

Simply

Good and Beautiful

MATH 3

COURSE BOOK

The Good and the Beautiful CURRICULUM

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REFERENCES



Metric Conversions

Millimeter (mm)	Centimeter (cm)	Meter (m)	Kilometer (km)
	10 millimeters	100 centimeters	1,000 meters
A millimeter is about the width of a pencil tip.	A centimeter is the length of this line segment.	The length of a baseball bat is about one meter.	A long bridge's length is about one kilometer.

Milliliter (mL)	Liter (L)
	1,000 milliliters
A milliliter is about the same as 20 drops of water.	A liter can fill a large water bottle.

Gram (g)	Kilogram (kg)
	1,000 grams
A paper clip weighs about one gram.	A pineapple weighs about one kilogram.

US Customary Conversions

Ounce (oz)	Pound (lb)	Ton (tn)
	16 ounces	2,000 pounds
A slice of bread weighs about one ounce.	A shoe weighs about one pound.	A small car weighs about one ton.

Inch (in)	Feet (ft)	Yard (yd)	Mile (mi)
	12 inches	3 feet	1,760 yards or 5,280 feet
An inch is the length of this line segment.	The length of an adult male's foot is about 1 foot.	The length of a baseball bat is about 1 yard.	The distance you could walk in about 20 minutes is one mile.

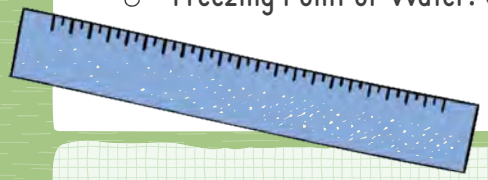
Teaspoon (tsp)	Tablespoon (Tbsp)	Cup (c)	Pint (pt)	Quart (qt)	Gallon (gal)
	3 teaspoons	16 tablespoons	2 cups	2 pints	4 quarts

Formulas

- **Perimeter** = 2L + 2W = L + L + W + W
- **Area** = L × W
- **Volume** = L × W × H

Temperature

- **Boiling Point of Water:** 100 °C or 212 °F
- **Body Temperature:** about 37 °C or 98 °F
- **Freezing Point of Water:** 0 °C or 32 °F



Time Conversions

60 seconds	1 minute
60 minutes	1 hour
24 hours	1 day
7 days	1 week
52 weeks	1 year
365 days	1 year
12 months	1 year

Order of Operations

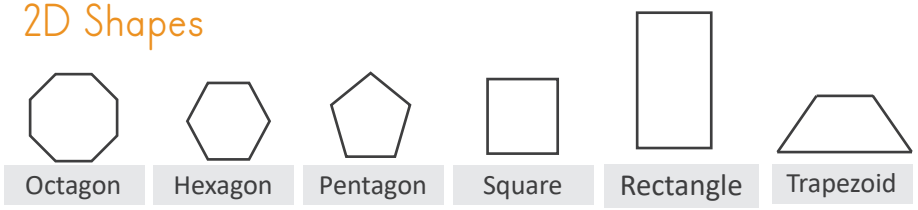
"Please Excuse My Dear Aunt Sally"
Parentheses, Exponents, Multiplication and Division, Addition and Subtraction

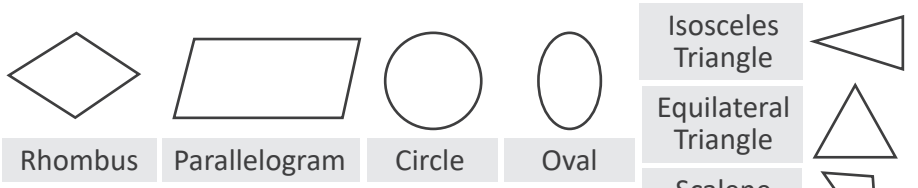


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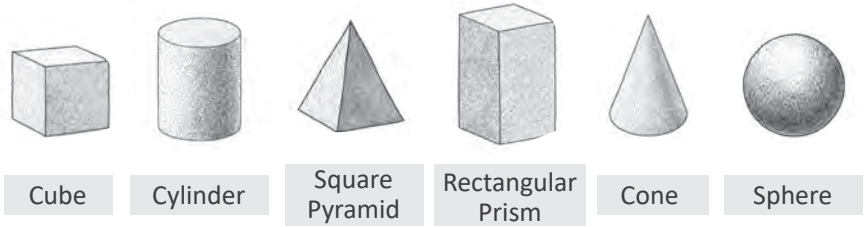
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2D Shapes

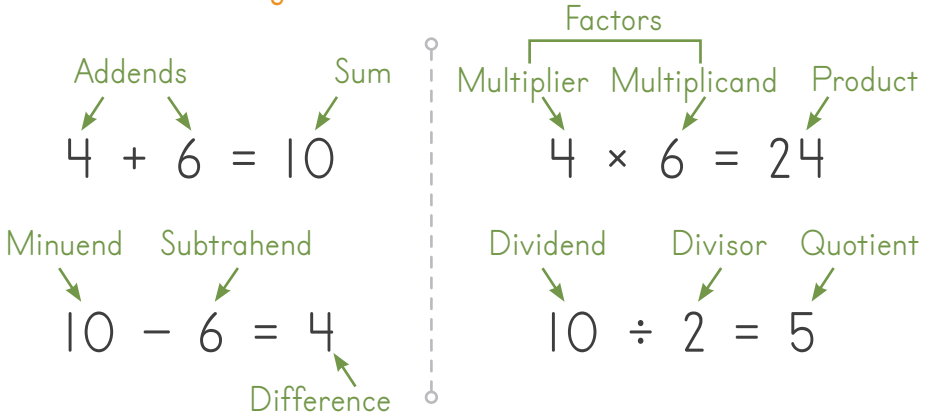




3D Shapes



Parts of an Equation



Skip Counting

3	3	6	9	12	15	18	21	24	27	30	33	36	
4	4	8	12	16	20	24	28	32	36	40	44	48	
6	6	12	18	24	30	36	42	48	54	60	66	72	
7	7	14	21	28	35	42	49	56	63	70	77	84	
8	8	16	24	32	40	48	56	64	72	80	88	96	
9	9	18	27	36	45	54	63	72	81	90	99	108	
11	11	22	33	44	55	66	77	88	99	110	121	132	
12	12	24	36	48	60	72	84	96	108	120	132	144	

Geometry Definitions

- **Point:** a specific position or location
- **Line:** a straight length that continues on forever in both directions
- **Ray:** part of a line that has one endpoint and continues on forever
- **Line Segment:** part of a line that has two endpoints
- **Parallel Lines:** lines that never intersect and are always the same distance apart
- **Perpendicular Lines:** lines that intersect at right angles
- **Intersecting Lines:** lines that cross each other at exactly one point
- **Vertical:** runs up and down
- **Horizontal:** runs left and right
- **Oblique:** not horizontal or vertical

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ABOUT THE COURSE

Supplies Needed

- *Simply Good and Beautiful Math 3 Course Book*
- *Simply Good and Beautiful Math 3 Box*
- Pencil, dry-erase marker, whiteboard, and colored pencils
- Tape or glue, paper clip, and scissors
- Scratch paper
- Optional: *Simply Good and Beautiful Math 3 Answer Key* (available to purchase as a physical product or as a free PDF download at goodandbeautiful.com/math3)

Course Overview

Math 3 consists of 120 lessons divided into four units. Each unit contains themed lessons and ends with a review and assessment. New concepts are taught by the parent, but the child completes practice and review activities independently.

Lesson Overview

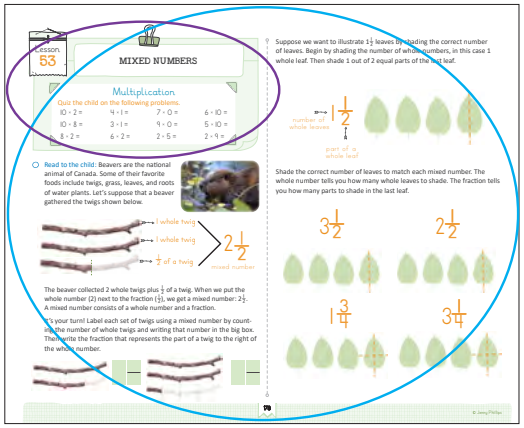
Each lesson is 3–4 pages and consists of four parts: mini review, lesson, lesson practice, and review and activities.

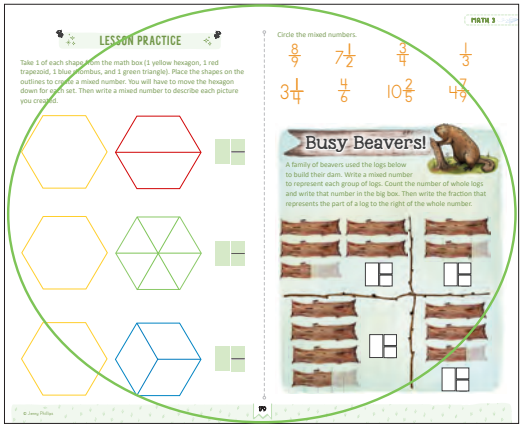
Mini Review Box: Each lesson starts with a review box. You can choose to do these items as a review or only do the items the child has not mastered.

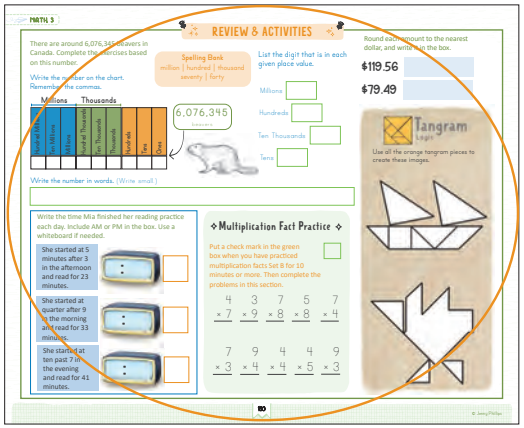
Lesson: The lesson sections are parent-directed and provide detailed teaching and interactive practice of the lesson topic. Blue text is instructions to the parent.

Lesson Practice: Dedicated practice of the lesson topic, this section is designed for the child to complete independently after the lesson with the parent.

Review and Activities: This section reviews concepts from previous lessons using games, activities, and logic puzzles. Children also practice multiplication facts daily. This section may be completed before or after the lesson.







Getting Started

Simply open the course book and start teaching the lesson. Always keep the math box on hand for each lesson. After completing the lesson with a parent or teacher, the child should complete the lesson practice and review and activities.

Parents/teachers should check their children's work daily and provide immediate help and feedback. An answer key is available as a free PDF download to make it easy to check a child's work. A child who struggles with reading may need the parent or teacher to read the instructions in the lesson practice and review and activities sections.

Video Lessons

Lessons 50 and 72 include optional video lessons that can be accessed at goodandbeautiful.com/math3 or on the Good and Beautiful Homeschool app. Scan the QR code above to download the app.

Important Safety Notice

Adult supervision is recommended for all activities as some require sharp objects, heat sources, or small objects that could be a choking hazard for young children.

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Frequently Asked Questions

How many lessons should my child do each week?

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

How long do lessons take?

The average time to complete a lesson is 30–35 minutes. This includes time to teach the lesson, complete the practice and review, and practice multiplication facts.

What if my child is too slow/fast?

- If the child takes longer than average but is understanding and retaining information, don't worry. You may want to break up the lessons. Complete the mini review and lesson practice at one time and the review and activities section at another time.
- If the child is taking less time than average but is learning new concepts, we suggest not skipping entire levels to avoid holes in his or her math foundations. Consider having him or her do multiple lessons a day to complete the course faster.
- If the child takes less than the average time and seems to already know all the information, consider having him or her take the unit assessments. Skip any units or lessons the child shows mastery on. Remember, the first few lessons of the course are review from Math 2, and it's expected that most children 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.

How do you teach multiplication facts?

The process and concept of multiplication is taught over several lessons in Unit 1. Children are then instructed to spend 10 minutes each day practicing one set of multiplication facts. Then they complete a few problems as part of the review and activities.

Families may choose which resources they use. The Good and the Beautiful offers the following options: *Musical Multiplication*, multiplication flashcards, or multiplication practice sheets.

Is Math 3 a parent-directed level?

Math 3 lessons are designed to be parent led. These sections take an average of 12–15 minutes for the parent to teach. The other sections—lesson practice and review and activities—can be done independently by the child. The parent/teacher will need to check the child's work and should do so on a daily basis when possible, providing immediate feedback.

Is Math 3 a spiral or mastery program?

Math 3 is mainly a spiral curriculum, constantly reviewing concepts the child has learned to ensure he or she understands and retains the information.

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

The child may use a personal whiteboard or keep scratch paper on hand while completing the lessons.

Do you follow Common Core?

No, our curriculum does not follow Common Core, but it does maintain a high academic standard, meeting or exceeding state standards.

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MULTIPLICATION
Mastery Chart

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

OTHER	Mastered	Reviewed
0s		
1s		
2s		
10s		

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

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

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

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UNIT 1 OVERVIEW

LESSONS 1-30

Extra Supplies Needed

- 1-cup measuring cup
- measuring bowl
- paper clip
- 30 cereal pieces, dry beans, or raisins
- stopwatch
- tape

New Concepts Taught

- Adding and Subtracting Rounded Amounts of Money
- Estimating Elapsed Time
- Estimating Length in Inches and Centimeters
- Identifying and Writing Numbers through the Hundred Thousands
- Multiplying by 100, 1,000, and 10,000
- Rounding to the Nearest Dollar

Concepts Reviewed and Expanded Upon

- Addition with Regrouping
- Data: Pictographs and Tally Charts
- Elapsed Time
- Fractions
- Identifying and Converting Units of Capacity
- Measuring Using Inches and Centimeters
- Metric and US Customary Units
- Multiplication
- One- and Two-Step Story Problems
- Rounding to the Nearest Hundred
- Subtraction with Regrouping
- Telling Time to the Nearest Minute
- Telling Time Using Half- and Quarter-Hour Intervals

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Lesson 4

MULTIPLICATION: PART 1

Skip Counting

Supplies
32 pieces of cereal, dry beans, or raisins

Practice these items with the child.

- Skip count by 3s from 3 to 36.
- Skip count backward by 5s from 50 to 0.

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

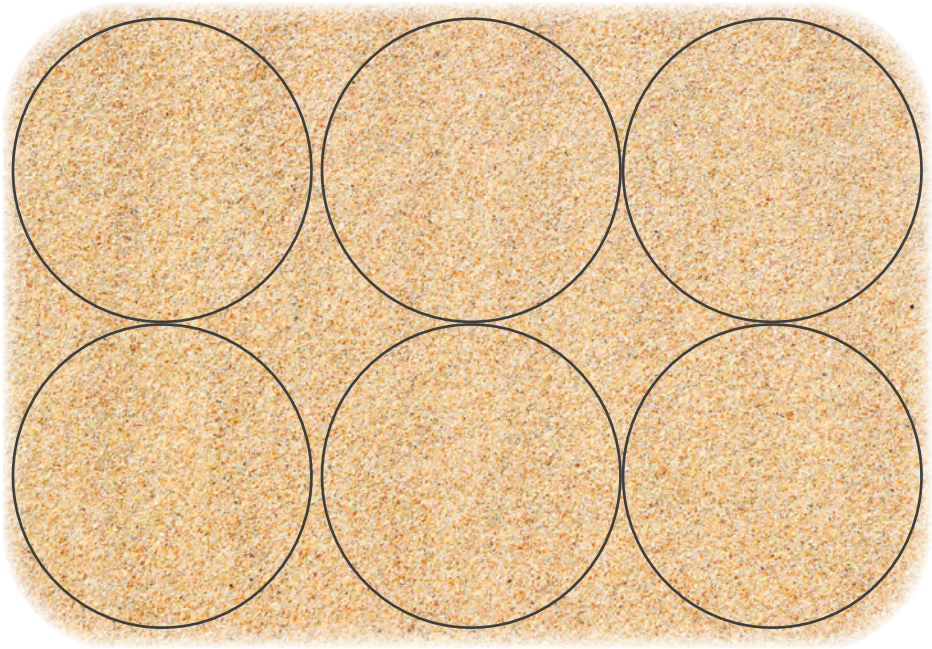


To find the total number of seashells Chun found, you can count all the seashells one by one, or you can add 4 + 4 + 4. You can even skip count by 4s three times. How many total seashells did Chun find?

Have you heard of multiplication? Let's learn more about how multiplication can help us complete problems quickly. Multiplication means we add equal groups many times. For example, Chun's seashells are in equal groups of 4. Since she has 3 groups, we can add 4 seashells 3 times or multiply 3 times 4, as in this problem shown here. Read the problem aloud with the child, pointing to each part. Say "times" for the multiplication symbol.

$$\underset{\text{groups}}{3} \times \underset{\text{seashells in each group}}{4} = \underset{\text{total seashells}}{12}$$

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



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

$$\underset{\text{groups}}{6} \times \underset{\text{seashells in each group}}{3} = \underset{\text{total seashells}}{\square}$$

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

3, ___, ___, ___, ___, ___

6 groups

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

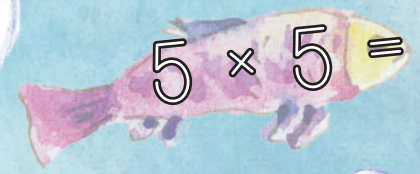
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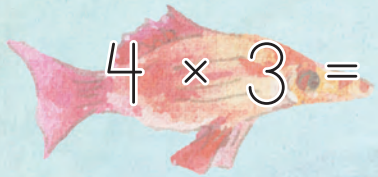
LESSON PRACTICE

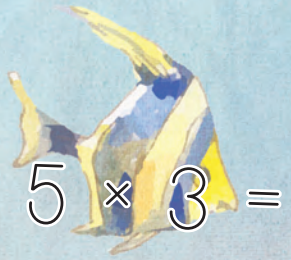
Use your small manipulative pieces from the lesson to create groups and solve each multiplication problem below. Write your answers in the bubbles.

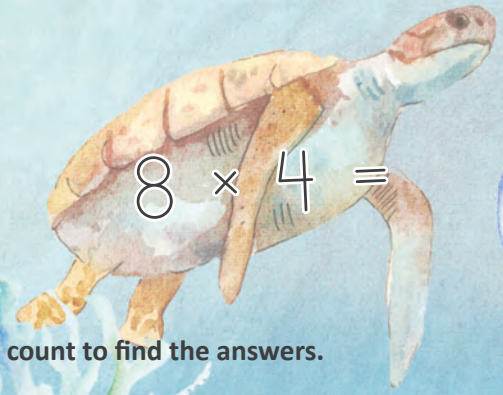


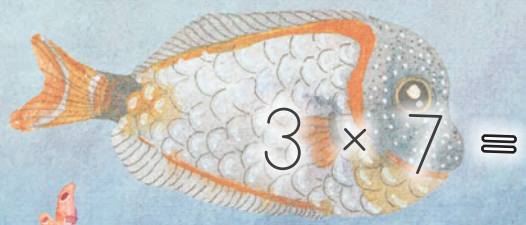












Skip count to find the answers.

6 × 5 =

5, _____, _____, _____, _____, _____

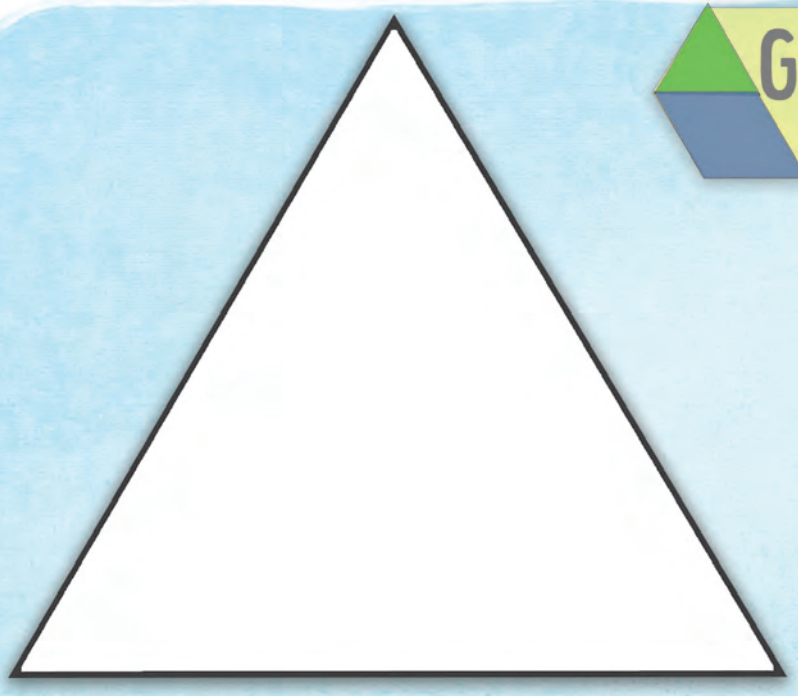
6 × 2 =

2, _____, _____, _____, _____, _____

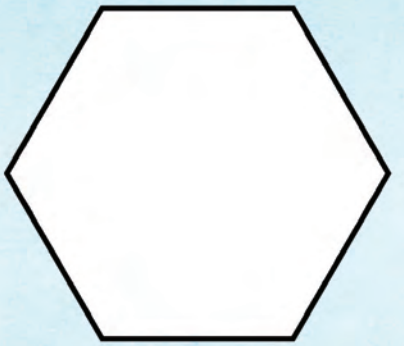
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Geometric Games

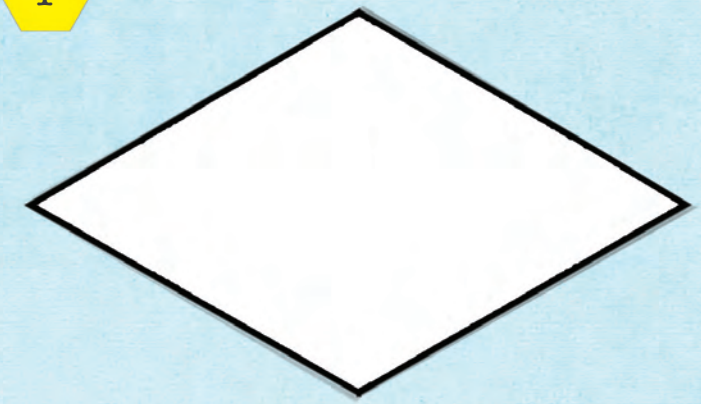
Use the shapes from the math box to create the large white shapes. In each white shape, draw the shapes you used to create the white shape.



2 4 1



1 1 1



2 2



1 1 1 1

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REVIEW & ACTIVITIES

Circle the digits that round up to ten.

5 8 2 9 6

3 1 7 4 0

Circle the correct answers.

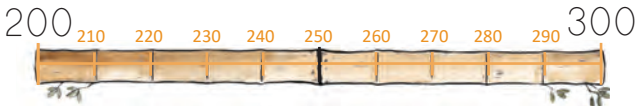
1. Round 426 to the nearest **ten**.



2. Round 752 to the nearest **hundred**.



3. Round 247 to the nearest **hundred**.



Write the numbers shown in expanded form in the green boxes below and complete the problems. Remember to use zeros as placeholders and to include commas in the answers.

6,000 + 50 + 1

,
+ 3,437

5,000 + 400 + 2

,
+ 4,238

Write the number on the chart. Remember to include the comma.

1. Sixty-seven thousand, twenty-six

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

2. Twenty-one thousand, ninety-seven

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Complete the problems. Write the answers in the spaces below.

There were 1,762 people at the beach when Chun and Bo visited it. Round this number to the nearest hundred.

While snorkeling, Bo counted 85 fish in the ocean. Round this number to the nearest ten.

Number Logic

What is the largest number you can create using each of these digits once?

7 6 9 4

What is the smallest number you can create using each of these digits once?

3 7 4 1

Unscramble the letters to find a number word.

- veens _____
- reeth _____
- vief _____
- ienn _____

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



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Lesson 8

STORY PROBLEMS WITH ADDITION AND SUBTRACTION

Mental Math

Have the child round the following numbers to the nearest hundred, saying the answer aloud.

674 826 359 250

Supplies
paper clip (keep in math box for later)

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

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



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

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



\$ she had fan
\$38 − \$21 = ☐
\$ she has left

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

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



lantern kite drum
\$10 + \$8 + \$5 = ☐
total \$ spent

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

1. Their mother, Lee, had \$42. Then she bought a vase for \$23. How much money does she have left?

2. Their father, Zhang, bought a doll for \$17, a lantern for \$10, and a vase for \$23. How much money did he spend altogether?

3. Chun wants to buy another fan for \$21, but she only has \$17. How many more dollars does she need? Use subtraction.

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LESSON PRACTICE

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



How much more does the vase cost than the doll? Find the difference.

Vase = $23

Doll = $17

?

$23 vase

− $17 doll

difference

Lee wants to buy a fan. She has $15. How many more dollars does she need?

Fan = $21

Lee has $15

?

fan

− $ Lee has

amount she needs

Chun bought a lantern, a kite, and a drum. How much money did she spend altogether?

Money spent altogether?

Lantern = $10 | Kite = $8 | Drum = $5

lantern

kite

+ drum

total $ spent

Bo had $53. He bought a fan for his mother. How much money does he have left?

Money Bo had = $53

Fan = $21

?

$ Bo had

− fan

amount he had left

Circle the correct answer.

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

ADD | SUBTRACT

2. To find the ***sum***, you need to . . .

ADD | SUBTRACT

REVIEW & ACTIVITIES

E·x·p·a·n·d·e·d FORM

Mount Everest is the highest mountain in China and the world. It rises to **29,032** feet. Write this number in expanded form.



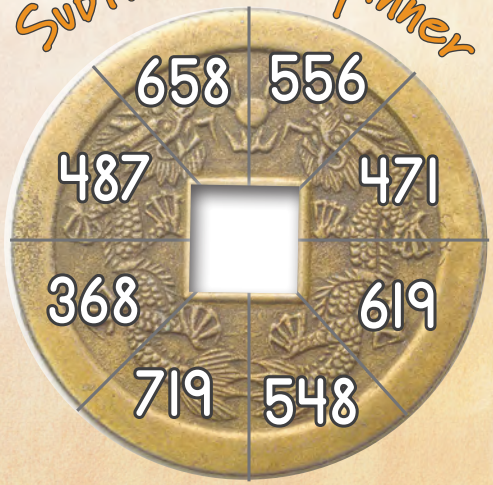
The Yangtze River in China is **3,915** miles long. Write this number in expanded form.



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Subtraction Spinner

Create a spinner using a paper clip and a pencil. Put the tip of the pencil through the looped end of the paper clip and set the tip of the pencil in the middle of the coin. Flick the paper clip to spin. Write the numbers you spin in the blanks below and complete the problems. Put the paper clip in the math box when you finish.



762 − ____ = ____

947 − ____ = ____

829 − ____ = ____

770 − ____ = ____

938 − ____ = ____

871 − ____ = ____

✧ Multiplication Fact Practice ✧

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

3 × 3	5 × 3	2 × 6	0 × 5	9 × 2	10 × 5	1 × 6

Equation Symmetry

Fill in each empty box with a number so that no matter which way you add three numbers (across, down, or diagonally), the sum of the three numbers equals 15. The digits 1–9 may be used only once each to complete this square.

8	1	
3	5	
		2

= 15

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

7		3
2	6	
		5

=

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Lesson 14

MULTIPLYING BY 100, 1,000, AND 10,000

Mental Math

Read to the child: To add 9 to any number, first add 10 and then subtract 1. Complete the purple problems in your mind. Say the answers aloud.

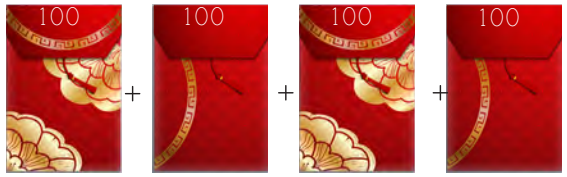
Example: 25 + 9 (25 + 10 = 35; 35 − 1 = 34)

63 + 9	45 + 9	27 + 9	54 + 9	72 + 9

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



Let's suppose a factory received an order for 4 boxes of 100 red envelopes each. How many total envelopes were in the order? Add the amount in each box together to find the total.

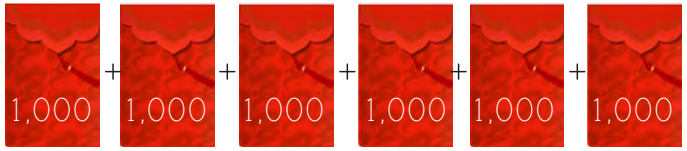


+ + + = _____ red envelopes

When we have equal groups, we can also multiply. This is the same as multiplying 4 × 100. Multiply 4 times 1, and then write the 2 zeros at the end.

4 boxes × 100 envelopes per box = _____ envelopes

Let's suppose this time the factory received an order for 6 boxes of 1,000 red envelopes each. How many total envelopes were in the order?



+ + + + + = _____ red envelopes

This is the same as multiplying 6 × 1,000. Multiply 6 times 1, and then write the 3 zeros at the end.

6 boxes × 1,000 envelopes per box = _____ envelopes

Let's suppose this time the factory received an order for 3 boxes of 10,000 red envelopes each. How many total envelopes were in the order?



+ + = _____ red envelopes

This is the same as multiplying 3 × 10,000. Multiply 3 times 1, and then write the 4 zeros at the end.

3 boxes × 10,000 envelopes per box = _____ envelopes

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

5 × 100 = ____

7 × 1,000 = ____

8 × 10,000 = ____

LESSON PRACTICE

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

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



Complete the problems.

3 × 1,000 = ____

6 × 1,000 = ____

8 × 10,000 = ____

9 × 10,000 = ____

4 × 100 = ____

8 × 100 = ____

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Lesson 22

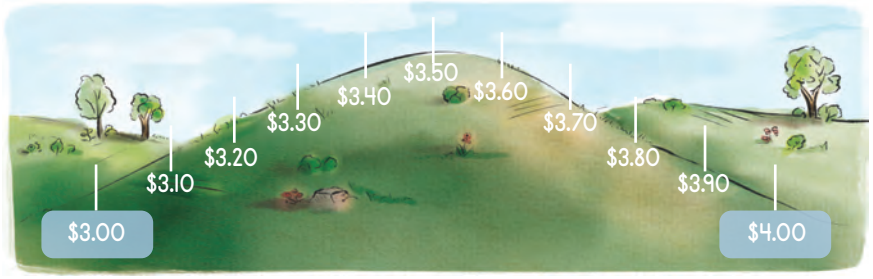
ROUNDING TO THE NEAREST DOLLAR

Measurement

Have the child work on memorizing this sentence.

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

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

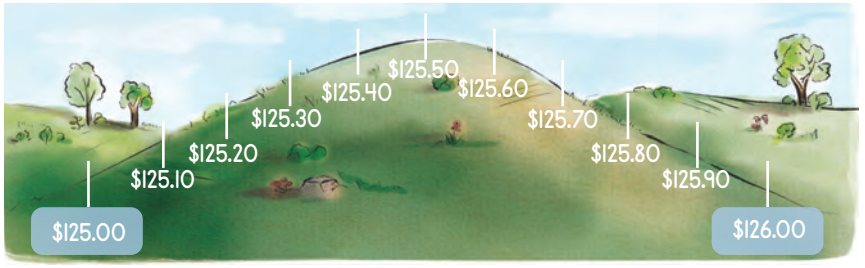


If you run up the hill and stop at the spot marked $3.30, which way would you roll down, towards the $3.00 or the $4.00? [$3.00] Yes, $3.30 is closer to $3.00 than it is to $4.00. This means $3.30 rounds to $3.00.

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

$3.80	$3.50	$3.20	$3.49

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



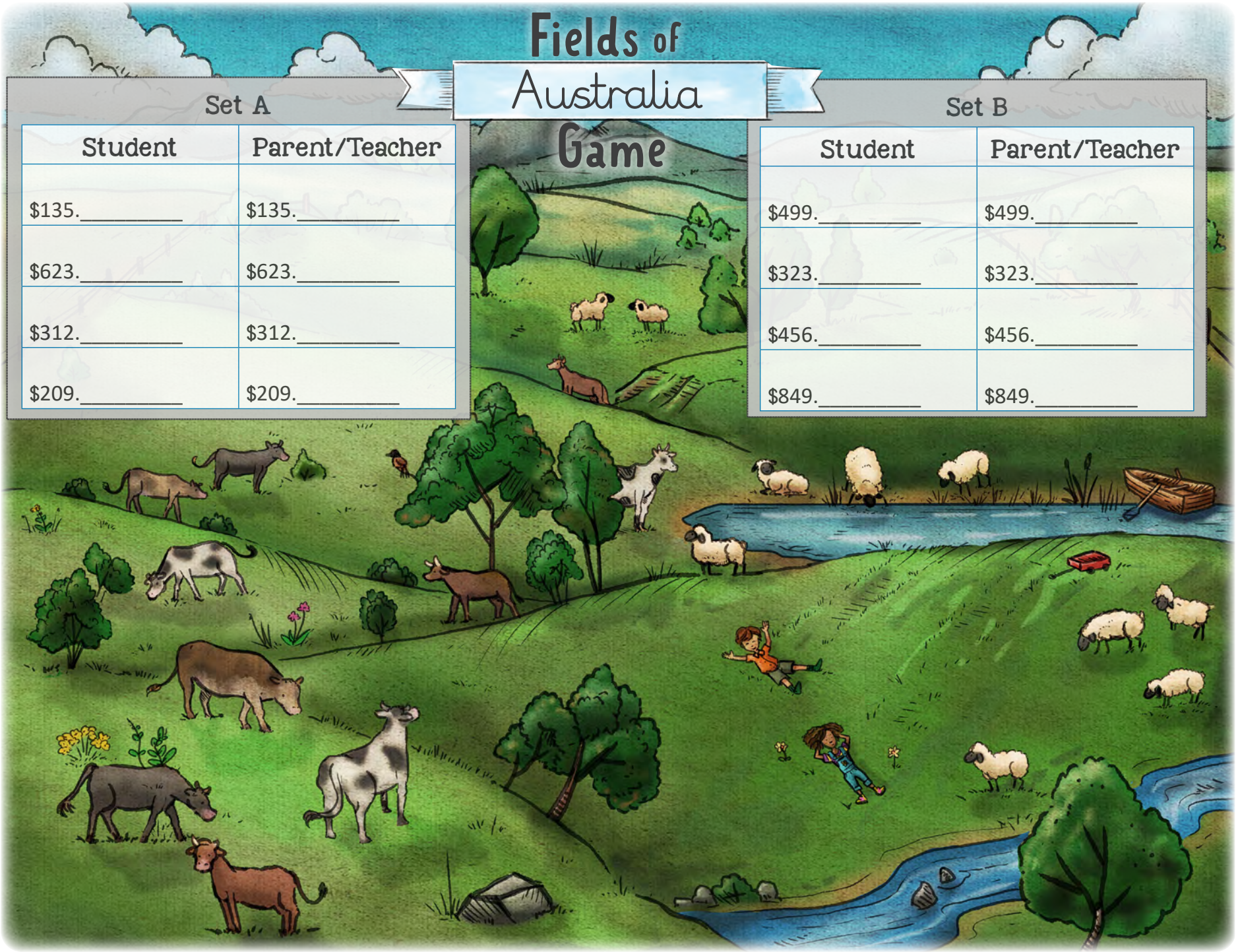
$125.40	$125.50	$125.49

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

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

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Fields of Australia Game



Set A

Student	Parent/Teacher
$135._____	$135._____
$623._____	$623._____
$312._____	$312._____
$209._____	$209._____

Set B

Student	Parent/Teacher
$499._____	$499._____
$323._____	$323._____
$456._____	$456._____
$849._____	$849._____

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LESSON PRACTICE

School Supply Round Up

















Jack wants to buy school supplies to donate to a family in need. First, round each price to the nearest dollar and write it in the box below or next to the price tag. Then answer the questions below using rounded amounts.

- Which item costs about $3.00?
- Which item costs the most?
- Which item costs the least?
- Jack decided to buy everything except the items that cost about $16.00 and $14.00 each. Which two items did he not buy?

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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 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.

For Lesson 29, have the child complete all the exercises with PURPLE headers only. At this level, you may need to read some of the instructions. Correct the work. If the child makes one or more mistakes in a section, explain the concept, and 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.

Note: All concepts in Unit 1 will be reviewed throughout the rest of the course, but less frequently.

Student

NUMBERS THROUGH THE HUNDRED THOUSANDS

Circle the word form for each number.

82,097

a) eighty-two thousand, ninety-seven

b) eighty-two thousand, nine hundred seven

401,365

a) four zero one, three hundred sixty-five thousand

b) four hundred one thousand, three hundred sixty-five

Write the numbers in standard form.

200,000 + 70,000 + 4,000 + 500 + 30 + 8

nine hundred sixty-one thousand, two hundred fifty-five

Additional Practice

Circle the word form for each number.

36,521

a) thirty-six, five hundred twenty-one

b) thirty-six thousand, five hundred twenty-one

968,731

a) ninety-six eight, seven hundred thirty-one thousand

b) nine hundred sixty-eight thousand, seven hundred thirty-one

Write the number in standard form.

600,000 + 9,000 + 800 + 3

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MULTIPLICATION

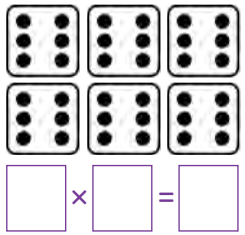
Use mental math to complete the following problems:

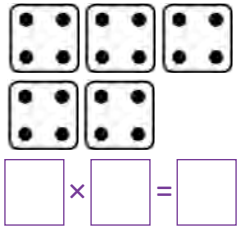
0 × 4 = _____ 19 × 1 = _____ 10 × 2 = _____

99 × 0 = _____ 2 × 8 = _____ 200 × 1= _____

5,000 × 1 = _____ 7 × 10,000 = _____

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





Additional Practice

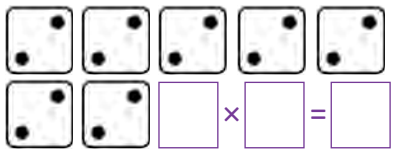
Use mental math to complete the following problems:

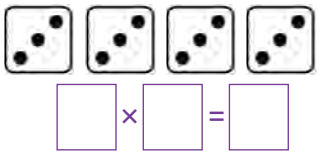
0 × 7 = _____ 35 × 1 = _____ 10 × 9 = _____

88 × 0 = _____ 2 × 6 = _____ 5 × 100 = _____

7 × 1,000 = _____ 2 × 10,000 = _____

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





ROUNDING TO THE NEAREST TEN OR HUNDRED

Round to the nearest TEN.

452	191	808	765

Round to the nearest HUNDRED.

2,367	285	7,614	851

Circle the numbers that would round up to 10.

0 1 2 3 4 5 6 7 8 9

Additional Practice

Round to the nearest TEN.

758	375	404	635

Round to the nearest HUNDRED.

7,249	347	3,127	461

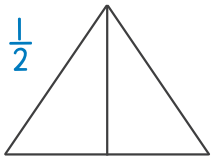
Circle the digits that will round down to zero.

0 1 2 3 4 5 6 7 8 9

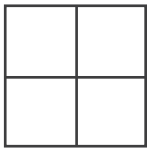
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FRACTIONS

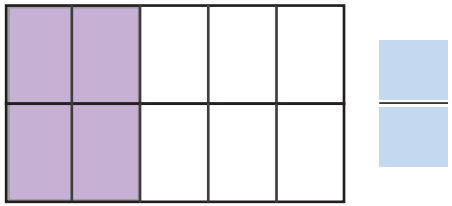
Shade each shape according to the fraction shown.

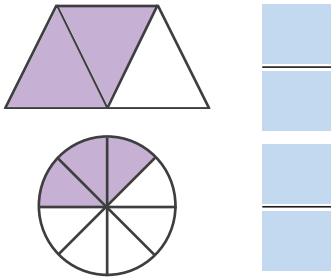
$\frac{1}{2}$ 

$\frac{1}{6}$ 

$\frac{1}{4}$ 

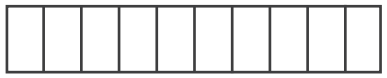
Write a fraction to show the amount that is shaded in each shape.

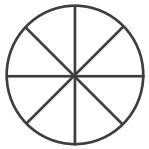


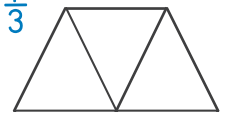


Additional Practice

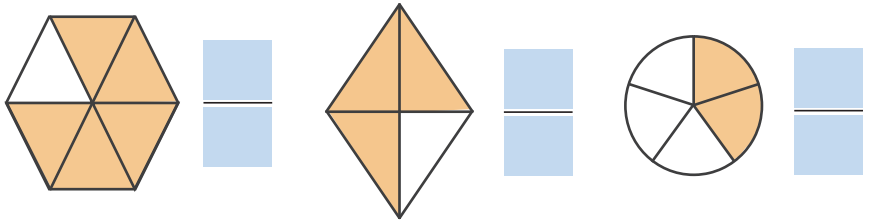
Shade each shape according to the fraction shown.

$\frac{1}{10}$ 

$\frac{1}{8}$ 

$\frac{1}{3}$ 

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

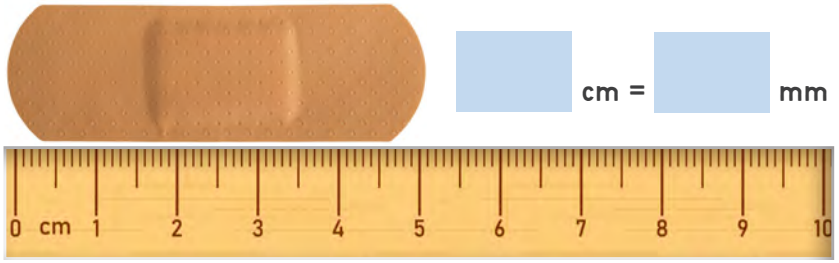


MEASUREMENT

Circle the more reasonable measurement for each item.

The length of a dollar bill	6 inches | 6 feet
The height of a person	5 feet | 5 yards
The length of a toothbrush	15 miles | 15 centimeters
The distance of a drive to a nearby city	10 miles | 10 inches
A large pitcher of orange juice	2 milliliters | 2 liters
The length of a river	220 centimeters | 220 kilometers

What is the length of the bandage in centimeters and millimeters?



Fill in the blank with the correct conversions.

1 cm = _____ mm

1 L = _____ mL



1 gallon = _____ quarts



1 pint = _____ cups

Continued on the next page ≫→

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UNIT 2 OVERVIEW

LESSONS 31-60

Extra Supplies Needed

- ○ set of dry measuring cups
- ○ 2 cups of flour in a medium bowl
- ○ optional tray or plate

New Concepts Taught

- ○ Adding and Subtracting Inches and Feet
- ○ Conversions Between Units of Measurement
- ○ Creating Tables and Charts
- ○ Expanded Form to a Million
- ○ Fractions Comparing and Ordering
- ○ Fractions Equal to One and Naming
- ○ Fractions on a Number Line
- ○ Line Graphs
- ○ Mixed Numbers
- ○ Rounding and Subtracting Money
- ○ Subtraction Across Zeros

Concepts Reviewed and Expanded Upon

- ○ Adding and Subtracting Large Numbers
- ○ Commutative Property of Multiplication
- ○ Counting, Adding, and Subtracting Money
- ○ Equivalent Fractions
- ○ Fraction Halves
- ○ Line of Symmetry
- ○ Number Patterns
- ○ Reading a Table and Bar Graph
- ○ Telling Time
- ○ Temperature Using a Thermometer
- ○ Venn Diagrams
- ○ Weight Measurements

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Lesson 35

FRACTIONS: IDENTIFYING AND GENERATING HALVES

Skip Counting

Practice items the child has not mastered.

- Review counting by 5s from 5 to 120.
- Count by 100s from 100 to 1,000.

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

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

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

Beans



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

Sweet Potatoes



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

Plantains



Corn



Wheat



Fill in the blanks with the fractions that represent half:

$\frac{1}{2}$ beans _____ sweet potatoes _____ plantains _____ corn _____ wheat

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

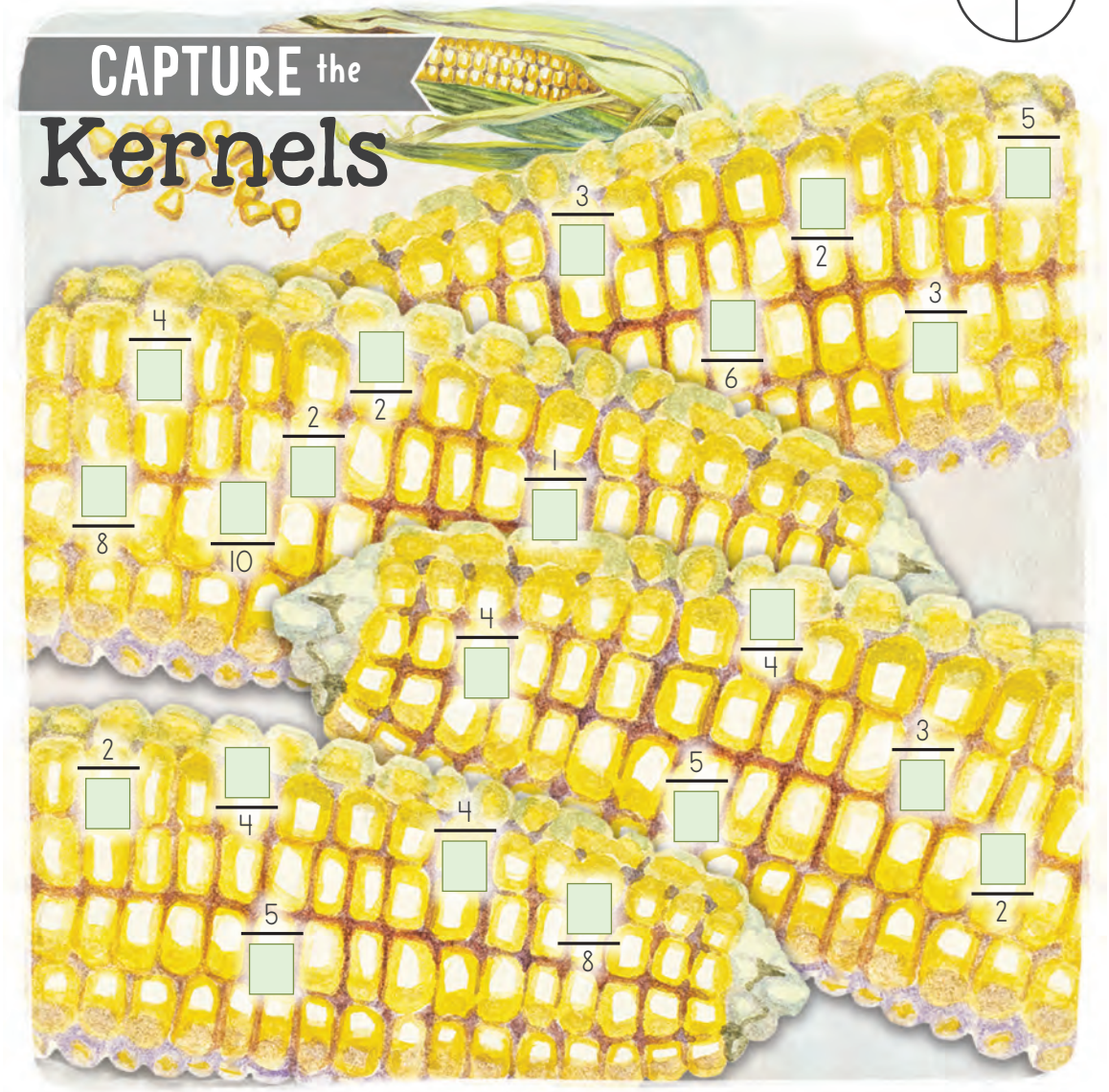






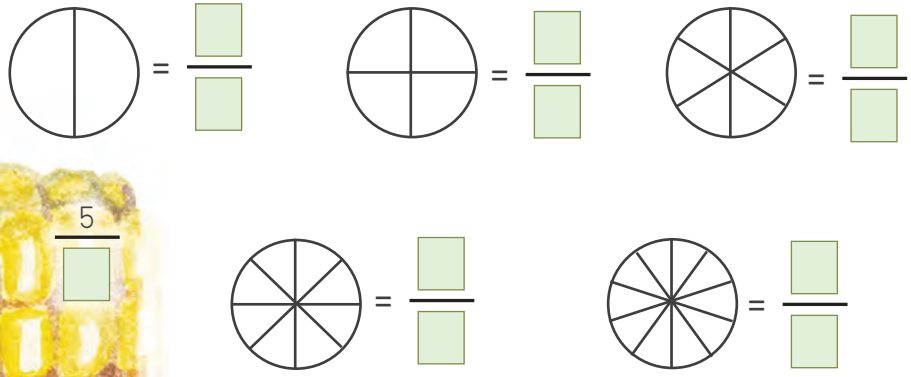
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○ **Game—Capture the Kernels:** Take two different colored pencils and the 10-sided dice from the math box. Roll the dice. If the number you rolled can be used to create a fraction equal to one-half (either as a numerator or denominator), then write the number in the blank space with your colored pencil to capture it. After you have gone, or if the dice lands on a number that cannot be used, then your turn is over and it's my turn to roll the dice. The person who captures the most kernels wins!



LESSON PRACTICE

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



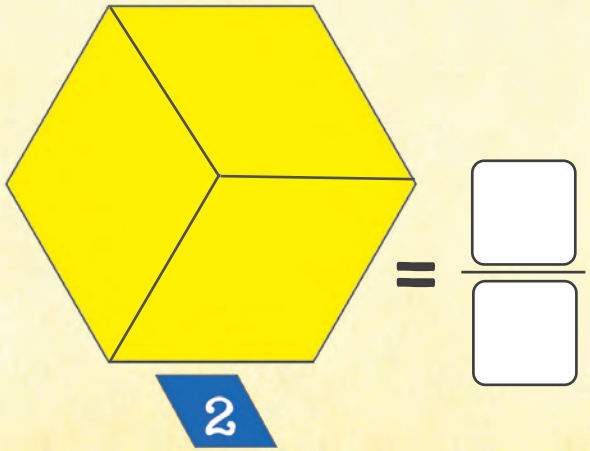
Circle all five fractions that are equal to one-half.

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

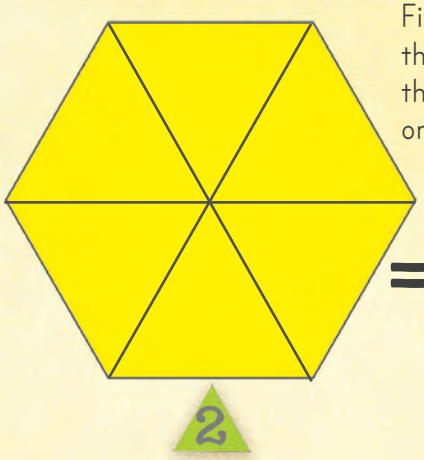
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Geometric Fractions

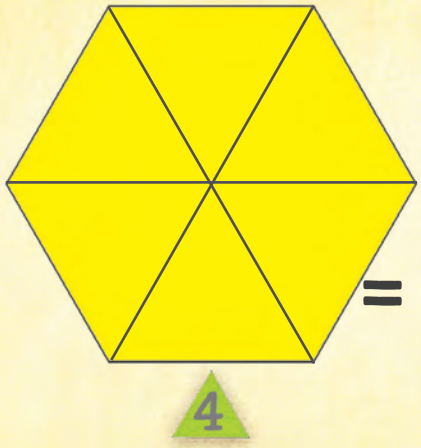
Fill in each hexagon using the specified number of shapes from the math box. Then write a fraction for the part of the hexagon that is covered with shapes. Circle the fractions that equal one-half.



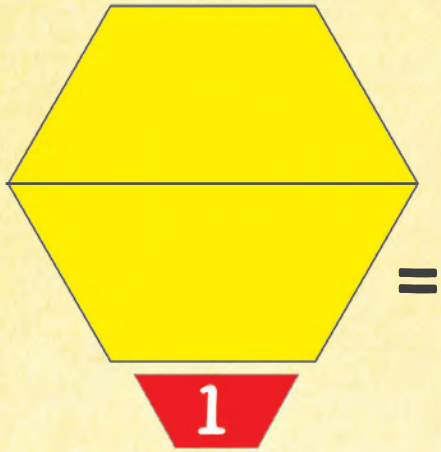
= $\frac{\square}{\square}$



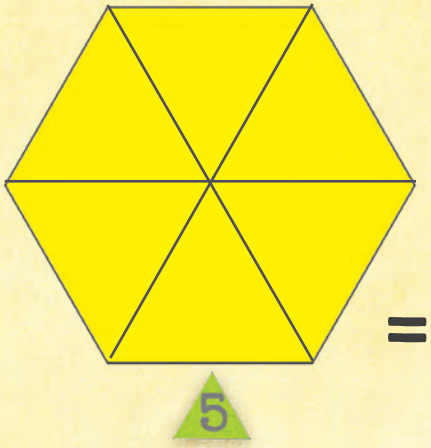
= $\frac{\square}{\square}$



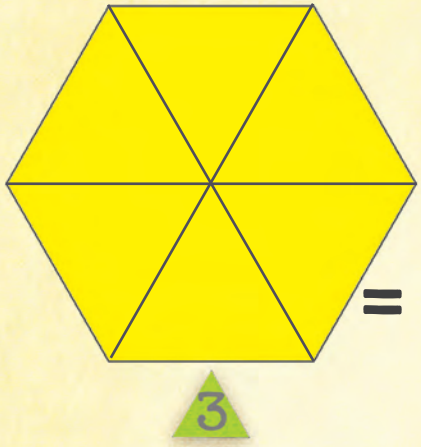
= $\frac{\square}{\square}$



= $\frac{\square}{\square}$



= $\frac{\square}{\square}$



= $\frac{\square}{\square}$

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Lesson 40

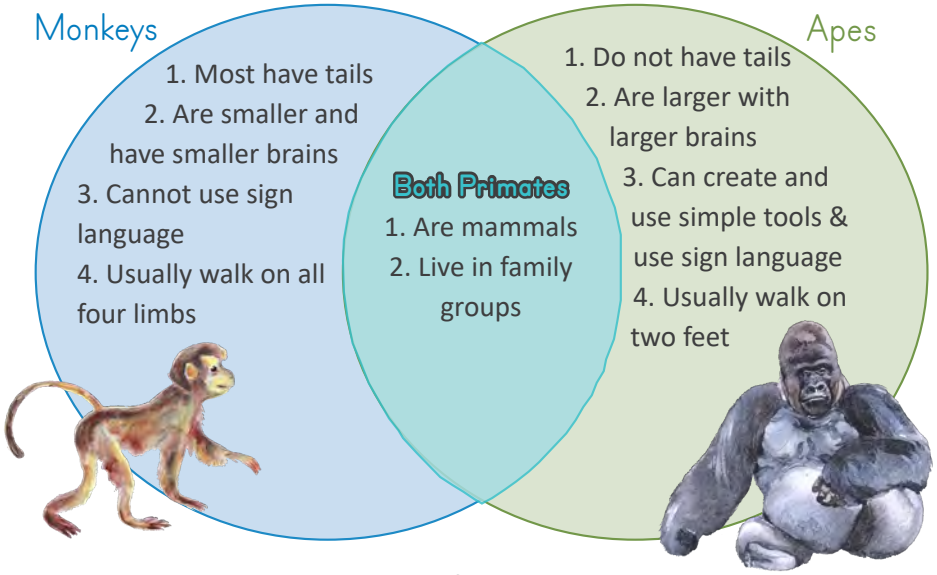
VENN DIAGRAMS

Temperature

Practice these items with the child.

Have the child fill in the temperature chart on the back of the array mat. Optionally, determine the current temperature inside or outside your house today.

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



Use the diagram to answer the following questions aloud.

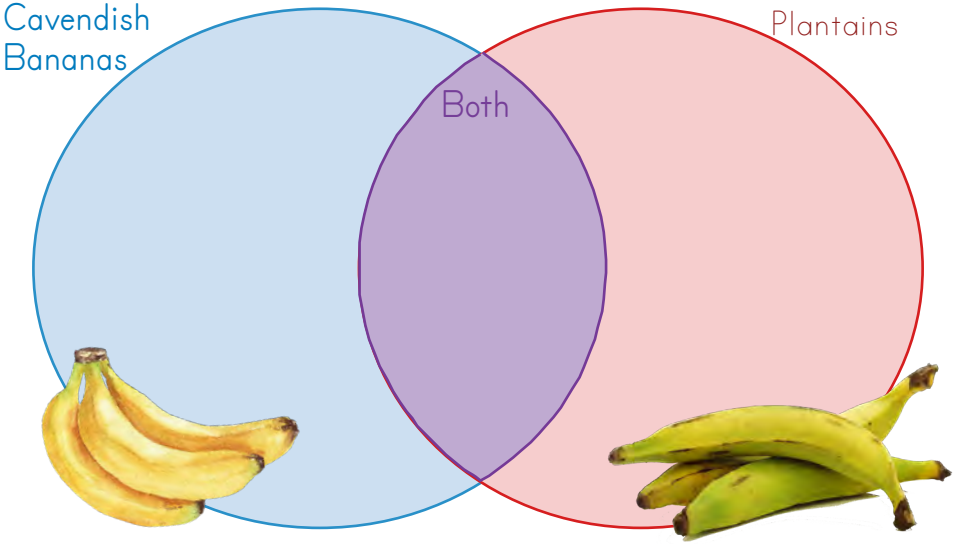
- What are two things monkeys and apes have in common?
- What is one way that apes are different from monkeys?

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

You are probably familiar with Cavendish bananas, which are the sweet yellow bananas sold in the United States. Cavendish bananas can be eaten raw or cooked. Once the banana is ripe, the skin is soft and easy to peel.

Plantains, the most commonly eaten fruit in Uganda, can also be found in the US. They are longer and wider than Cavendish bananas. The skin is thicker and does not peel easily, even when the fruit ripens. The fruit itself is starchy and unsweetened, similar to a potato, so it is almost always eaten cooked or fried, not raw.

Both Cavendish bananas and plantains come from the Musa plant family and have a long, curved shape. They start green, ripen to yellow, and finally turn brown when they are over-ripened.



In each section of the Venn diagram, write one or two items from the paragraph that you underlined. The child needs to write only one item in each section.

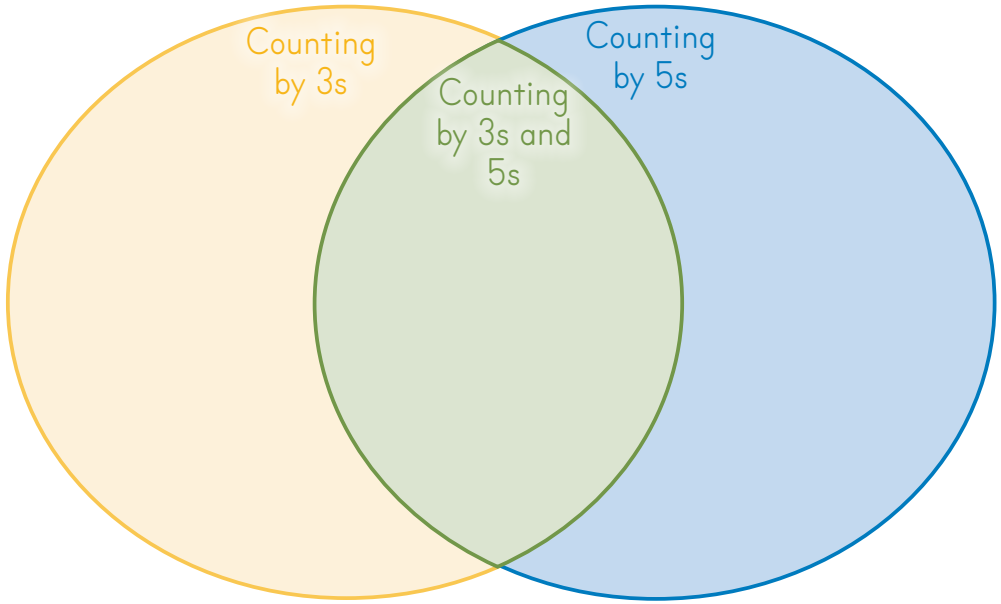
© Jenny Phillips

LESSON PRACTICE

Skip-Counting Patterns

Circle the numbers that are the same when skip counting by both 3s and 5s. Then write each number from the boxes in the correct section of the Venn diagram.

3	6	9	12	15
18	21	24	27	30
33	36	39		

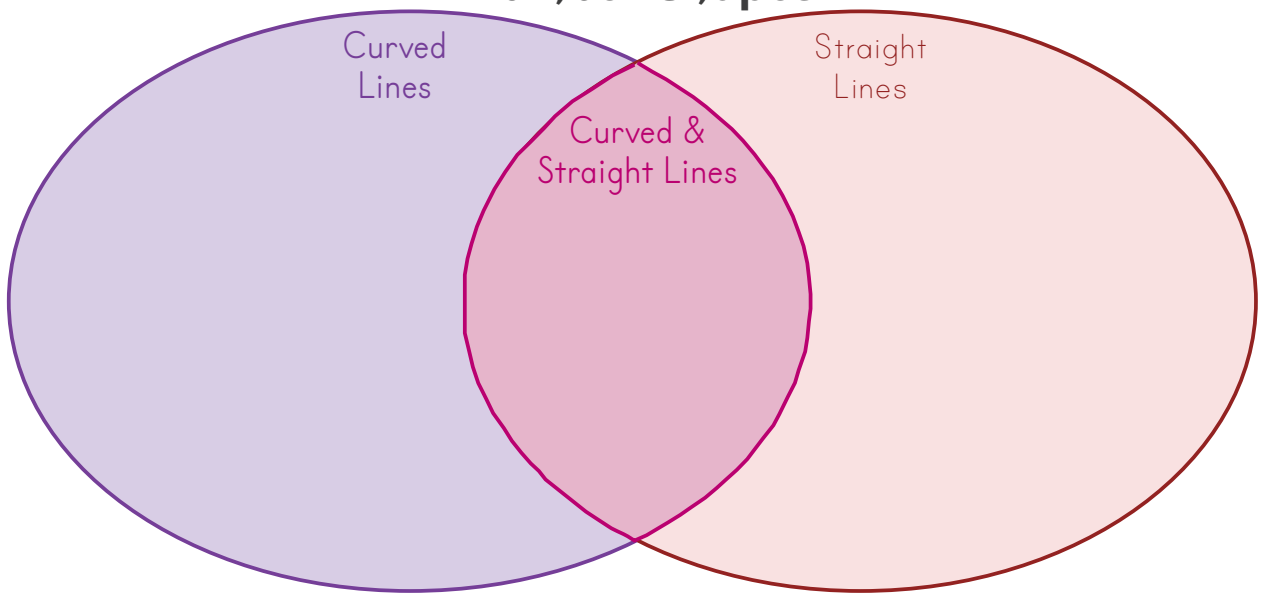


5	10
15	20
25	30
35	40

Number Shapes

Write each number in the correct section of the Number Shapes Venn diagram. Sort the number shapes based on how they look in the boxes here.

1	2	3
4	5	6
7	8	9



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Lesson 46

TWO-STEP STORY PROBLEMS WITH MONEY

Telling Time

How many seconds are in a minute? How many minutes are in an hour? How many hours are in a day? What day comes before Thursday?

Mental Math

- Skip count by 8s from 8 to 80.
- Skip count by 25s from 25 to 500.

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

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

$18.40 stamps
+ $ 6.35 envelopes
total cost

$30.75 paid
− ____ total cost
change due



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

$24.96 book
+ $ 8.72 journal
total cost

____ total cost
+ $1.32 change
amount paid

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

____ apples
+ ____ peaches
total cost

____ total cost
$0.75 refund
amount paid

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

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







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Lesson 50

SUBTRACTION ACROSS ZEROS

Place Value

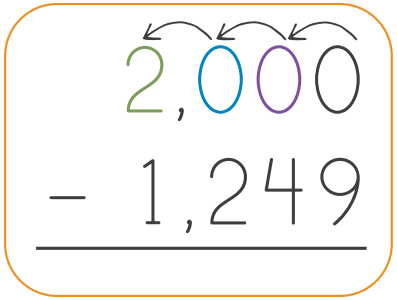
- How many hundreds, tens, and ones are in 180?
- What is the value of the digit 2 in the number 3,297?
- Which digit is in the ten millions place? 172,395,463

Skip Counting

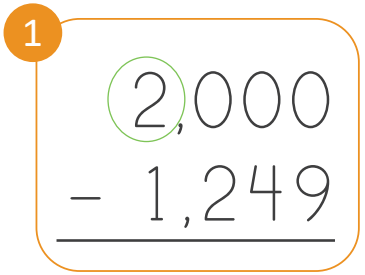
- Skip count by 6s from 6 to 66.
- Skip count by 60s from 60 to 660.

○ Read to the child: Mia arrived at the library one sunny day and was excited to see that the summer reading program was starting. When the librarian asked Mia how many minutes of reading she could do over the summer, Mia chose 2,000 minutes. She read every day for the first 6 weeks. Then she added up all her minutes and subtracted them from 2,000 to find out how many more minutes she needed to reach her goal.

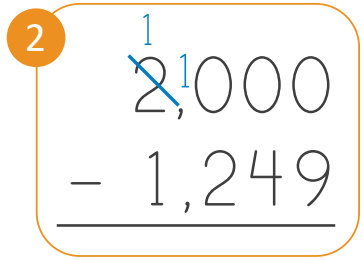
○ Read to the child: Mia wrote down this problem to subtract her minutes read from the total minutes needed. She couldn't subtract 9 from 0, so she needed to borrow. Point to the tens place (purple). But she couldn't borrow from the tens place. Point to the hundreds place (blue). She looked to the hundreds place but couldn't borrow from there either. Point to the thousands place (green). Finally, she got to the thousands place, and now she can borrow from the 2.



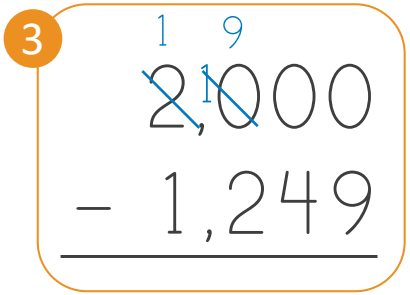
1 Before she subtracts, she is going to regroup and borrow. Regrouping is renaming or changing a group of ten. Point to the circled 2. The circled 2 is in the thousands place and represents 2 thousands. A thousand is made up of 10 hundreds.



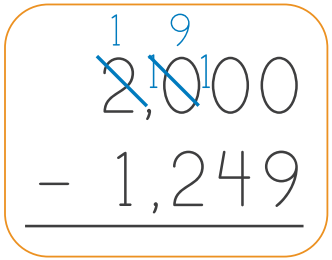
2 Point to the 2 that is crossed out in the thousands place. If Mia regroups 1 of the thousands into hundreds, she will have 1 thousand and 10 hundreds, which is still equal to 2 thousands. To show the regrouping, she crosses out the number in the thousands place and writes one number less above it.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



3 Now she can regroup and borrow from the 10 that is in the hundreds place! Mia thinks borrowing is fun. She crosses out the 10 in the hundreds place and writes a 9 because she is borrowing 1 hundred and regrouping it into 10 tens.



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



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

4
$$\begin{array}{r} {\scriptstyle 1\ \ 9\ \ 9\ \ 1} \\ 2{,}\cancel{0}\cancel{0}0 \\ -\ 1{,}249 \\ \hline \end{array}$$

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

$$\begin{array}{r} 6{,}005 \\ -\ 4{,}382 \\ \hline \end{array}$$

$$\begin{array}{r} 500{,}000 \\ -\ 428{,}176 \\ \hline \end{array}$$

Optional Video Lesson

For additional practice watch the optional video lesson on the Good and Beautiful Homeschool app or at goodandbeautiful.com/math3 titled "Subtracting Across Zeros." The section below is used during the video.

$$\begin{array}{r} 2{,}605 \\ -\ 1{,}349 \\ \hline \end{array}$$

$$\begin{array}{r} 4{,}008 \\ -\ 1{,}647 \\ \hline \end{array}$$

$$\begin{array}{r} 700{,}000 \\ -\ 372{,}895 \\ \hline \end{array}$$



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Lesson 54

NUMBER PATTERNS: PART 1

Maple Leaf Mental Math

Find the missing numbers.

12 +  = 18  = _____  +  = _____

 + 8 = 15  = _____  +  = _____

Skip Counting

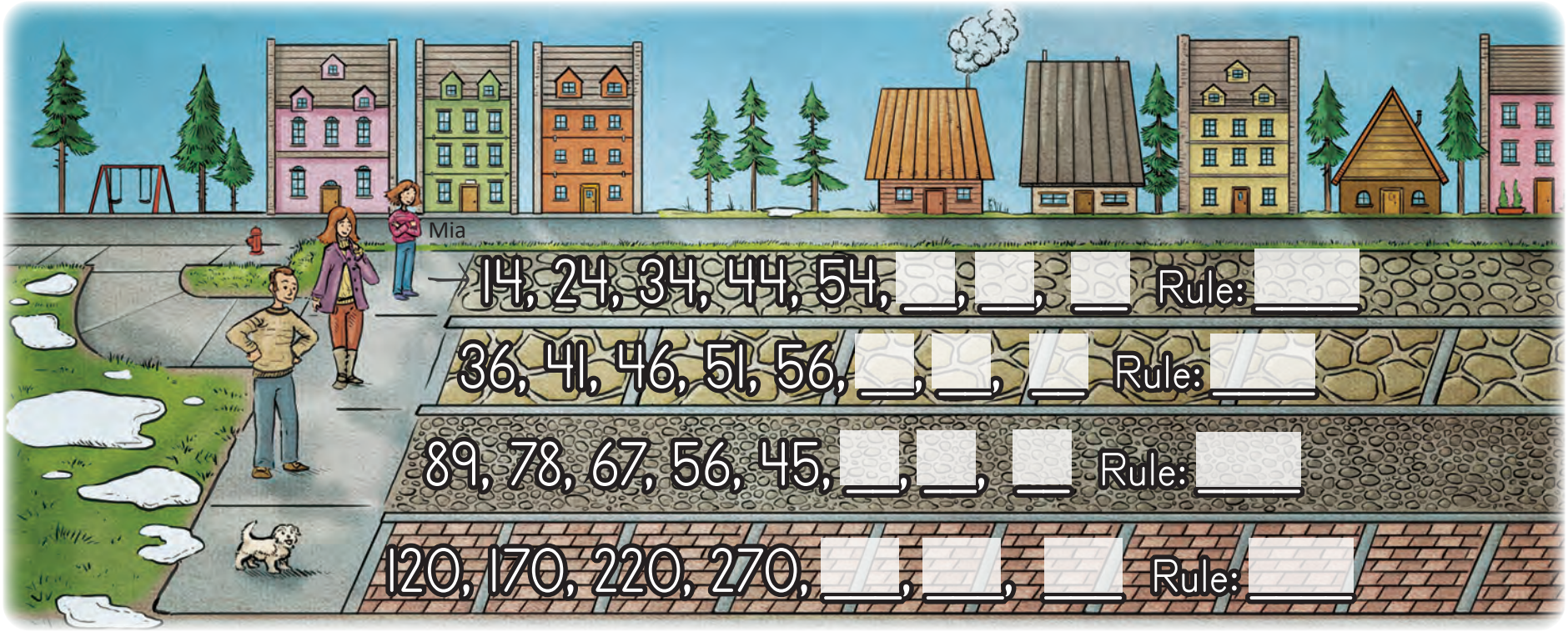
- Skip count by 8s from 8 to 88.
- Skip count by 25s from 300 to 600.



Read to the child: God created a beautiful world full of wonderful patterns and symmetry. This spiral seashell shows a growing pattern as the size of the spiral continues growing from the inside out.

We can find patterns in numbers too. Look at the number pattern below next to Mia. To find the pattern, find the difference between the first two numbers. The difference between 14 and 24 is 10. Then find the difference between the second and third numbers to see if it is the same amount. Yes, the difference between 24 and 34 is also 10. That means the rule for this pattern is plus 10. Write "+ 10" on the line for the rule. Now that you know the pattern, you can find the missing numbers. The next one is 54 plus 10. Then add 10 again to find the next number. Fill in the blanks for the first pattern.

Look at the other number patterns, starting with the first and second numbers to find the rule. Check to see if it is true for the second and third numbers. Write the rule and missing numbers in the blanks.



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UNIT 3 OVERVIEW

LESSONS 61-90

Extra Supplies Needed

- measuring spoons
- sugar or salt

New Concepts Taught

- Adding and Subtracting Fractions and Mixed Numbers with Common Denominators
- Adding and Subtracting Money
- Comparing and Ordering Measurements
- Multiplication by Multiples of 10, 100, and 1,000
- Multiplication Factors
- Multiplication of 2-digit, 3-digit and 4-digit by 1-digit numbers
- Multiplication with Money
- Negative Numbers
- Story Problems with Area and Perimeter
- Using Fractions with Measurements
- Volume of Rectangular Prisms

Concepts Reviewed and Expanded Upon

- Area
- Multiples of Numbers
- Perimeter
- Weight Measurement

Parent/Teacher Tip

Go at the pace of the child. If the child is progressing slowly and is overwhelmed by the length of the lessons, consider not completing a full lesson each day. You can catch up by doing five days of school a week instead of four or by doing some lessons during summer break. If the child finishes a lesson quickly and is ready to do more, consider doing more than one lesson in a day.

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Lesson 62

MULTIPLICATION: FACTOR PAIRS

Calendar

Have the child complete the following.

- On the calendar chart, write the number of days in each month during a leap year.
- Which month is the 3rd month? Which is the 10th month? Which month comes after the 5th month?

Read to the child: Have you heard the story of Noah and the ark? The Bible tells us that the animals entered the boat in *pairs*, male and female, just as God had commanded Noah. A pair is something that comes in a set of two. Circle the items below that are shown in pairs.









Factors are the numbers multiplied in a multiplication problem. Look at the multiplication fact at the right. The numbers 3 and 5 are a factor pair of 15, because 3 times 5 is 15.

$3 \times 5 = 15$

FACTORS

Fill in the missing factors.

$7 \times ___ = 21$ $4 \times ___ = 32$ $10 \times ___ = 90$

$___ \times 5 = 25$ $___ \times 8 = 48$ $___ \times 2 = 8$

Circle the factor pairs of 12. These are the numbers that can be multiplied together to equal 12.

6×4 1×12 2×6

9×2 5×5

3×4 0×8 7×10

Game: Take the 10-sided dice from the math box and two colored pencils. We will take turns rolling the dice and finding all animals with factors that can be multiplied to equal the number rolled. For example, if the number 4 is rolled, then we can look for 2×2 or 1×4. With a colored pencil, circle all the animals whose factor pair gives the product of the number rolled. If no factor pairs remain for the number rolled, roll again. Continue until all the animals have been circled. Whoever gets the most animal pairs is the winner. (Hint: Multiply the factors together to find the number they equal.)



1×10 2×1



2×3 1×5



7×1 3×3



5×1 1×7



1×4 4×2



2×2 1×6



9×1 1×3



2×5 1×1

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LESSON PRACTICE

Fill in each missing factor to make the statements true.

8 × ___ = 56 5 × ___ = 30 2 × ___ = 20

___ × 6 = 42 ___ × 3 = 24 ___ × 9 = 81

Write a factor pair on each pair of socks to equal the product shown on the laundry basket below the socks. An example has been done for you.

Example:



REVIEW & ACTIVITIES

Complete the problems using the subtraction across zeros strategy.

5,005	8,008	6,000
− 3,349	− 5,447	− 5,327

Continue the number patterns.

2, 4, 8, ____, ____, ____ Rule:_____

100, 90, 80, ____, ____, ____ Rule: _____

320, 340, 360, ____, ____, ____ Rule: _____

✧ Multiplication Fact Practice ✧

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

6	5	8	7	7	6	8
× 3	× 6	× 9	× 5	× 9	× 7	× 6
9	9	8	7	7	6	7
× 8	× 6	× 3	× 9	× 7	× 8	× 6

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Tina's Tiny Framing Shop

If you completed *Simply Good and Beautiful Math 2*, you might remember Tina's Tiny Framing Shop. Today, she is framing tiny landscape photos of India. Use the measuring tape from the math box to measure each side of the photos in centimeters. In each blue box, write the perimeter of each photo. In each frame, write the total time it took Tina to make the frame for the photo.

perimeter = cm



perimeter = cm





perimeter = cm

Start: 10:05 AM
End: 10:57 AM
Elapsed Time ____ minutes

Start: 1:13 PM
End: 1:45 PM
Elapsed Time ____ minutes

Start: 9:00 AM
End: 11:00 AM
Elapsed Time ____ hours



perimeter = cm

Started: 6:30 PM
Ended: 9:30 PM
Elapsed Time ____ hours

The distance around a 2D shape is called the ***perimeter***.
To find the perimeter of an object, add the length of each side.

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Lesson 69

NEGATIVE NUMBERS AND TEMPERATURE

Temperature

Have the child fill in the temperature chart on the back of the array mat. Optionally, determine the current temperature inside or outside your house today.

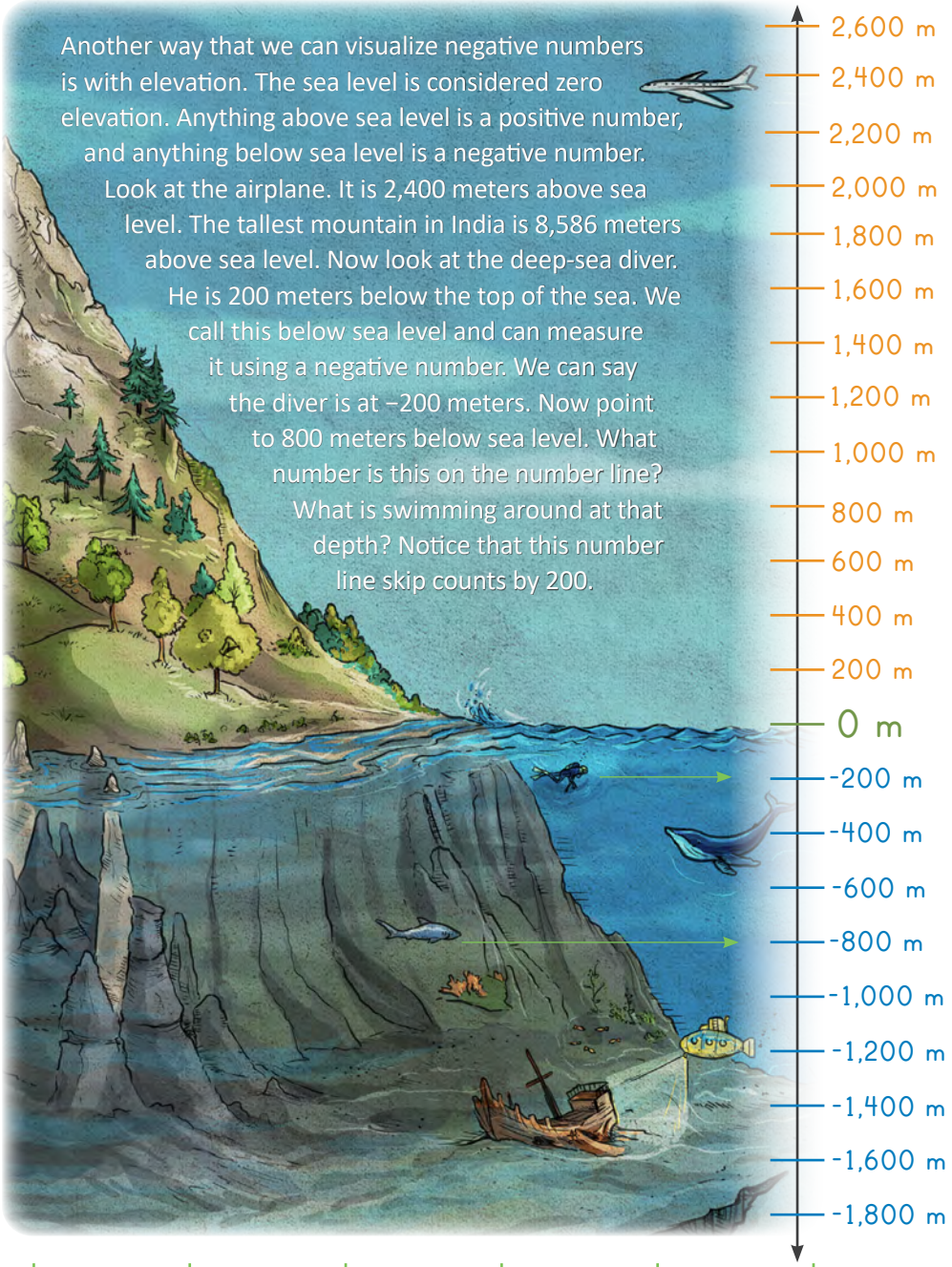
Skip Counting

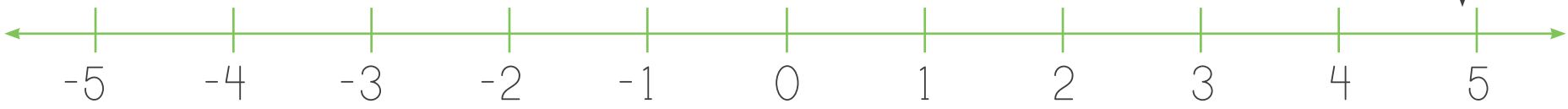
- Skip count by 7s from 7 to 77.
- Skip count by 3s backward from 36 to 0.

Read to the child: When you started learning about numbers, you began at one and learned to count up. In this course we have worked with numbers up into the millions. These numbers are positive numbers. Today, we are going to learn about negative numbers, which are numbers less than 0. Zero is not positive or negative.

Negative numbers are numbers less than zero.

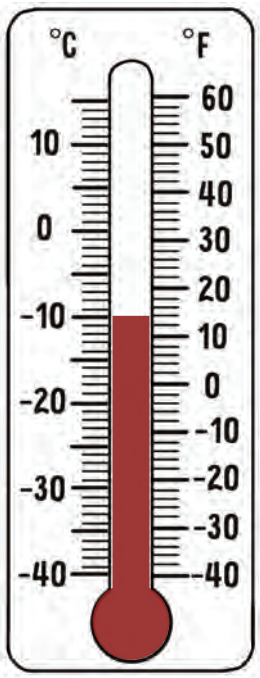
Let's look at negative numbers on a number line. Point to 0 on the number line below. If you count up 2 spaces, where will you land on the number line? Now, go back to 0 and count down 2 spaces. This is negative 2. We write it with a minus sign in front of the number. Starting at the 0 again, count down and say each number aloud as you point to it. The child should say "negative one, negative two, negative three, negative four, negative five." Notice how the negative numbers follow the same pattern as positive numbers.





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You have been measuring temperature using a thermometer, which uses a vertical number line. Thermometers often include negative numbers because temperatures can drop below 0 degrees. Look at the thermometer on the right. What temperature does it show in degrees Celsius? Another way to say this temperature is 10 degrees below 0. The lower the temperature is, the farther the negative number will be from 0. Draw a line on the thermometer at −40 degrees Fahrenheit. Is this temperature warmer or colder than −10 degrees Celsius?



LESSON PRACTICE

Circle the correct answer to each question. Use the image of the sea levels from the lesson.

- Which object is found at −400 meters?

  shipwreck | whale | deep-sea diver

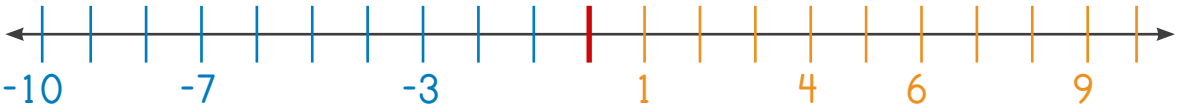
- Which object is found at −1,400 meters?

  submarine | whale | shipwreck

- Which object is found at −1,200 meters?

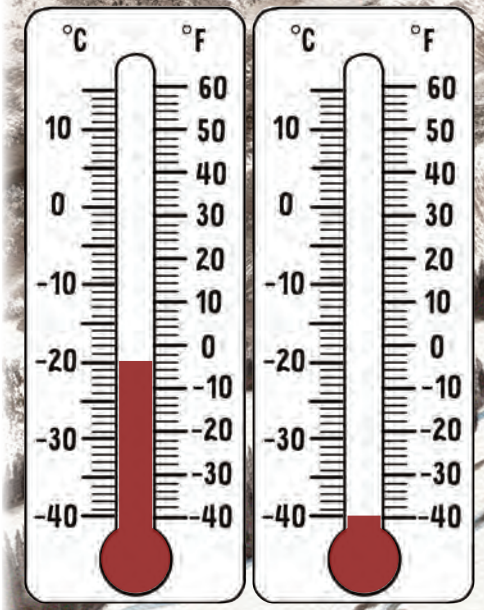
  shark | whale | submarine

Complete the number line below. Write 0 under the red tick mark. Fill in the missing positive numbers counting up by 1s from 1 to 10 under the orange tick marks. Then under the blue tick marks, write the negative numbers by counting down by 1s from −1 to −10, moving away from 0 toward the left.



Temperatures on very tall mountains are extremely cold. Help the hikers record the daily high and low temperatures during their hike up Kanchenjunga.

Write the temperatures shown on the thermometers in degrees Celsius and Fahrenheit.

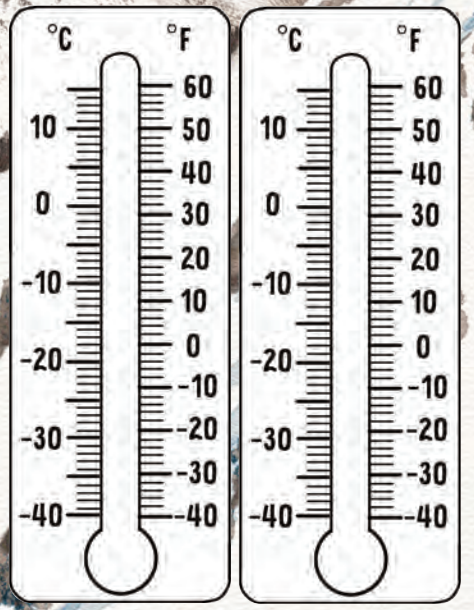


HIGH
_____ °C
_____ °F

LOW
_____ °C
_____ °F

Circle the thermometer above that shows the lower (or colder) temperature.

Shade the thermometers to show the correct temperatures in degrees Celsius and Fahrenheit.



HIGH
−10 °C
14 °F

LOW
−30 °C
−22 °F

Circle the thermometer above that shows the higher (or warmer) temperature.

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Lesson 73

MULTIPLICATION: STORY PROBLEMS

Mental Math

- If you had a bouquet of 1 dozen flowers, how many flowers would you have? How many flowers are in 2 dozen?
- How many flowers are in a bouquet of a half dozen?

Skip Counting

- Skip count by 6s from 6 to 66.
- Skip count by 60s from 60 to 600.

Read to the child: Today, we will use flowers that are native to India to learn how to complete multiplication story problems. Some story problems tell you the number of equal groups and the amount in each and require multiplication to find the total. Let's look at an example.

Subha has 3 vases. She wants to put 8 lotus flowers in each vase. How many total lotus flowers will she need? This story problem requires us to find 3 groups of 8. We could add 8 plus 8 plus 8; however, multiplication is faster.



$$\underset{\text{vase 1}}{8} + \underset{\text{vase 2}}{8} + \underset{\text{vase 3}}{8} = \underset{\substack{\text{number}\\\text{of vases}}}{3} \times \underset{\substack{\text{number of}\\\text{flowers in}\\\text{each vase}}}{8}$$

What is 3 times 8? Subha will need a total of 24 lotus flowers.

Continue the lesson with the child on the next page before playing the Flower Path game on this page.

Continued on the next page ⟶

Flower Path

Place the game pawns on "START." The first player completes a story problem. If the answer is correct, then the player rolls the dice and moves his or her game pawn the number of spaces shown on the dice. The next player follows the same steps. The first player to land on "FINISH" is the winner.

The flower grows 2 mm each day. How many millimeters did it grow in 4 days?

There are 10 flowers. Each flower has 2 leaves on the stem. How many total leaves are there?



You plant 3 flowers in each pot. There are 5 flower pots. How many total flowers do you plant?

There are 7 flowers. Each flower has 8 petals. How many total petals are there?

There are 5 bouquets of flowers. Each bouquet has 6 flowers. How many total flowers are there?

There are 4 rows of flowers in the flower bed. Each row has 10 flowers. How many total flowers are in the flower bed?

You have 2 vases. You want to put 9 flowers in each vase. How many total flowers do you need?

There are 6 kinds of flowers. There are 8 of each kind. How many total flowers are there?

There are 6 flower beds. Each one has 7 rows of flowers. How many total rows of flowers are there?

There are 7 honeybees drinking nectar from the flowers. They each visit 7 different flowers. How many total flowers do they visit?

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Before we play the game, we'll practice with two more story problems. Raj has 4 vases. He wants to put 7 dahlia flowers in each vase. How many total dahlia flowers will he need?



This story problem requires us to find 4 groups of 7. Again, we could add 7 four times, but multiplying is much faster.

$$7 + 7 + 7 + 7 = 4 \times 7$$

vase 1, vase 2, vase 3, vase 4 = number of vases × number of flowers in each vase

What is 4 times 7? Raj will need a total of 28 dahlia flowers.

Try this problem on your own. Kiara has 2 vases. She wants to put 10 hibiscus flowers in each vase. How many total hibiscus flowers will she need? Fill in the blanks below, and then find the product.



____ (number of vases) × ____ (number of flowers in each vase) = ____ (total flowers)

○ Read to the child: Now we're ready to play the game. Take the 10-sided dice and two game pawns from the math box and turn back to the previous page.

LESSON PRACTICE

RIDDLE Time

Circle the story problem that correctly matches the multiplication problem. Remember to look for a story problem that talks about equal groups.



3 × 4

There were 3 shrubs. Kiara picked 4 flowers from each shrub. How many flowers did Kiara pick in all?

Kiara picked 3 flowers from one shrub and 4 from another shrub. How many flowers did Kiara pick in all?

2 × 5

Raj picked 5 roses and gave 2 to his mom. How many roses does Raj have left?

Raj noticed there were 2 vases on the table with 5 roses in each vase. How many total roses were there?

Complete each story problem. Then place the letters in the blanks to answer the riddle. **What kind of flowers grow on your face?**

P There were 8 centerpieces with 5 flowers in each one. How many total flowers were there?

U There were 7 vases. Each vase had 7 flowers. How many total flowers were there?

L There were 4 rows of flowers. Each row had 6 flowers. How many total flowers were there?

S There are 3 vases. You want to put 9 flowers in each vase. How many flowers do you need?

I There are 10 flowers. Each flower has 6 petals. How many total petals are there?

T You pick 5 flowers from each shrub. There are 2 shrubs. How many flowers do you pick?





10 49 24 60 40 27

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Lesson 76

PERIMETER: PART 2

Mental Math

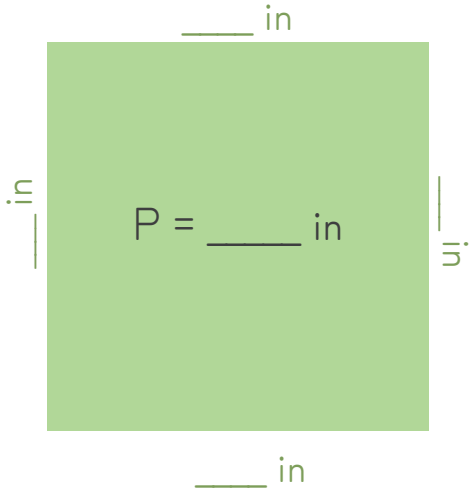
- You can add or subtract 100 from a number by changing the digit in the hundreds place. Complete the problems:

1,459 + 100 =	2,746 + 100 =	8,738 + 100 =
6,927 - 100 =	4,276 - 100 =	7,153 - 100 =

Skip Counting

- Skip count by 100s from 150 to 950.

○ Read to the child: Do you remember what perimeter is? [the distance around a 2D shape] Today, we will continue our discussion about perimeter.



You can find the perimeter of any shape with three or more sides by adding the length of each side. Using the measuring tape from the math box, measure each side of the green square, write the length of each side, and write the perimeter in inches. We will use the letter P to stand for perimeter.

Did you notice that each side of the square measures the exact same length? If you know the length of one side of a square, you can figure out the perimeter by adding the length of one side four times.

One sunny California afternoon, 10-year-old Rita and her 6-year-old brother, Warren, decided to do their math work in their tree fort while their parents tended to the garden. Rita's assignment was to find the perimeter of things around her home. The side of this square seed packet is 8 cm long. What is the perimeter of the seed packet?



8 cm

8 cm + _____ + _____ + _____ = _____



A rectangle has two long sides that are equal in length as well as two short sides that are equal in length. If you know the length and width of a rectangle, you can find the perimeter.

Fill in the missing length and width of the vegetable box, and then calculate the perimeter.

20 in + 15 in + _____ + _____ = _____

Using the image on the next page, help Rita find the perimeter of the items in her yard by adding the lengths of the sides. Write your answers in the boxes below and remember to include the units in your answers.

- Tree swing:
- Sandbox (square):
- Dog house:
- Firepit (hexagon): all sides equal
- Window:
- Back door:

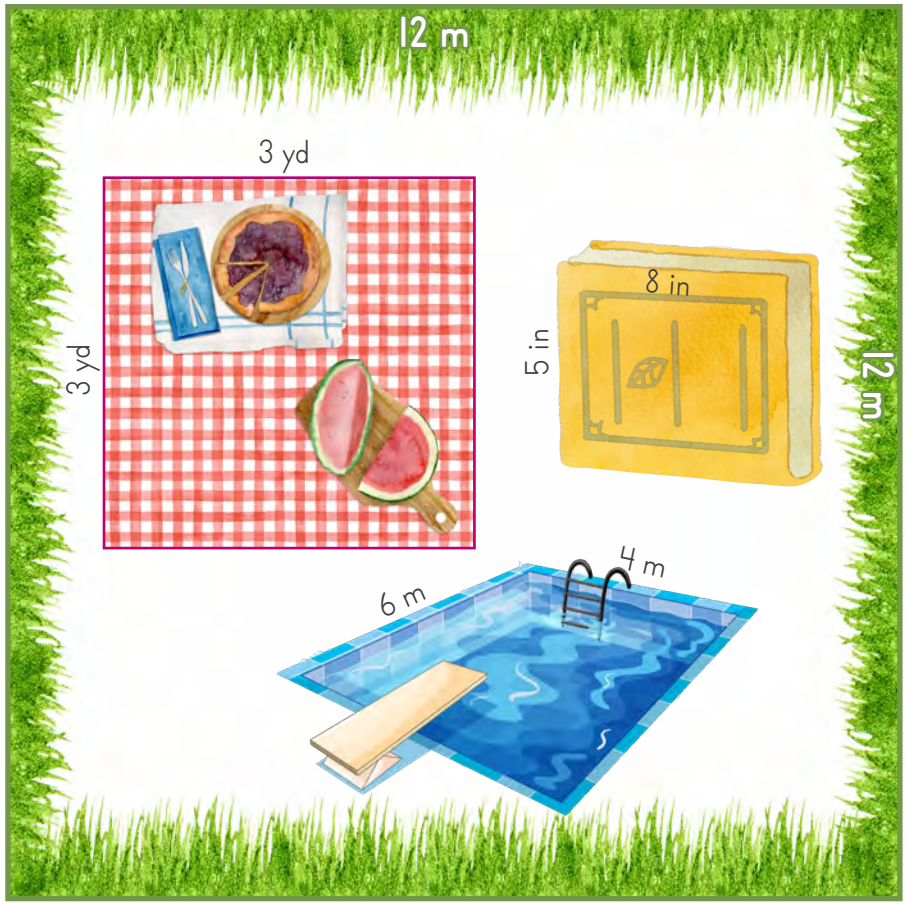
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LESSON PRACTICE

Rita's big brother, Tom, started mowing their lawn by cutting the grass around the perimeter of the yard. Without measuring, find the perimeter of the yard, and then find the perimeter of each shape based on the measurements given. Write the answers in the box below, and include the units of measurement.



PERIMETER

Grass: _____

Picnic blanket: _____

Book: _____

Pool: _____

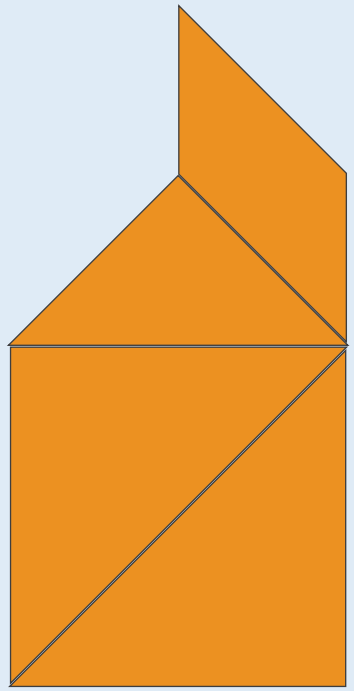
Using the centimeter side of the measuring tape, measure one side of the square and two sides of the rectangles. Record the measurements, and then add to find the perimeter.

P = _____ cm

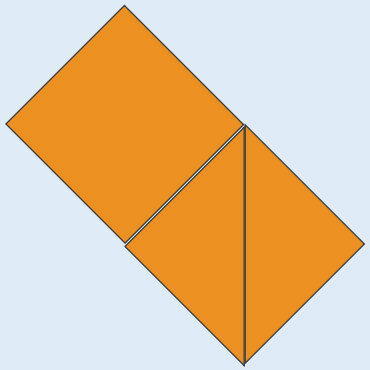
P = _____ cm

P = _____ cm

Take the tangram pieces from the math box. Assemble them as shown below. Using the measuring tape, measure each side of the perimeter to the nearest centimeter.



Perimeter is about _____ cm.



Perimeter is about _____ cm.

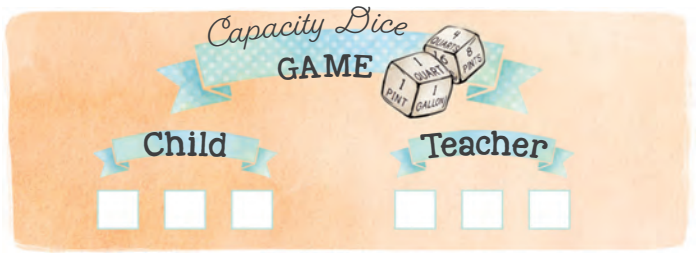
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Lesson 85

PERFECT SQUARES

Capacity

Play the "Capacity Dice Game." Refer to page ix for the instructions.

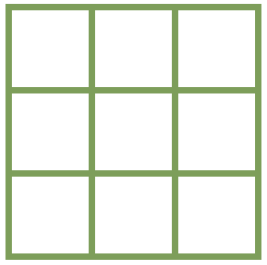


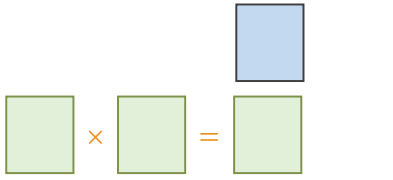
Read to the child: Previously you learned that area is the space inside a 2D shape. To find the area, you multiply the number of rows by the number of columns in a rectangle or square, and you use the words "square units" in the answer because area is the number of squares needed to cover a space.



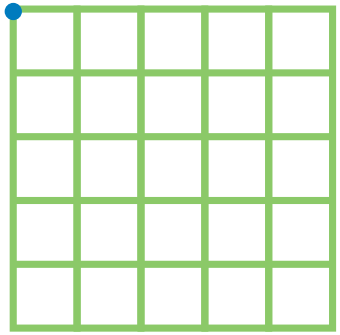
2 units × 3 units = 6 square units

In a square, there is an equal number of rows and columns inside the shape. Look at the example below. There are 3 rows and 3 columns of square units. Count how many square units there are and write your answer in the blue box. Check your answer by multiplying the number of rows by the number of columns.





Read to the child: On the grid below, draw a shape with 4 rows and 4 columns of units. To do this, start at the dot in the top left corner, and then count down 4 rows and draw another dot. Connect the dots with a line. Then, starting at the first dot, count 4 columns across and place another dot. Draw a line to connect the dots, and then complete the square shape by drawing in the other 2 sides and shading the area.



Count the number of square units in the square you just drew and complete the problem to find the area.

4 units × 4 units = ____ square units

The product of a whole number multiplied by itself is called a ***perfect square***.

A perfect square is the product of a whole number multiplied by itself.

Area Arrays



Take the array mat and a dry-erase marker from the math box.

- Draw a square that has 5 rows and 5 columns. Multiply to find the perfect square and write it below:

  5 units × 5 units = ____ square units

- Draw a perfect square with a total of 4 units. To do this, think of what number multiplied by itself equals 4. Test it on your array mat, and then fill in the equation below:

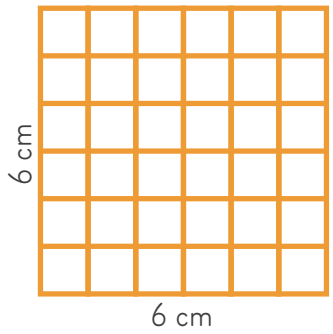
  ___ units × ___ units = 4 square units

- Erase your array mat, and then draw a square that has 8 rows and 8 columns. Multiply to find the perfect square and write it below:

  8 units × 8 units = ____ square units

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If the units are measured in inches, centimeters, feet, yards, meters, etc., you will use "square" followed by one of those units. For example, if you were measuring this square in centimeters and there were 6 rows and 6 columns, the formula to find the area would look like this:



6 cm × 6 cm = 36 square cm

In the chart below, some perfect squares are listed in the right column. This chart could go on forever!

1 × 1 = 1
2 × 2 = 4
3 × 3 = 9
4 × 4 = 16
5 × 5 = 25
6 × 6 = 36
7 × 7 = 49
8 × 8 = 64
9 × 9 = 81
10 × 10 = 100
11 × 11 = 121
12 × 12 = 144

LESSON PRACTICE

Rita and her 14-year-old brother, Tom, wanted to fix up an old table to use in their backyard. They decided to cover the table top with 1-foot square tiles to make it strong and durable, but they weren't sure how many tiles they would need.



Rita started by adding one tile to the top corner of the table. One tile was definitely not enough to cover the table's surface. Tom added three more tiles to make a square. How many tiles make up this perfect square?

2 × 2 = ___



More tiles were needed to cover the table, so Rita added one more row while Tom added another column. How many rows and columns are there now? How many tiles make up this perfect square? Write a multiplication equation.

___ × ___ = ___



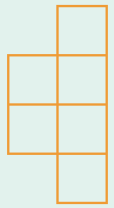
Rita added one more row and column of tiles, which covered the entire table. How many rows and columns are there? How many tiles make up this perfect square? Write a multiplication equation below.

___ × ___ = ___

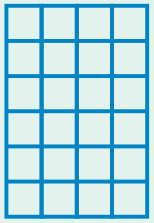
Pretend each unit is one square inch and find the area of the following shapes.



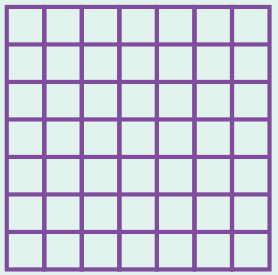
___ sq in



___ sq in



___ sq in



___ sq in

Circle the image that is a perfect square.

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UNIT 4 OVERVIEW

LESSONS 91-120

Extra Supplies Needed

- none

New Concepts Taught

- Algebraic Thinking
- Area: Finding the Missing Side
- Division Story Problems
- Finding Missing Factors
- Fractions of a Set
- Identifying Geometric Solids
- Identifying Triangles by Side Length
- Introduction to Division
- Multiplication and Division Fact Families
- Multiplication and Division Story problems
- Order of Operations
- Rounding to Any Place Value
- Similar Shapes

Concepts Reviewed and Expanded Upon

- Congruent Shapes
- Coordinate Plane
- Identifying Geometric Attributes
- Roman Numerals

Parent/Teacher Tip

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

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Lesson 91

INTRODUCTION TO DIVISION

Time

Read the time on each clock in two different ways. (For example, 2:30 could be read as "two thirty" or "half past two.")



Skip Counting

- Skip count by 9s from 9 to 99.
- Skip count by 90s from 90 to 990.

Read to the child: ***Division*** is separating into equal groups or parts. Take 8 shapes from the math box. Divide them equally between you and me by passing out one shape at a time until all the shapes are gone.

How many shapes did we each get? Write a 4 in the box. Eight divided by 2 equals 4. This means that 8 shapes divided equally into 2 groups is 4 shapes in each group.

$8 \div 2 = \square$

division symbol "divided by"

Let's look at another problem. This time take 6 shapes from the math box. Pass out the shapes one at a time into 3 groups.

How many shapes are in each group? Write a 2 in the box. Six divided by 3 equals 2. This means that 6 shapes divided equally into 3 groups is 2 shapes in each group.

$6 \div 3 = \square$

Continue using the shapes to complete these division problems. The first number tells you the total number of shapes. The second number tells you the number of groups.

$9 \div 3 = \square$ $6 \div 2 = \square$



Nine-year-old twins Seth and Darius are sharing figs. This is a popular fruit in Egypt. There are 12 figs divided equally between the 2 boys.



Each part of a division problem has a specific name. The ***dividend*** is the number of items you are dividing—in this case, 12 figs. The ***divisor*** is the number of groups you are dividing into—2 groups. The ***quotient*** is the answer, or the number in each group—6 figs. Label each part with the correct term.

$12 \div 2 = 6$

Let's look at another problem. Suppose the figs must be shared among the twin boys and their younger sister, Layla. This time we need to divide the 12 figs among 3 people. Fill in the dividend, divisor, and quotient for this situation.

Seth Darius Layla





$\square \div \square = \square$

Dividend — Total figs

Divisor — Number of groups

Quotient — Number in each group

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LESSON PRACTICE

Excavating in EGYPT

Draw a line from the division term to the correct part of the division equation.

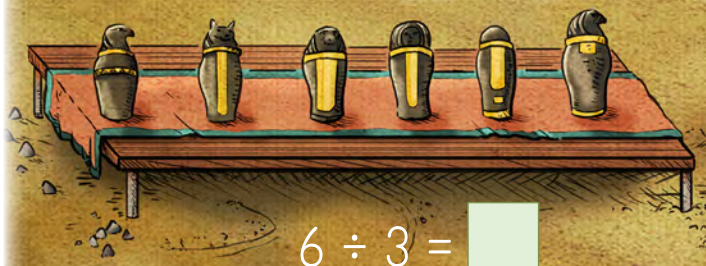
$42 \div 6 = 7$

Divisor

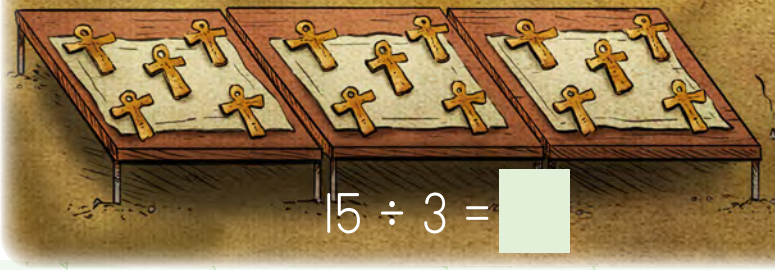
Quotient

Dividend

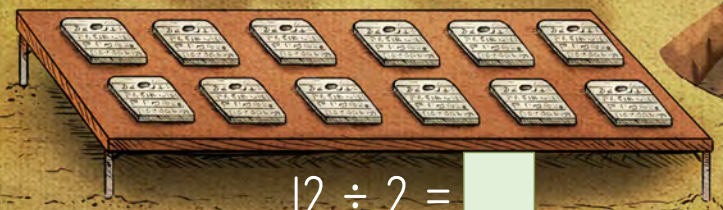
The twins' dad is an archaeology professor at a university. Help him sort the finds from the most recent dig by dividing them into equal groups.



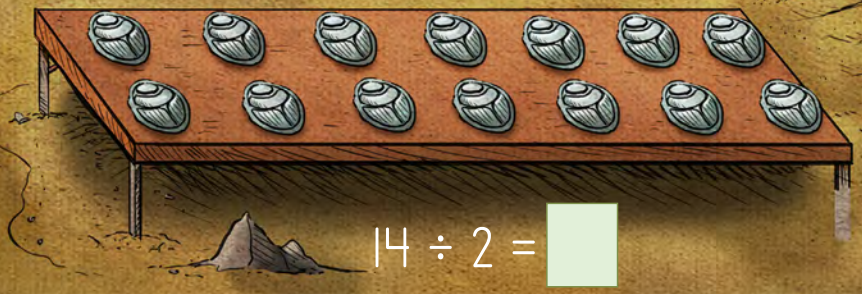
$6 \div 3 =$ ☐



$15 \div 3 =$ ☐



$12 \div 2 =$ ☐



$14 \div 2 =$ ☐

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Lesson 96

LINES, LINE SEGMENTS, POINTS, AND RAYS

Multiplication

Say each answer aloud:

100 × 8 50 × 4 1,000 × 5 40 × 9

Area

- What is the area of an object with a length of 4 inches and a width of 9 inches?
- What is the length of a rectangle with an area of 21 sq ft and a width of 3 ft?

Read to the child: Today, we will learn about points, lines, line segments, and rays. In math, a ***point*** is a specific position or location. Points are shown by drawing dots. A point is named by writing a letter next to the dot.



A ***line*** is a straight length that continues on forever in both directions. It is impossible to draw a never-ending line, so we draw arrows on the ends like this:

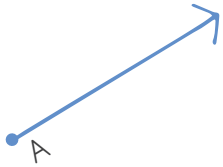


However, when we use the word "line," we usually don't mean a long, continuous line. We typically mean part of a line with a beginning point and an ending point. A ***line segment*** is part of a line that has two endpoints. A line segment is named by its two endpoints. The line segment below is named line segment AB or line segment BA.

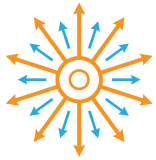


With your finger, trace line segments AB, BC, and CD. Then trace line segments AC and BD.





A ***ray*** is part of a line that has one endpoint and an arrow showing that it continues on forever. You can remember a ray by picturing a sun's rays beginning on the surface of the sun and extending out into space forever.



Match the words to the definitions by drawing line segments between the points.

Line ·	· A specific position or location, often labeled with a letter
Line Segment ·	· A part of a line that has one endpoint and continues on forever (the arrow represents the continuation of the line)
Ray ·	· A straight length that continues on forever in both directions
Point ·	· A part of a line that has two endpoints



To measure a line segment, place the 0 mark on your ruler right at the starting point, which is the first letter of the line segment. Measure to the end point. For the following line segments, use the centimeter side of a ruler or the measuring tape from your math box. Measure the line segments and write your measurements below.

WX = _____

YZ = _____

XZ = _____

WY = _____

WZ = _____

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J

Using the inch side of your ruler or measuring tape, create the following line segments by drawing and labeling the end points on the line above.

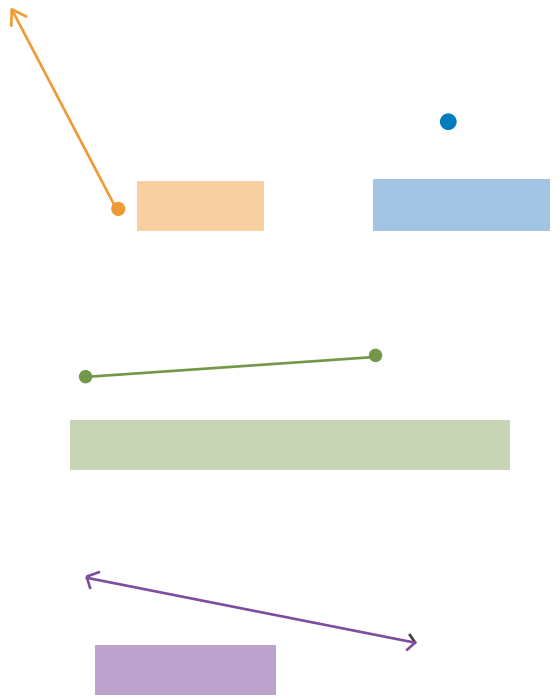
1. JN = 8 inches
2. JK = 1 inch
3. KM = 5 inches
4. JL = 4 inches

Using the points you labeled, measure these line segments in inches and fill in the blanks.

LM = ___ inches
LN = ___ inches
JM = ___ inches
KN = ___ inches

LESSON PRACTICE

Label the following figures by writing the vocabulary words from the lesson in the boxes:



Draw a line segment connecting points O and P, a line segment between points Q and R, and another line segment connecting points O and Q. Measure the length of each line segment in inches.

O
P
Q
R

OP:

QR:

OQ:

Lines IN Life

Use the vocabulary words from the lesson to label these real-life examples.

A flashlight shining into the sky:



_____



The distance from your front door to the front door of the house across the street:

_____



A pin on a map:

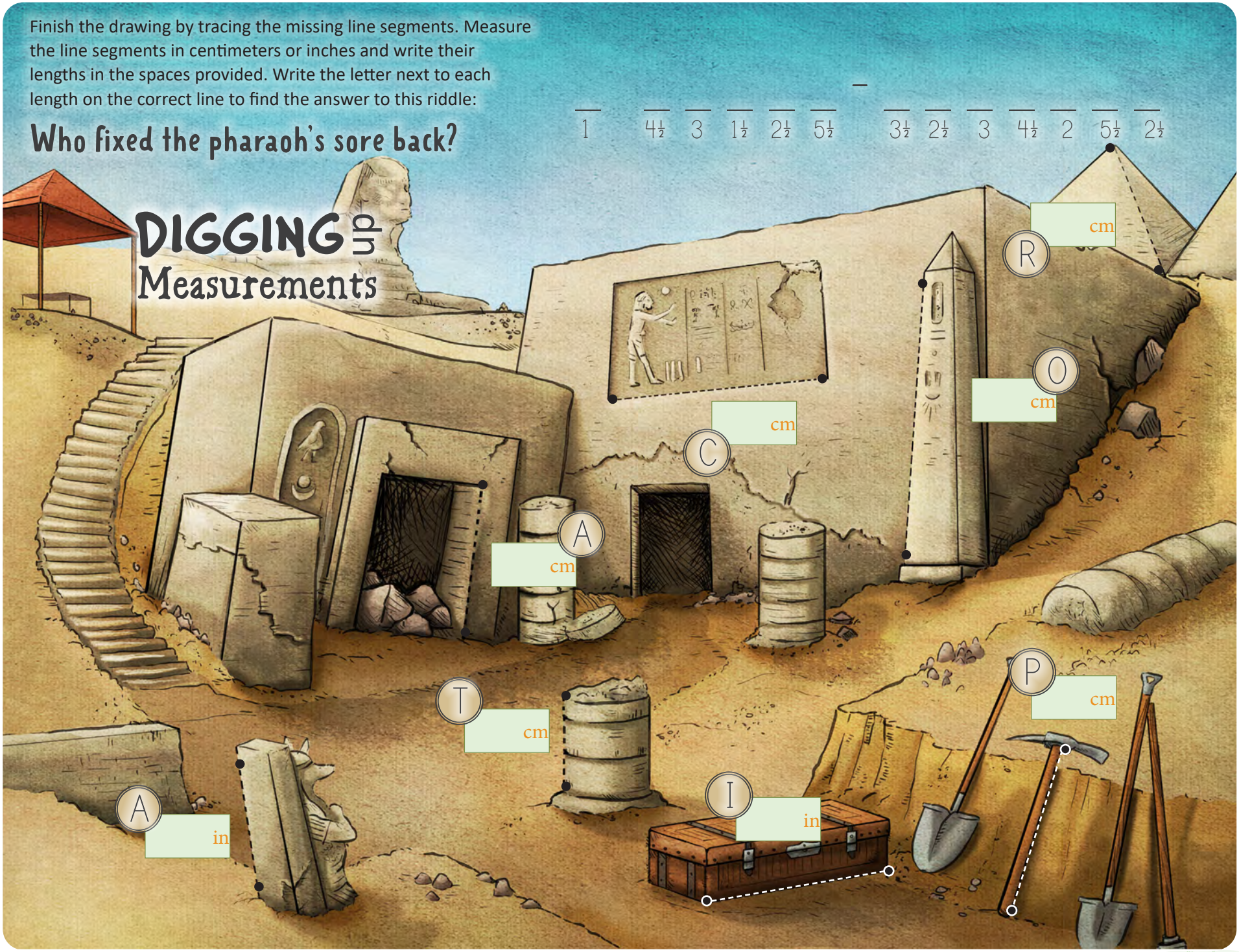
_____

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Finish the drawing by tracing the missing line segments. Measure the line segments in centimeters or inches and write their lengths in the spaces provided. Write the letter next to each length on the correct line to find the answer to this riddle:

Who fixed the pharaoh's sore back?

DIGGING up Measurements



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