chance." Chance is often expressed as a percent, such as a 50% chance that a flipped coin will land on heads.

Probability Scale

0 or 0%		$\frac{1}{2}$ or 50%		1 or 100%
impossible will never happen	unlikely probably won't happen	equally likely an equal chance of happening or not happening	likely probably will happen	certain will always happen

Example: What is the probability that the spinner will land on a blue space if all the sections are the same size?

$\frac{0}{4}$ or 0	$\frac{1}{4}$	$\frac{2}{4}$ or $\frac{1}{2}$	$\frac{3}{4}$	$\frac{4}{4}$ or 1
0%	25%	50%	75%	100%

When writing a fraction to show probability, the number of desired outcomes is the numerator, and the number of possible outcomes is the denominator.

$$\frac{\text{number of desired outcomes}}{\text{number of possible outcomes}}$$

Continued on next page »→

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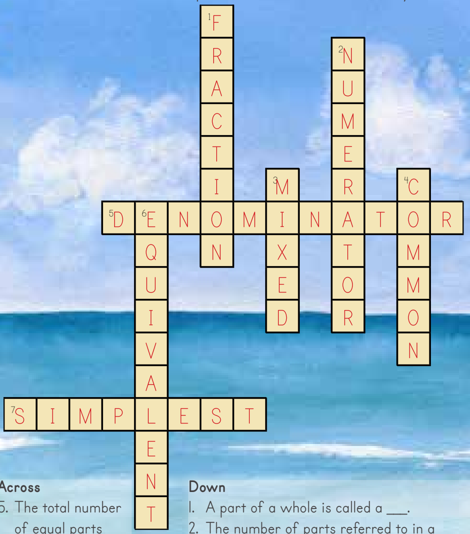
Fraction Vocabulary

Fill in the crossword puzzle with fraction vocabulary.



Across

5. The total number of equal parts that make a whole is the ___ of a fraction.
7. A fraction reduced to its lowest terms is written in ___ form.

Down

1. A part of a whole is called a ___.
2. The number of parts referred to in a fraction is called a fraction's ___.
3. A number that includes a whole number and a fraction is a ___ number.
4. When fractions have the same denominator, they have ___ denominators.
6. The fractions $\frac{1}{3}$, $\frac{2}{6}$, and $\frac{3}{9}$ are examples of ___ fractions.

Hint (for previous page): Start with a fraction that has "4" in the denominator. Then find equivalent fractions to that first fraction.

Review

Write all answers in simplest form.

1. Add or subtract the mixed numbers and fractions.

$1\frac{2}{3} + 3\frac{1}{3} = 5$ $\quad 3 - 2\frac{1}{4} = \frac{3}{4}$ $\quad 8 - 5\frac{5}{6} = 2\frac{1}{6}$ $\quad \frac{3}{12} + \frac{4}{12} + \frac{5}{12} = 1$

2. Multiply the fractions.

$\frac{2}{5} \times \frac{1}{4} = \frac{2}{20} = \frac{1}{10}$ $\quad \frac{2}{7} \times \frac{3}{5} = \frac{6}{35}$ $\quad \frac{8}{9} \times \frac{9}{10} = \frac{72}{90} = \frac{4}{5}$ $\quad \frac{2}{9} \times \frac{11}{12} = \frac{22}{108} = \frac{11}{54}$

3. Write the simplest form under each decimal number. Then plot those numbers on the number line.

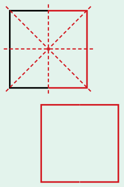
08.01200	008.0160	08.0190	8.015000
8.012	8.016	8.019	8.015

4. Write each quotient as a mixed number. (You may choose to use long division or short division.)

$8\overline{)2{,}443} = 305\frac{3}{8}$ $\quad 7\overline{)1{,}760} = 251\frac{3}{7}$ $\quad 11\overline{)3{,}565} = 324\frac{1}{11}$

5. Follow the instructions.

- Show reflectional symmetry by finishing the shape of the square.
- Draw lines of symmetry on the square.
- Show translational symmetry by drawing the square in a different position without rotating it or changing the size.



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.

$\cancel{\frac{1}{8}}, \frac{2}{4}, \boxed{\frac{4}{5}}$

$\frac{1}{2}, \cancel{\frac{2}{7}}, \boxed{\frac{7}{9}}$

$\frac{3}{6}, \boxed{\frac{9}{10}}, \cancel{\frac{2}{5}}$

$\frac{6}{7}, \cancel{\frac{8}{16}}, \boxed{\frac{5}{5}}$

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.

8 in
16 in
perimeter = 80 in
area = 256 in^2

20 cm
40 cm
perimeter = 160 cm
area = 1,200 cm^2

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.

2	1	3	
623.7,	623.07,	623.701,	623.77

623.77

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

294,000 mg = 294 g

261 g = 261,000 mg

283 g = 283,000 mg

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

42.451 lb (tenths) — 42.5 lb

39.83 lb (ones) — 40 lb

36.742 lb (hundredths) — 36.74 lb

38.2365 lb (thousandths) — 38.237 lb

Barn of Champions

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

$\frac{2}{3} \times \frac{4}{9} = \frac{8}{27}$

$\frac{7}{8} \times \frac{2}{7} = \frac{1}{4}$

$\frac{5}{6} \times \frac{2}{5} = \frac{1}{3}$

$\frac{6}{7} \times \frac{3}{8} = \frac{9}{28}$

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

$\frac{8}{10}$ $\frac{4}{5}$

$\frac{1}{5}$

$\frac{1}{2}$ $\frac{12}{24}$

33 $\frac{1}{3}$

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

142.904 − 38.31 = 104.594

15.82 + 89.067 = 104.887

99.5259 + 4.8942 = 104.4201

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

130 kg

100 kg

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

$8\overline{)79}$ $9\frac{7}{8}$

$7\overline{)64}$ $9\frac{1}{7}$

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

~~0014.2~~ ~~14.20~~ ~~14.200~~

~~014.2~~ 14.02 ~~14.2~~

What is the cost of 1 cotton candy, 2 corn dogs, and 1 lemonade? $8.30

A ticket to the fair for an adult is $5.25 and for a child is $3.75. What is the price difference? $1.50

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? 53%

MENU	
Cotton Candy	$2.75
Corn Dog	$1.95
Lemonade	$1.65

What is the cost of 3 lemonades and a cotton candy? $7.70

5.2 $5\frac{1}{5}$

5.85 $5\frac{17}{20}$

5.25 $5\frac{1}{4}$

5.6 $5\frac{3}{5}$

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.