Amplify Desmos Math CALIFORNIA

Grade 2

Volume 1: Units 1–4

Student Edition

About Amplify

Amplify is dedicated to collaborating with educators to create learning experiences that are rigorous and riveting for all students. Amplify creates K–12 core and supplemental curriculum, assessment, and intervention programs for today's students.

A pioneer in K–12 education since 2000, Amplify is leading the way in next-generation curriculum and assessment. All of our programs provide teachers with powerful tools that help them understand and respond to the needs of every student.

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Hello Curious Mind,

Welcome to Grade 2!

Get ready to dig deeper into the math you already know and explore new ways to grow as a mathematician!

This year, you'll get to explore math ideas with new friends.

You'll meet Benita — a second grader just like you — and you'll help her add and represent votes to see if her class pet can be a millipede. You'll compose boxes of honey cakes alongside Val the baker, and you'll help Orson figure out how to use measuring tools as he prepares for his school play. You'll also guide Ms. Morales along her mail route as you explore three-digit numbers, and you'll use addition and subtraction to help Bea find her lost stuffed porcupine, Eli.

And that's not all!

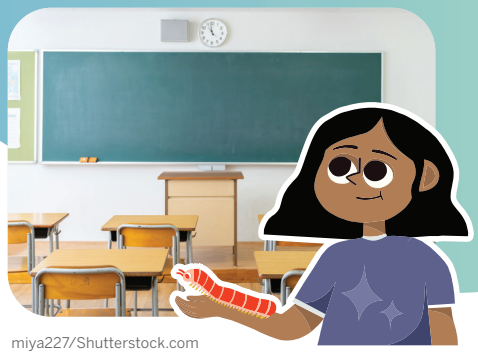
It's going to be an exciting year! Let's dig in!

Sincerely,

The Amplify Desmos Math California team



Unit 1 Working With Data and Solving Comparison Problems



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Let's solve problems using addition and subtraction.
Let's collect and represent data.

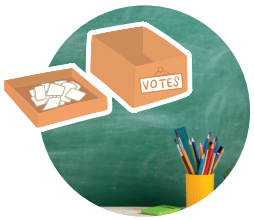
Unit Story: A New Class Pet In this story, Mr. Roy's class votes for a class pet. As votes are tallied, an unusual choice is discovered and second-grader Benita finds her voice.



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Unit 2 Adding and Subtracting Within 100

Let's solve problems about money and add and subtract within 100.



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Unit Story: The Heroes of Pineapple Street In this story, Kyle learns about the importance of cooperation as his community works together to raise money for the local library.



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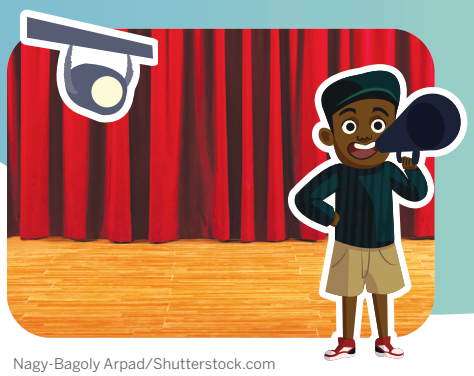
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Unit 3 Measuring Length

Let's measure lengths in different units. Let's make sense of data in line plots.

Unit Story: What Orson Imagined In this story, Orson becomes frustrated when others' ideas do not align with his vision for the school play.



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Unit 4 Addition and Subtraction on the Number Line



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Let's represent numbers to 100 and adding and subtracting on the number line.

Unit Story: A Seed's Journey In this story, Sid the seed goes on a journey before it begins to grow.



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Unit 5 Numbers to 1,000

Let's show and compare numbers greater than 100.

Unit Story: 302 Ricotta Drive In this story, Josey writes a letter to her mail carrier, Ms. Morales, to thank her for the important work she does in the community.



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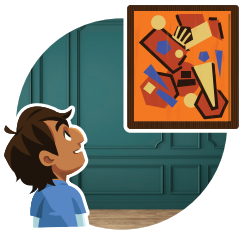
Unit 6 Geometry and Time

Let's identify and describe shapes and split them into equal parts. Let's work with time to the 5 minutes.

Unit Story: Arjun the Artist In this story, Arjun goes on a field trip to an art museum where he sees artwork that helps him believe in his own artistic potential.



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Unit 7 Adding and Subtracting Within 1,000

Let's use what we know about addition and subtraction to find sums and differences of three-digit numbers.

Unit Story: Where Eli Went In this story, Bea goes on an unexpected adventure through a magical forest to find her stuffed porcupine, Eli.



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Aastels/Shutterstock.com

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Unit 8 Equal Groups

Let's explore why the number of objects in a group is even or odd. Let's describe and create arrays.

Unit Story: On Clementine Court In this story, the kids who live on Clementine Court figure out what games they can play to include all of their neighbors.



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Unit 1

Working With Data and Solving Comparison Problems

Big Ideas in This Unit

CC1 Represent Data CC3 Number Strategies

Questions for Investigation

- How can you use patterns and strategies to find sums and differences?
- How can picture graphs and bar graphs help you solve problems about data?

Explore: A Pattern Puzzle

What number patterns can you find?

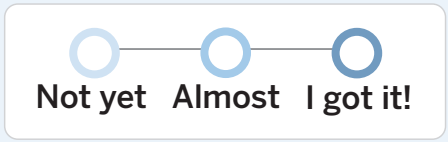
Unit Story: A New Class Pet

In this story, Mr. Roy's class votes for a class pet. As votes are tallied, an unusual choice is discovered and second-grader Benita finds her voice.

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Watch Your Knowledge Grow

This is the math you'll explore in this unit. Rate your understanding to see how your knowledge grows!



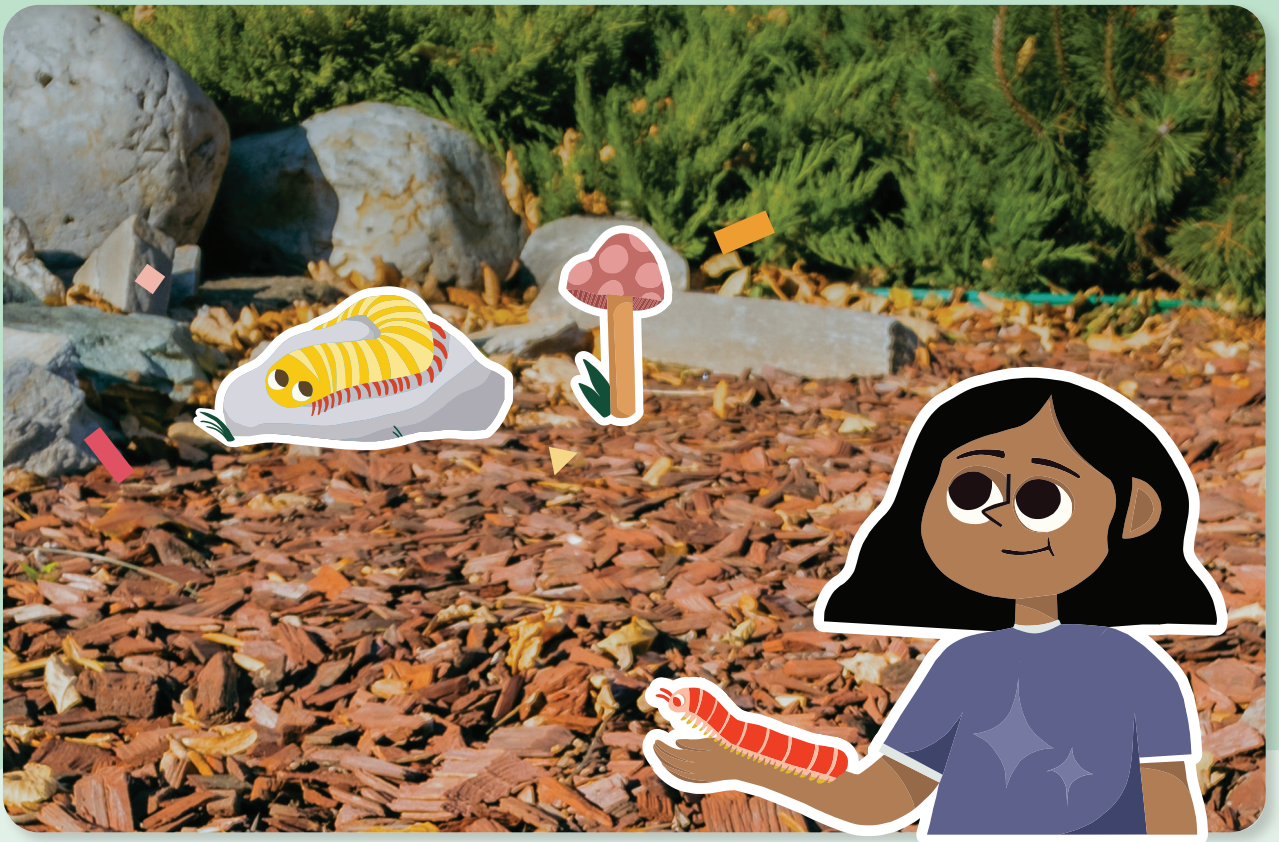
I can . . .	Before	After
Understand and represent the relationship between parts and their total.		
Add within 20.		
Subtract within 20.		
Read and represent data using a picture graph.		
Read and represent data using a bar graph.		
Ask and answer questions about data in graphs.		
Use bar graphs to represent and solve story problems.		
Use tape diagrams to represent and solve story problems.		
Use equations to represent and solve story problems.		

Sub-Unit

1

Adding and Subtracting

Unit Story: A New Class Pet



AndriiChagovets/Shutterstock.com

Benita shared the reasons why she thought a millipede would be a good pet.

How can you help others understand your mathematical ideas?

Name _____ Date _____

Number Strategies Building Toward 2.OA.2, SMP.1, SMP.2, SMP.7, SMP.8

Explore: A Pattern Puzzle

What number patterns can you find?



We are a math community. How did Benita feel when her classmates listened to her? What can you do to make sure all members of our math community feel listened to?

Warm-Up

eyes on teacher

Discuss What do you notice? What do you wonder?



Activity

Name _____ Date _____

Look at your puzzle pieces. Put together your puzzle pieces to make a square. Look for patterns in the numbers. As you work, discuss what you notice and wonder with your group.

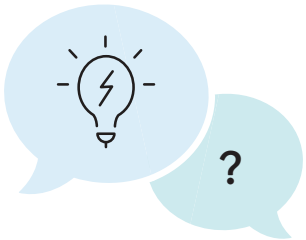
Ways to be a mathematician

1. I can take my time to think about a challenging problem before trying to solve it.



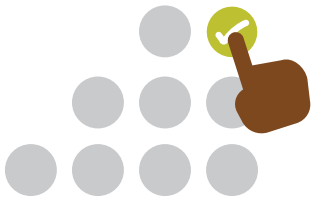
Not yet — Almost — I got it!

2. I can explain why my thinking makes sense and ask questions to understand the thinking of others.



Not yet — Almost — I got it!

3. I can see how ideas are connected and use patterns to help solve problems.



Not yet — Almost — I got it!

Unit 1
Lesson
2

Name _____ Date _____

Number Strategies | Building Toward 2.OA.2, SMP.7

Exploring Within 10

Let's add and subtract within 10.



Warm-Up

eyes on teacher

I can be all of me in math class. Think about the story. How is Benita like you? How is Benita different from you?

Activity 1

Introducing the Center, Check It Off

Stage 1

Pairs Let's add and subtract within 10.

You'll need: Number Cards, 0–10, Recording Sheet

How to Play

1. Draw 2 cards.
2. Find the *sum* or *difference*.
3. Check off the *sum* or *difference* you found, and record the *expression*. You can write another expression if you get the same *sum* or *difference* on another turn.
4. Take turns. The player who checks off more *sums* and *differences* wins.

CENTER
Recording Sheet

Name _____ Date _____

Check It Off (continued)

	✓	Expressions
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Activity 2

Name _____ Date _____

Around the Block

1 Hands-On

Write as many addition and subtraction expressions as you can for each value.

0	1	2
3	**4**	**5**

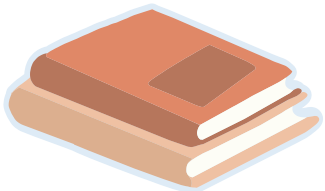
Activity 2

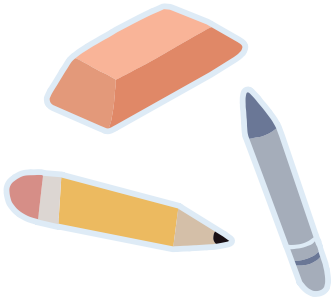
Name _____ Date _____

Around the Block (continued)

6	7	8

9	10





Summary 1.02

Recognizing patterns in expressions can help you build fluency when adding and subtracting within 10.

8	
8 + 0	10 − 2
7 + 1	9 − 1
6 + 2	
5 + 3	
4 + 4	

Practice 1.02

For Problems 1 and 2, write a new addition expression for the value.

1

9
5 + 4
7 + 2
8 + 1

2

6
4 + 2
6 + 0

Name _____ Date _____

For Problems 3 and 4, use the patterns in the equations to fill in the table.

3

5	+	1	=	
6	+		=	7
	+	1	=	8
	+		=	

4

4	+	1	=	
4	+	2	=	
4	+		=	7
	+		=	

For Problems 5–10, find the value of the expression.

5 9 – 2 _____

6 8 + 2 _____

7 5 + 3 _____

8 10 – 3 _____

9 2 + 8 _____

10 7 + 2 _____

Name _____ Date _____

11 Jada has red and yellow flowers in a vase. She has 6 flowers in all. Show **1** combination of colors that could be in the vase.

Show your thinking.

red: _____

yellow: _____

Spiral Review

For Problems 12–14, use the first equation to find the missing number in the second equation.

12 $2 + 3 = 5$

$3 + _____ = 5$

13 $6 + 4 = 10$

$10 - _____ = 6$

14 $3 + 4 = 7$

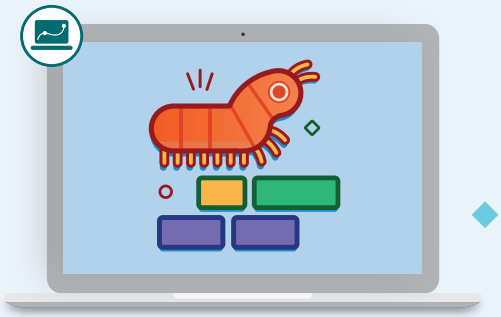
$4 + _____ = 7$

Name _____ Date _____

Number Strategies | Building Toward 2.OA.2, SMP.7

Ways to Make 10

Let's recognize pairs that make 10.



I can be all of me in math class. You will work with partners every day in math class. What do you want your partners to know about you?

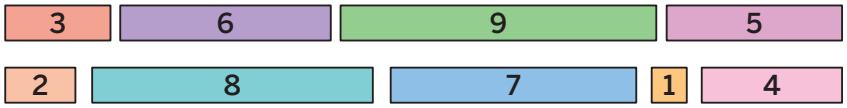
Warm-Up

1 eyes on teacher

Activity 1 All the Ways to Make 10

Hands-On

2 Choose different ways to make 10 with 2 blocks. You may use each block more than once. Fill in each sentence.



_____ and _____ make 10.

_____ and _____ make 10.

_____ and _____ make 10.

_____ and _____ make 10.

_____ and _____ make 10.

_____ and _____ make 10.

Name _____ Date _____

All the Ways to Make 10 (continued)

3 You will be given a set of cards with pairs that make 10. Organize the pairs that make 10 into the empty spaces to create a pattern.

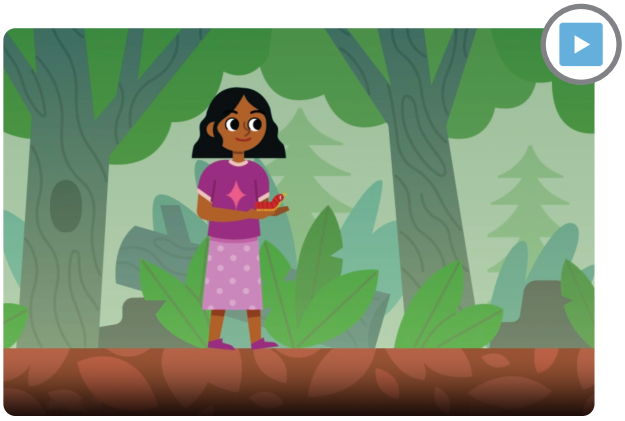
4 Let's compare patterns.

Activity 2

Name _____ Date _____

Finding the Missing Pair

5 Let's watch a video.



6 Choose the block that makes 10 with the block shown in each sentence. You may use each block more than once. Fill in each sentence with the number.

1	3	5	4	2

6 and _____ make 10.

7 and _____ make 10.

5 and _____ make 10.

8 and _____ make 10.

Name _____ Date _____

Finding the Missing Pair (continued)

7 Choose the number that makes 10. You may use each number more than once. Fill in each equation.

0	1	2	3	4	5	6	7	8	9	10

6 + _____ = 10

3 + _____ = 10

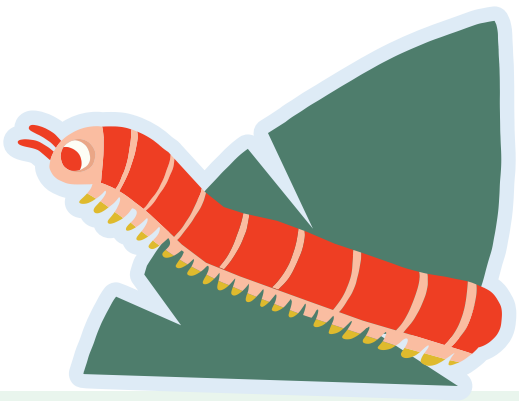
8 + _____ = 10

5 + _____ = 10

9 + _____ = 10

0 + _____ = 10

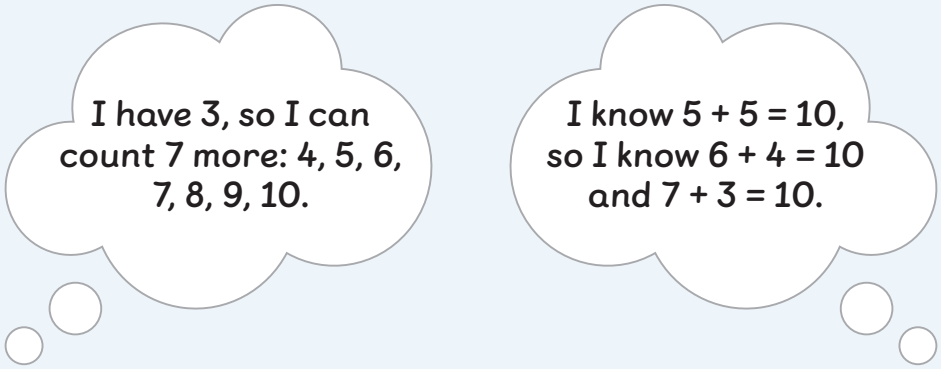
8 Let's compare strategies.



Summary 1.03

You can use patterns or strategies, such as counting on, counting back, or using known sums, to find pairs that make 10.

$$\underline{7} + 3 = 10$$



Practice 1.03

1 Circle **3** equations that are true.

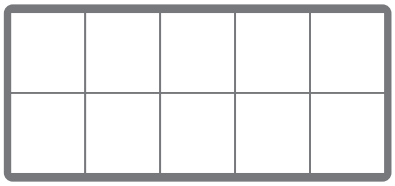
10 = 7 + 3 6 + 1 = 10 8 + 2 = 10

9 + 2 = 10 10 = 5 + 5

Name _____ Date _____

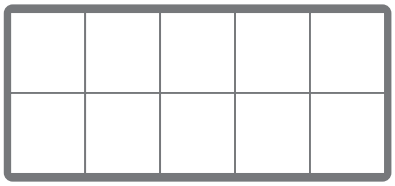
For Problems 2–4, show 3 different ways to make 10 using 2 colors in the 10-frame. Write an equation that represents the 10-frame.

2



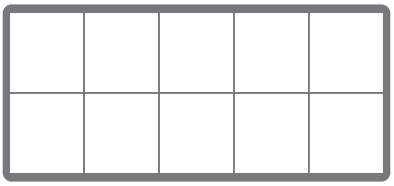
_____

3



_____

4



_____

5 Ms. Hernández is counting students' votes. She counts 4 votes. If there are 10 students in her class, how many *more* students need to vote? Write an equation that represents your thinking and underline the answer.

Show your thinking.

answer: _____ **equation:** _____

Name _____ Date _____

For Problems 6–11, find the number that makes 10.

6 9 + _____ = 10

7 8 + _____ = 10

8 6 + _____ = 10

9 3 + _____ = 10

10 2 + _____ = 10

11 1 + _____ = 10

Spiral Review

For Problems 12–17, find the sum. In each expression, circle the 2 addends you will add first.

12 4 + 2 + 6 _____

13 3 + 3 + 2 _____

14 5 + 2 + 3 _____

15 4 + 1 + 4 _____

16 7 + 1 + 3 _____

17 5 + 5 + 3 _____

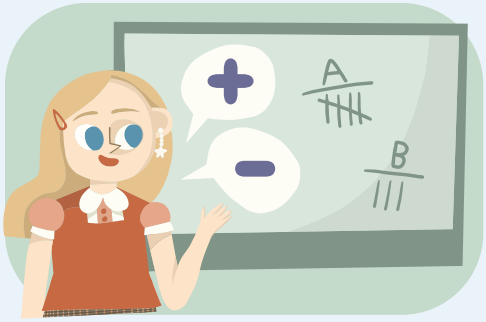
Unit 1
Lesson
4

Name _____ Date _____

Number Strategies 2.OA.2, SMP.2, SMP.3, SMP.7

A Tower of 10

Let's think about the relationship between parts and their total.



Warm-Up

eyes on teacher

I can be all of me in math class.
What is a math word or phrase that describes you all of the time? Some of the time?

Activity 1

Introducing the Center, What's Behind My Back? Stage 3



Pairs Let's figure out the missing part to make 10.

You'll need: 10-frame, 10 connecting cubes, Recording Sheet

Set Up Build a tower of 10 connecting cubes.

How to Play

1. **Player A:** Hide the tower of 10 connecting cubes behind your back and break off some cubes. Show your partner the rest.
2. **Player B:** Write an equation with a blank space to show what is missing.
3. **Player A:** Ask, "How many are behind my back? How do you know?"
4. **Player B:** Record the equation on the Recording Sheet. Switch roles and repeat.
5. Continue playing until your Recording Sheet is full.

CENTER
Recording Sheet

Name _____ Date _____

What's Behind My Back? (continued)

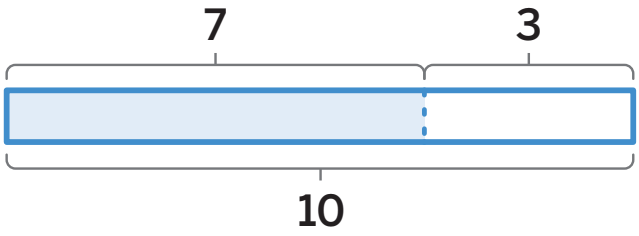
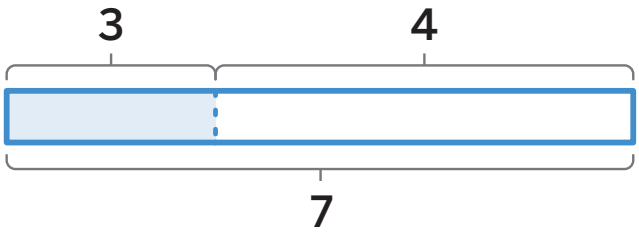
Round	Equation
0	
1	
2	
3	
4	
5	
6	

Activity 2

Name _____ Date _____

Connecting Representations

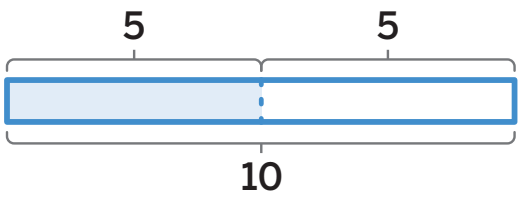
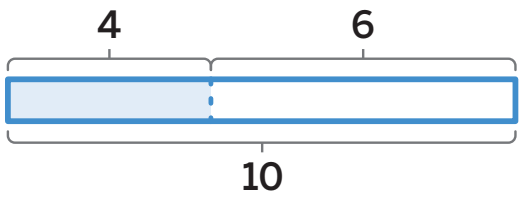
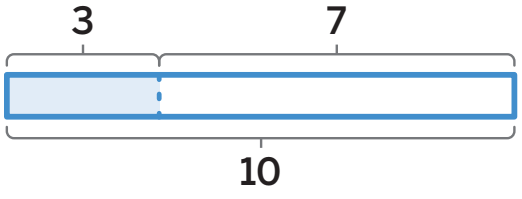
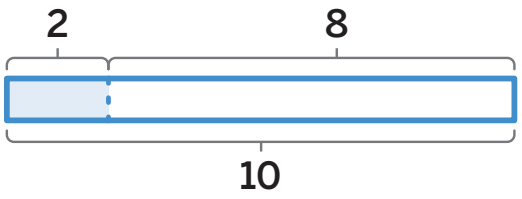
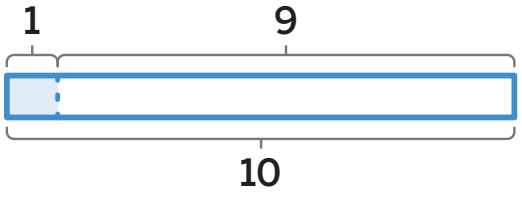
Draw lines to match each image with an equation.

	Image	Equation
1		$7 = 1 + 6$
2		$4 + 6 = 10$
		$3 + 4 = 7$
3		$10 - 3 = 7$
4		

Name _____ Date _____

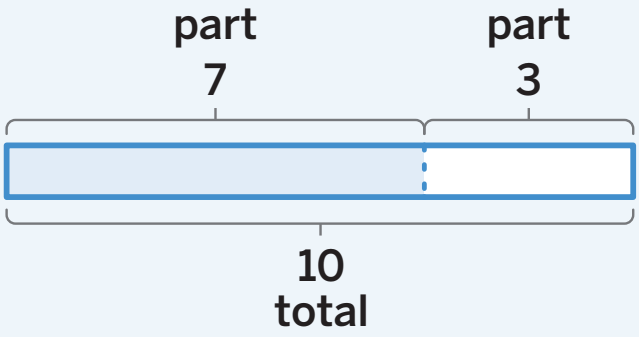
Connecting Representations (continued)

Represent the tape diagram with as many equations as you can. Write the equations in the table.

Tape diagram	Equations
5 	
6 	
7 	
8 	
9 	

Summary 1.04

You can use a **tape diagram** to represent the relationship between the parts and a total.



$3 + 7 = 10$ $10 - 3 = 7$
$7 + 3 = 10$ $10 - 7 = 3$

tape diagram A group of rectangles used to represent a relationship between quantities.

Practice 1.04

Jada is playing *What's Behind My Back?* with Han. Han has 10 cubes, but he only shows the cubes in the picture to Jada. Use the information for Problems 1–3.



1 How many cubes are behind Han's back?

_____

2 Write an addition equation that matches the game.

_____

3 Write a subtraction equation that matches the game.

_____

Name _____ Date _____

For Problems 4 and 5, solve the story problem. Write an equation that represents your thinking and underline the answer.

Show your thinking.

4 Diego is observing birds at the zoo. He wants to find 8 different kinds of birds. He has seen 5 kinds of birds so far. How many kinds of birds does Diego still need to find?

answer: _____

equation: _____

5 Clare is observing fish. In the first tank, she sees 8 fish. In the second tank, she sees 2 more fish. How many fish does she see in all?

answer: _____

equation: _____

Name _____ Date _____

6 Which equation could you use to find the value of 10 – 7? Circle your answer.

3 + 3 = 6

3 + 7 = 10

7 – 1 = 6

5 + 5 = 10

For Problems 7–9, find the value of the first expression. Then use that value to help find the value of the second expression.

7 3 + 3 _____ 6 – 3 _____

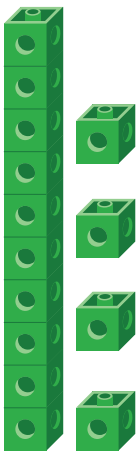
8 7 – 2 _____ 5 + 2 _____

9 4 + 6 _____ 10 – 4 _____

Spiral Review

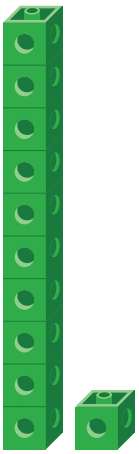
For Problems 10–12, write the number represented by the set of connecting cubes.

10



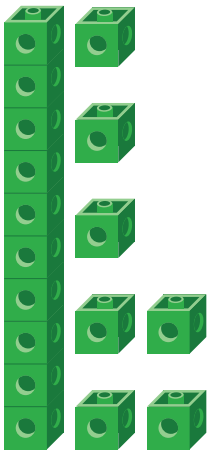
_____

11



_____

12



_____

Name _____ Date _____

Number Strategies 2.OA.2, SMP.2, SMP.7, SMP.8

What's Missing?

Let's make equations with missing numbers true.



I can be all of me in math class. In the story, it seemed important to Mr. Roy that everyone's ideas were included. What makes you feel included in math class?

Warm-Up

eyes on teacher

Activity 1

Introducing the Center, What's Behind My Back? Stage 5



Pairs Let's figure out the missing part to make 20.

You'll need: 20 connecting cubes, double 10-frame, Recording Sheet

Set Up Build a tower of 20 connecting cubes.

How to Play

1. **Player A:** Hold 2 towers of 10 cubes behind your back and break off some cubes. Show your partner the rest.
2. **Player B:** Write an equation with a blank space to show what is missing.
3. **Player A:** Ask, "How many are behind my back? How do you know?"
4. **Player B:** Record the equation on the Recording Sheet.
5. Switch roles and repeat.
6. Continue playing until your Recording Sheet is full.

CENTER
Recording Sheet

Name _____ Date _____

What's Behind My Back? (continued)

Round	Equation
1	
2	
3	
4	
5	
6	

Activity 2

Name _____ Date _____

Making Equations True

Hands-On

Find the number that makes each equation true. You can use the tape diagram if it is helpful.

Show or explain your thinking.

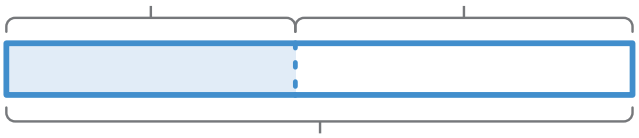
1. $4 + 9 =$ _____



2. $15 -$ _____ $= 3$



3. $13 = 6 +$ _____

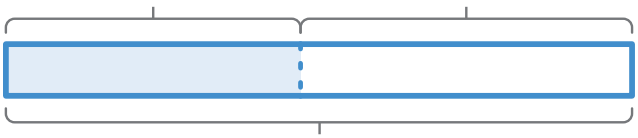


Name _____ Date _____

Making Equations True (continued)

Show or explain your thinking.

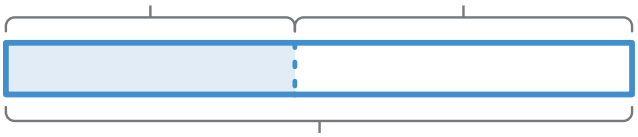
4 _____ = 17 – 9



5 _____ + 5 = 19



6 _____ – 4 = 8



Summary 1.05

You can use different strategies to find the missing number in addition and subtraction equations.

$$20 - __ = 15$$

I can start at 15 and count up 5 until I get to 20: 16, 17, 18, 19, 20.

15 + 5 = 20, so 20 − 5 = 15.

Practice 1.05

For Problems 1 and 2, find the number that makes the equation true. You can use the tape diagram if it is helpful.

Show or explain your thinking.

1 16 + _____ = 20



2 4 = 18 − _____



Name _____ Date _____

For Problems 3 and 4, solve the story problem. Write an equation that represents your thinking and underline the answer.

Show your thinking.

3 Clare collected canned food items for a community food drive. On Saturday, she collected 4 cans. On Sunday, she collected more cans. She collected 20 cans in all. How many cans did Clare collect on Sunday?

answer: _____ **equation:** _____

4 Priya collected 15 cans of food for a community food drive. She gave 7 of the cans to her friend. How many cans does Priya have left?

answer: _____ **equation:** _____

Practice 1.05

Name _____ Date _____

For Problems 5–7, find the number that makes the equation true.

Show or explain your thinking.

5 17 + _____ = 20

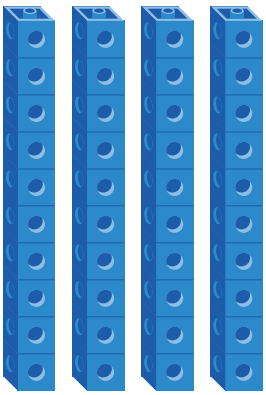
6 20 = 5 + _____

7 7 = 20 – _____

Spiral Review

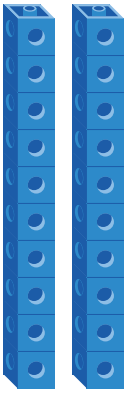
For Problems 8–10, write the number represented by the set of connecting cubes.

8



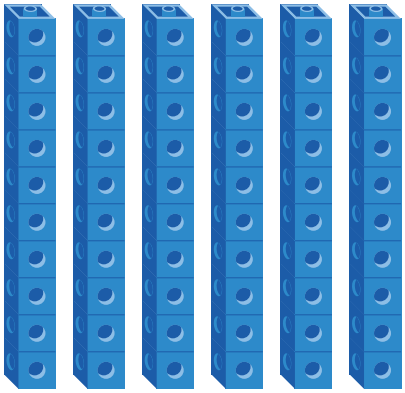
_____

9



_____

10



_____

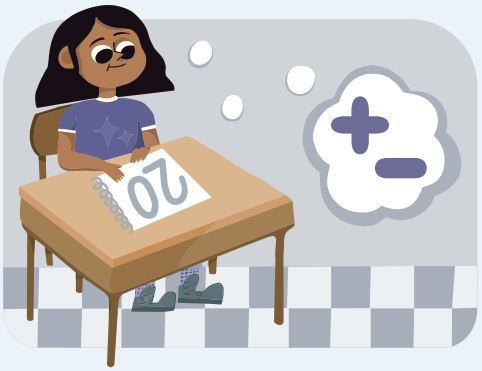
Unit 1
Lesson
6

Name _____ Date _____

Number Strategies 2.OA.2, SMP.7, SMP.8

Have It Your Way

Let's explore strategies for adding within 20.



I can be all of me in math class. Benita felt afraid to share her ideas in class. When have you felt afraid to share your ideas in math class?

Warm-Up

eyes on teacher

Activity 1

Introducing the Center, How Close? Stage 1

Pairs Let's add within 20.

You'll need: Number Cards, 0–9, Recording Sheet

Set Up Shuffle the Number Cards and lay them in a stack facedown.

How to Play

1. Each player draws 5 cards.
2. Choose 3 cards to fill in your equation. Find the sum.
3. Compare your sums. If your sum is closer to 20, you earn a point.
4. Draw 3 new cards and play again until the Recording Sheet is full.

How to win The player who earns more points wins.

CENTER
Recording Sheet

Name _____ Date _____

How Close? (continued)

Addition equation	Points
☐ + ☐ + ☐ = ☐	
☐ + ☐ + ☐ = ☐	
☐ + ☐ + ☐ = ☐	
☐ + ☐ + ☐ = ☐	
☐ + ☐ + ☐ = ☐	

Activity 2

Name _____ Date _____

Adding Within 20

Find the number that makes each equation true.

1. $4 + 6 =$ _____

   $4 + 8 =$ _____

2. $9 + 1 =$ _____

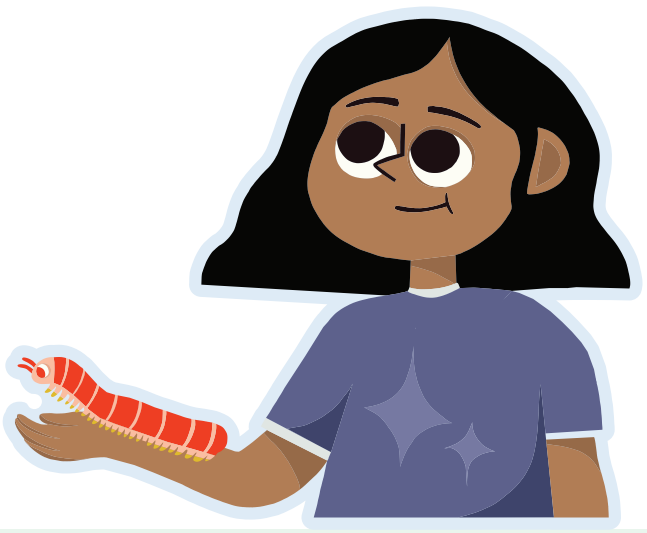
   $9 + 8 =$ _____

3. $6 + 6 =$ _____

   $6 + 9 =$ _____

4. $8 + 8 =$ _____

   $8 + 5 =$ _____



Name _____ Date _____

Adding Within 20 (continued)

Find the value of each expression.

Show or explain your thinking.

5 $8 + 7$ _____

6 $12 + 8$ _____

7 $5 + 9$ _____

8 $7 + 5$ _____

Summary 1.06

There are different strategies you can use to add. You can use what you notice about the numbers to choose a strategy.

5 + 9	8 + 7
9 + 1 = 10 10 + 4 = 14	7 + 7 = 14 14 + 1 = 15

Practice 1.06

1 A list of numbers is shown.

1	2	3	5	6	7	9

Choose **3** numbers to add to get as close as you can to 20.

Write **2** different equations that show how you added.

Show your thinking.

Equation 1: _____ **Equation 2:** _____

Name _____ Date _____

For Problems 2 and 3, find the number that makes the equation true.

Show or explain your thinking.

2 $20 - 9 =$ _____

3 $13 +$ _____ $= 20$

4 Solve the story problem. Write an equation that represents your thinking and underline the answer.

Jada had 17 pennies. Some pennies fell out of her pocket and then she had 8. How many pennies fell out of Jada's pocket?

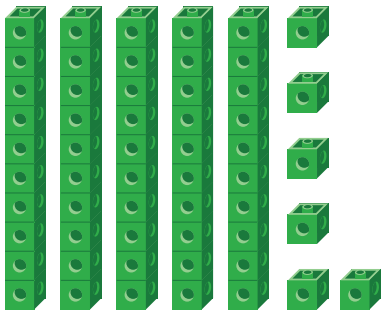
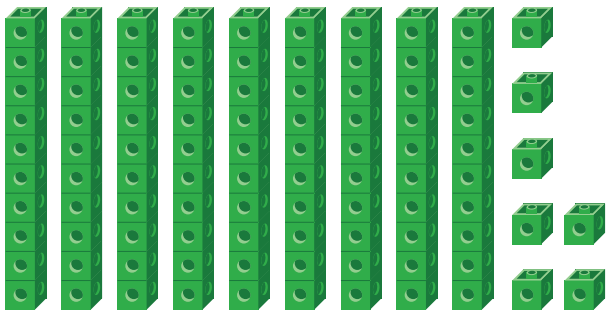
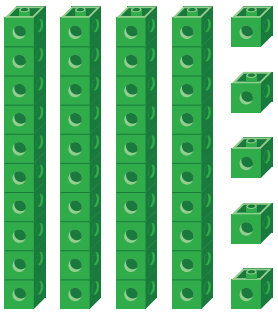
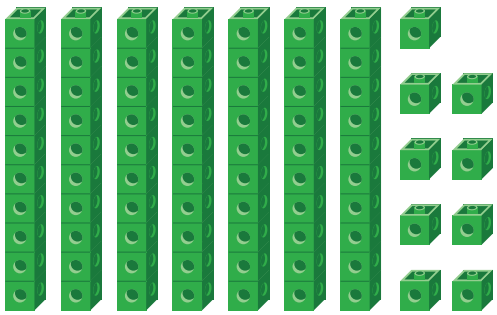
Show your thinking.

answer: _____ **equation:** _____

Name _____ Date _____

Spiral Review

For Problems 5–8, draw lines to match the set of connecting cubes with the correct number.

	Connecting cubes	Number
5		45
6		79
		56
7		97
8		

Sub-Unit 2

Ways to Represent Data

Unit Story: A New Class Pet



Sensay/Shutterstock.com

Mr. Roy used tally marks to represent each student's vote.

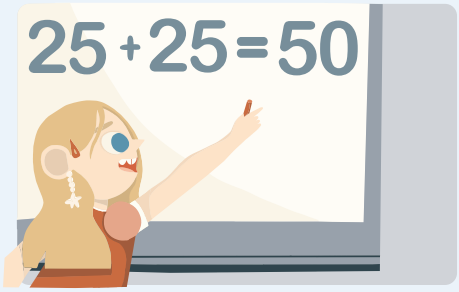
How else could he represent their answers?

Name _____ Date _____

Represent Data | Building Toward 2.MD.10, SMP.5

How We Get to School

Let's organize data to share it with others.



Warm-Up

eyes on teacher

We are a math community. What does good listening look like and sound like to you as a math learner?

Activity 1 How Do We Get to School?

You and your partner will be given a sheet, colored pencils, scissors, and tape.

1. Choose the picture that shows how you got to school today. If you got to school another way, draw a picture in the square labeled "another way" to show how you got to school.

2. Write your name on the picture.

3. Cut out the picture and place it on the class display.

4. **Data Talk!**
   What questions could you ask based on the class display?

Activity 2

Name _____ Date _____

Visual Representations of Data

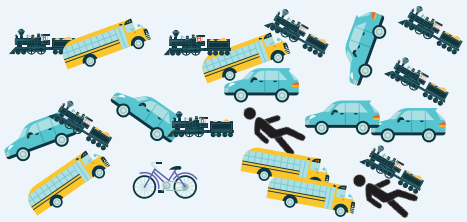
Hands-On

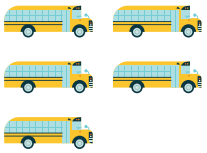
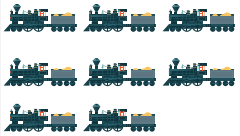
You and your partner will be given cards that show ways of traveling, dot stickers, glue, markers, scissors, and tape.

5 Organize and represent the data about how our class gets to school.

Summary 1.07

When you group together related data and label it, you can read and understand the data more clearly.



bus	train
	
car	**another way**
	

Practice 1.07

Jada drew pictures of what she saw in a park. Use her pictures for Problems 1 and 2.



1 Create a different representation of Jada's data.

Draw

Name _____ Date _____

2 Explain how you organized the data in Problem 1.

Diego recorded his classmates' favorite colors. Use Diego's data for Problems 3–5.

Favorite Colors			
yellow	red	red	blue
red	blue	purple	yellow
red	red	blue	purple
red	blue	blue	yellow
red	red		

3 Create a representation to show Diego's data.

Draw

4 Explain how you organized the data in Problem 3.

Name _____ Date _____

5 Represent Diego's data in the table.

yellow	
red	
blue	
purple	

Spiral Review

For Problems 6–9, find the value of the expression.

6 2 + 7 _____

7 8 + 2 _____

8 5 + 3 _____

9 3 + 3 _____

For Problems 10–13, find the number that makes the equation true.

10 2 + _____ = 6

11 5 + _____ = 9

12 8 − _____ = 7

13 5 = 10 − _____

14 Diego asked his family members about their favorite colors. 2 people in his family like pink, 4 people like blue, and 3 people like green. How many family members did Diego ask? Write an equation that represents your thinking and underline the answer.

Show your thinking.

answer: _____ **equation:** _____

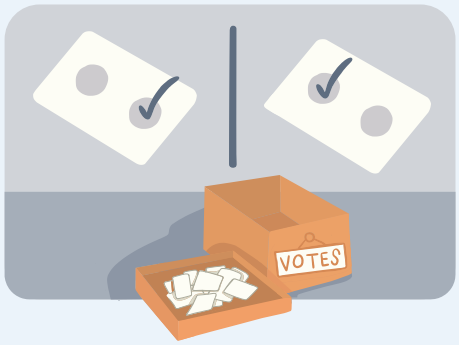
Unit 1
Lesson
8

Name _____ Date _____

Represent Data 2.MD.10, SMP.2, SMP.4, SMP.7

A Class Pet

Let's read and understand data in picture graphs.



I can be all of me in math class. In time, Benita felt comfortable with sharing her ideas. What makes you feel comfortable with sharing your ideas?

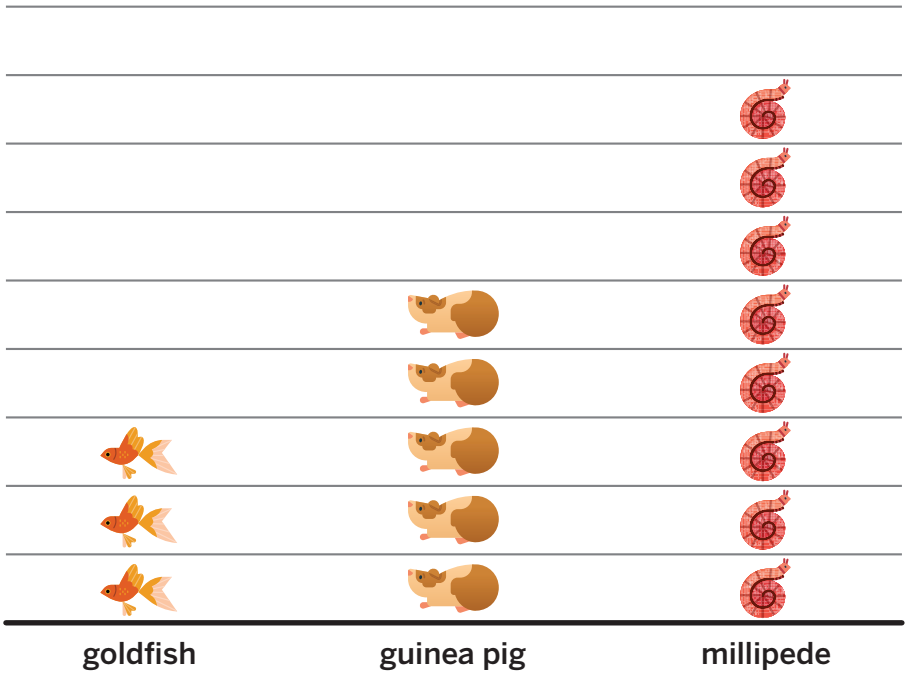
Warm-Up

eyes on teacher

Activity 1 Class Pet, Part 1

Benita explained why the class should have a millipede as the class pet. Then the class voted again. The data representation shows how they voted.

Class Pet: Round 2



Name _____ Date _____

Class Pet, Part 1 (continued)

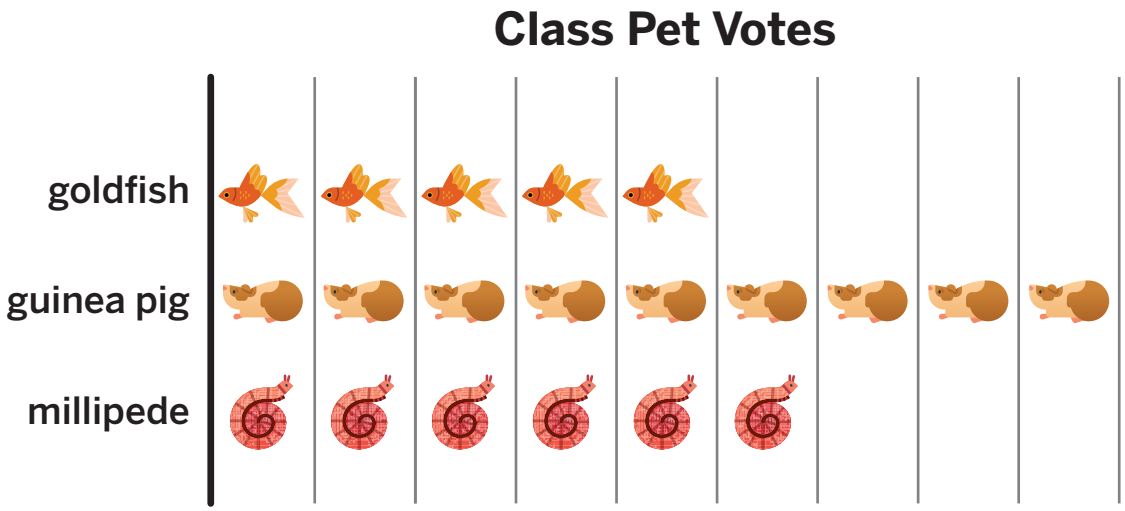
1 Write as many statements as you can about the data represented.

Activity 2

Name _____ Date _____

Class Pet, Part 2

The picture graph shows votes for a class pet from another class.



2 Circle **3** questions that can be answered using the graph.

How many students voted for a guinea pig?

What is the total number of students who voted for a goldfish or a millipede?

Why did so many students choose guinea pigs?

How many more students voted for a guinea pig than a millipede?

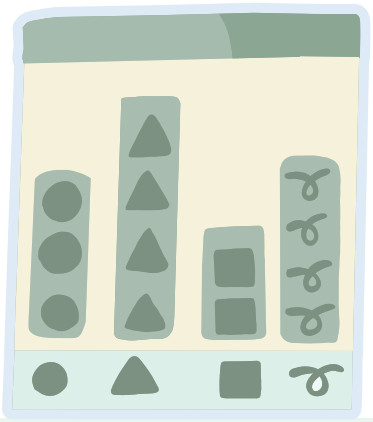
What is a millipede?

Name _____ Date _____

Class Pet, Part 2 (continued)

3 Answer the questions you circled in the table. If possible, for each question, write an equation and underline the answer.

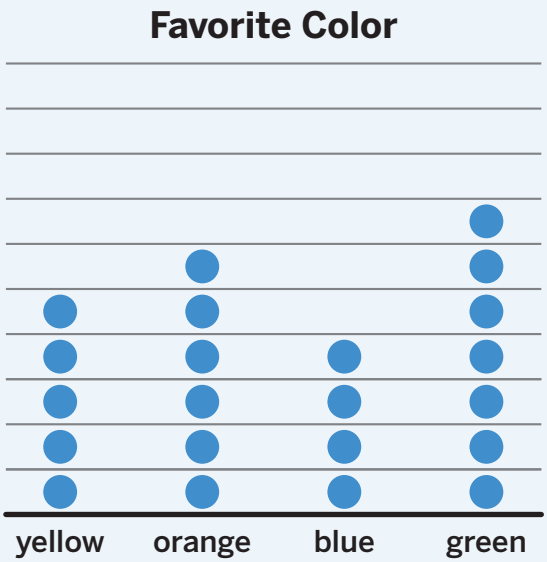
Letter of question	Answer	Equation





Summary 1.08

Picture graphs are a way to organize and represent data. You can use picture graphs to answer questions about data.



picture graph A way to show the number of items in a group or category using pictures to represent the objects.

Practice 1.08

The picture graph in the Summary shows the favorite colors of some students. Use the picture graph for Problems 1 and 2.

1 Circle **2** statements that are *true* about the data.

More students like green than any other color.

5 students chose blue as their favorite color.

2 more students chose blue than orange.

3 fewer students chose blue than green.

2 How many students voted?

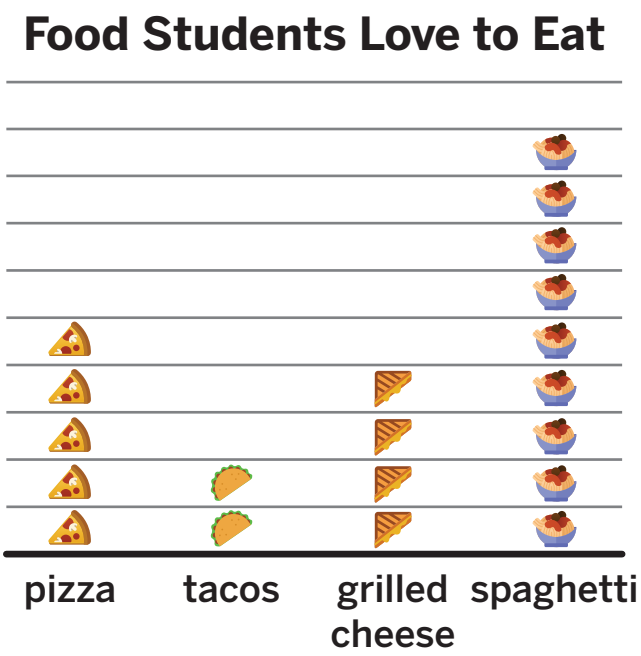
answer: _____

equation: _____

Name _____ Date _____

The picture graph shows some students' favorite foods. Use the picture graph for Problems 3–5.

Write an equation to show how you solved each problem and underline the answer.



3 How many students chose pizza or tacos as their favorite food?

answer: _____

equation: _____

4 How many *more* students chose spaghetti than grilled cheese as their favorite food?

answer: _____

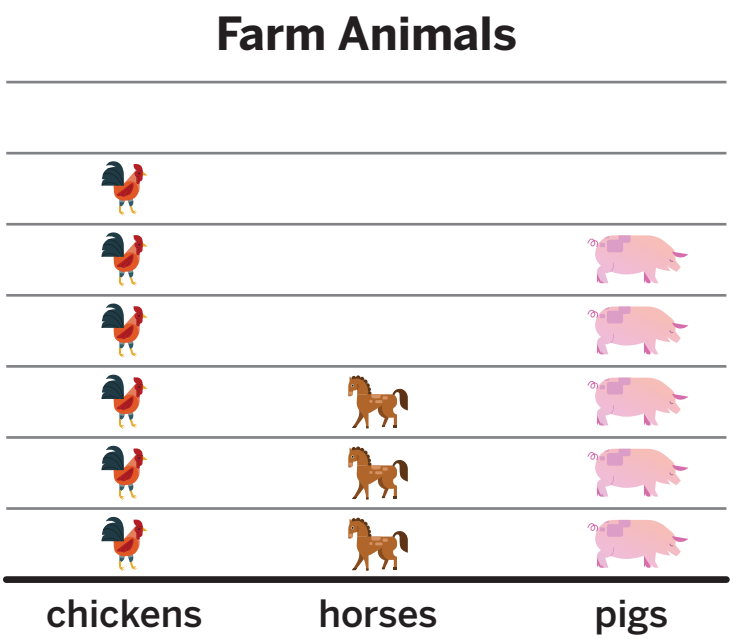
equation: _____

5 Which food was chosen less than any other food?

_____

Name _____ Date _____

6 The picture graph shows the number of different animals that students saw on a trip to the farm. Write **1** fact about the data shown in the picture graph.



_____

_____

Spiral Review

For Problems 7–10, find the number that makes the equation true.

7 10 + _____ = 15

8 10 + 4 = _____

9 10 + _____ = 18

10 10 + 9 = _____

Unit 1
Lesson
9

Name _____ Date _____

Represent Data 2.MD.10, SMP.2, SMP.6

Data About Mr. Roy's Class

Let's read and understand data in bar graphs.



We are a math community. How does Mr. Roy's class use data to make sure each member of their community feels represented?

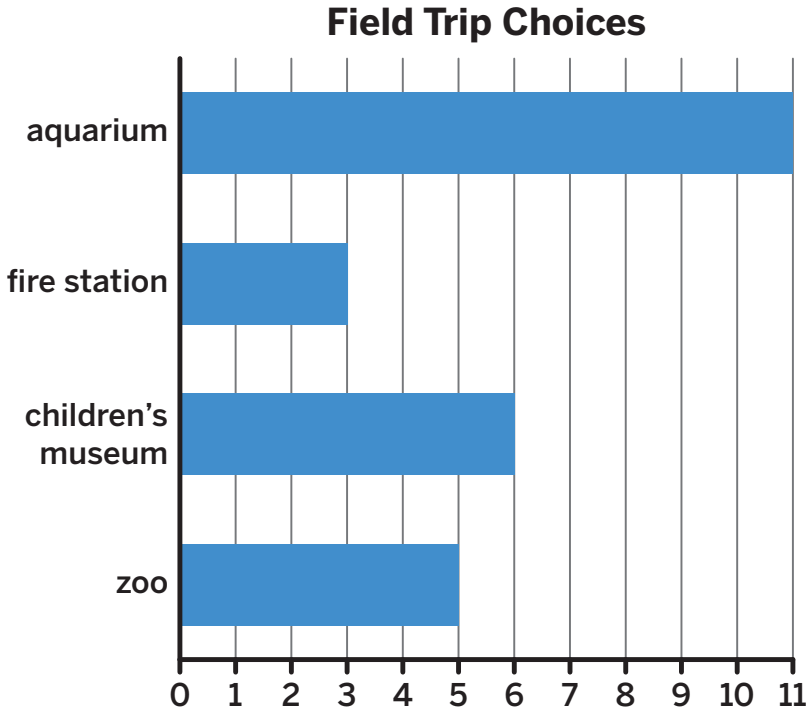
Warm-Up

eyes on teacher

Activity 1

Field Trip Choices

The graph shows how Mr. Roy's students voted on where to go for their next field trip.



Name _____ Date _____

Field Trip Choices (continued)

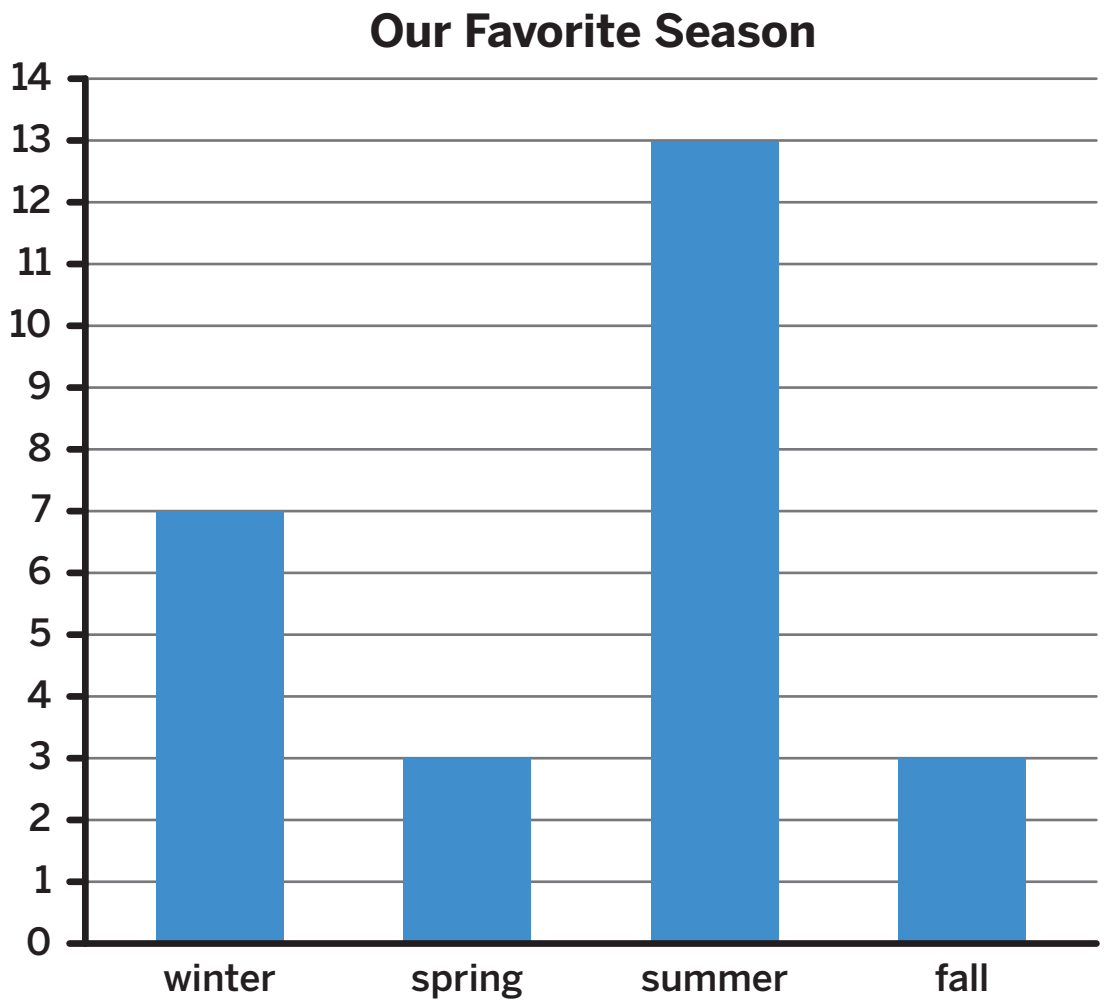
1 Write as many statements as you can about the data in the **bar graph**.

Activity 2

Name _____ Date _____

Our Favorite Seasons

Mr. Roy's students were asked, "What is your favorite season?" Their responses are shown in the bar graph.



Name _____ Date _____

Our Favorite Seasons (continued)

Use the bar graph to complete each problem. For Problems 3–5, write an equation to show how you solved the problem and underline the answer.

2 How many students voted for summer?

_____

3 What is the total number of students who voted for fall or spring?

answer: _____

equation: _____

4 Which **2** seasons have a total of 10 votes?

answer: _____

equation: _____

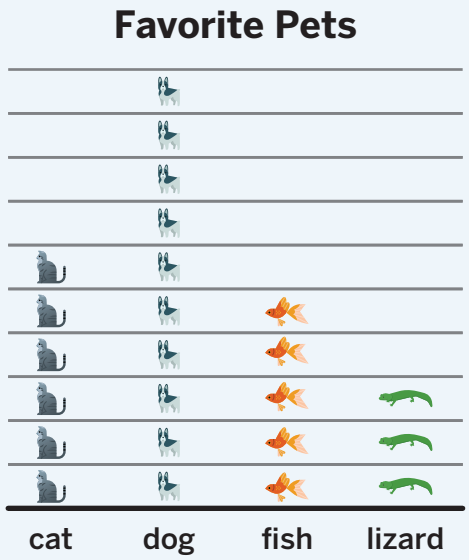
5 How many students voted?

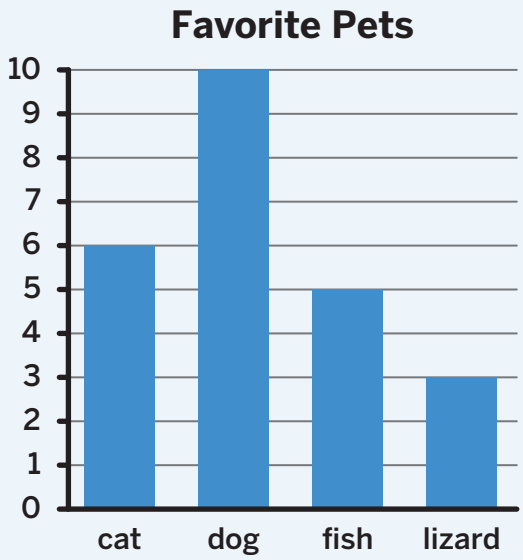
answer: _____

equation: _____

Summary 1.09

Bar graphs and picture graphs are ways to represent data. They can show the same data, but the number labels on a bar graph help you know how many without having to count.





bar graph A way to show how many in each group or category using the length of the rectangles.

Practice 1.09

The graphs in the Summary show the favorite pets of some students. Use the graphs for Problems 1 and 2.

1 How many *more* votes for dogs are there than lizards? Write an equation and underline the answer.

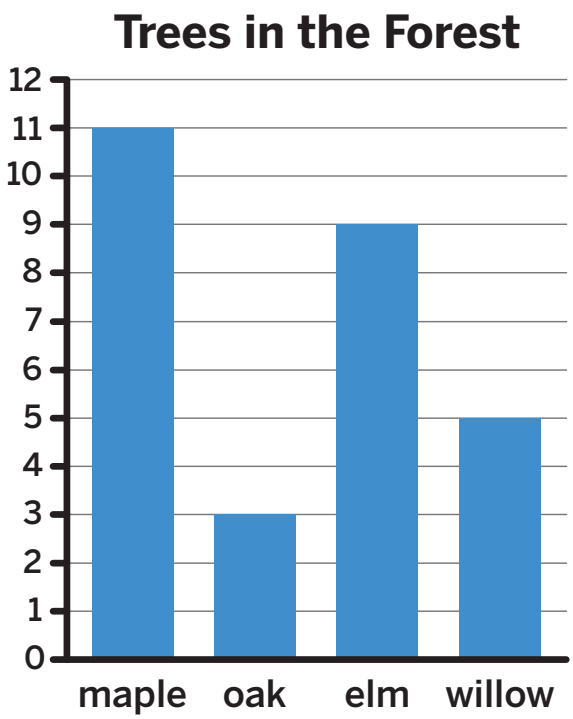
answer: _____ **equation:** _____

2 How many students voted? Write an equation and underline the answer.

answer: _____ **equation:** _____

Name _____ Date _____

The bar graph shows data on different kinds of trees that are growing in a forest. Use the bar graph for Problems 3–6.



3 How many willow and elm trees are in the forest? Write an equation and underline the answer.

answer: _____

equation: _____

4 How many *more* maple trees are there than oak trees? Write an equation and underline the answer.

answer: _____

equation: _____

5 What kind of tree is found the *least* in the forest?

_____

6 How many trees are in the forest altogether? Write an equation and underline the answer.

answer: _____

equation: _____

Name _____ Date _____

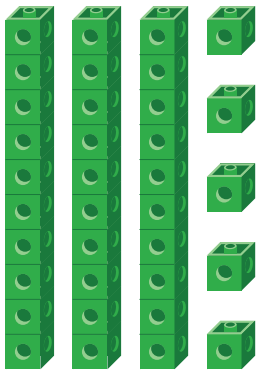
Spiral Review

7 Circle **6** expressions that are equal to 8.

4 + 3	5 + 2	7 + 1
6 + 2	9 – 3	5 + 3
10 – 2	4 + 4	9 – 1

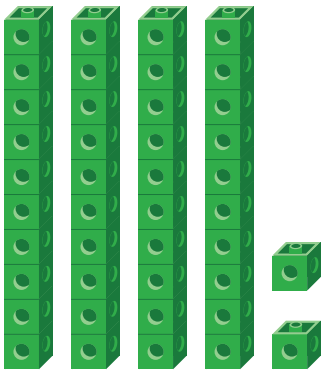
For Problems 8–11, write the number represented by the set of connecting cubes.

8



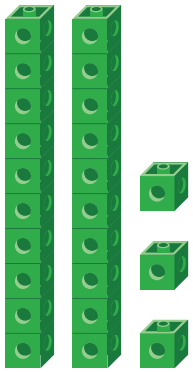
_____

9



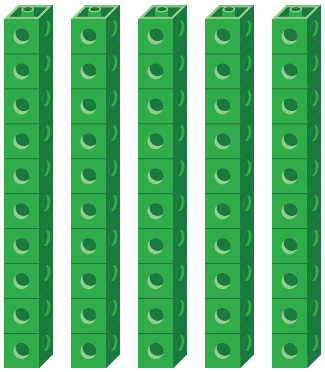
_____

10



_____

11



_____

Unit 1
Lesson
10

Name _____ Date _____

Represent Data 2.MD.10, SMP.2, SMP.6

Representing Data in Graphs

Let's make our own picture graphs and bar graphs.



We are a math community. Benita was afraid to share her opinion at first. How can you encourage others to share their ideas in math class?

Warm-Up

eyes on teacher

Activity 1 Drawing a Picture Graph

Hands-On

A group of students collected data. You and your partner will decide who is Partner A and who is Partner B. Each partner will have a different data table that shows data the group collected.

1 You will be given a blank graph. Represent the data from your table in a picture graph.

Partner A:

Favorite Sports	
basketball	4
softball	3
gymnastics	5
soccer	11

Partner B:

Marbles in a Jar	
red	4
green	10
orange	5
purple	4

Name _____ Date _____

Drawing a Picture Graph (continued)

2 Discuss

Give your partner feedback on their graph. What did your partner do well? What could they change?

Use the sentence frames if they are helpful.

- Your graph is clear because _____.
- Your graph could be more clear if _____.





Activity 2

Name _____ Date _____

Drawing a Bar Graph

Hands-On

Switch data tables with your partner.

3 You will be given a blank graph. Represent the data from your *new* table in a bar graph.

Partner A:

Marbles in a Jar	
red	4
green	10
orange	5
purple	4

Partner B:

Favorite Sports	
basketball	4
softball	3
gymnastics	5
soccer	11

4 ## Discuss

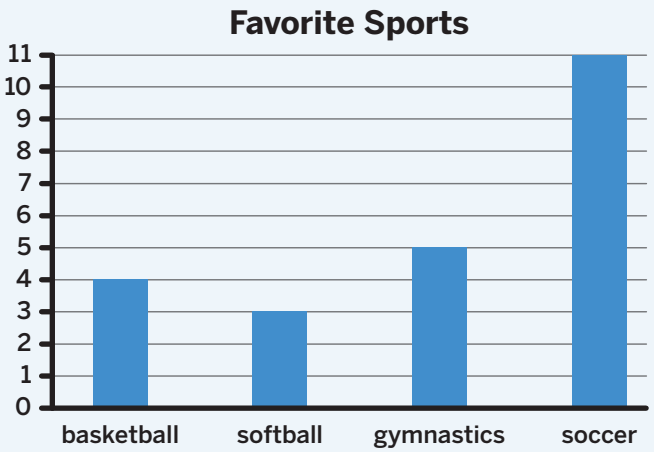
Give your partner feedback on their graph. What did your partner do well? What could they change?

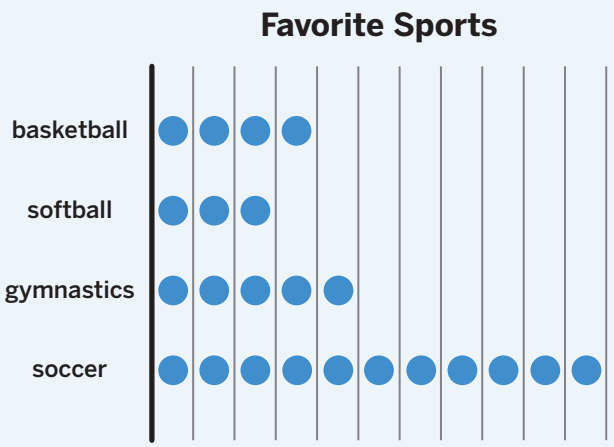
Use the sentence frames if they are helpful.

- Your graph is clear because _____.
- Your graph could be more clear if _____.

Summary 1.10

Picture graphs and bar graphs can show the same data. The number labels on a bar graph can help you interpret the data because you do not have to count each picture or symbol.

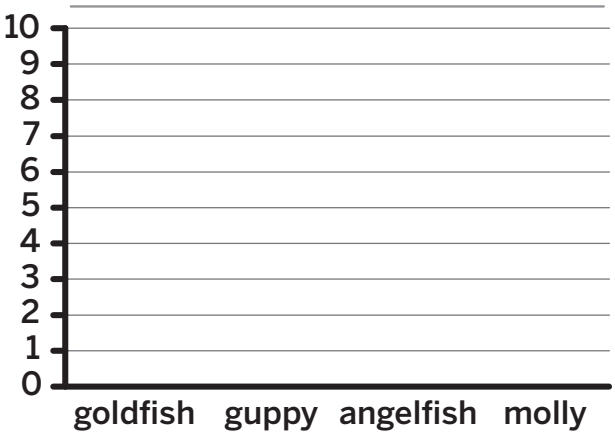




Practice 1.10

1 The table shows the types of fish in a tank. Use the data to complete the bar graph.

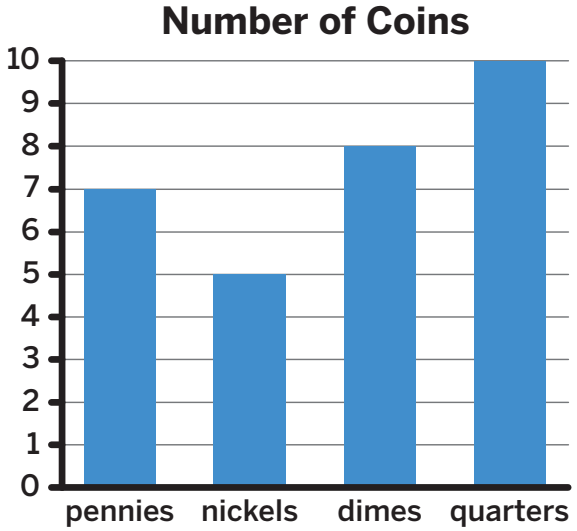
Fish	Number
goldfish	3
guppy	9
angelfish	4
molly	5



Name _____ Date _____

2 After the school bake sale, Han and Jada made a graph to represent the money they earned.

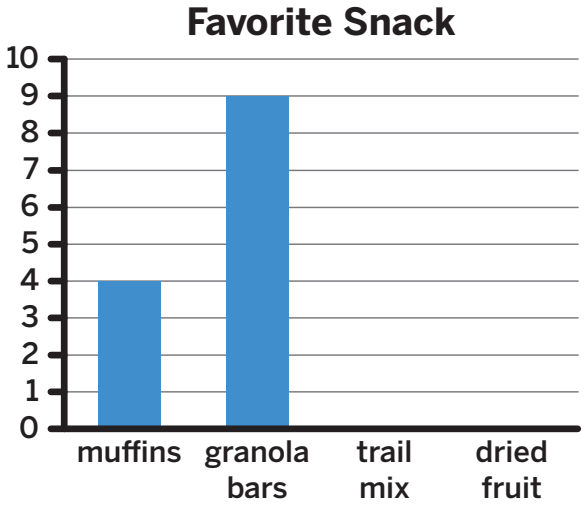
Fill in the table to show how many of each coin they collected.



Coin name	Number
penny	
nickel	
dime	
quarter	

3 Han and Jada collected data in different ways to record how many of each type of item they sold in the bake sale. Use the data they collected to complete the graph and the data table.

Han's graph



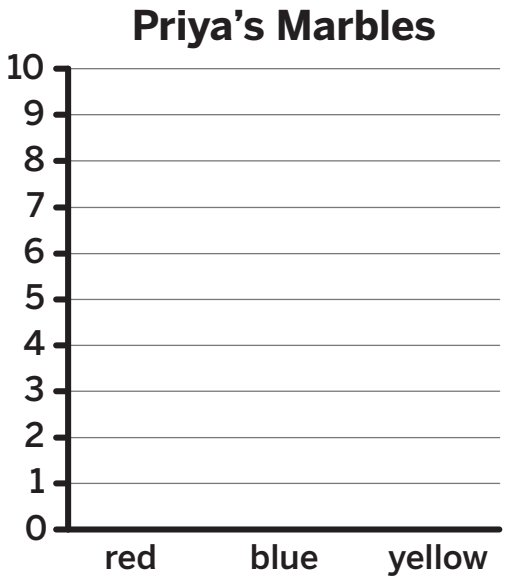
Jada's table

Snack	Number
muffins	
granola bars	
trail mix	8
dried fruit	5

Name _____ Date _____

4 Priya has a bag of red, blue, and yellow marbles. She has 15 marbles in all. Fill in the table to show **1** combination of marble colors that equals 15. Create a bar graph to represent the data.

Priya's Marbles	
red	
blue	
yellow	



Spiral Review

5 Solve the story problem. Write an equation that represents your thinking and underline the answer.

Priya has another bag of marbles. She has 3 red marbles, 6 blue marbles, and 7 yellow marbles. How many marbles are in Priya's bag altogether?

Show your thinking.

answer: _____ **equation:** _____

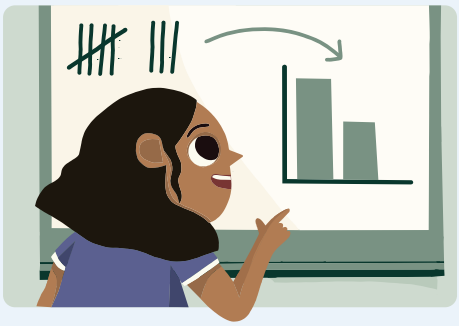
Unit 1
Lesson
11

Name _____ Date _____

Represent Data | Number Strategies | 2.MD.10, 2.OA.2, SMP.2, SMP.6, SMP.7

Questions About Data

Let's ask and answer questions about data in graphs.



Warm-Up

eyes on teacher

I can be all of me in math class.
How do you like to receive feedback for your math work?

Activity 1 Writing Questions About Graphs

1 Hands-On

You will be given your picture graph and bar graph from the previous lesson and a sheet on which to write questions. Choose one of your graphs. Write **4** questions you could ask about the data in the graph.

Use the question frames if they are helpful.

- How many students _____?
- How many total students chose _____ or _____?
- How many more students chose _____ than _____?

Activity 2

Name _____ Date _____

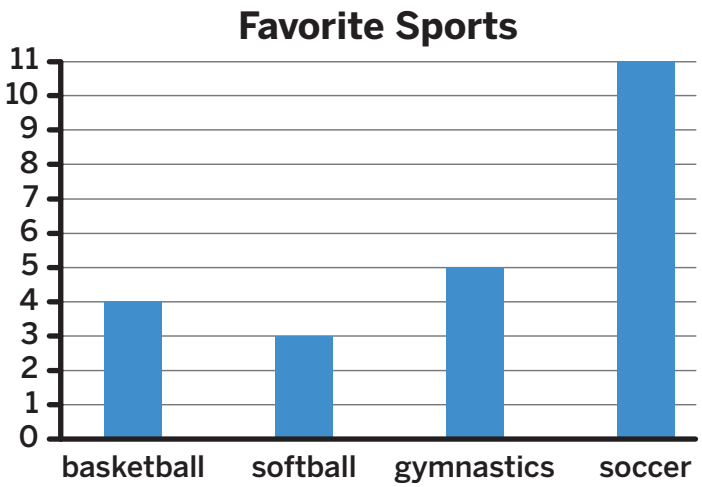
Answering Questions About Graphs

Your partner will give you their graph and their questions.

2 Use your partner's graph to answer the question your partner circled. Write an equation that represents your thinking and underline the answer.

answer: _____ **equation:** _____

Use Benita's bar graph to answer Problems 3 and 4. Write an equation that represents your thinking and underline the answer.



3 How many *total* students voted for basketball or soccer?

answer: _____ **equation:** _____

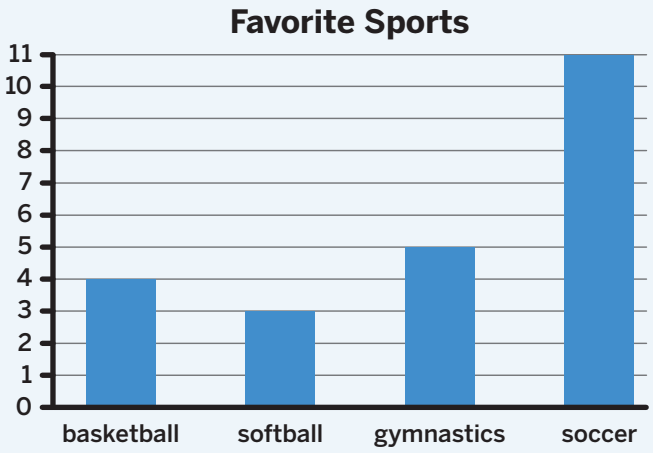
4 How many *more* students chose soccer than basketball?

answer: _____ **equation:** _____

Summary 1.11

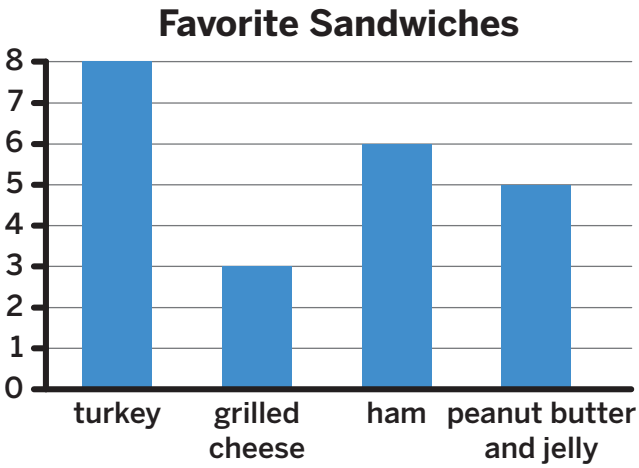
You can use graphs to ask and answer questions about how many are in each category by combining or comparing categories.

- How many students chose gymnastics?
- How many *fewer* students chose softball than gymnastics?
- How many students were surveyed?



Practice 1.11

1 The bar graph shows the favorite sandwiches of some students. Circle the **3** questions that can be answered by looking at the graph.



How many students chose turkey?

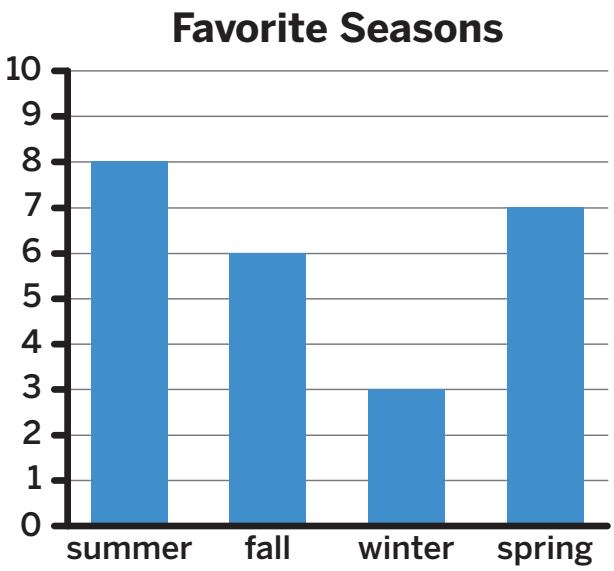
How many students did *not* vote?

Did *more* students choose ham or grilled cheese?

How many students chose a sandwich other than peanut butter and jelly?

Name _____ Date _____

The bar graph shows some students' favorite seasons. Use the bar graph to answer Problems 2–4.



2 Write **1** question you can answer using the graph.

_____

_____

_____

3 Answer the question you wrote in Problem 2. Write an equation that represents your thinking and underline the answer.

answer: _____ **equation:** _____

4 How many students did not choose summer as their favorite season? Write an equation that represents your thinking and underline the answer.

Show your thinking.

answer: _____ **equation:** _____

Practice 1.11

Name _____ Date _____

For Problems 5–10, find the number that makes the equation true.

5 1 + _____ = 5

6 3 + _____ = 5

7 10 − _____ = 5

8 12 − _____ = 5

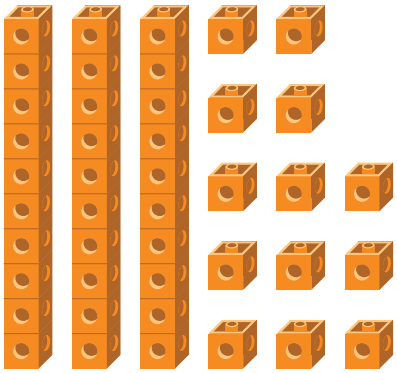
9 8 − _____ = 5

10 11 − _____ = 5

Spiral Review

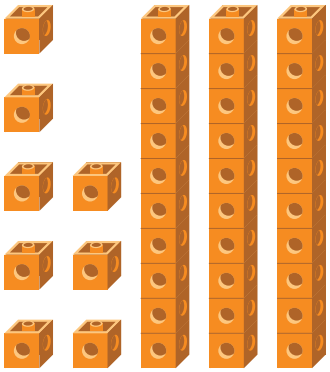
For Problems 11 and 12, write the number represented by the set of connecting cubes.

11



_____

12



_____

Name _____ Date _____

Represent Data 2.MD.10, 2.OA.2, SMP.4

Class Surveys

Let's create our own surveys to get to know our classmates better.



Warm-Up

eyes on teacher

We are a math community. Why is it important for data to represent everyone in our community?

Activity 1 Classroom Survey

1 What is your survey question?

_____

_____

_____

_____

2 What are your categories?

Category 1: _____

Category 2: _____

Category 3: _____

Category 4: _____

Name _____ Date _____

Classroom Survey (continued)

3 Ask each student in our class your survey question. Record the data on this page.

Activity 2

Name _____ Date _____

Representing Your Data

Hands-On

You will be given a sheet to organize and represent the data from Activity 1 in a table. You will also be given a sheet to represent the data in a graph.

4 Use the data collected in Activity 1 to fill in the table on the *Organizing Your Data* sheet.

5 Use the data table from Problem 4 to represent the data in a graph on the *Representing Your Data* sheet.

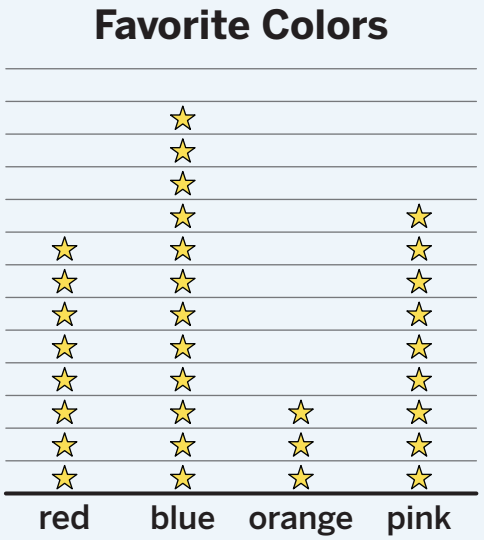
- Choose if you will make a picture graph or a bar graph.
- Decide if your graph will be vertical or horizontal.

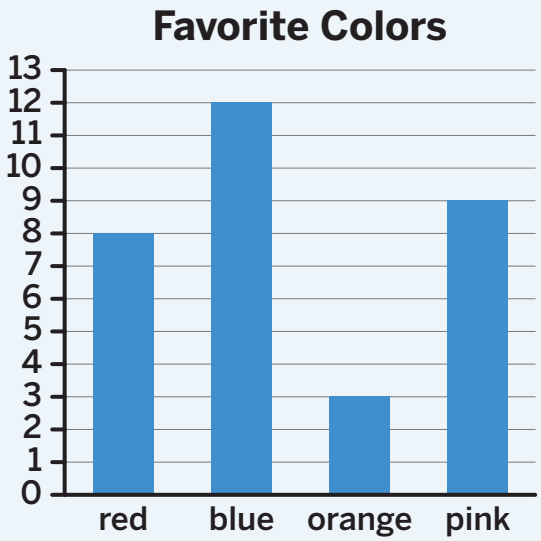
6 **Discuss**

What choices did you make when creating your graph? Why did you make these choices?

Summary 1.12

When you collect data and create graphs, there are different choices you can make. It can be helpful to think about how you can organize and use features of a graph to represent the data clearly.

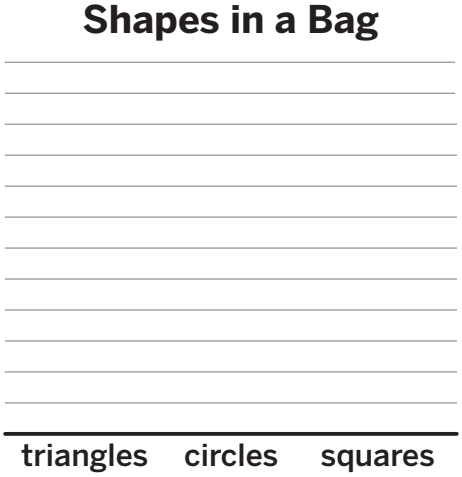




Practice 1.12

1 Draw a bar graph with data that represents *all* of the following statements.

- There are *more* than 15 shapes altogether, but *fewer* than 25.
- There are 6 *more* squares than circles.
- There are 7 *fewer* circles than triangles.



Name _____ Date _____

For Problems 2–6, use the graph of your data in Problem 1.

2 How many squares and circles are there?

answer: _____ **equation:** _____

3 Are there *more* triangles or squares?

_____

4 Write an addition equation and a subtraction equation to show how many *fewer* circles there are than triangles. In each equation, underline the number that shows the answer.

addition equation: _____

subtraction equation: _____

5 Write a question that could be answered by using the data in your graph.

_____

_____

_____

6 Answer your question from Problem 5. Write an equation that represents your thinking and underline the answer.

answer: _____ **equation:** _____

Practice 1.12

Name _____ Date _____

For Problems 7–10, find the number that makes the equation true.

7 2 + _____ = 14

8 _____ – 5 = 4

9 8 + 4 = _____

10 14 – 4 = _____

Spiral Review

For Problems 11 and 12, write the amounts of tens and ones.

11 68

_____ tens _____ ones

12 42

_____ ones _____ tens

For Problems 13 and 14, write the amount as a two-digit number.

13 5 tens 6 ones _____

14 2 tens 8 ones _____

Notes:

Sub-Unit

3

Solving Problems About Comparing

Unit Story: A New Class Pet



Vipman45/Shutterstock.com

Benita was nervous to share her ideas about the class pet.

How can you make sure everyone in our class is comfortable sharing their ideas?

Unit 1
Lesson
13

Name _____ Date _____

Represent Data | Number Strategies | 2.MD.10, 2.OA.2, SMP.2, SMP.6, SMP.7

Representing Data With Benita

Let's use bar graphs and equations to help us represent and solve story problems.



I can be all of me in math class. Benita often compared herself to her classmates. When is comparing useful? When is it not useful?

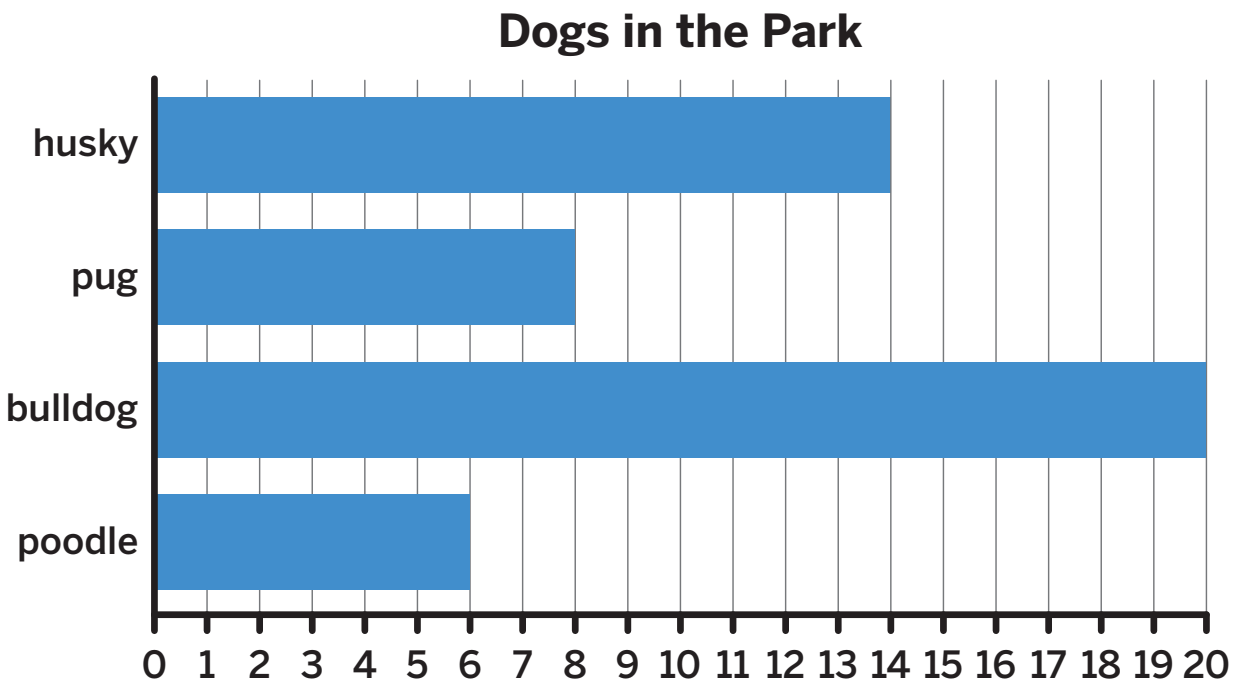
Warm-Up

eyes on teacher

Activity 1

Dogs in the Park

Benita and Chelsea counted the types of dogs they saw in a park. Their data is shown in the bar graph.



Name _____ Date _____

Dogs in the Park (continued)

Use the bar graph to fill in each sentence so that it is true. Then write an addition equation and a subtraction equation to show how many *more* or *fewer* dogs. For each equation, underline the number that shows the answer.

1 They saw *more* _____ than _____.

addition equation: _____

subtraction equation: _____

2 They saw *fewer* _____ than _____.

addition equation: _____

subtraction equation: _____

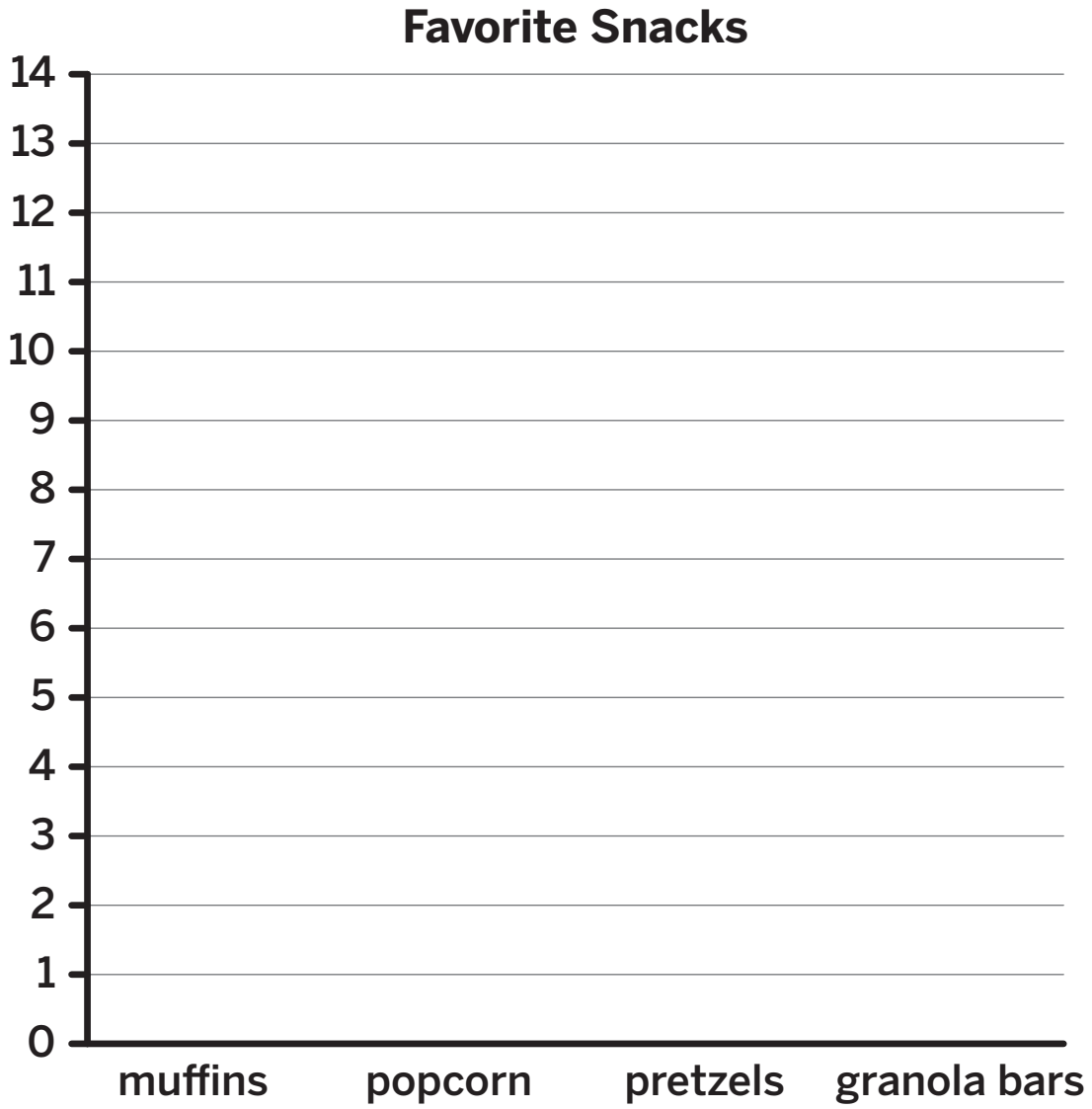


Activity 2

Name _____ Date _____

Where Are the Bars?

Benita asked her classmates about their favorite snacks. Complete the bar graph and help Chelsea show how the students voted using the information in Problems 3–6.



3 9 students chose muffins. Show this in the bar graph.

Name _____ Date _____

Where Are the Bars? (continued)

For Problems 4–6, show the number of students in the bar graph. Write an equation that represents your thinking and underline the answer.

4 5 *fewer* students chose granola bars than muffins. How many students chose granola bars?

answer: _____

equation: _____

5 7 students chose granola bars or popcorn. How many students chose popcorn?

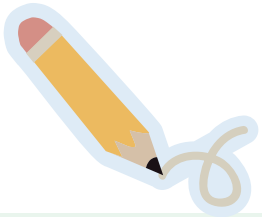
answer: _____

equation: _____

6 4 *more* students chose pretzels than popcorn. How many students chose pretzels?

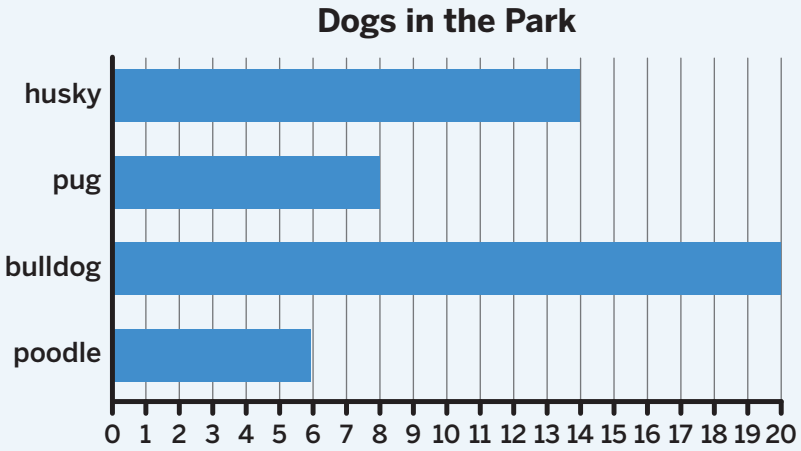
answer: _____

equation: _____



Summary 1.13

You can use addition and subtraction equations and a bar graph to represent relationships between amounts in story problems



$20 - 14 = \underline{6}$

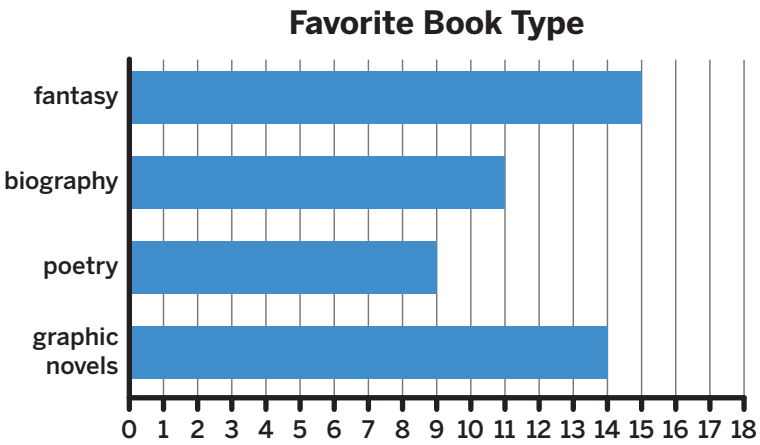
$14 + \underline{6} = 20$

There are 6 fewer huskies than bulldogs.

There are 6 more bulldogs than huskies.

Practice 1.13

1 Mr. Roy's class collected data about books students like to read and the data is shown in the bar graph.



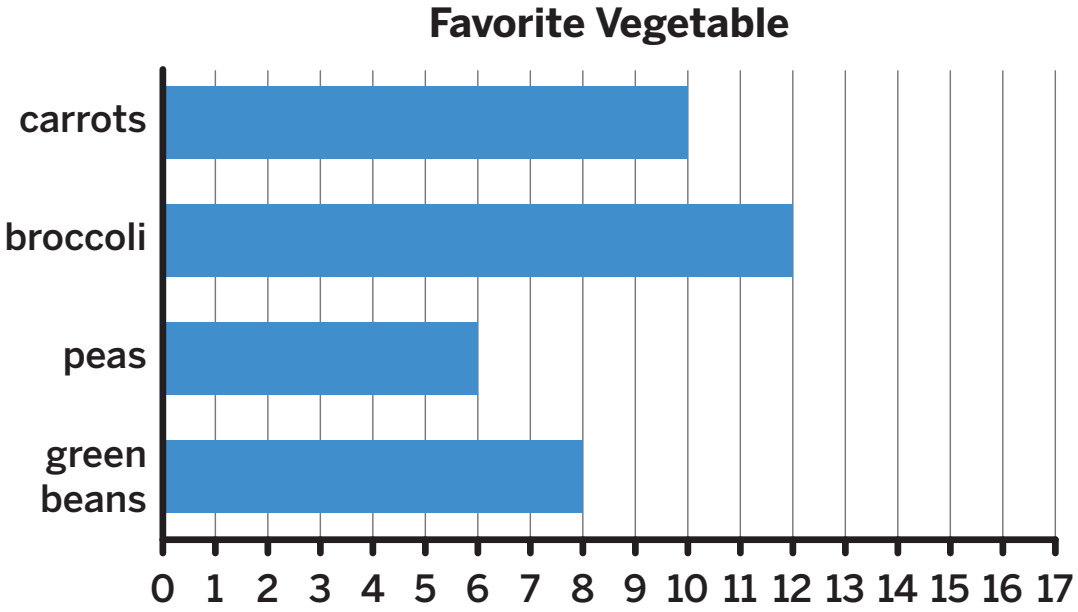
How many *fewer* students chose poetry than fantasy? Write an addition equation and a subtraction equation and underline the answer.

addition equation: _____

subtraction equation: _____

Name _____ Date _____

The bar graph shows the students' favorite vegetables. Use the graph for Problems 2–4.



2 Circle **2** equations that represent how many *more* students chose broccoli than carrots.

6 + 6 = 12

12 – 10 = 2

10 + 2 = 12

12 – 8 = 4

3 Use the graph to fill in the sentence so that it is true.

Fewer students chose _____

than _____.

4 Write **2** different equations for your sentence in Problem 3 that show how many *fewer* and underline the answer.

Equation 1: _____ **Equation 2:** _____

Name _____ Date _____

For Problems 5 and 6, find the value of the expression. Then write a related subtraction equation.

5 7 + 6 _____

_____

6 9 + 5 _____

_____

Spiral Review

7 In a class vote about favorite animals, 5 students chose cats, 8 students chose dogs, and 3 students chose horses. How many students voted in all? Write an equation that represents your thinking and underline the answer.

Show your thinking.

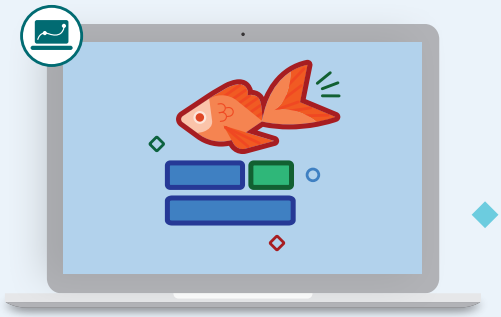
answer: _____ **equation:** _____

Name _____ Date _____

Represent Data | Number Strategies | 2.MD.10, 2.OA.2, SMP.2, SMP.7

Awesome Aquariums

Let's make sense of tape diagrams.



I can be all of me in math class. Benita felt successful when she finally spoke up in class. When have you felt successful in math class?

Warm-Up

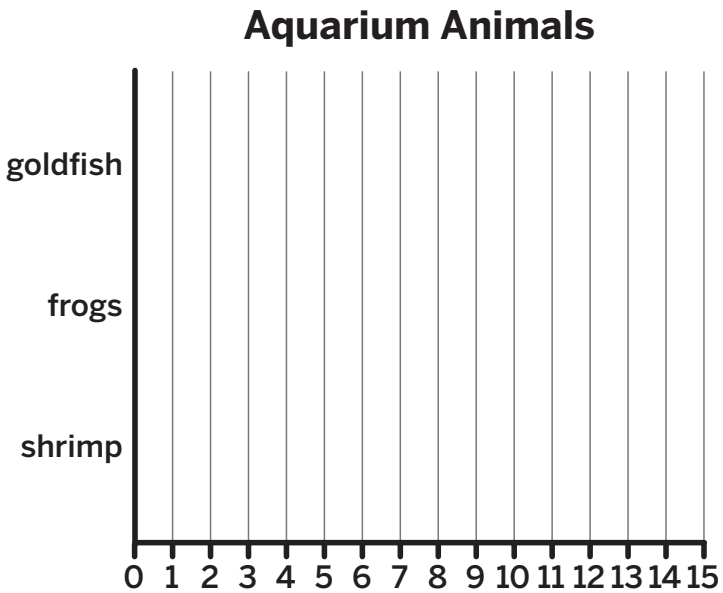
1 eyes on teacher

Activity 1

Theo's Dream Aquarium

2 Let's watch a video.

3 Draw bars on the graph to show how many of each animal you think Theo has in his aquarium.

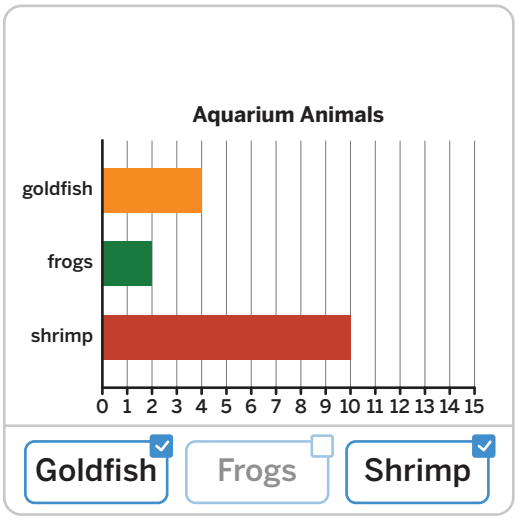


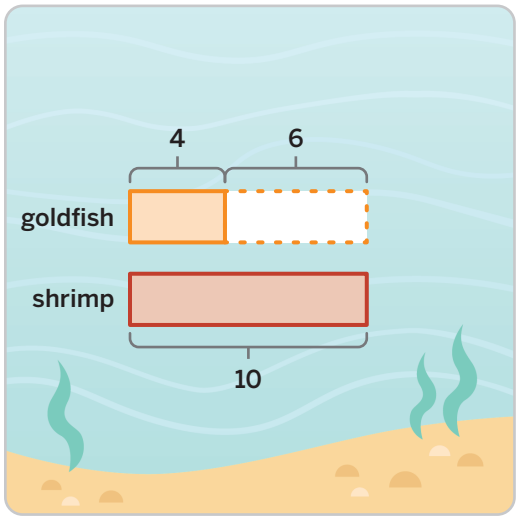
Name _____ Date _____

Theo's Dream Aquarium (continued)

4 Data Talk!

How are these representations similar? How are they different?





Activity 2

Name _____ Date _____

Chelsea's Mystery Aquariums

Hands-On

You and your partner will be given a set of cards showing different tape diagrams.

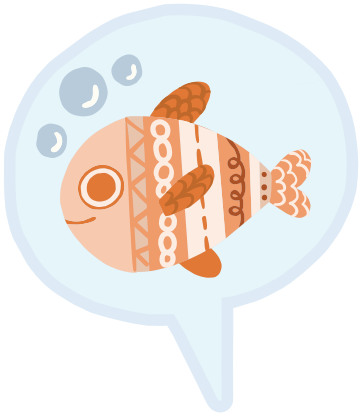
Choose *at least* 1 tape diagram that represents each comparison statement about Chelsea's aquariums. Some tape diagrams may not represent either statement.

5 There are 7 more goldfish than shrimp.

card(s): _____

6 There are 8 fewer goldfish than shrimp.

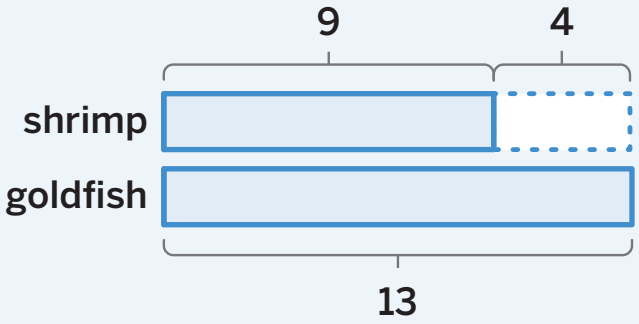
card(s): _____



Summary 1.14

You can use bars to create a tape diagram that represents the relationship between 2 amounts being compared.

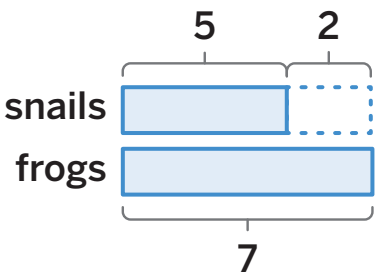
There are 4 fewer shrimp than goldfish.

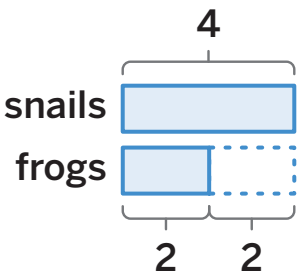


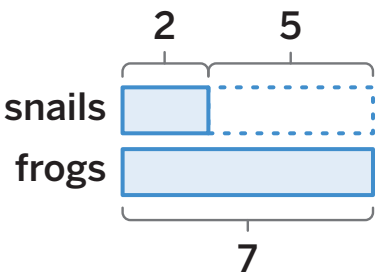
Practice 1.14

For Problems 1 and 2, circle the tape diagram that represents the comparison statement.

1 There are 2 fewer snails than frogs.

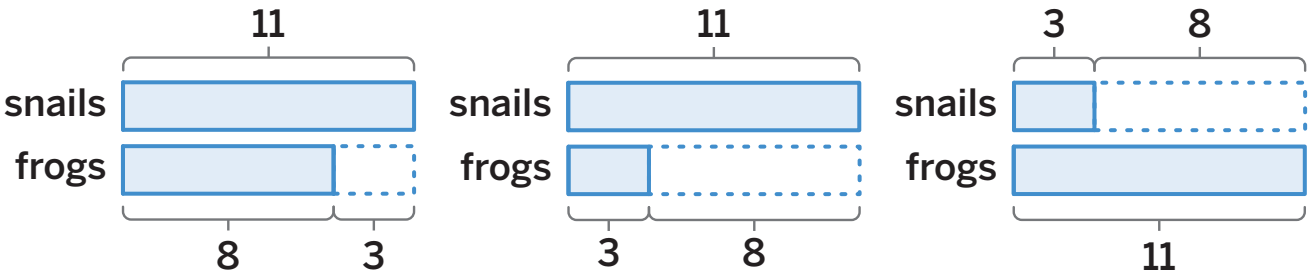






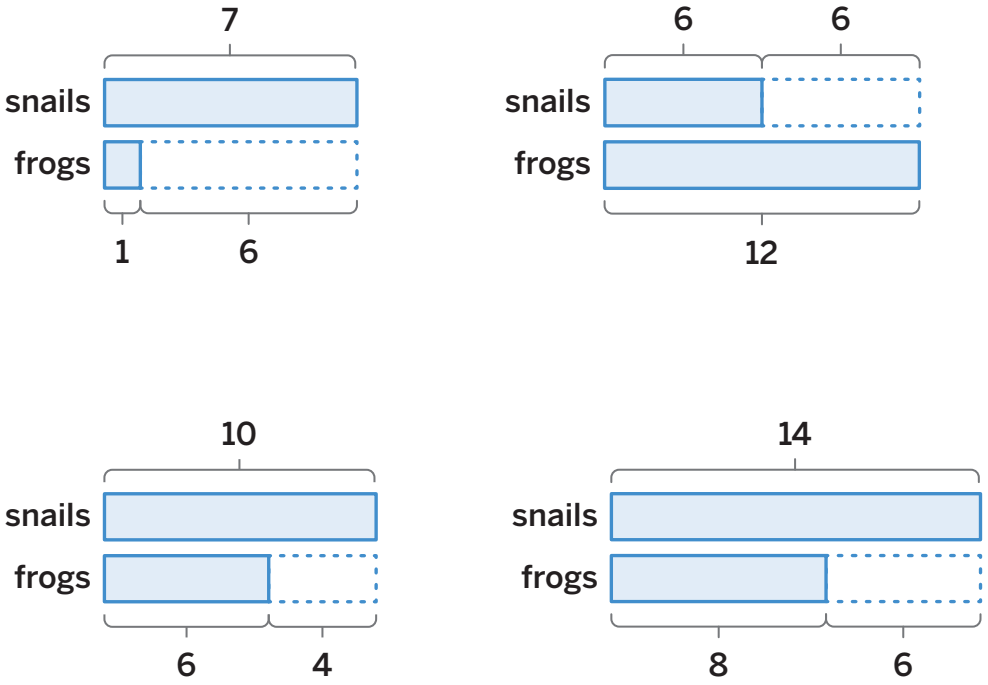
Name _____ Date _____

2 There are 8 more frogs than snails.



3 Circle **2** tape diagrams that represent the comparison statement.

There are 6 fewer frogs than snails.



Practice 1.14

Name _____ Date _____

For Problems 4–9, find the number that makes the equation true.

4 7 + 7 = _____

5 19 − _____ = 7

6 12 + _____ = 16

7 14 + 5 = _____

8 3 + _____ = 17

9 6 + _____ = 14

Spiral Review

10 In a class vote about favorite breakfast foods, 7 students chose cereal and 12 students chose pancakes. How many *more* students chose pancakes than cereal? Write an equation that represents your thinking and underline the answer.

Show your thinking.

answer: _____ **equation:** _____

Unit 1
Lesson
15

Name _____ Date _____

Number Strategies 2.OA.1, 2.NBT.5, SMP.1, SMP.2, SMP.7

Comparing at the Beach

Let's read and interpret story problems and tape diagrams.



I am a doer of math.
What are examples you see of math or number comparisons in everyday life?

Warm-Up

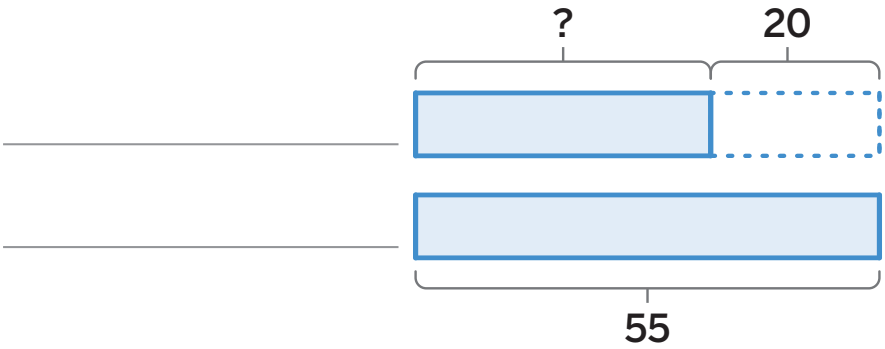
eyes on teacher

Activity 1 Shell Collections

Benita has 55 shells. Chelsea has 20 *fewer* shells than Benita.

1. Who has *more* shells? _____

2. Use the story problem to fill in the diagram.



3. Write **2** equations to show how you could find the number of shells Chelsea collected. Write a blank line to represent the unknown number of shells.

Equation 1: _____ **Equation 2:** _____

Activity 2

Name _____ Date _____

Card Sort: At the Beach

Hands-On

You will be given a set of cards. Find the tape diagram and equation cards that represent each story problem. More than 1 equation card may represent a story problem card.

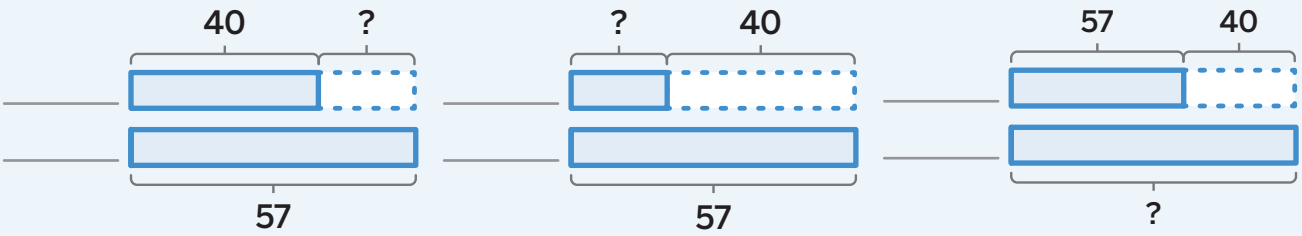
4 Write the letters of the cards in the table.

Story problem card	Tape diagram card	Equation card(s)
A		
B		
C		
D		
E		
F		

5 Choose **1** story problem card. Describe how you know the tape diagram you chose represents that story problem.

Summary 1.15

Tape diagrams can show what is happening in a story problem and help you find which part is the unknown.

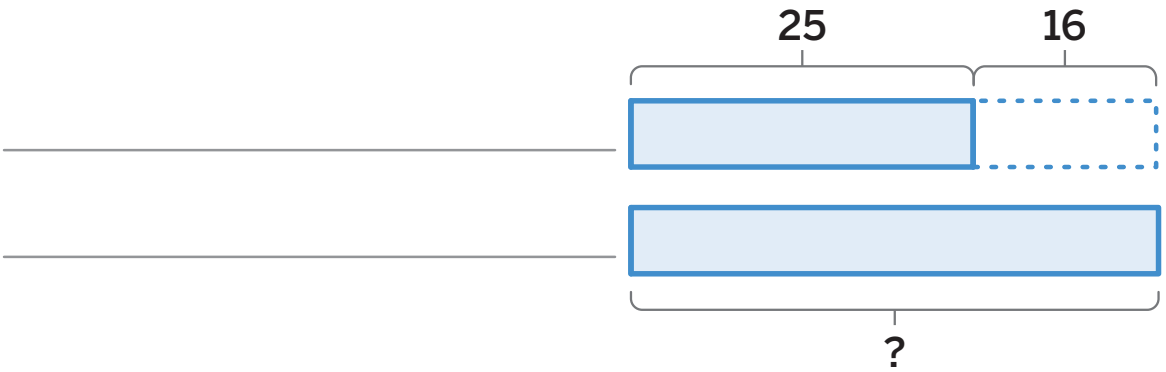


Practice 1.15

Use the story problem for Problems 1 and 2.

There are 25 crickets chirping in the front yard. There are 16 *more* crickets chirping in the backyard than in the front yard.

1 Label the tape diagram to match the story.



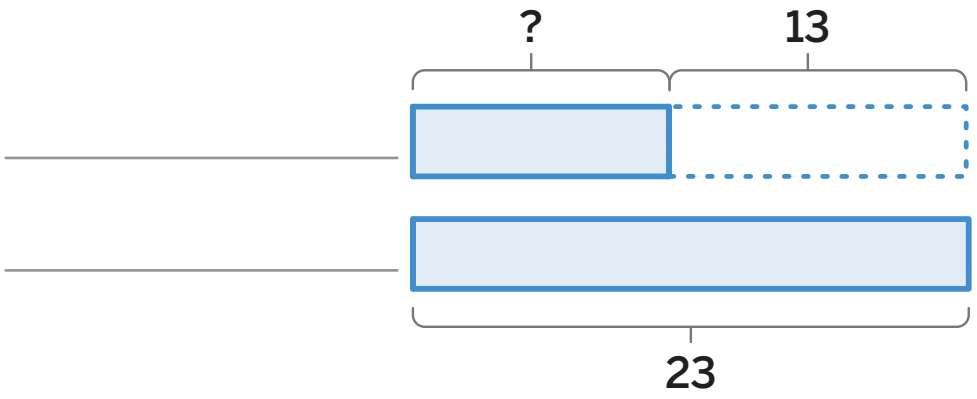
2 Write an equation that matches the story problem and tape diagram. Write a blank line to represent the unknown number of crickets.

Name _____ Date _____

Use the story problem for Problems 3 and 4.

Clare found 23 flowers in the park. Priya found 13 *fewer* flowers than Clare. How many flowers did Priya find?

3 Label the tape diagram to match the story.

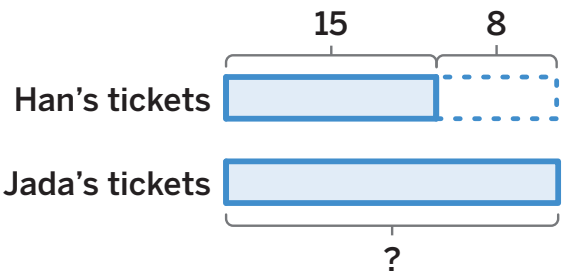


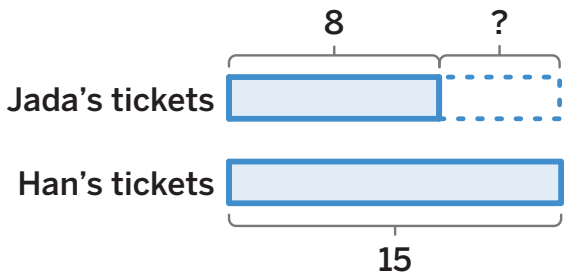
4 Write **2** different equations to show how you could find the number of flowers that Priya found. Write a blank line to represent the unknown number of flowers.

Equation 1: _____

Equation 2: _____

5 Circle the tape diagram that matches the story.
Han had 15 tickets for the raffle. Jada had 8 *more* tickets than Han. How many tickets does Jada have?





Practice 1.15

Name _____ Date _____

For Problems 6–11, find the number that makes the equation true.

6 10 + 3 = _____

7 12 − _____ = 10

8 10 + _____ = 15

9 10 + 7 = _____

10 4 + _____ = 14

11 8 + _____ = 18

Spiral Review

12 Solve the story problem. Write an equation that represents your thinking and underline the answer.

Diego collects insects. He has 5 ladybugs, 3 ants, and 2 dragonflies. How many insects does Diego have in his collection?

Show your thinking.

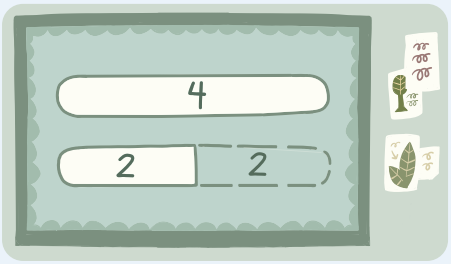
answer: _____ **equation:** _____

Name _____ Date _____

Number Strategies 2.OA.1, 2.NBT.5, SMP.1, SMP.2, SMP.7

Comparing at the Library

Let's solve story problems and write equations to match them.



Warm-Up

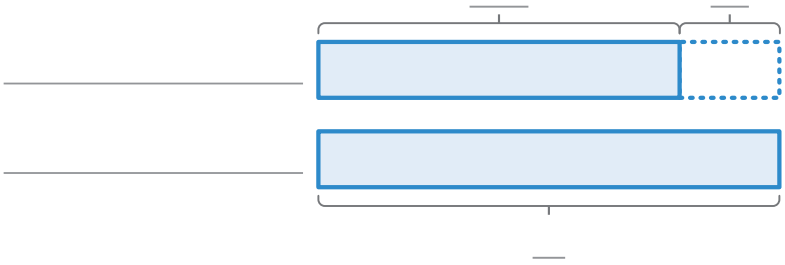
eyes on teacher

I am a doer of math.
Why is comparison an important part of data collection?

Activity 1 A Trip to the Library

Benita and Theo returned books to the library. Benita returned 29 books. Theo returned 8 more books than Benita.

1 Use the story problem to fill in the tape diagram.



2 How many books did Theo return? Write an equation that represents your thinking and underline the answer.

Show your thinking.

answer: _____ equation: _____

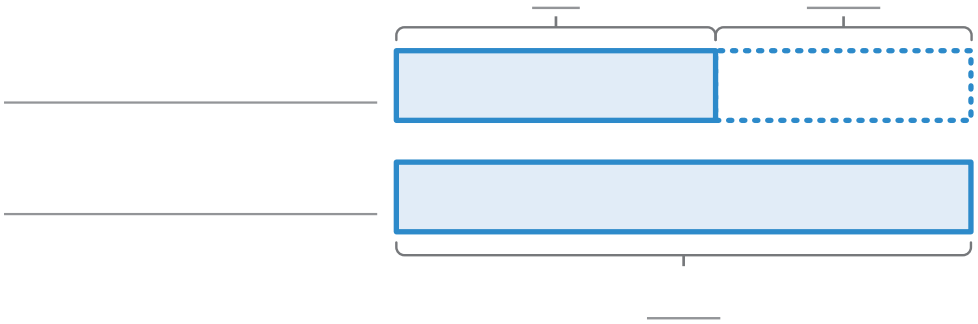
Name _____ Date _____

A Trip to the Library (continued)

Benita read 45 pages of her book last night. Theo read 20 *fewer* pages of his book than Benita.

3 Who read *more* pages? _____

4 Use the story problem to fill in the tape diagram.



5 How many pages did Theo read? Write an equation that represents your thinking and underline the answer.

Show your thinking.

answer: _____ **equation:** _____

Activity 2

Name _____ Date _____

Solving Story Problems

Solve each story problem. Write an equation that represents each story problem and underline the answer. You can represent your thinking using a tape diagram if it is helpful.

Show your thinking.

6 Benita read 30 *fewer* pages than Chelsea. Chelsea read 67 pages. How many pages did Benita read?

answer: _____ **equation:** _____

7 Chelsea stacked 34 *more* books than Theo. Theo stacked 58 books. How many books did Chelsea stack?

answer: _____ **equation:** _____

Name _____ Date _____

Solving Story Problems (continued)

Show your thinking.

8 Benita read 47 pages of her book. Theo read 20 pages of his book. How many *fewer* pages did Theo read?

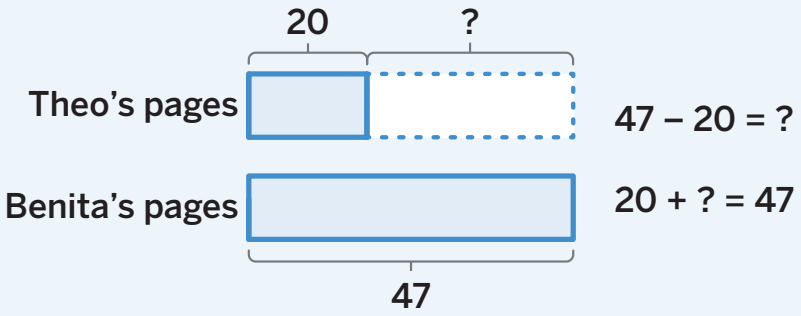
answer: _____ **equation:** _____

9 Theo spent 25 minutes reading. Benita spent 30 *more* minutes reading than Theo. How many minutes did Benita spend reading?

answer: _____ **equation:** _____

Summary 1.16

You can use different representations to help make sense of a story problem before trying to solve it.



Practice 1.16

For Problems 1–3, solve the story problem. Write an equation that represents the story problem and underline the answer. You can represent your thinking using the tape diagram if it is helpful.

Show your thinking.

1 There are 35 cherries in a bowl. There are 17 *fewer* cherries on a plate than there are in the bowl. How many cherries are on the plate?

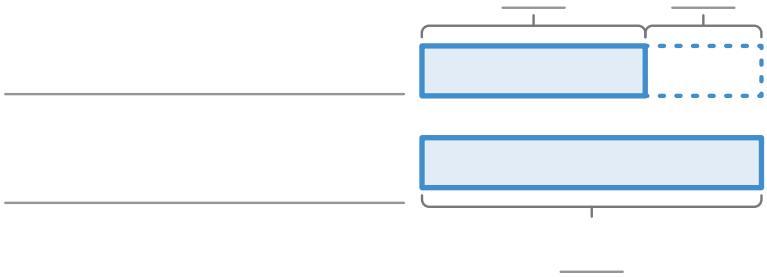


answer: _____ **equation:** _____

Name _____ Date _____

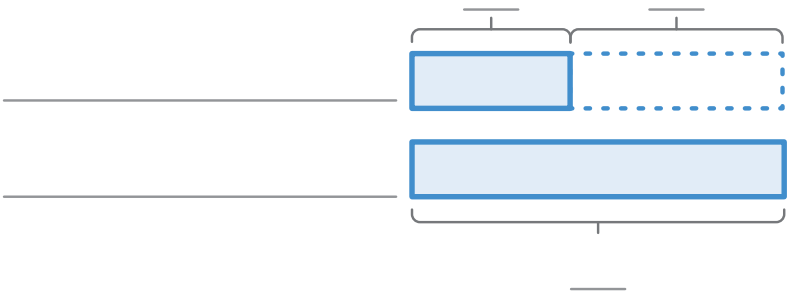
Show your thinking.

2 The petting zoo has 24 chickens and 17 goats. How many *more* chickens are there than goats?



answer: _____ **equation:** _____

3 Han has 12 marbles. Jada has 15 *more* marbles than Han. How many marbles does Jada have?



answer: _____ **equation:** _____

Practice 1.16

Name _____ Date _____

For Problems 4–9, find the number that makes the equation true.

4 5 + 3 = _____

5 9 − _____ = 7

6 7 − _____ = 3

7 6 + 4 = _____

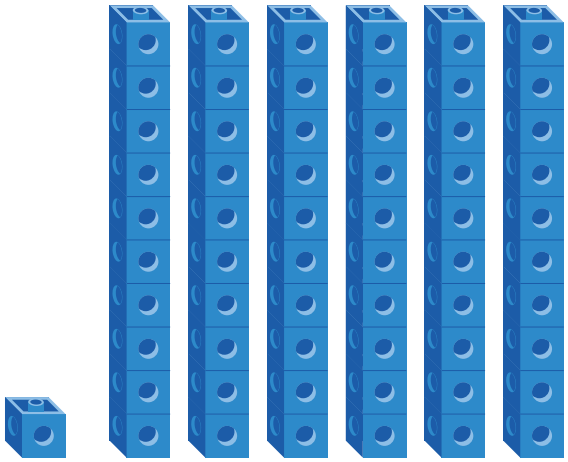
8 3 + _____ = 9

9 5 − _____ = 1

Spiral Review

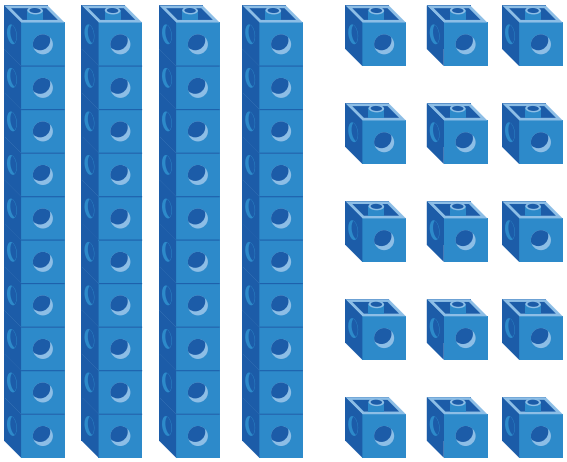
For Problems 10 and 11, write the number represented by the set of connecting cubes.

10



_____

11



_____

Notes:

Math at Work

Imagine your school will design a new mascot. How can the people designing the mascot know what the community might think?

Survey researchers help people or companies make decisions. They think about what questions to ask. They make bar graphs to show the survey data and might add or subtract to compare or answer questions.



Studio Romantic/Shutterstock.com. garagestock/Shutterstock.com.

Math at Home

Create a survey question. Ask at least 15 people in your home and community your question. Record the data on a separate piece of paper.

What do you notice?
What do you wonder?

Math Mindset

Describe one strategy you could use to add 8 + 7.

Unit 2

Adding and Subtracting Within 100

Big Ideas in This Unit

CC1 Represent Data | CC2 Dollars and Cents | CC3 Number Strategies

Questions for Investigation

- How can we solve problems about the value of money when combining dollars and cents?
- When and how do we decompose a ten when subtracting two-digit numbers?
- How can we use various strategies to identify the unknowns in story problems?

Explore: Activities at the Block Party

How many points should each token be worth?

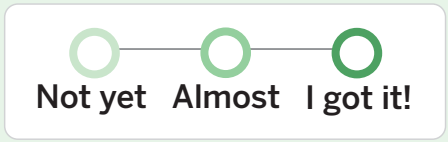
Unit Story: The Heroes of Pineapple Street

In this story, Kyle learns about the importance of cooperation as his community works together to raise money for the local library.

DC_Aperture/Shutterstock.com

Watch Your Knowledge Grow

This is the math you'll explore in this unit. Rate your understanding to see how your knowledge grows!



I can . . .	Before	After
Identify and know the value of coins and bills.		
Solve word problems involving mixed coins and bills.		
Use addition and subtraction to solve one- and two-step story problems.		
Subtract a one-digit number from a two-digit number.		
Subtract a two-digit number from a two-digit number.		
Decompose a ten to subtract.		
Solve story problems with an unknown number.		
Compare story problems with unknown numbers.		
Represent two-step story problems with equations.		
Ask and answer questions about story problems.		

Sub-Unit

1

The Value of Money

Unit Story: The Heroes of Pineapple Street



snapvision/Shutterstock.com

Val keeps a donation jar at her stand so she can raise some extra money for the library.

How could she figure out how much money is in the donation jar?

Name _____ Date _____

Number Strategies Building Toward 2.MD.8, 2.NBT.5, SMP.1, SMP.7, SMP.8

Explore: Activities at the Block Party

How many points should each token be worth?



We are a math community. Each person in Kyle's community played a part in helping the library. What part can you play in helping our math community?

Warm-Up

eyes on teacher

Discuss What do you notice? What do you wonder?



Activity

Name _____ Date _____

There will be 4 tokens, each with a different value that is less than 50 points.

Work with your partner to decide on a point value for each token.

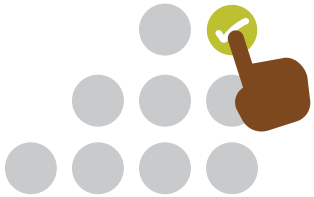
Ways to be a mathematician

1 I can take my time to think about a challenging problem before trying to solve it.



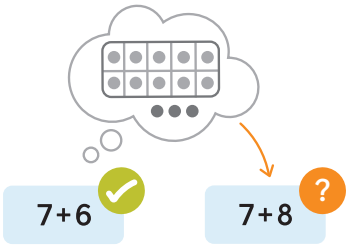
Not yet Almost I got it!

2 I can see how ideas are connected and use patterns to help solve problems.



Not yet Almost I got it!

3 I look for strategies that I can apply to new problems.



Not yet Almost I got it!

Name _____ Date _____

Dollars and Cents | Building Toward 2.MD.8, SMP.1, SMP.2, SMP.8

Discovering Coins (Part 1)

Let's learn about coins and their values.



Warm-Up

eyes on teacher

We are a math community.
What does it mean to be part of a math community?

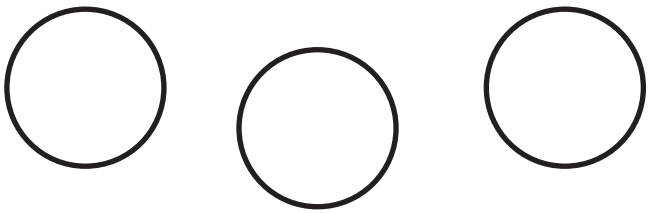
Activity 1 Mystery Coins

Hands-On

Find the value of each mystery coin.

Show your thinking.

1 The total value of the coins is 30. Each coin has the same value.



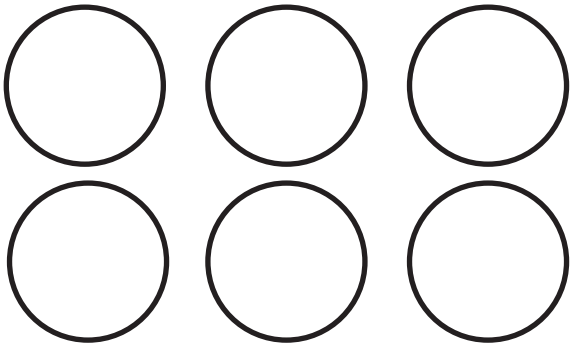
What is the value of each coin? _____

Name _____ Date _____

Mystery Coins (continued)

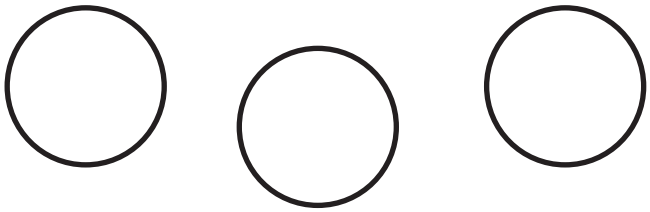
Show your thinking.

2 The total value of the coins is also 30. Each coin has the same value.



What is the value of each coin? _____

3 The total value of the coins is 3. Each coin has the same value.



What is the value of each coin? _____

Activity 2

Name _____ Date _____

Show Kyle the Money

Hands-On

Find the total value of each group of coins and name the type of coins in each group. Use the cent symbol ¢ when writing the values.

Show or explain your thinking.

Customer 1:



4 Circle the name of the coins in this group.

dimes nickels pennies

5 What is the value of the coins? _____

Customer 2:



6 Circle the name of the coins in this group.

dimes nickels pennies

7 What is the value of the coins? _____

Name _____ Date _____

Show Kyle the Money (continued)

Show or explain your thinking.

Customer 3:



8 Circle the name of the coins in this group.

dimes nickels pennies

9 What is the value of the coins? _____

10 Show **2** different ways to make 10 cents using coins.

Show or explain your thinking.

Way 1:

Way 2:

Summary 2.02

Dimes, **nickels**, and **pennies** have their own values and characteristics. You can find the total value of a group of the same type of coins by counting by their value.

1 dime 

10¢

2 nickels 

10¢

10 pennies 

10¢

dime A coin worth 10 cents.
nickel A coin worth 5 cents.
penny A coin worth 1 cent.

Practice 2.02

For Problems 1–3, use the coins shown.



1 Which coins are shown in the picture? _____

2 What is the value of 1 coin? _____ ¢

3 What is the total value of the coins? _____ ¢

Name _____ Date _____

For Problems 4–6, use the coins shown.



4 Which coins are shown in the picture? _____

5 What is the value of 1 coin? _____ ¢

6 What is the total value of the coins? _____ ¢

For Problems 7–9, use the coins shown.



7 Which coins are shown in the picture? _____

8 What is the value of 1 coin? _____ ¢

9 What is the total value of the coins? _____ ¢

Name _____ Date _____

10 Han has 4 dimes and a mystery coin. He has 45 cents in all. What is the name of the mystery coin?

Show or explain your thinking.

answer: _____

For Problems 11–14, find the number that makes the equation true.

11 45 + 10 = _____

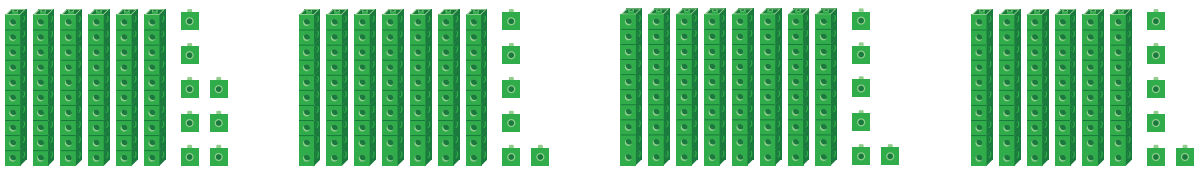
12 81 – 10 = _____

13 62 + 10 = _____

14 18 – 10 = _____

Spiral Review

15 Circle the image that shows 8 tens 6 ones.



Unit 2
Lesson
3

Name _____ Date _____

Dollars & Sense | Number Strategies | 2.MD.8, 2.NBT.5, 2.OA.1, 2.NBT.6, SMP.7, SMP.8

How Much Money?

Let's find the value of a group of mixed coins.



We are a math community. How would you describe Kyle's community? How is it similar to or different from your math community?

Warm-Up

eyes on teacher

Activity 1 Groups of Mixed Coins

Hands-On

For Problems 1–3, find the amount of each type of coin. Then find the total value of the group of coins.

Show your thinking.

1



nickels: _____ dimes: _____ pennies: _____

total value: _____

Name _____ Date _____

Groups of Mixed Coins (continued)

Show your thinking.

2



nickels: _____ dimes: _____ pennies: _____

total value: _____

3



nickels: _____ dimes: _____ pennies: _____

total value: _____

4 Discuss

Explain how you found the total value of each group of coins.

Activity 2

Name _____ Date _____

Kyle's Coin Challenge

Some people used coins to pay for their treats. Find the total value of each group of coins.

Show or explain your thinking.

5 A person used 5 dimes and 3 nickels.

total value: _____

6 A person used 4 pennies, 2 nickels, and 1 dime.

total value: _____

Name _____ Date _____

Kyle's Coin Challenge (continued)

Show or explain your thinking.

7 A person used 2 dimes, 4 nickels, and 2 pennies.

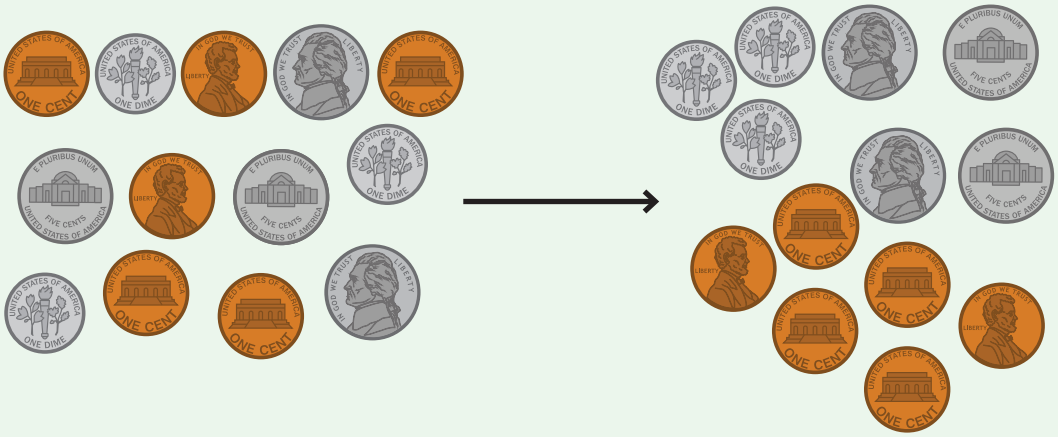
total value: _____

8 A person used 5 pennies, 3 nickels, and 4 dimes.

total value: _____

Summary 2.03

When finding the value of a mixed group of coins, you can organize the same types of coins and then add or count on.



3 dimes = 30¢ 4 nickels = 20¢ 6 pennies = 6¢

30 + 20 = 50 50 + 6 = 56

Practice 2.03

1 Find the total value of 2 pennies, 5 dimes, and 3 nickels.

Show or explain your thinking.

total value: _____

Name _____ Date _____

2 Find the number of each type of coin. Then find the total value of the coins.

Show or explain your thinking.



nickels: _____ **dimes:** _____ **pennies:** _____

total value: _____

3 Find the total value of the coins shown.

Show or explain your thinking.



total value: _____

Name _____ Date _____

4 Find the total value of the coins shown.

Show or explain your thinking.



answer: _____

For Problems 5–8, find the number that makes the equation true.

5 62 – 10 = _____

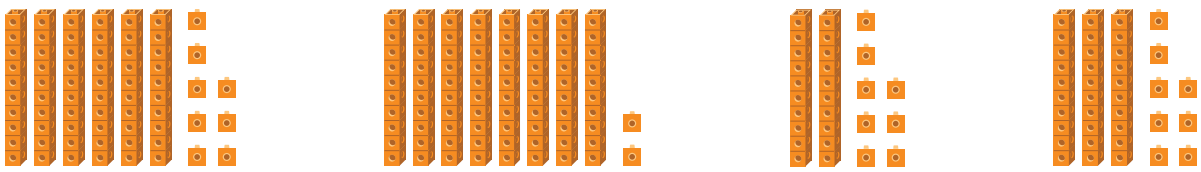
6 15 + 10 = _____

7 71 + 10 = _____

8 35 – 10 = _____

Spiral Review

9 Circle the image that shows 8 ones 2 tens.



Name _____ Date _____

Represent Data | Dollars and Cents | Number Strategies | 2.MD.8, 2.MD.10, 2.NBT.5, SMP.2, SMP.7

Discovering Coins (Part 2)

Let's learn about a new coin and find the values of groups of coins.



We are a math community. What can we do to create a fun and safe math community in our classroom?

Warm-Up

eyes on teacher

Activity 1 Another Mystery Coin?

Hands-On

Help Kyle figure out the value of the mystery coin.

The group of coins has the same value as 1 of the mystery coins. Find the value of the mystery coin.

Show or explain your thinking.

1



total value: _____

Name _____ Date _____

Another Mystery Coin? (continued)

2 Show another way to make the value of the mystery coin.

Show or explain thinking.



Activity 2

Name _____ Date _____

Let's Go Shopping!

Hands-On

Help Kyle find the total value of each group of coins and the amount of each type of coin.

Show or explain your thinking.

3



quarters: _____

dimes: _____

nickels: _____

total value: _____ pennies: _____

4



quarters: _____

dimes: _____

nickels: _____

total value: _____ pennies: _____

Name _____ Date _____

Let's Go Shopping! (continued)

5 Kyle wants to buy a superhero sticker for 97¢. What is **1** group of coins he could use to buy the sticker?

Show or explain your thinking.

quarters: _____ **dimes:** _____

nickels: _____ **pennies:** _____



Summary 2.04

Quarters are silver-colored coins that are larger than dimes and nickels. Each quarter has a value of 25 cents. When finding the value of a group of mixed coins including quarters, you can use different addition strategies.





Quarter

- 1 quarter is equal to 25¢ or 25 cents.
- 2 quarters are equal to 50¢.
- 3 quarters are equal to 75¢.
- 4 quarters are equal to 100¢ or $1.

quarter A coin worth 25 cents.

Practice 2.04

1 Find the total value of the coins.

Show or explain your thinking.



total value: _____

Name _____ Date _____

2 Find the total value of the coins.

Show or explain your thinking.



total value: _____

3 Priya wants to buy a pencil for 78¢. What is 1 group of coins she could use to buy the pencil?

Show or explain your thinking.

quarters: _____ **dimes:** _____

nickels: _____ **pennies:** _____

Name _____ Date _____

4 Find the total value of 4 pennies, 2 dimes, 3 nickels, and 1 quarter.

Show or explain your thinking.

total value: _____

For Problems 5–8, find the number that makes the equation true.

5 5 + 10 = _____

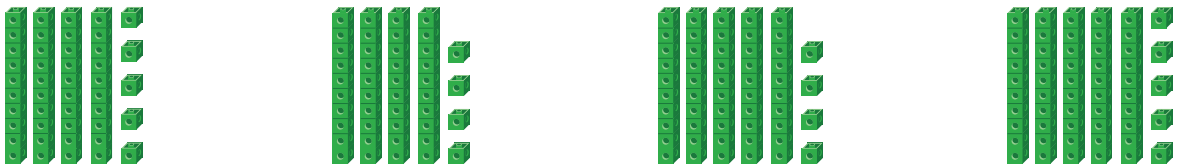
6 89 + 10 = _____

7 29 – 10 = _____

8 48 – 10 = _____

Spiral Review

9 Circle the image that shows 5 ones 4 tens.



Name _____ Date _____

Dollars and Cents | Number Strategies | 2.MD.8, 2.NBT.5, 2.NBT.6, SMP.1, SMP.7, SMP.8

The Toy Stand

Let's use coins to pay for toys.



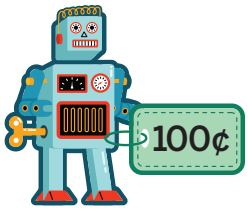
Warm-Up

1 eyes on teacher

We are a math community. How can you make sure everyone feels valued in our math community?

Activity 1 The 100 Cents Challenge

2 Circle coins to show how Kyle could pay for the robot.



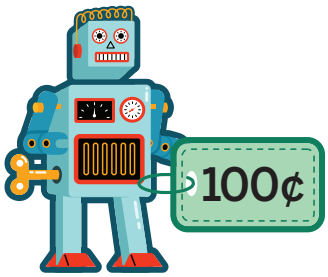
Show your thinking.



Name _____ Date _____

The 100 Cents Challenge (continued)

3 Use any coins you choose to show another way Kyle could pay for the robot.



Show your thinking.

quarters: _____ **dimes:** _____

nickels: _____ **pennies:** _____

4 Let's look at 2 ways to pay for the robot.

Activity 2

Name _____ Date _____

The Price Is Right

Hands-On

5 Design a Challenge.

- Use the *Design a Challenge* sheet to choose a toy.
- Write a price for your toy. Choose **2** or more types of coins that you could use to pay for your toy on the sheet.
- Show how you could pay for your toy in the workbox on this page.

Show your thinking.

my toy

quarters: _____

dimes: _____

nickels: _____

pennies: _____

price: _____

- You will complete **3** different challenges. Trade your *Design a Challenge* sheet with 1 partner. Complete your partner's challenge using only the coins chosen by your partner. Show your thinking in the workbox on the next page.
- Repeat the challenge with 2 other partners. Show your work for each challenge in another workbox on the next page.

Name _____ Date _____

The Price Is Right (continued)

Show your thinking.

Challenge 1

quarters: _____

dimes: _____

nickels: _____

pennies: _____

price: _____

Challenge 2

quarters: _____

dimes: _____

nickels: _____

price: _____ pennies: _____

Challenge 3

quarters: _____

dimes: _____

nickels: _____

price: _____ pennies: _____

Summary 2.05

A **dollar** is a unit of money worth 100 cents. You can make a dollar and other values using different combinations of coins. When you write dollar amounts, you use the **$** symbol.

$$\$1 = 100¢$$





dollar A unit of money that is equal to 100 cents ($1).

Practice 2.05

1 Circle **2** groups of coins that have a value of $1.







Name _____ Date _____

2 Make 95 cents using quarters and dimes.

Show or explain your thinking.

quarters: _____ **dimes:** _____

3 Han found 76 cents in his pocket. What is **1** group of coins that has a value of 76 cents?

Show or explain your thinking.

quarters: _____ **dimes:** _____

nickels: _____ **pennies:** _____

Name _____ Date _____

4 Clare has 65 cents. She needs 100 cents to buy a toy. What is **1** group of coins Clare would need so she has 100 cents?

Show or explain your thinking.

quarters: _____ **dimes:** _____

nickels: _____ **pennies:** _____

For Problems 5–8, find the number that makes the equation true.

5 12 + 10 = _____

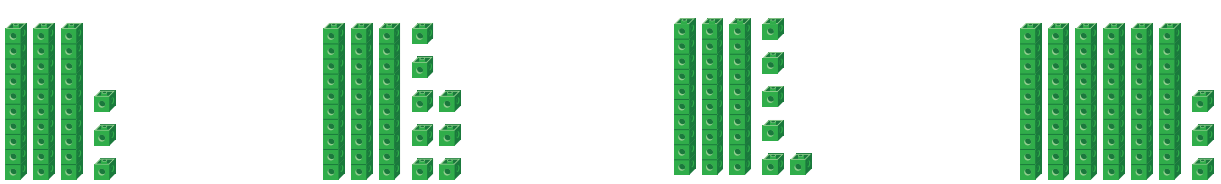
6 56 + 10 = _____

7 48 – 10 = _____

8 41 – 10 = _____

Spiral Review

9 Circle the image that shows 3 tens 6 ones.



Name _____ Date _____

Dollars and Cents | Number Strategies | 2.MD.8, 2.NBT.5, 2.OA.1, SMP.1, SMP.4, SMP.7

The Craft Stand at the Block Party

Let's solve story problems about money.



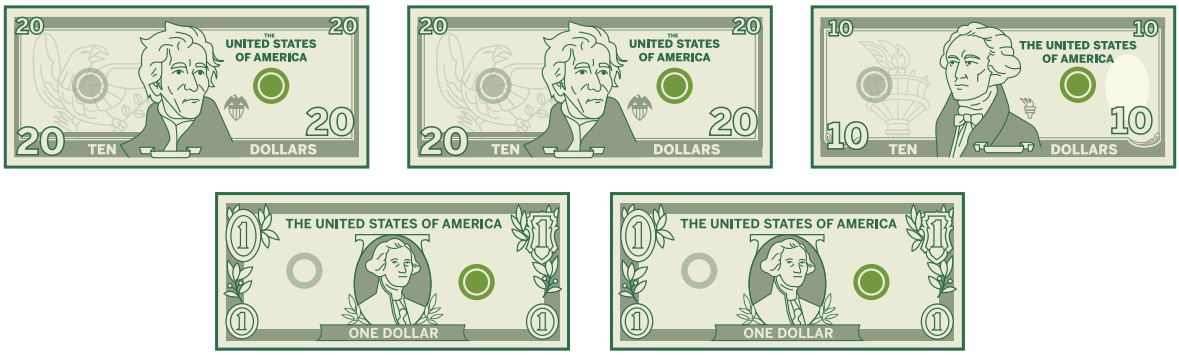
We are a math community. Kyle was not sure how to help the library. Who can you go to for help in your math community?

Warm-Up

eyes on teacher

Activity 1 The Craft Stand

The craft stand earned the money shown. Use the bills for Problems 1 and 2.



1 How much money did the craft stand earn?

Show or explain your thinking.

The craft stand earned _____ .

Name _____ Date _____

The Craft Stand (continued)

2 In the afternoon, the craft stand earned 3 more $1 bills, a $5 bill, and a $10 bill. How much money has the craft stand earned now?

Show or explain your thinking.

The craft stand has now earned _____ .

3 The toy stand earned one $20 bill, three $10 bills, two $5 bills, and three $1 bills. How much money did the toy stand earn?

Show or explain your thinking.

The toy stand earned _____ .

4 Kyle's dad spent $25 at the toy stand. How much money has the toy stand earned now?

Show or explain your thinking.

The toy stand has now earned _____ .

Activity 2

Name _____ Date _____

Time to Shop

The craft stand has the following items for sale. Use the price boards for Problems 1 and 2.



5 Circle **1** item and show how to make the amount with *coins* or *bills*.

Show your thinking.

Name _____ Date _____

Time to Shop (continued)

6 Circle a second item from the same price board. What is the total price of both items?

Show or explain your thinking.

I chose _____ **and** _____.

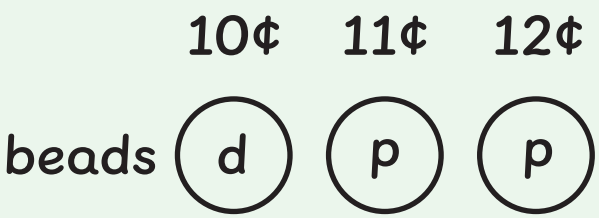
answer: _____

7 **Discuss**

Explain how you found the total price in Problem 6.

Summary 2.06

You can use addition to solve real-world story problems about money.



Practice 2.06

1 Val has two $1 bills, three $10 bills, and two $20 bills. How much money does she have?

Show your thinking.

Val has _____.

Name _____ Date _____

The table shows the prices of different items. Kyle spent exactly $1 on some items. Which items could Kyle have bought?

For Problems 2 and 3, use the table to find 2 different sets of items.

Item	Price
notebook	25¢
colored pencil	20¢
glue stick	10¢
pencil	5¢

Show your thinking.

2

Kyle bought _____

_____.

3

Kyle bought _____

_____.

Name _____ Date _____

4 Val had $42. Kyle gave her $35. How much money does Val have now?

Show your thinking.

Val now has _____.

Spiral Review

For Problems 5–8, find the number that makes the equation true.

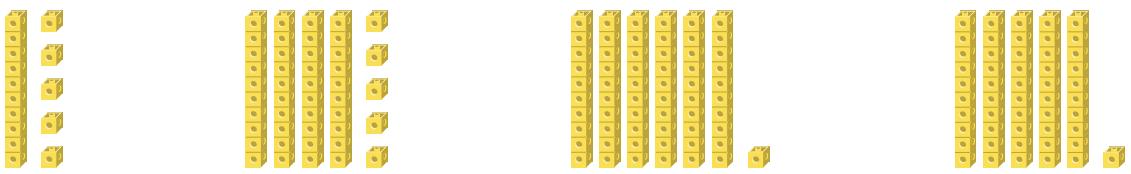
5 86 – 10 = _____

6 19 + 10 = _____

7 33 + 10 = _____

8 54 – 10 = _____

9 Circle the image that shows 5 tens 1 one.



Sub-Unit

2

Subtracting Within 100

Unit Story: The Heroes of Pineapple Street



DC_Aperture/Shutterstock.com

Kyle sees many stands lining the Pineapple Street sidewalk with items for sale.

How could he figure out how many items each stand has sold?

Name _____ Date _____

Dollars and Cents | Number Strategies | 2.NBT.5, 2.OA.1, 2.OA.2, SMP.7, SMP.8

Subtracting Your Way

Let's use different tools to represent subtraction strategies.



We are a math community.
Val talked to Kyle about the spirit of working together. What does this mean to you in math class?

Warm-Up

eyes on teacher

Activity 1 How Do You Find the Value?

Hands-On

Kyle had 52¢ in his piggy bank. He took out 9¢ so he could purchase the pin. How much money is in his piggy bank now?

1 Solve the story problem using any strategy. Represent your thinking with connecting cubes. Write an equation that represents your thinking and underline the answer.

Show your thinking.

answer: _____ equation: _____

Name _____ Date _____

How Do You Find the Value? (continued)

Kyle had 52¢ in his piggy bank. He took out 9¢ so he could purchase the pin. How much money is in his piggy bank now?

2 Represent your thinking with base-ten blocks.

3 **Discuss**

How are base-ten blocks and connecting cubes similar? How are they different?

Activity 2

Name _____ Date _____

Introducing the Center, Target Numbers

Stage 4



Pairs Let's subtract tens or ones from two-digit numbers.

You'll need: Number Cards, 1–9, Recording Sheet

Set Up Place the number cards facedown in a pile.

How to Play

1. Draw the top number card. Choose whether to subtract that number of *tens* or *ones* from the starting number.
2. Record your chosen number to create a subtraction equation. Complete the equation by finding the difference.
3. Record the difference from the previous equation as the starting number in your next equation.
4. Take turns until each player's Recording Sheet is full.

How to win The player with a final difference closer to 0 wins.

CENTER
Recording Sheet

Name _____ Date _____

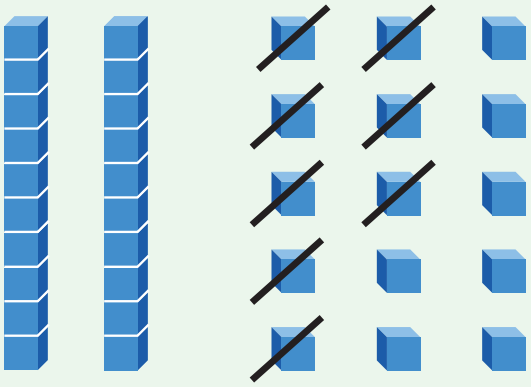
Target Numbers (continued)

Number cards	Equation
_____ tens _____ ones	95 − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐

Summary 2.07

There are different ways to represent and solve subtraction problems, such as using base-ten blocks and connecting cubes.

$$35 - 8$$



Practice 2.07

1 Find the difference.

Show your thinking.

45 – 3

answer: _____

Name _____ Date _____

For Problems 2–4, find the difference.

Show or explain your thinking.

2 91 – 6

answer: _____

3 57 – 6

answer: _____

4 34 – 7

answer: _____

Name _____ Date _____

5 Solve the story problem. Write an equation that represents your thinking and underline the answer.

Clare is creating a bridge and a house using blocks. She has 45 blocks. She uses 9 blocks to build the bridge. How many blocks does she have left to build the house?

Show your thinking.

answer: _____ **equation:** _____

Spiral Review

For Problems 6–9, find the number that makes the equation true.

6 14 + 6 = _____

7 8 + 9 = _____

8 17 − 6 = _____

9 14 − 6 = _____

For Problems 10–12, represent the value in a different way.

10 28

11 30 + 7

12 5 tens 9 ones

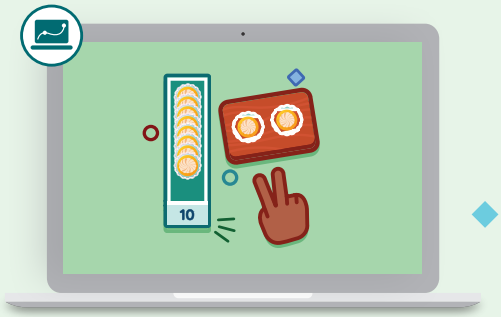
Unit 2
Lesson
8

Name _____ Date _____

Number Strategies 2.NBT.5, 2.NBT.9, 2.OA.1, SMP.7, SMP.8

Hungry for Honey Cakes

Let's subtract one-digit numbers from two-digit numbers.



We are a math community.
How can our math classroom community work together to solve problems like Kyle's community did?

Warm-Up

1 eyes on teacher

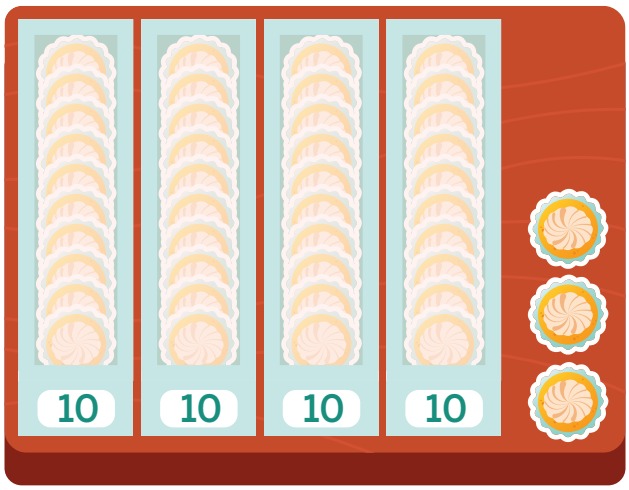
Activity 1 Order Up!

Val had to open a box of honey cakes to complete some customers' orders.

2 Circle 1 or more numbers of honey cakes that could be in this order.

43 – _____

1	2	3
4	5	6
7	8	9

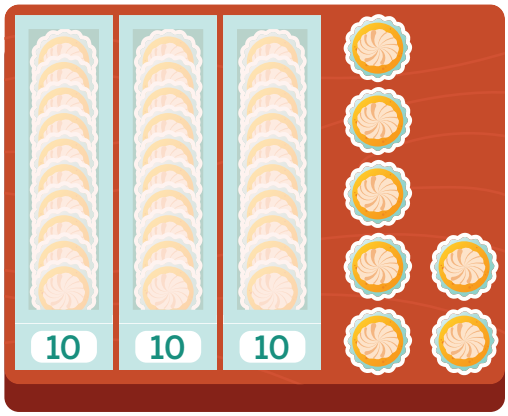


Name _____ Date _____

Order Up! (continued)

Val had to open a box of honey cakes to complete some customers' orders.

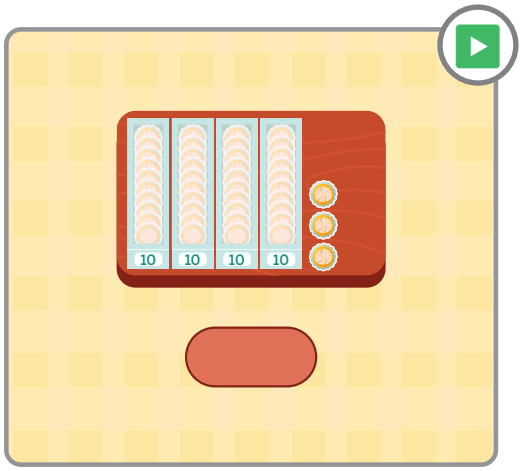
3 Circle 1 or more numbers of honey cakes that could be in this order.



37 – _____

1	2	3
4	5	6
7	8	9

4–5 Let's watch a video.



Activity 2

Name _____ Date _____

How Many Honey Cakes Are Left?

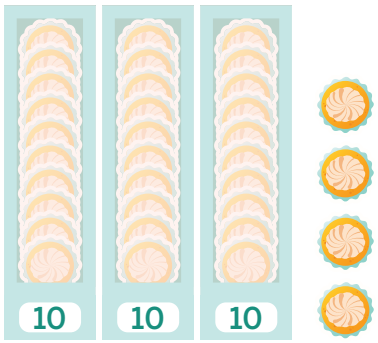
6 Discuss

Let's make a conjecture.

For Screens 7–9, find the difference to help Val find the number of honey cakes she has left after some customers' orders. After you find each difference, discuss the following question.

Show your thinking.

7 34 – 7



answer: _____

Discuss

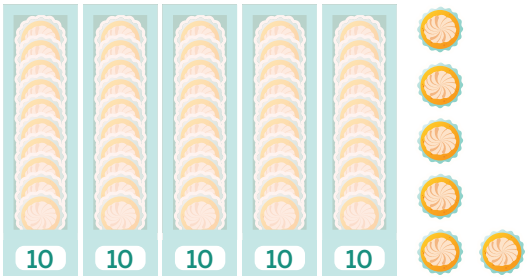
Did you need to decompose? Why or why not?

Name _____ Date _____

How Many Honey Cakes Are Left? (continued)

Show your thinking.

8 56 – 3



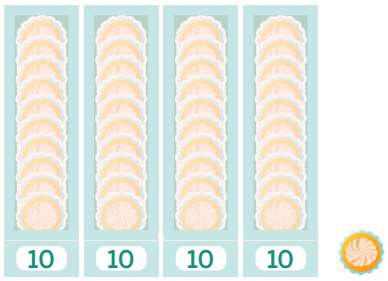
answer: _____

Discuss

Did you need to decompose? Why or why not?

Show your thinking.

9 41 – 5



answer: _____

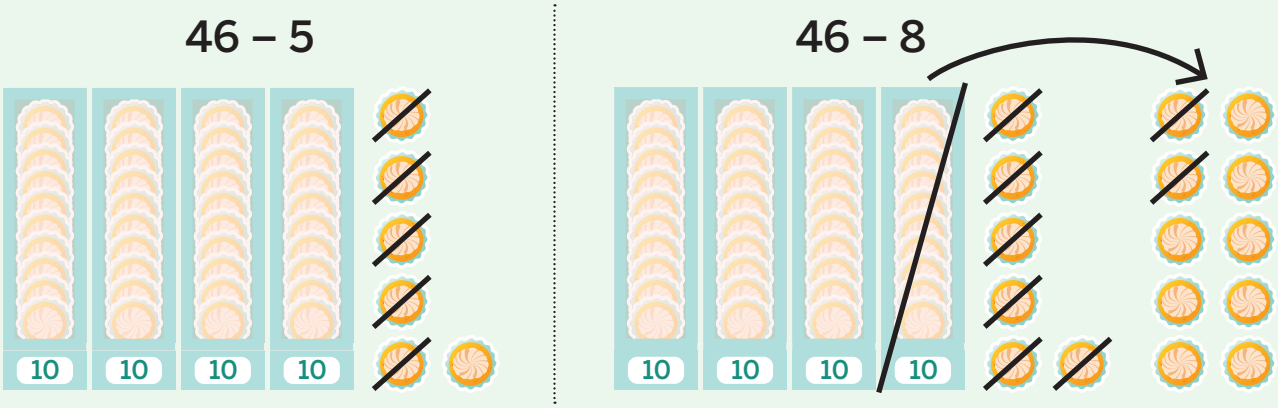
Discuss

Did you need to decompose? Why or why not?

10 Let's explain how we know when we need to decompose.

Summary 2.08

When subtracting by place, you need to **decompose** a ten to make 10 ones if the amount of ones you are taking away is greater than the amount of ones you have.



decompose Break apart.

Practice 2.08

1 Circle **2** expressions that would require decomposing a ten to find the difference.

39 – 2

75 – 4

25 – 7

81 – 6

Name _____ Date _____

For Problems 2–4, find the difference.

Show or explain your thinking.

2 61 – 6

answer: _____

3 73 – 8

answer: _____

4 98 – 9

answer: _____

Name _____ Date _____

5 Diego has 35 cans to give to 2 food pantries. He gives 8 cans to the first food pantry. How many cans does he have left to give to the second food pantry?

Show your thinking.

answer: _____ **equation:** _____

Spiral Review

For Problems 6–9, find the number that makes the equation true.

6 18 – 7 = _____

7 13 + 6 = _____

8 16 – 8 = _____

9 12 – 7 = _____

For Problems 10–12, represent the value in a different way.

10 3 tens 6 ones

11 10 + 9

12 66

Name _____ Date _____

Number Strategies 2.NBT.5, 2.NBT.9, SMP.3, SMP.7, SMP.8

What's the Difference?

Let's subtract two-digit numbers from two-digit numbers.



We are a math community. Each person at the block party helps in a different way. What are the ways you can help our math community today?

Warm-Up

eyes on teacher

Activity 1 Subtracting Two-Digit Numbers

Hands-On

Find each difference. Use base-ten blocks if it is helpful.

1 46 – 28

Show your thinking.

answer: _____

Name _____ Date _____

Subtracting Two-Digit Numbers (continued)

2 93 – 54

Show your thinking.

answer: _____

3 **Discuss**

Compare how you solved the problem with your partner.

Activity 2

Name _____ Date _____

Introducing the Center, Target Numbers

Stage 5



Pairs Let's subtract tens or ones from two-digit numbers.

You'll need: Number Cards, 1–9, Recording Sheet

Set Up Place the number cards facedown in a pile.

How to Play

1. Draw the top 3 number cards. Choose 1 card to represent the tens and 1 card to represent the ones to make a two-digit number to subtract from the starting number.
2. Record your chosen number to create a subtraction expression. Complete the equation by finding the difference.
3. Record the difference from the previous equation as the starting number in your next equation.
4. Take turns until each player's Recording Sheet is full.

How to win The player with a final difference closer to 0 wins.

CENTER
Recording Sheet

Name _____ Date _____

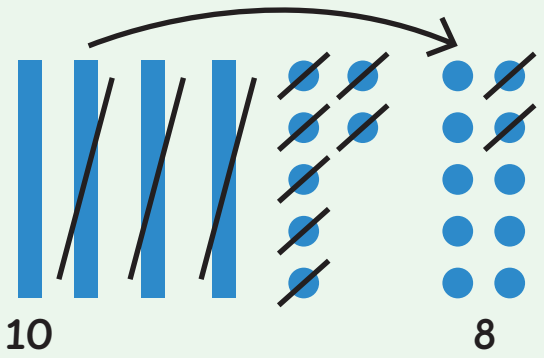
Target Numbers (continued)

Number cards	Equation
_____ tens _____ ones	100 − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐

Summary 2.09

You can use different strategies to subtract two-digit numbers from two-digit numbers. Sometimes, you need to decompose a ten.

$$47 - 29$$



$29 + 1 = 30$
$30 + 10 = 40$
$40 + 7 = 47$
$1 + 10 + 7 = 18$

Practice 2.09

1 Find the difference.

Show your thinking.

84 – 23

answer: _____

Name _____ Date _____

For Problems 2–4, find the difference.

Show your thinking.

2 57 – 38

answer: _____

3 33 – 17

answer: _____

4 78 – 65

answer: _____

Name _____ Date _____

Spiral Review

5 The farmer brought 46 apples to the farmer's market. She sold 24 apples. How many apples does she have left? Write an equation that represents your thinking and underline the answer.

Show your thinking.

answer: _____ **equation:** _____

For Problems 6–9, find the number that makes the equation true.

6 5 + 14 = _____

7 13 – 8 = _____

8 12 + 8 = _____

9 15 – 4 = _____

For Problems 10–12, represent the value in a different way.

10 94

11 60 + 6

12 3 tens 2 ones

Unit 2
Lesson
10

Name _____ Date _____

Number Strategies 2.NBT.5, 2.NBT.9, SMP.7, SMP.8

What's Your First Move?

Let's represent and subtract two-digit numbers from two-digit numbers.



We are a math community. How can you honor each community member's math ideas today?

Warm-Up

eyes on teacher

Activity 1 How Can You Solve?

Hands-On

1 To find the difference of 63 – 27, Jada said, "I am going to start by taking away 7 ones."

Show Jada's strategy.

Show your thinking.

answer: _____

Name _____ Date _____

How Can You Solve? (continued)

2 To find the difference of 63 – 27, Shawn said, "I am going to start by taking away 2 tens."

Show Shawn's strategy.

Show your thinking.

answer: _____

3 What do you notice about Jada's and Shawn's strategies?

Activity 2

Name _____ Date _____

Val's Stand

Hands-On

Find each difference to find how many items Val has left to sell.

Show your thinking.

4 **honey breads:** 48 – 23

answer: _____

5 **honey bars:** 61 – 38

answer: _____

Name _____ Date _____

Val's Stand (continued)

Show your thinking.

6 **honey pops:** 95 – 57

answer: _____

7 **honey cakes:** 84 – 42

answer: _____

Summary 2.10

When subtracting by place, you can subtract the tens first or the ones first. You can represent your choice with equations.

$$82 - 26$$

$$82 - 20 = 62$$
$$62 - 6 = 56$$

$$82 - 6 = 76$$
$$76 - 20 = 56$$

Practice 2.10

1 Find the difference.

Show your thinking.

66 – 49

answer: _____

Name _____ Date _____

For Problems 2–4, find the difference.

Show or explain your thinking.

2 92 – 58

answer: _____

3 85 – 56

answer: _____

4 41 – 28

answer: _____

Name _____ Date _____

Spiral Review

5 Priya made 62 friendship bracelets to sell at the craft show. She sold 48 bracelets. How many bracelets does she have left? Write an equation that represents your thinking and underline the answer.

Show your thinking.

answer: _____ **equation:** _____

For Problems 6–9, find the number that makes the equation true.

6 19 – 9 = _____

7 6 + 7 = _____

8 7 + 8 = _____

9 17 – 4 = _____

For Problems 10–12, represent the value in a different way.

10 9 tens 5 ones

11 48

12 70 + 7

Unit 2
Lesson
11

Name _____ Date _____

Dollars and Cents | Number Strategies | 2.NBT.5, 2.NBT.9, 2.OA.1, SMP.3, SMP.7, SMP.8

Subtraction Choices

Let's compare and use subtraction strategies.



We are a math community. How can mathematicians respectfully agree and disagree when they have different ideas?

Warm-Up

eyes on teacher

Activity 1 Corn for the Block Party

Solve each story problem. Write an equation that represents how you solved each story problem and underline the answer.

1. A box of corn from Fran's Farm costs $65. Vern's Veggies charges $57 for a box of corn. How much more does a box of corn from Fran's Farm cost than a box of corn from Vern's Veggies?

Show your thinking.

answer: _____ equation: _____

Name _____ Date _____

Corn for the Block Party (continued)

2 Val and Kyle helped prepare the corn for the block party. Kyle prepared 38 ears of corn. Val prepared 72 ears of corn. How many fewer ears of corn did Kyle prepare than Val?

Show your thinking.

answer: _____ **equation:** _____



Activity 2

Name _____ Date _____

Choosing Your Method

Hands-On

Find each difference. Use base-ten blocks if it is helpful.

Show your thinking.

3 91 – 87

answer: _____

4 65 – 35

answer: _____

Name _____ Date _____

Choosing Your Method (continued)

Show your thinking.

5 82 – 54

answer: _____

6 77 – 68

answer: _____

7 How did you decide what strategy to use for Problem 6?

Summary 2.11

Noticing how close or far apart the values of the numbers are in a subtraction problem can help you choose a strategy to use to solve it.

Subtract by place	Count up	Compensate
62 – 45 62 = 50 + 12 50 – 40 = 10 12 – 5 = 7 10 + 7 = 17	**93 – 91** 91 + 2 = 93	**72 – 19** 72 – 20 = 52 52 + 1 = 53

Practice 2.11

1 Find the difference.

Show your thinking.

91 – 79

answer: _____

Name _____ Date _____

2 Explain how you decided what strategy to use in Problem 1.

3 Find the difference.

Show your thinking.

74 – 52

answer: _____

4 Explain how you decided what strategy to use in Problem 3.

Name _____ Date _____

5 Solve the story problem. Write an equation that represents the story problem and underline the answer.

The librarian gets a donation of 85 books. He puts 47 books on the shelves. How many books does the librarian still need to put on the shelves?

Show your thinking.

answer: _____ **equation:** _____

Spiral Review

For Problems 6–9, find the number that makes the equation true.

6 15 + 5 = _____

7 16 – 5 = _____

8 14 – 8 = _____

9 9 + 6 = _____

For Problems 10–12, represent the value in another way.

10 2 tens 5 ones

11 41

12 70 + 2

Unit 2
Lesson
12

Name _____ Date _____

Number Strategies 2.NBT.5, 2.NBT.9, SMP.1, SMP.7

Solve the Puzzle

Let's solve puzzles involving addition and subtraction.



Warm-Up

eyes on teacher

We are a math community.
What does it mean to be part of a math community?

Activity 1 The Case of the Missing Digits

Hands-On

Find the digits that make each equation true.

Show your thinking.

1. $80 = 5 \square + 29$

2. $80 = \square\square + 20$

Name _____ Date _____

The Case of the Missing Digits (continued)

Show your thinking.

3 $80 = 27 + \square\square$

4 $80 = 1\square + 6\square$

5 $80 = 3\square + \square 1$

Activity 2

Name _____ Date _____

Block Party Preparations

Hands-On

Find the missing numbers.

Show your thinking.

6 Val subtracted a one-digit number from 43 and needed to decompose a ten. What could the number be?

43 – 

answer: _____

7 Val added a one-digit number to 67 and did not need to compose a ten. What could the number be?

67 + 

answer: _____

Name _____ Date _____

Block Party Preparations (continued)

Show your thinking.

8 Val added a two-digit number to 15 and needed to compose a ten. What could the number be?

 + 15

answer: _____

9 Val subtracted a two-digit number from 94 and did not need to decompose a ten. What could the number be?

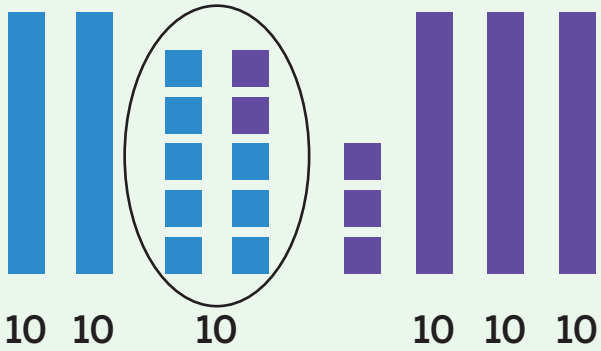
94 – 

answer: _____

Summary 2.12

When adding, if you have more than ten of a smaller unit you can **compose** it to be one larger unit. Ten ones can be **composed** to one ten.

$28 + 35 = 63$



compose Put together.

Practice 2.12

For Problems 1–4, find the number that makes the equation true.

Show your thinking.

1 ___ + 57 = 92

answer: _____

Name _____ Date _____

Show or explain your thinking.

2 81 – ___ = 38

answer: _____

3 63 + ___ = 91

answer: _____

4 28 = 45 – ___

answer: _____

Name _____ Date _____

5 Solve the story problem. Write an equation that represents the story problem and underline the answer.

Han wants to draw flags from 45 countries in his sketchbook. He has already drawn 18 flags. How many more flags does Han need to draw?

Show your thinking.

answer: _____

Spiral Review

For Problems 6–9, find the number that makes the equation true.

6 16 – 9 = _____

7 12 – 11 = _____

8 14 + 5 = _____

9 14 – 6 = _____

For Problems 10–12, represent the value in a different way.

10 85

11 10 + 7

12 6 tens 5 ones

_____ _____ _____

Notes:

Sub-Unit

3

Adding and Subtracting to Compare

Unit Story: The Heroes of Pineapple Street



New Africa/Shutterstock.com

Mr. Cerito uses different paints to face paint at the block party.

What comparisons could Mr. Cerito make while painting?

Unit 2
Lesson
13

Name _____ Date _____

Number Strategies 2.MD.8, 2.NBT.5, 2.OA.1, SMP.2, SMP.3, SMP.4

Community Comparisons

Let's use addition and subtraction to solve story problems.



I am a doer of math.
Kyle's imagination brought the stories he read to life. How could you bring story problems to life in math class?

Warm-Up

eyes on teacher

Activity 1 Paper Planes and Piggy Banks

Hands-On

Solve each story problem. Write an equation that represents each story problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

Show your thinking.

1 Diego made 18 more paper airplanes than Priya. Priya made 71 paper airplanes. How many paper airplanes did Diego make?

answer: _____ **equation:** _____

Name _____ Date _____

Paper Planes and Piggy Banks (continued)

Show your thinking.

2 Jada has 56¢ in her piggy bank. Han has 47¢ in his piggy bank. How much less money does Han have than Jada?

answer: _____ **equation:** _____



Activity 2

Name _____ Date _____

Face Painting at the Block Party

Hands-On

Solve each story problem. Write an equation that represents each story problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

Show your thinking.

3 By the end of the night, Mr. Cerito painted 78 butterflies. He painted 13 more tigers than butterflies. How many tigers did he paint?

answer: _____ **equation:** _____

Name _____ Date _____

Face Painting at the Block Party (continued)

Show your thinking.

4 Mr. Cerito used 96 bottles of face paint. His wife used 27 fewer bottles of face paint. How many bottles of face paint did his wife use?

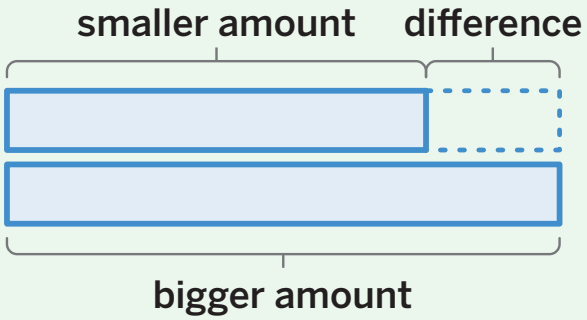
answer: _____ **equation:** _____

5 On Saturday, Mr. Cerito used 84 glitter markers. On Sunday, he used 61 glitter markers. How many fewer glitter markers did he use on Sunday?

answer: _____ **equation:** _____

Summary 2.13

The unknown amount in story problems about comparing can be the difference, the bigger amount, or the smaller amount.



Practice 2.13

For Problems 1–3, solve the story problem. Write an equation that represents the story problem and underline the answer.

Show your thinking.

1 On Monday, a restaurant served 86 customers for lunch. On Tuesday, it served 18 fewer customers. How many customers did the restaurant serve on Tuesday?

answer: _____ **equation:** _____

Name _____ Date _____

Show your thinking.

2 Diego gathered 42 orange seeds. Jada gathered 16 apple seeds. How many more seeds did Diego gather than Jada?

answer: _____ **equation:** _____

3 Han has 54 stickers. He has 36 more stickers than Shawn. How many stickers does Shawn have?

answer: _____ **equation:** _____

Name _____ Date _____

4 Find the difference.

Show your thinking.

85 – 26

answer: _____

Spiral Review

For Problems 5–7, circle 2 numbers with a sum of 11.

5

8	7
4	6

6

2	3
10	9

7

8	5
7	3

For Problems 8 and 9, write the number that is equal to the given value.

8 8 tens 5 ones _____

9 6 tens 18 ones _____

Unit 2
Lesson
14

Name _____ Date _____

Number Strategies 2.OA.1, 2.NBT.5, SMP.1, SMP.2, SMP.7, SMP.8

Comparing With Kyle

Let's make sense of and solve story problems.



Warm-Up eyes on teacher

We are a math community. How is being a member of a math community helpful for mathematicians?

Activity 1 Hungry for Honey!

Hands-On

Read the story problem. Use this page to brainstorm ideas for how to solve the story problem. Use a tape diagram to represent the problem if it is helpful.

Val sold 15 fewer honey muffins than granola bars.

Val sold 47 honey muffins.

How many granola bars did Val sell?

Name _____ Date _____

Hungry for Honey! (continued)

1 Solve the story problem. Write an equation that represents the story problem and underline the answer.

Show your thinking.

answer: _____ **equation:** _____



Activity 2

Name _____ Date _____

Trip to the Zoo

Hands-On

Solve each story problem. Write an equation that represents each story problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

Show your thinking.

2 65 students went to the sea lion show. 23 fewer students went to the sea lion show than the reptile house. How many students went to the reptile house?

answer: _____ **equation:** _____

Name _____ Date _____

Trip to the Zoo (continued)

Show your thinking.

3 58 students visited the monkey house. 34 more students visited the bird house than the monkey house. How many students visited the bird house?

answer: _____ **equation:** _____

4 73 students went to see the bears. 44 fewer students went to see the lions than the bears. How many students went to see the lions?

answer: _____ **equation:** _____

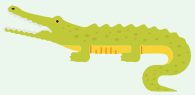
Summary 2.14

The word *fewer* is found in many story problems. In some of these problems, the bigger amount is unknown, and in other problems, the smaller amount is unknown.

There are 65 sea lions.
There are 23 fewer sea lions than reptiles.

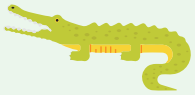


65
23 fewer



65 + 23 = 88

There are 88 reptiles.
There are 23 fewer sea lions than reptiles.



88



23 fewer
88 − 23 = 65

Practice 2.14

For Problems 1–3, solve the story problem. Write an equation that represents the story problem and underline the answer.

Show your thinking.

1 39 fewer people attended the carnival on Monday than on Tuesday. 52 people attended the carnival on Monday. How many people attended the carnival on Tuesday?

answer: _____ **equation:** _____

Name _____ Date _____

Show your thinking.

2 Diego read 25 pages of a book. Jada read 17 fewer pages of the same book. How many pages did Jada read?

answer: _____ **equation:** _____

3 Scientists are collecting fossils at a dig site. They collected 64 leaf fossils on Monday. They collected 36 fewer fossils on Monday than Tuesday. How many fossils did they collect on Tuesday?

answer: _____ **equation:** _____

Name _____ Date _____

4 Find the difference.

Show your thinking.

71 – 59

answer: _____

For Problems 5–7, circle 2 numbers with a sum of 12.

5

9	3
4	7

6

2	4
10	9

7

8	5
7	3

Spiral Review

For Problems 8 and 9, write the number that is equal to the given value.

8 4 tens 9 ones _____

9 4 ones 9 tens _____

Unit 2
Lesson
15

Name _____ Date _____

Dollars and Cents | Number Strategies | 2.OA.1, 2.MD.8, 2.NBT.5, SMP.1, SMP.2, SMP.7, SMP.8

Library Comparisons

Let's make sense of and solve story problems.



We are a math community. How does listening to other people's ideas help you grow as a mathematician?

Warm-Up

eyes on teacher

Activity 1

Mr. Cerito's Face Painting

Hands-On

Read the story problem. Use this page to brainstorm ideas for how to solve the story problem. Use a tape diagram to represent the problem if it is helpful.

The price of a butterfly face painting is 12¢ more than the price of a tiger face painting.

The price of a butterfly face painting is 98¢.

What is the price of a tiger face painting?

Name _____ Date _____

Mr. Cerito's Face Painting (continued)

1 Solve the story problem. Write an equation that represents the story problem and underline the answer.

Show your thinking.

answer: _____ **equation:** _____

Activity 2

Name _____ Date _____

Events at the Library

Solve each story problem. Write an equation that represents each story problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

Show your thinking.

2 Volunteers planted 44 plants in the community garden in April. They planted 29 more plants in May than they did in April. How many plants did they plant in May?

answer: _____ **equation:** _____

3 63 people attended the cooking class at the library on Wednesday. 32 more people attended the class on Wednesday than on Thursday. How many people were there on Thursday?

answer: _____ **equation:** _____

Name _____ Date _____

Events at the Library (continued)

Show your thinking.

4 On the first movie night in June, volunteers popped 73 bags of popcorn. On the second movie night, they popped 15 fewer bags. How many bags of popcorn did they pop on the second night?

answer: _____ **equation:** _____

5 Discuss

Choose **1** story problem from Problems 2–4. How did you find what the known and unknown amounts were in the problem?

Summary 2.15

The word *more* is found in many story problems. In some story problems, the bigger amount is unknown, and in others, the smaller amount is unknown.

There were 44 plants planted in April. There were 29 more plants planted in May than in April.



44



29 more

44 + 29 = 73

There were 73 plants planted in May. There were 29 more plants planted in May than in April.



73

29 more



73 − 29 = 44

Practice 2.15

For Problems 1–3, solve the story problem. Write an equation that represents the story problem and underline the answer.

Show your thinking.

1 The students at Pineapple Street Elementary voted on where to go for their end-of-year celebration. 81 students voted for the park. 25 more students voted for the park than for the aquarium. How many students voted for the aquarium?

answer: _____ **equation:** _____

Name _____ Date _____

Show your thinking.

2 Clare collected 75 pine cones at the park. She collected 28 more pine cones than Han. How many pine cones did Han collect?

answer: _____ **equation:** _____

3 Priya donated 45 books to the thrift store. Her sister donated 38 more books than Priya. How many books did Priya's sister donate?

answer: _____ **equation:** _____

Name _____ Date _____

4 Find the difference.

Show your thinking.

92 – 71

answer: _____

For Problems 5–7, circle 2 numbers with a sum of 13.

5

8	7
6	9

6

2	8
5	9

7

7	5
9	4

Spiral Review

For Problems 8 and 9, write the number that is equal to the given value.

8 3 tens 16 ones _____

9 5 ones 2 tens _____

Unit 2
Lesson
16

Name _____ Date _____

Dollars and Cents | Number Strategies | 2.OA.1, 2.MD.8, 2.NBT.5, 2.NBT.7.1, SMP.2, SMP.4, SMP.7

Problem Palooza

Let's solve story problems about comparing and then share our work.



We are a math community.
How can we make everyone in our class feel like a successful mathematician?

Warm-Up

eyes on teacher

Activity
1

Thinking About the Unknown

Hands-On

On Monday, 72 people volunteered at a community garden. 26 fewer people volunteered on Monday than on Tuesday. How many people volunteered on Tuesday?

1 Solve the story problem. Write an equation that represents the problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

Show your thinking.

answer: _____

equation: _____

Name _____ Date _____

Thinking About the Unknown (continued)

Jada and her sister are counting the money in their piggy banks. Jada has 61¢. Jada has 39¢ more than her sister. How much money does Jada's sister have?

2 Discuss

Before solving the problem, tell your partner what you know about the value of the unknown amount in the story problem. Justify how you know your estimate is true.

Use the sentence frames if they are helpful.

- The unknown will be greater than _____ because _____.
- The unknown will be less than _____ because _____.
- The unknown will be about/around _____ because _____.

3 Solve the story problem. Write an equation that represents the problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

Show your thinking.

answer: _____

equation: _____

Activity 2

Name _____ Date _____

Helping the Library

Hands-On

Solve each story problem. Write an equation that represents each story problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

Show your thinking.

4 At her stand, Jo sold 94 t-shirts. She also sold 47 posters. How many more t-shirts did Jo sell than posters?

answer: _____ **equation:** _____

Name _____ Date _____

Helping the Library (continued)

Show your thinking.

5 57 people helped set up the block party. 29 more people helped set up the block party than cleaned it up. How many people helped clean up the block party?

answer: _____ **equation:** _____

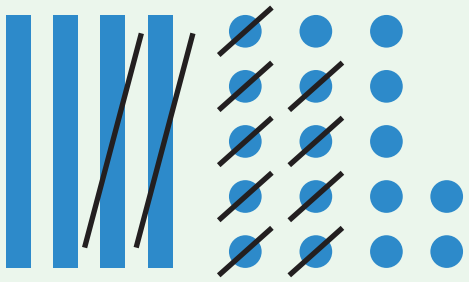
6 Mr. Cerito raised $41 on Saturday. He raised $58 more on Sunday than on Saturday. How much money did he raise on Sunday?

answer: _____ **equation:** _____

Summary 2.16

It is important to think about all the information in a story problem. Then you can solve the problem in a way that makes sense to you.

$57 - 7 = 50$
$50 - 20 = 30$
$30 - 2 = \underline{28}$



Practice 2.16

For Problems 1–3, solve the story problem. Write an equation that represents the story problem and underline the answer.

Show your thinking.

1 Han's family is comparing tickets for theme parks. It costs $24 more to go to Fun Land than to Adventure City. Fun Land's ticket costs $97. How much does a ticket for Adventure City cost?

answer: _____ **equation:** _____

Name _____ Date _____

Show your thinking.

2 Diego collects insects. He has 27 butterflies. He has 35 fewer butterflies than dragonflies. How many dragonflies does Diego have?

answer: _____ **equation:** _____

3 Jada did 38 push-ups on Monday. She did 29 more push-ups on Tuesday than she did on Monday. How many push-ups did she do on Tuesday?

answer: _____ **equation:** _____

Name _____ Date _____

4 Find the difference.

Show your thinking.

51 – 37

answer: _____

For Problems 5–7, circle 2 numbers with a sum of 14.

5

8	7
4	6

6

6	5
7	9

7

8	7
7	5

Spiral Review

For Problems 8 and 9, write the number that is equal to the given value.

8 4 tens 12 ones _____

9 7 tens 10 ones _____

Notes:

Sub-Unit

4

Solving One- and Two-Step Story Problems

Unit Story: The Heroes of Pineapple Street



Ferenc Szelepcsenyi/Shutterstock.com

Kyle learns many people have to work together to save the library.

What math questions could you ask about what you see in this illustration?

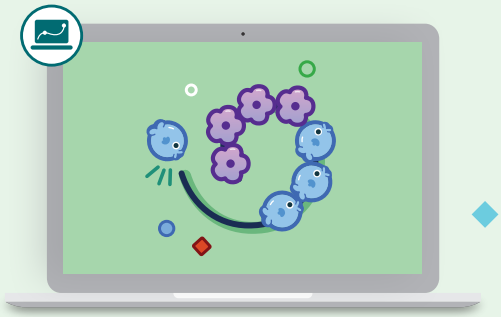
Unit 2
Lesson
17

Name _____ Date _____

Number Strategies 2.OA.1, 2.NBT.5, SMP.2, SMP.4, SMP.7

Brace Yourselves

Let's make connections between story problems and tape diagrams.



Warm-Up 1 eyes on teacher

I am a doer of math.
How do you feel when solving a challenging math problem?

Activity 1 Bead It

Hands-On

Let's look at story problems and tape diagrams. You and your partner will be given a set of cards with tape diagrams.

2 Sort the tape diagrams into categories that make sense to you.

Discuss

Explain how you sorted the cards.

3 **Discuss**

What do you notice about the story problems and the tape diagrams? What do you wonder?

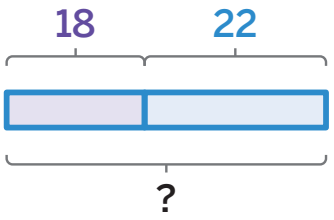
Name _____ Date _____

Bead It (continued)

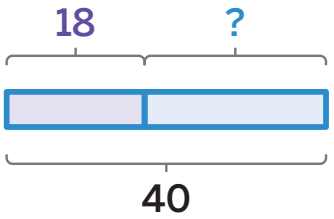
4 Discuss

What is similar about these story problems and tape diagrams? What is different?

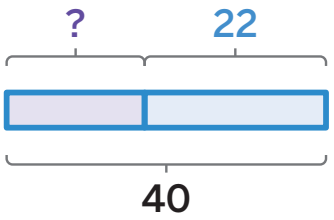
Story 1:
Kyle's bracelet has 18 flower beads and 22 fish beads. How many total beads are on Kyle's bracelet?



Story 2:
Kyle has **40** beads on a bracelet. 18 of the beads are flowers, and the rest are fish beads. How many fish beads does his bracelet have?



Story 3:
Kyle has **40** beads on a bracelet. 22 of the beads are fish beads, and the rest are flowers. How many flower beads does his bracelet have?



5 Discuss

Let's discuss what story problems could be represented by the tape diagram.

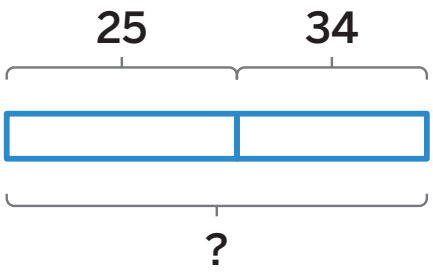
Activity 2

Name _____ Date _____

Busy Beaders

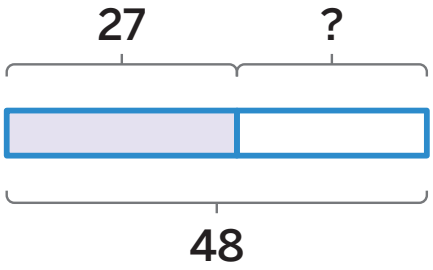
Solve the story problems.

6 Henry has a bracelet with 25 apple beads and 34 heart beads. How many beads are on Henry's bracelet?



answer: _____

7 Jesse has 48 beads. 27 of them are heart beads, and the rest are cat beads. How many cat beads does his bracelet have?



answer: _____

8 Circle **3** equations that could represent the story problem from Screen 7.

27 + ? = 48

? + 27 = 48

48 + 28 = ?

48 – 27 = ?

Name _____ Date _____

Busy Beaders (continued)

9 **Solve each story problem. Use the tape diagram if it is helpful.**

Show or explain your thinking.

Jun has a bracelet with 30 sun beads and 38 apple beads. How many beads does Jun's bracelet have?



answer: _____

Jo's bracelet has 49 pig beads and the rest are cat beads. There are 73 beads in all. How many cat beads are on Jo's bracelet?



answer: _____

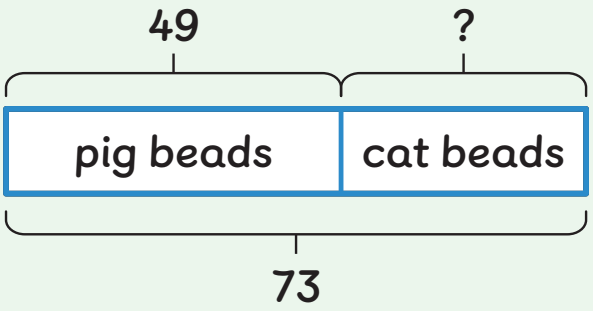
10 **Discuss**

Let's discuss the relationship between the story problem, tape diagram, and equation.

Summary 2.17

Tape diagrams can be used to make sense of story problems about parts and a total before choosing a strategy to solve.

Jo's bracelet has 49 pig beads and the rest are cat beads. There are 73 beads in all. How many cat beads are on Jo's bracelet?



$49 + ? = 73$

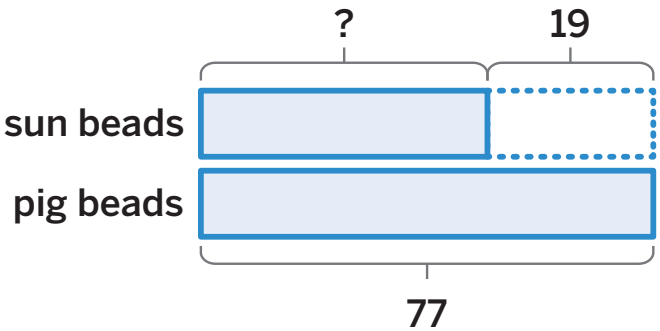
$73 - 49 = ?$

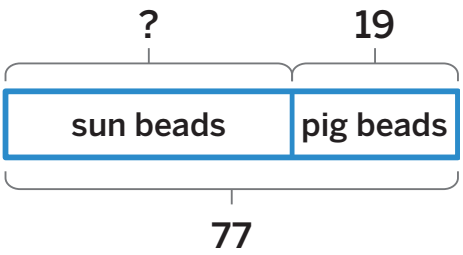
$74 - 50 = 24$ cat beads

Practice 2.17

1 Circle **1** tape diagram and **1** equation that represent the story problem.

Val has 77 beads on a bracelet. Some beads are sun beads and 19 beads are pig beads. How many sun beads are on Val's bracelet?





$? + 19 = 77$

$77 + 19 = ?$

Name _____ Date _____

Use the math story to solve Problems 2 and 3. Write an equation that represents the story problem and underline the answer.

Han and his dad went to the water park. Their tickets were $83 in total. Han's ticket was $29.

Show your thinking.

2 How much was Han's dad's ticket?

answer: _____ **equation:** _____

3 How much more was Han's dad's ticket than Han's ticket?

answer: _____ **equation:** _____

Name _____ Date _____

4 Find the difference.

Show your thinking.

63 – 25

answer: _____

For Problems 5–7, circle 2 numbers with a sum of 9.

5

8	1
7	3

6

2	5
4	6

7

8	7
4	2

Spiral Review

For Problems 8 and 9, write the number that is equal to the given value.

8 5 ones 7 tens _____

9 2 tens 10 ones _____

Unit 2
Lesson
18

Name _____ Date _____

Number Strategies 2.OA.1, SMP.1, SMP.7, SMP.8

Unity in the Community

Let's make sense of math stories.



We are a math community. Many people helped raise money for the Pineapple Street Library. What does help in a math community look like?

Warm-Up

eyes on teacher

Activity 1 At the Animal Shelter

Write 2 questions someone can answer about each math story.

The Pineapple Street Animal Shelter had 50 dogs that needed a bath. One volunteer gave 25 dogs a bath. Another volunteer gave 10 dogs a bath.

1 Write Question 1.

2 Write Question 2.

Name _____ Date _____

At the Animal Shelter (continued)

There are 36 people who volunteer at the animal shelter every Monday. 25 people volunteer every Wednesday. 10 people volunteer every Friday.

3 Write Question 1.

_____

_____

4 Write Question 2.

_____

_____

5 **Discuss**

Choose your favorite question to share with your partner. Explain how you decided to write that question.

Activity 2

Name _____ Date _____

What Are Your Questions?

Write 2 questions someone can answer using *all* the information in each math story.

Jo collected 40 dog toys for the animal shelter. Val collected 20 dog toys for the animal shelter. The next day, Val collected 30 more dog toys for the animal shelter.

6 Write Question 1.

_____

_____

_____

7 Write Question 2.

_____

_____

_____

Name _____ Date _____

What Are Your Questions? (continued)

A volunteer baked 50 dog treats for the animal shelter. 25 treats were peanut butter, 10 treats were pumpkin, and the rest of the treats were sweet potato.

8 Write Question 1.

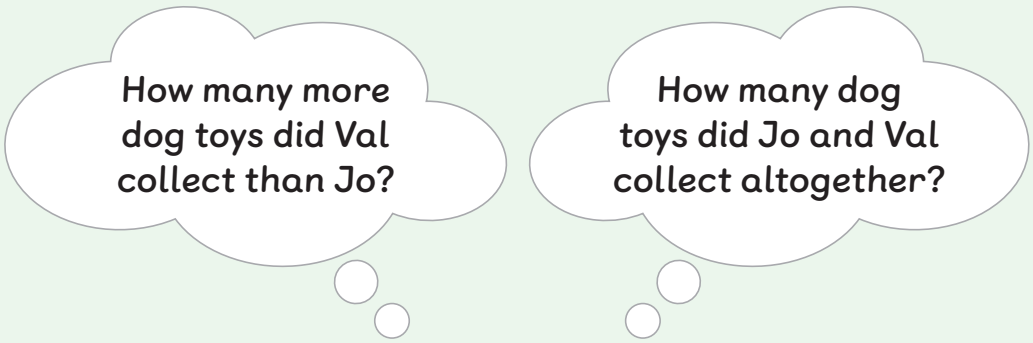
9 Write Question 2.

10 **Discuss**

How are these math stories similar to math stories you have worked with in the past? How are these math stories different from math stories you have worked with in the past?

Summary 2.18

You can ask different questions about the same math story. Some questions can be answered using all the information from the story.



Practice 2.18

1 Find the difference.

Show your thinking.

72 – 24

answer: _____

Name _____ Date _____

Use the math story for Problems 2 and 3.

On Sunday, there were 60 bags of dog food in the shelter. A volunteer gave the shelter 20 more bags of dog food on Monday and 17 bags on Tuesday.

2 Write a question that uses *some* of the information in the story.

_____

_____

_____

3 Write a question that uses *all* the information in the story.

_____

_____

_____

4 Find the difference.

Show your thinking.

85 – 26

answer: _____

Practice 2.18

Name _____ Date _____

For Problems 5–7, circle 2 numbers with a sum of 15.

5

8	7
4	6

6

5	6
9	8

7

5	8
10	6

Spiral Review

For Problems 8–11, write the number that is equal to the given value.

8 3 ones 8 tens _____

9 5 tens 12 ones _____

10 3 tens 8 ones _____

11 2 tens 17 ones _____

Unit 2
Lesson
19

Name _____ Date _____

Number Strategies 2.OA.1, 2.NBT.5, SMP.1, SMP.2, SMP.7

Mrs. Hernández's Farm

Let's make sense of and solve story problems.



We are a math community. How does it feel to be a member of your math community when you work together to solve problems?

Warm-Up

eyes on teacher

Activity 1 Card Sort: Story Problems

Hands-On

You and your partner will be given a set of cards with different story problems.

1 Sort

Sort the cards into **2** categories of your choosing.

Create a name for each category and then fill in the table to show how you sorted the cards.

Category	Cards
Category 1:	
Category 2:	

Name _____ Date _____

Card Sort: Story Problems (continued)

2 Discuss

Compare your responses with another group. What was the same about the way you and your partner sorted the story problems? What was different?



Activity 2

Name _____ Date _____

How Many Unknowns?

Hands-On

Solve each story problem. Use a tape diagram to represent the problem if it is helpful.

Show or explain your thinking.

3 Mrs. Hernández's hens were laying eggs in their henhouse. The nests had 6 brown eggs, and the rest were white eggs. There were 38 eggs total. How many eggs were white?

answer: _____

Name _____ Date _____

How Many Unknowns? (continued)

Show or explain your thinking.

4 Val collected 70 bottles of goat milk to take to her bakery. She put 20 of the bottles into crates. Then Kyle helped her put 15 more of the bottles into crates. How many bottles did Val have left to put into crates?

answer: _____



Summary 2.19

Story problems with 1 unknown are one-step story problems.
Story problems with 2 unknowns are two-step story problems.

	1st unknown:	**2nd unknown:**
Kyle	Val	Val and Kyle
		
20	Kyle collected 3 more than Val. 17 + 3 = 20	20 + 17 = **37**

Practice 2.19

1 Val collected 40 blue eggs and 35 brown eggs from hens on the farm. Val dropped some eggs. Now Val has 55 eggs. How many eggs did Val drop?

Show or explain your thinking.

answer: _____

Name _____ Date _____

2 45 people were at the lake in the morning. 25 more people came to the lake during lunch. 17 people left the lake after lunch. How many people are at the lake now?

Show or explain your thinking.

answer: _____

3 Diego scored 34 points in the trivia game. Priya scored 17 points more than Diego. How many points did they score altogether?

Show or explain your thinking.

answer: _____

Name _____ Date _____

4 The farmer sold 43 heads of lettuce at the farmer's market. She sold 21 fewer eggplants than heads of lettuce. How many vegetables did the farmer sell in all?

Show or explain your thinking.

answer: _____

For Problems 5–8, find the number that makes the equation true.

5 5 + 13 = _____

6 12 − 7 = _____

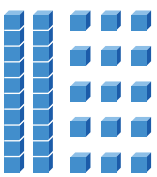
7 20 − 11 = _____

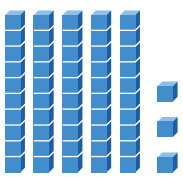
8 9 + 7 = _____

Spiral Review

9 Circle the image that does *not* have the same value as the others.

35





3 tens 5 ones

Unit 2
Lesson
20

Name _____ Date _____

Number Strategies 2.OA.1, 2.NBT.5, SMP.2, SMP.3, SMP.7

Even Heroes Have Problems

Let's solve story problems.



I can be all of me in math class.
How have you learned from a mistake you made in math class?

Warm-Up

eyes on teacher

Activity 1

Checking Once, Checking Twice

Mr. Cerito made 35 fidget toys. Kyle's dad made 10 fewer fidget toys than Mr. Cerito. How many fidget toys did Mr. Cerito and Kyle's dad make in total?

Kyle and his friend, Sam, found 2 different answers. Their ways of solving are shown.

Kyle's Way

35 + 10 = 45

answer: 45 fidget toys

Sam's Way

35 – 10 = 25

35 + 25 = 60

answer: 60 fidget toys

Name _____ Date _____

Checking Once, Checking Twice (continued)

1 Who is correct?

_____

2 Explain your choice.

_____

_____

_____

_____

Activity 2

Name _____ Date _____

Neighborhood Heroes

Hands-On

Solve each story problem. Use a tape diagram to represent the problem if it is helpful.

Show or explain your thinking.

3 Val made 55 bottles of cucumber juice and 15 bottles of strawberry juice. Her mother spilled 20 bottles of juice. How many bottles of juice did Val have after the spill?

answer: _____

Name _____ Date _____

Neighborhood Heroes (continued)

Show or explain your thinking.

4 Kyle likes trading cards. He had 45 monster cards and the same number of baseball cards. Henry gave Kyle 10 football cards. How many trading cards does Kyle have?

answer: _____

5 **Discuss**

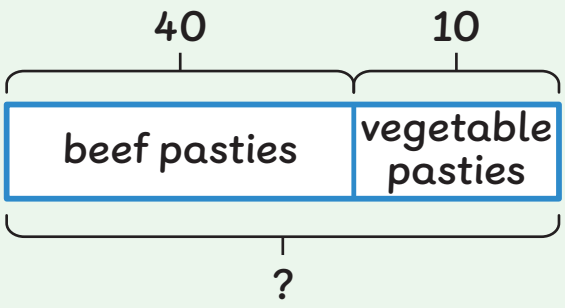
Share your responses with your partner. How did you find how many unknowns were in the story problems?

Summary 2.20

Two-step story problems can have 2 different relationships between the amounts that need to be considered when finding the unknown amounts.

Jo first baked 40 beef pasties and 10 vegetable pasties.

Then she gave her neighbor 20 beef pasties. I need to find how many pasties she has left.



$50 - 20 = 30$

Jo has 30 pasties left.

Practice 2.20

1 Priya wanted to grow a garden. She had 30 squash seeds and the same number of cucumber seeds. Diego had 25 seeds. How many more seeds did Priya have than Diego?

Show or explain your thinking.

answer: _____

Name _____ Date _____

2 Scientists were studying bird migration on an island. In May, there were 58 birds on the island. In June, 17 birds left the island. 25 birds came to the island in July. How many birds were on the island in July?

Show or explain your thinking.

answer: _____

3 Clare is counting her drawing tools. She has 17 markers. She has 15 more colored pencils than markers. She has 38 crayons. How many drawing tools does Clare have in all?

Show or explain your thinking.

answer: _____

Name _____ Date _____

4 The teacher had 86 tests to grade. He graded 24 tests on Monday. He graded 10 more tests on Tuesday than he graded on Monday. How many tests does he have left to grade?

Show or explain your thinking.

answer: _____

For Problems 5–8, find the number that makes the equation true.

5 9 + 7 = _____

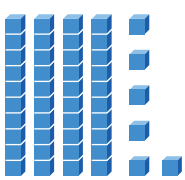
6 14 − 7 = _____

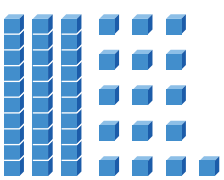
7 6 + 11 = _____

8 14 − 6 = _____

Spiral Review

9 Circle the image that does *not* have the same value as the others.





64

4 tens 6 ones

Name _____ Date _____

Dollars and Cents | Number Strategies | 2.OA.1, 2.NBT.5, 2.MD.8, SMP.4, SMP.7, SMP.8

Solving It Your Way

Let's solve two-step story problems and share our thinking with others.



I am a doer of math.
Kyle learned heroes do not solve problems on their own. How can you apply that lesson to math class?

Warm-Up

eyes on teacher

Activity 1 Finding Your Way

Solve each story problem. Use a tape diagram to represent the problem if it is helpful.

1. Mr. Cerito is drawing pictures for all 76 students in Kyle's class. Mr. Cerito has already drawn 11 dog and 12 butterfly pictures. How many more pictures does he need to draw?

Show or explain your thinking.

answer: _____

Name _____ Date _____

Finding Your Way (continued)

2 Discuss

Explain how you solved the story problem to your partner.

Activity 2

Name _____ Date _____

More Than 1 Way?

Hands-On

Solve each story problem. Use a tape diagram to represent the problem if it is helpful.

Show or explain your thinking.

3 Jo is gathering books to donate to the library. She gathered 15 books. Val gathered 47 books and Mr. Cerito gathered 35 books. How many books did they gather altogether?

answer: _____

Name _____ Date _____

More Than 1 Way? (continued)

Show or explain your thinking.

4 Kyle had saved $54 from helping neighbors throughout the community. He spent $18 on a new comic book and $12 on a new paint set. How much money does Kyle have left?

answer: _____



Summary 2.21

Two-step story problems can be solved in different ways. When you only use addition to solve, you can add numbers in any order and the sum will not change.

Han scored 12 points playing kickball. Priya scored 32 points and Diego scored 12. How many points did they score altogether?

12 + 32 = 44	12 + 12 = 24
44 + 12 = <u>56</u>	24 + 32 = <u>56</u>

Practice 2.21

1 Jo made 33 blue shirts, 40 red shirts, and 27 yellow shirts for all the teachers on the last day of school. How many shirts did Jo make in total?

Show or explain your thinking.

answer: _____

Name _____ Date _____

2 Val had 58 bags of honey popcorn on Monday. On Tuesday, she sold 24 bags. She sold some more bags on Wednesday. Now she has 15 bags. How many bags did Val sell on Wednesday?

Show or explain your thinking.

answer: _____

3 Jada found 27 shells on the beach in the morning. In the afternoon, she found 15 more shells. She found 39 more shells the next day. How many shells did Jada find in all?

Show or explain your thinking.

answer: _____

Name _____ Date _____

4 Diego had 62 marbles. He gave 25 marbles to his sister. Then he lost 23 marbles on the playground. How many marbles does Diego have left?

Show or explain your thinking.

answer: _____

For Problems 5–8, find the number that makes the equation true.

5 12 + 8 = _____

6 14 − 9 = _____

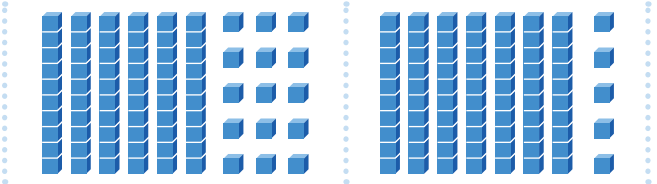
7 6 + 7 = _____

8 15 − 8 = _____

Spiral Review

9 Circle the image that does *not* have the same value as the others.

75



5 tens 7 ones

Unit 2
Lesson
22

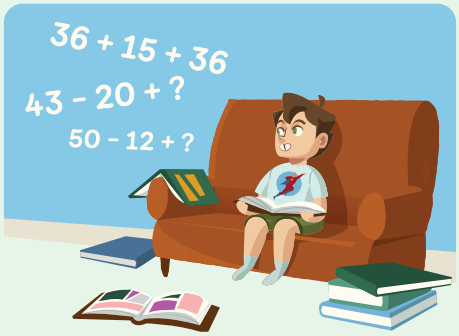
Name _____ Date _____

Dollars and Cents | Number Strategies

2.OA.1, 2.NBT.5, 2.MD.8, 2.NBT.6, SMP.2, SMP.4, SMP.6

Story Problems Galore

Let's make sense of equations and solve story problems.



We are a math community. How have you and your math community recently worked together to solve a problem?

Warm-Up

eyes on teacher

Activity 1 Matching Them Up!

For each story problem, find 1 or more equations in the table that represent it. Equations can be used more than once.

1. Jo earned $30 for babysitting and $30 for cutting the grass. She also earned $15 for helping Mr. Cerito paint his fence. How much money did Jo earn in total?

   equation letter(s): _____

2. Mrs. Hernández picked 30 roses and 30 sunflowers from her garden. On her way inside, she dropped 15 flowers. How many flowers does she have now?

   equation letter(s): _____

Name _____ Date _____

Matching Them Up! (continued)

3 Kyle's class had 30 library books checked out. Sam's class had 15 more library books checked out than Kyle's. How many books are checked out in total?

equation letter(s): _____

4 Val baked 30 tamales. Val's sister baked 15 fewer tamales than Val. How many tamales did they bake altogether?

equation letter(s): _____

Letter	Equation
A	30 + 30 + 15 = ___
B	30 + 30 – 15 = ___
C	15 + 30 + 30 = ___
D	30 + 15 + 30 = ___
E	30 – 15 + 30 = ___

Activity 2

Name _____ Date _____

Solving Story Problems

Hands-On

Solve each story problem. Write 1 or more equations that represent each story problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

Show or explain your thinking.

5 Mrs. Hernández had 53 flowers in her garden. Her goat ate 30 flowers. Then Val gave Mrs. Hernández 17 flowers from her garden. How many flowers does Mrs. Hernández have now?

answer: _____

equation: _____

Name _____ Date _____

Solving Story Problems (continued)

Show or explain your thinking.

6 Kyle has 38 stickers on his skateboard. Sam has 12 more stickers on his skateboard than Kyle. How many stickers do they have altogether?

answer: _____

equation(s): _____



Summary 2.22

Two-step story problems can be represented with 1 or more equations.

Kyle bought a granola bar for 34¢ and a banana muffin for the same price at Val's bakery. Sam spent 16¢ more at the bakery than Kyle did. How much money did Sam spend at the bakery?

$34 + 34 + 16 = \underline{84}$

one equation

or

$34 + 34 = 68$
$68 + 16 = \underline{84}$

two equations

Practice 2.22

1 Priya wants to make a gumbo soup for her family and has $100 to spend on vegetables. She spent $35 on potatoes and $15 on corn. How much money does Priya have left?

Show or explain your thinking.

answer: _____

equation(s): _____

Name _____ Date _____

2 The cafeteria helpers sold some water bottles on Monday. On Tuesday, they sold 18 water bottles, and on Wednesday, they sold 24 water bottles. They sold 58 water bottles in all. How many water bottles did they sell on Monday?

Show or explain your thinking.

answer: _____

equation: _____

3 Han has 28 toy cars. He has 18 fewer toy cars than Diego. How many toy cars do they have altogether?

Show or explain your thinking.

answer: _____

equation(s): _____

Name _____ Date _____

4 Priya had 32 baseball cards. She gave 18 of her cards to her brother. She bought some more baseball cards at the store and now she has 47. How many baseball cards did Priya buy?

Show or explain your thinking.

answer: _____

equation: _____

For Problems 5–8, find the number that makes the equation true.

5 20 – 8 = _____

6 16 – 9 = _____

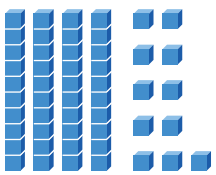
7 19 – 5 = _____

8 6 + 5 = _____

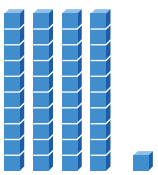
Spiral Review

9 Circle the image that does *not* have the same value as the others.

4 tens 1 one



41



Math at Work

Did you know coins can last about 30 years before they are too worn to use? Next time you look at a coin, check out its date!

People who **work at the U.S. Mint** make sure you have coins you can spend, save, or collect.
The Mint makes more than 10 billion coins to circulate each year!



PeopleImages.com - Yuri A/Shutterstock.com.
Roman Babakin/Shutterstock.com.

Math in the World

Do you like collecting coins or other objects? The U.S. Mint in San Francisco, California makes coins you can collect. They even use robots to package the coins!



Iv-olga/Shuttestock.com.

Math Mindset

What is one strategy you could use to find 52¢ – 37¢?

Unit 3

Measuring Length

Big Ideas in This Unit

CC1 Measure and Compare Objects | Represent Data

CC2 Problem Solving With Measure | Dollars and Cents

CC3 Number Strategies

Questions for Investigation

- How can we estimate and measure the lengths of objects?
- How can we represent and solve story problems involving measurement?
- How can we represent measurement data in a line plot?

Explore: Orson's Costumes

How could you help someone draw a rectangle they cannot see?





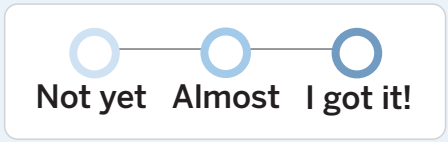
Unit Story: What Orson Imagined

In this story, Orson becomes frustrated when others' ideas do not align with his vision for the school play.

Nagy-Bagoly Arpad/Shutterstock.com

Watch Your Knowledge Grow

This is the math you'll explore in this unit. Rate your understanding to see how your knowledge grows!



I can . . .	Before	After
Determine how much longer one object is than another.		
Measure the lengths of objects in centimeters and meters using a ruler and meterstick.		
Measure the length of objects in inches and feet using a ruler and yardstick.		
Estimate the length of objects in centimeters, meters, inches, and feet.		
Choose the appropriate measurement tool to measure the length of objects.		
Solve one- and two-step story problems about length.		
Explain how to identify the unknowns in story problems.		
Represent two-step story problems with equations.		
Create line plots using measurement data.		
Answer questions about line plots using data.		

Sub-Unit

1

Measuring in Standard Units

Unit Story: What Orson Imagined



Komsan Loonprom/Shutterstock.com

The students are measuring the lengths of props for the play.

What tools could they use to measure?

Name _____ Date _____

Measure and Compare Objects | Building Toward 2.MD.1, 2.MD.2, SMP.1, SMP.5, SMP.6

Explore: Orson's Costumes

How could you help someone draw a rectangle they cannot see?



We are a math community. How can you communicate your math ideas to others clearly?

Warm-Up

eyes on teacher

Discuss What do you notice? What do you wonder?



Activity

Name _____ Date _____

You will be given a sheet with a fabric piece, or rectangle, and different math tools.

- With your partner, write directions for how to draw the rectangle.
- Trade directions with another pair.
- Draw a rectangle using the directions you receive.

Ways to be a mathematician

1 I can take my time to think about a challenging problem before trying to solve it.



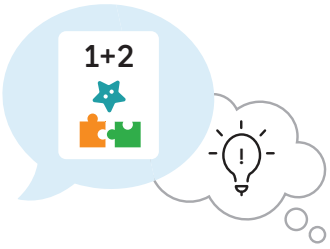
Not yet Almost I got it!

2 I can choose the tool that is just right for the problem I am solving.



Not yet Almost I got it!

3 I can work carefully and try to be clear when I share my ideas.



Not yet Almost I got it!

Unit 3
Lesson
2

Name _____ Date _____

Measure and Compare Objects | Problem Solving With Measure | 2.MD.1, 2.MD.4, 2.MD.9, SMP.5, SMP.6

Which Tool Will You Use?

Let's measure length in centimeters.



I am a doer of math.
What are some things you have measured in the past? Why did you measure them?

Warm-Up

eyes on teacher

Activity 1 Two Different Tools

Hands-On

You will be given a sheet with the costume designer's tray, centimeter cubes, and 10-centimeter rods.

Marcos, the costume designer, found a tray to hold extra costume materials. You and your partner will help Marcos measure the length of the tray to make sure all the materials can fit.

1 Measure the length of the tray using centimeter cubes. Record your measurement.

The tray is _____ centimeters long.

Name _____ Date _____

Two Different Tools (continued)

2 Measure the length of the tray using 10-centimeter rods. Record your measurement.

The tray is _____ centimeters long.

3 **Discuss**

What is similar and different about measuring with each of these tools?



Activity 2

Name _____ Date _____

Will They Fit?

Hands-On

You will be given sheets with costume materials. Measure the length of each costume material in centimeters. Then compare the lengths of the leaf and the tray.

4 How long is the wristband?

_____

5 How long is the leaf?

_____

6 How long is the flower?

_____

7 How long are the scissors?

_____

Name _____ Date _____

Will They Fit? (continued)

8 How much longer is the leaf than the tray from Activity 1?

Show or explain your thinking.

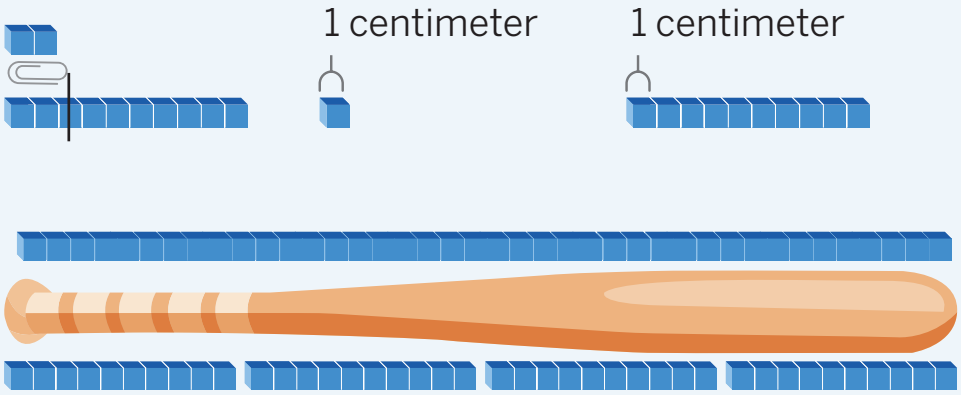
length: _____ **equation:** _____

9 **Discuss**

Which objects from Problems 4–7 will fit on the tray? How do you know?

Summary 3.02

You can choose which tools you use to measure length. You can use longer measurement tools to measure short and long objects. You can also use multiple tools to measure the same object.



a centimeter A length unit in the metric measurement system.

Practice 3.02

For Problems 1 and 2, use the picture of the pencil.
Fill in the sentence.



1 Use centimeter cubes to measure the length of the pencil.

The pencil is _____ centimeters long.

2 Use 10-centimeter rods to measure the length of the pencil.

The pencil is _____ centimeters long.

Name _____ Date _____

3 Which tool did you prefer to use for measuring the pencil? Explain your thinking.

For Problems 4 and 5, use the picture of the colored pencil. Fill in the sentence.



4 Use 10-centimeter rods or centimeter cubes to measure the colored pencil.

The colored pencil is _____ centimeters long.

5 If you measured the colored pencil again with the other measuring tool, how long do you think it would be?

I think the colored pencil would be _____ centimeters long.

Name _____ Date _____

Spiral Review

For Problems 6 and 7, find the value of the expression.

Show your thinking.

6 17 + 48

answer: _____

7 81 – 24

answer: _____

8 In band class, each student chose an instrument to learn to play. 31 students chose a drum. 14 fewer students chose a trumpet. How many students chose a trumpet?

Show your thinking.

answer: _____ **equation:** _____

Unit 3
Lesson
3

Name _____ Date _____

Measure and Compare Objects | Problem Solving With Measure | 2.MD.1, 2.MD.4, 2.MD.9, 2.NBT.5, 2.OA.2, SMP.2, SMP.7, SMP.8

What's the Difference?

Let's use rulers to measure the lengths of objects in centimeters.



Warm-Up

eyes on teacher

I am a doer of math.
How can tools help you with math?

Activity 1 Comparing Rulers and Cubes

Hands-On

Use a centimeter ruler to measure the length of each rectangle. Check your answers with centimeter cubes or 10-centimeter rods. Record the measurement.

1

_____

2

_____

Name _____ Date _____

Comparing Rulers and Cubes (continued)

3



_____

4 **Discuss**

What is similar and different about measuring length with a ruler and measuring length with centimeter cubes?



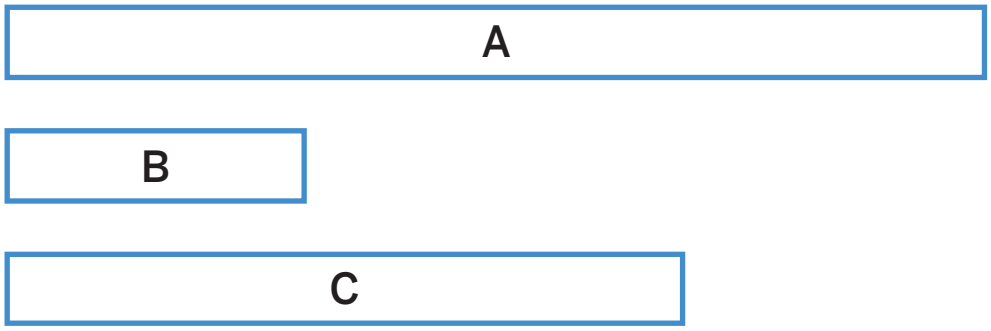
Activity 2

Name _____ Date _____

Comparing Lengths

Hands-On

Use a centimeter ruler to measure the length of each rectangle. Record the measurement.



5 Rectangle A is _____ long.

6 Rectangle B is _____ long.

7 Rectangle C is _____ long.

Name _____ Date _____

Comparing Lengths (continued)

8 How many centimeters *longer* is Rectangle A than Rectangle B?

Show or explain your thinking.

answer: _____

9 How many centimeters *shorter* is Rectangle C than Rectangle A?

Show or explain your thinking.

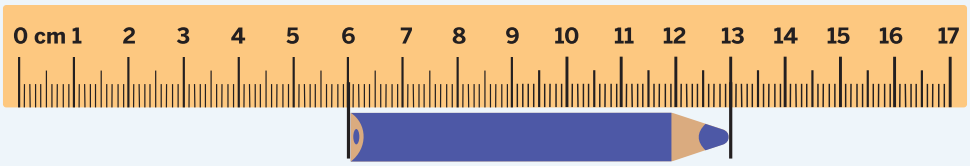
answer: _____

Summary 3.03

You can use a **ruler** to find the length of an object by lining up the edge of the object with the 0 on the ruler or by counting the number of length units between the endpoints of the object.



The paper clip is 5 centimeters long.



13 – 6 = 7

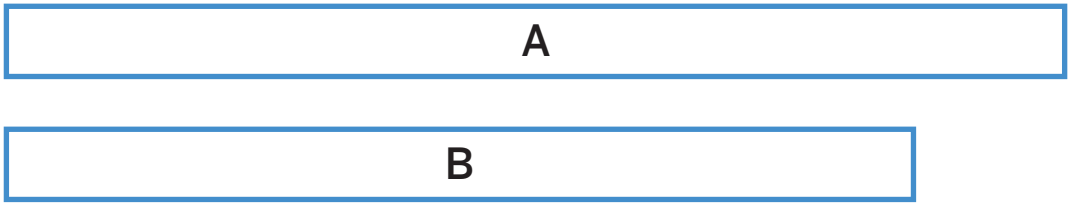
The colored pencil is 7 centimeters long.

The colored pencil is 2 centimeters longer than the paper clip because 7 – 5 = 2.

ruler A tool used to measure length that shows the distance from 0 in equal length units.

Practice 3.03

For Problems 1 and 2, use a ruler to measure the length of the rectangle in centimeters. Fill in the sentence.



1 Rectangle A is _____ long.

2 Rectangle B is _____ long.

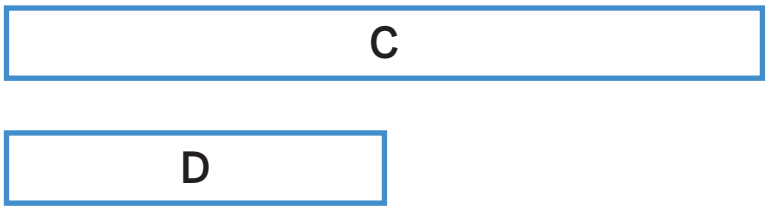
Name _____ Date _____

3 How many centimeters *longer* is Rectangle A than Rectangle B?

Show or explain your thinking.

answer: _____

For Problems 4 and 5, use a ruler to measure the length of the rectangle in centimeters. Fill in the sentence.



4 Rectangle C is _____ long.

5 Rectangle D is _____ long.

6 How many centimeters *shorter* is Rectangle D than Rectangle C?

Show or explain your thinking.

answer: _____

Name _____ Date _____

Spiral Review

For Problems 7 and 8, find the value of the expression.

Show your thinking.

7 35 – 19

answer: _____

8 63 + 27

answer: _____

9 The community center has 72 cans of corn and 35 cans of tomatoes. How many *more* cans of corn do they have than cans of tomatoes?

Show your thinking.

answer: _____

equation: _____

Unit 3
Lesson
4

Name _____ Date _____

Measure and Compare Objects 2.MD.3, 2.MD.1, 2.MD.9, 2.NBT.7.1, SMP.3, SMP.7

About How Long Is It?

Let's estimate and measure the lengths of objects in centimeters.



Warm-Up

eyes on teacher

I am a doer of math.
How can using your imagination help you in math?

Activity 1 Estimating Lengths in Centimeters

You will be given objects to measure. You will measure the objects with a ruler in the next activity.

1 Estimate the length of each object in centimeters. Record each estimate.

Object	Estimate (centimeters)	Measurement (centimeters)

Name _____ Date _____

Estimating Lengths in Centimeters (continued)

2 Choose one more object to measure. Record your estimate.

Choose an object to measure	Estimate (centimeters)	Measurement (centimeters)

3 **Discuss**

Compare your estimates with your partner's estimates. Explain how you made your estimates.

Activity 2

Name _____ Date _____

Measuring and Comparing

Hands-On

You and your partner will be given a centimeter ruler.

4 Measure each object using a centimeter ruler and record your measurements in the table in Activity 1.



Name _____ Date _____

Measuring and Comparing (continued)

5 Discuss

Compare your measurements with your estimates. Discuss the following questions with your partner:

- Which estimates were about right?
- Which estimates were too low or too high?



Summary 3.04

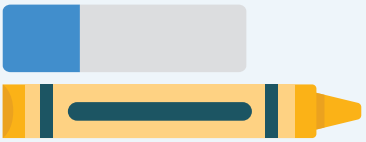
You can use your understanding of 1 centimeter, 10 centimeters, or other objects of known lengths to help you make length estimates.



I pictured cubes lined up next to the crayon. The crayon looks about the same length as 8 centimeter cubes.



The crayon looks shorter than a 10-centimeter rod, so I think the crayon is 8 centimeters long.



The crayon is longer than the eraser that I know is 5 centimeters long, so I think the crayon is 8 centimeters long.

Practice 3.04

For Problems 1 and 2, use the rectangle. Fill in the sentence.



1 Estimate the length of the rectangle in centimeters.

I think the length of the rectangle is about _____.

2 Measure the length of the rectangle in centimeters.

The length of the rectangle is actually _____.

Name _____ Date _____

For Problems 3 and 4, use the rectangle. Fill in the sentence.



3 Estimate the length of the rectangle in centimeters.

I think the length of the rectangle is about _____.

4 Measure the length of the rectangle in centimeters.

The length of the rectangle is actually _____.

For Problems 5 and 6, use the rectangle. Fill in the sentence.



5 Estimate the length of the rectangle in centimeters.

I think the length of the rectangle is about _____.

6 Measure the length of the rectangle in centimeters.

The length of the rectangle is actually _____.

Name _____ Date _____

Spiral Review

For Problems 7 and 8, find the value of the expression.

Show your thinking.

7 75 – 33

answer: _____

8 29 + 46

answer: _____

9 Clare baked 72 muffins for the bake sale at school. She baked 43 muffins in the morning and the rest of the muffins in the afternoon. How many muffins did Clare bake in the afternoon?

Show your thinking.

answer: _____

equation: _____

Name _____ Date _____

Measure and Compare Objects 2.MD.2, 2.MD.1, 2.MD.9, SMP.5, SMP.7, SMP.8

A New Length Unit

Let's explore and choose measurement tools.



I am a doer of math.
Orson has to measure the length of the stage. What math tool could he use to measure?

Warm-Up

eyes on teacher

Activity 1 Measuring Trees

Hands-On

You will measure strips of tape on the floor. Each tape strip represents the height of 1 of Orson's trees. Choose a tool and measure the length of each tape strip in centimeters.

1. What is the height of the banana tree?

_____

2. What is the height of the teak tree?

_____

3. What is the height of the rubber tree?

_____

Activity 2

Name _____ Date _____

Measuring in Meters

Hands-On

You will measure strips of tape on the floor. Each tape strip represents the height of 1 of Orson's trees.

4 What is the height of the teak tree?

_____

5 **Discuss**

Compare your measurement of the height of the teak tree from Problem 2 with your measurement from Problem 4. What is the same about these measurements? What is different?

6 What is the height of the rubber tree in a combination of meters and centimeters?

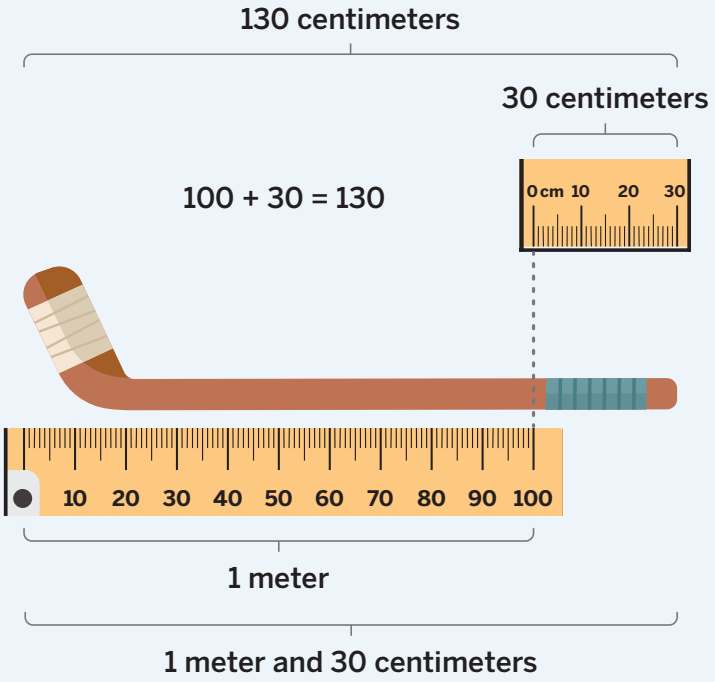
_____

7 What is the height of the Kapok tree in a combination of meters and centimeters?

_____

Summary 3.05

Using longer length units, such as **meters**, and a longer tool, such as a **meterstick**, can be helpful when measuring longer objects.



a meter/meters A length unit in the metric measurement system. There are 100 centimeters in a meter.
meterstick A tool for measuring length in centimeters and meters that is exactly 1 meter long.

Practice 3.05

1 Diego held a gecko at the zoo. The gecko fit in his hand. He measured the gecko and said it was 13 meters long. Do you think his measurement was correct? Explain your thinking.

Name _____ Date _____

For Problems 2–7, circle the unit that would be *more* useful for measuring the length of the object.

2



centimeters

meters

3



centimeters

meters

4



centimeters

meters

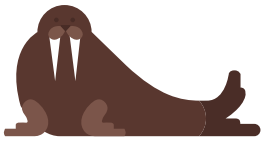
5



centimeters

meters

6



centimeters

meters

7



centimeters

meters

Name _____ Date _____

Spiral Review

For Problems 8 and 9, find the value of the expression.

Show your thinking.

8 58 + 25

answer: _____

9 98 – 64

answer: _____

10 Han and Diego collect toy cars. Han has 32 cars. Diego has 16 *more* cars than Han. How many cars do they have altogether?

Show your thinking.

answer: _____

equation: _____

Unit 3
Lesson
6

Name _____ Date _____

Problem Solving With Measure | Number Strategies | 2.NBT.5, 2.MD.5, SMP.1, SMP.2, SMP.7, SMP.8

Lengths of Jungle Animals

Let's solve story problems about the lengths of animals.



We are a math community. Orson's classmates work together to prepare for the play. How do you feel about working on math with others?

Warm-Up

eyes on teacher

Activity 1 Whose Reptile Is Longer?

Hands-On

Solve each story problem. Write 1 or more equations that represent each story problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

1. Lena's lizard is 62 centimeters long. Shawn's lizard is 19 centimeters longer than Lena's. Orson's lizard is 10 centimeters longer than Shawn's. How long is Orson's lizard?

Show or explain your thinking.

length: _____

equations: _____

Name _____ Date _____

Whose Reptile Is Longer? (continued)

Show or explain your thinking.

2 Jada's snake is 17 centimeters longer than Diego's. Jada's snake is 71 centimeters long. How long is Diego's snake?

length: _____

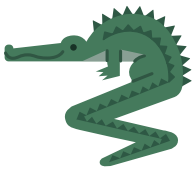
equation(s): _____

Activity 2

Name _____ Date _____

Guess My Animal

Choose 1 animal from each list.

Partner A's animals	Partner B's animals
 tarantula 15 centimeters	 ribbon snake 83 centimeters
 howler monkey 98 centimeters	 butterfly 12 centimeters
 parrot 65 centimeters	 baby alligator 71 centimeters
 toucan 28 centimeters	 bat 38 centimeters

In Problems 3 and 4, create a story problem using the lengths of the animals you chose.

3 Fill in the sentence.

My animal is _____ long.

4 Fill in the sentence and circle *shorter* or *longer*.

It is _____ (shorter/longer) than 1 of your animals.

Name _____ Date _____

Guess My Animal (continued)

5 Share your sentences with your partner.
Which animals did your partner choose?

Show or explain your thinking.

my partner's animals: _____

_____



Summary 3.06

Story problems about comparing the lengths of objects are similar to story problems about comparing amounts. The unknown can be the length of the shorter object, the length of the longer object, or the difference between lengths.

$$76 - 52 = ____$$

Shorter length unknown

Jada's lizard is 76 centimeters long. Diego's lizard is 52 centimeters shorter than Jada's lizard. How long is Diego's lizard?

Smaller amount unknown

Jada has 76 books. Diego has 52 fewer books than Jada. How many books does Diego have?

Practice 3.06

For Problems 1–3, solve the story problem. Write 1 or more equations that represent the story problem and underline the answer.

Show or explain your thinking.

1 Lena measured her pets. Her cat is 19 centimeters shorter than her dog. Her cat is 33 centimeters long. How long is her dog?

answer: _____

equation(s): _____

Name _____ Date _____

Show or explain your thinking.

2 Diego and Han have pet snakes. Han's snake is 26 centimeters longer than Diego's. Han's snake is 54 centimeters long. How long is Diego's snake?

answer: _____

equation(s): _____

3 Clare's pet lizard is 62 centimeters long. Jada's pet lizard is 38 centimeters long. How much shorter is Jada's lizard than Clare's?

answer: _____

equation(s): _____

Name _____ Date _____

Spiral Review

For Problems 4 and 5, find the value of the expression.

Show your thinking.

4 71 + 18

answer: _____

5 82 – 35

answer: _____

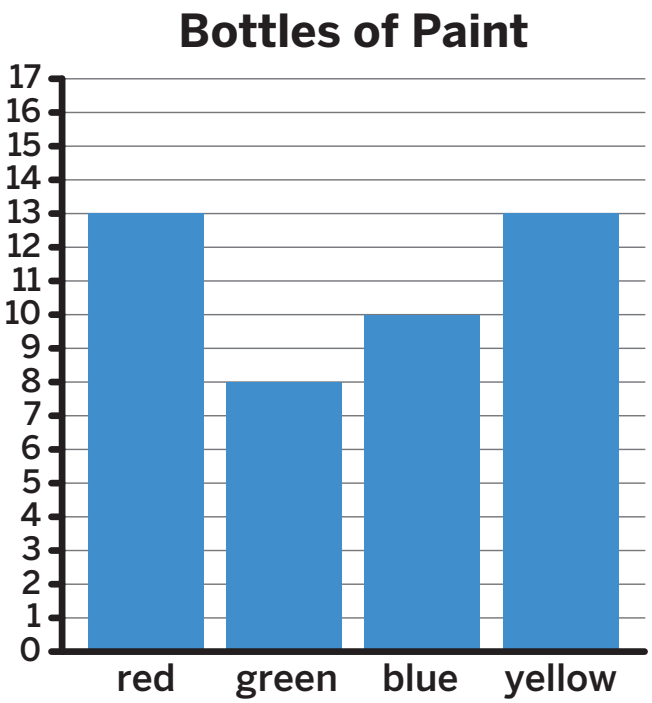
For Problems 6 and 7, use the bar graph showing the number of different paint bottles in the art room.

6 Which **2** colors have the *same* number of bottles?

_____

7 Write an equation to show how many green and blue bottles of paint there are altogether and underline the answer.

_____



Sub-Unit

2

Measuring in Inches and Feet

Unit Story: What Orson Imagined



smolaw/Shutterstock.com

Suppose the costume designer's measuring tape was torn.

How could they still use it to measure the lengths of the objects?

Name _____ Date _____

Measure and Compare Objects 2.MD.1, 2.MD.3, 2.NBT.7.1, SMP.5, SMP.6, SMP.7

It's Customary

Let's measure in inches.



Warm-Up eyes on teacher

I am a doer of math.
What are some ways you could do math?

Activity 1 What Is an Inch?

Hands-On

You will be given an inch tile. Use your inch tile to find 2 objects around the classroom that are about an inch long.

1 Object 1: _____

2 Object 2: _____

Name _____ Date _____

What Is an Inch? (continued)

3 Measure the length of each object shown in the table using an inch ruler. Then choose **2** objects to measure.

Object	Length
marker	
crayon	
math book	
Choose your own object	**Length**



Activity 2

Name _____ Date _____

Introducing the Center, Target Measurements

Stage 1



Pairs Let's draw line segments to the target measurement (in whole inches and centimeters).

You'll need: ruler (inches and centimeters), straightedge, Recording Sheet

How to Play

1. **Player A:** Choose a target length, up to 8 inches or up to 20 centimeters, and record it.
2. **Player A**: Begin to slowly draw a line with a straightedge on the Recording Sheet.
3. **Player B:** Say, "Stop!" when you think the length of the line is equal to the target measurement.
4. **Player B:** Measure the line segment to the nearest inch or centimeter. Record the measurement.
5. Find the difference between the length of the line and the target measurement. The value of the difference is the score for the partner who said "Stop!"
6. Take turns until each player's Recording Sheet is full.

How to win The player with the lower score wins.



Target Measurements

Stage 1

CENTER
Recording Sheet

Name _____ Date _____

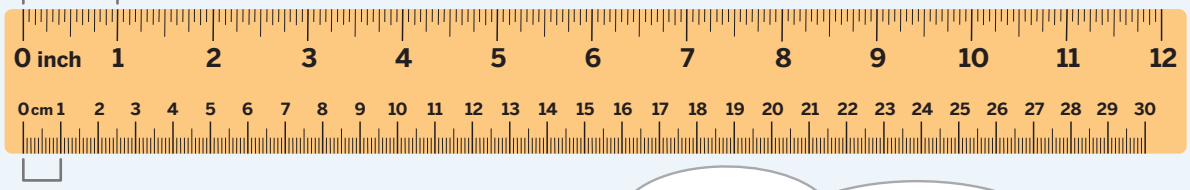
Target Measurements (continued)

1			
	Target:	Actual:	Points:
2			
	Target:	Actual:	Points:
3			
	Target:	Actual:	Points:
4			
	Target:	Actual:	Points:
			Total Points: _____

Summary 3.07

An **inch** is longer than a centimeter, but much shorter than a meter. You can estimate the length of an object in different ways.

1 inch



1 centimeter



My estimate is that the pencil sharpener is about an inch long because it is about the same length as a paper clip.

inch A length unit in the U.S. Customary measurement system.

Practice 3.07

For Problems 1 and 2, use a ruler to draw a line for the measurement.

Draw

1 5 inches

2 1 inch

Name _____ Date _____

3 Use a ruler to draw a line for the measurement.

Draw

3 inches

For Problems 4 and 5, use a ruler to measure the rectangle. Write your measurement.



4 Measure the *longer* side of the rectangle in inches.

_____

5 Measure the *shorter* side of the rectangle in inches.

_____

Name _____ Date _____

Spiral Review

For Problems 6–9, find the number that makes the equation true.

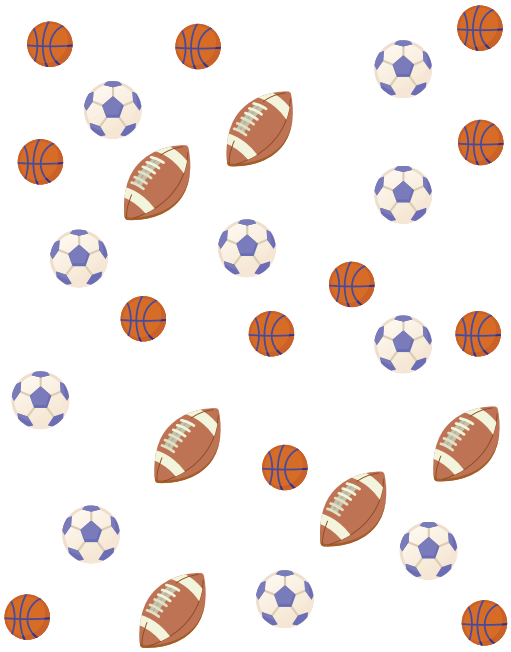
6 18 – 7 = _____

7 6 + 7 = _____

8 14 – 9 = _____

9 2 + 14 = _____

10 Han and Clare were helping the gym teacher clean up the balls after class. Use the pictures to make a bar graph showing how many of each type of ball were found.





11 Write an equation to show how many basketballs and footballs there are altogether.

_____

Name _____ Date _____

Measure and Compare Objects 2.MD.3, 2.MD.1, 2.NBT.7.1, SMP.3, SMP.7

How Many Inches?

Let's estimate and measure the lengths of objects in inches.



Warm-Up eyes on teacher

I am a doer of math.
Why would you need to estimate the length of an object in the real world?

Activity 1

Estimating Lengths in Inches

Record a length estimate in inches for each object. You will measure the objects with a ruler in the next activity.

1 Estimate the length of each object in inches.

Object	Estimate (inches)	Measurement (inches)

Name _____ Date _____

Estimating Lengths in Inches (continued)

2 Choose 1 more object to measure. Record your estimate.

Choose your own object	Estimate (inches)	Measurement (inches)

3 **Discuss**

Compare your estimates to your partner's estimates. Justify why you think your estimates are about right.

Activity 2

Name _____ Date _____

Measuring and Comparing

Hands-On

Use a ruler to measure each object. Record your measurements in the table in Activity 1.

4 Measure each object in inches and record your measurements.

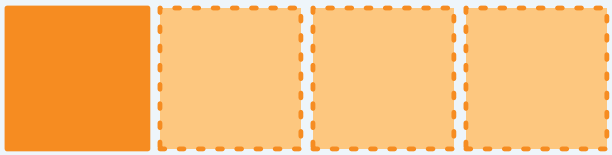
5 **Discuss**

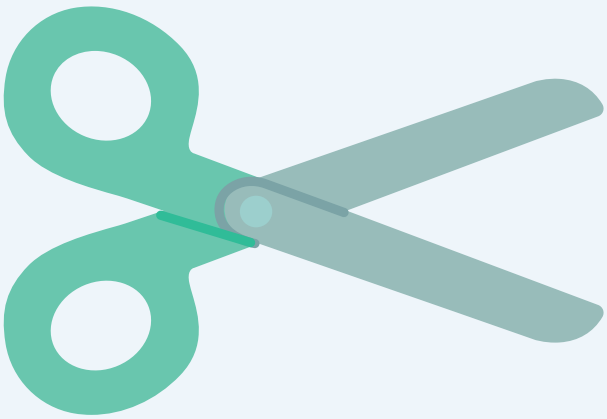
Compare your measurements to your estimates. Discuss the following questions with your partner:

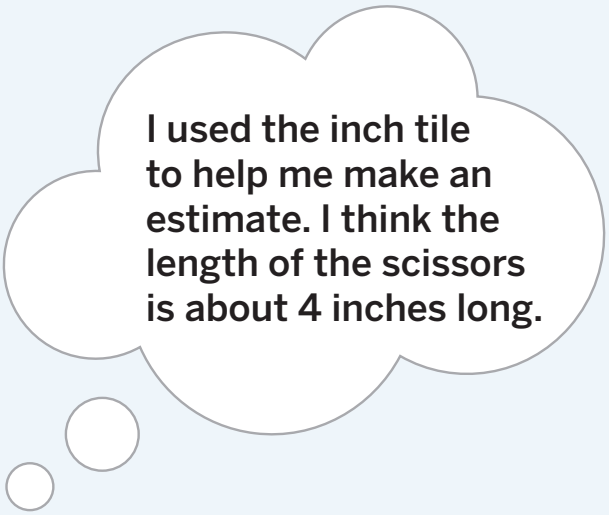
- Which estimates were about right?
- Which estimates were too long or too short?

Summary 3.08

You can make reasonable estimates of length by imagining a measurement tool, thinking about the length of the unit, or using the actual lengths of other objects.







Practice 3.08

For Problems 1 and 2, use the picture of the paintbrush.



1 Estimate the length of the paintbrush in inches.

The length of the paintbrush is about _____ inches.

2 Measure the length of the paintbrush in inches using a ruler.

The length of the paintbrush is _____ inches.

Name _____ Date _____

For Problems 3–5, use the picture of the crayon.



3 Estimate the length of the crayon in inches.

The length of the crayon is about _____.

4 Justify your estimate for the length of the crayon.

_____

_____

5 Measure the length of the crayon in inches using a ruler.

The length of the crayon is _____.

Spiral Review

For Problems 6 and 7, find the value that makes the equation true.

6 15 − 8 = _____

7 6 + 5 = _____

Name _____ Date _____

For Problems 8–11, find the value that makes the equation true.

8 9 + 6 = _____

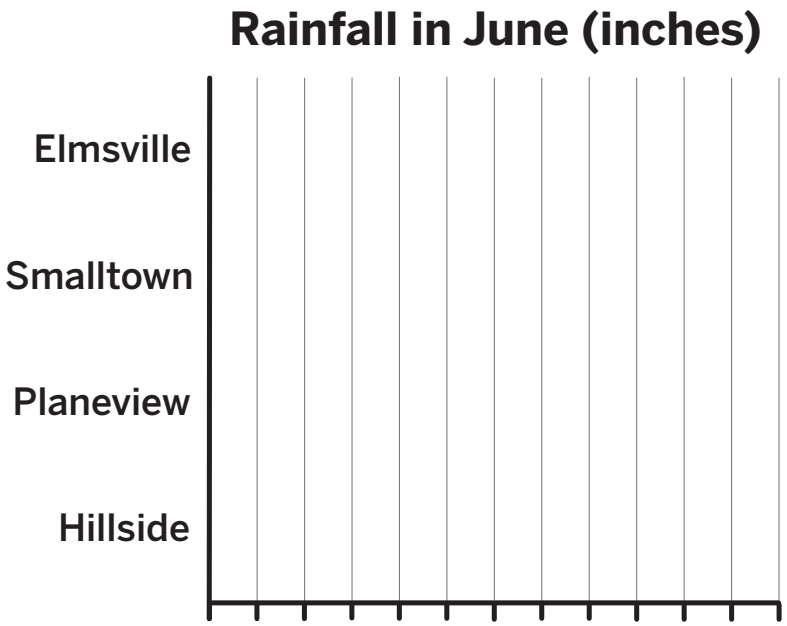
9 13 – 8 = _____

10 12 – 5 = _____

11 7 + 6 = _____

12 The table shows the inches of rainfall that several cities had in June last year. Use the information in the table to complete the bar graph.

City	Rainfall (inches)
Elmsville	3
Smalltown	9
Planeview	6
Hillside	5



13 Which **2** cities had a combined total of 14 inches of rainfall?

Show your thinking.

answer: _____

Name _____ Date _____

Measure and Compare Objects 2.MD.1, 2.MD.2, 2.MD.3, 2.NBT.7.1, SMP.5, SMP.7

Another New Length Unit

Let's measure in inches and feet.



I am a doer of math.
What are some ways you could overcome a problem when you feel frustrated in math class?

Warm-Up

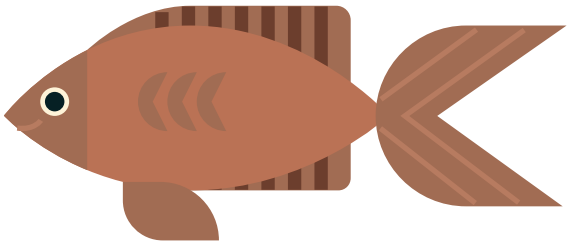
eyes on teacher

Activity 1 Measuring the Lengths of Props

Hands-On

Use your ruler to measure the tape strips around the classroom in feet. Then measure the lengths in inches.

Tape A: Armored catfish prop



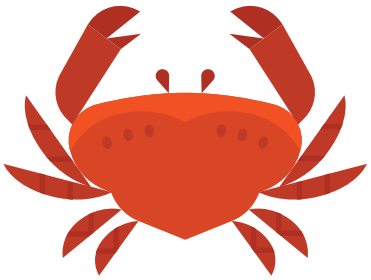
1 length in feet: _____

2 length in inches: _____

Name _____ Date _____

Measuring the Lengths of Props (continued)

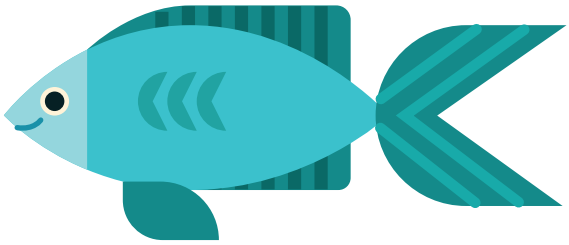
Tape B: Coconut crab prop



3 length in feet: _____

4 length in inches: _____

Tape C: Bluefish prop



5 length in feet: _____

6 length in inches: _____

7 **Discuss**

What did you notice about the number of feet compared to the number of inches when you measured the tape strips?

Activity 2

Name _____ Date _____

Introducing the Center, Estimate and Measure

Stage 4



Pairs Let's estimate and measure the lengths of different objects.

You'll need: measuring tools (ruler, meter stick, tape measure), objects to measure, Recording Sheet

How to Play

1. Choose an object to measure.
2. **Partner A:** Choose a unit to measure the length of the object you chose — inches, feet, centimeters, or meters.
3. **Partner A:** Estimate the length of your object and record your estimate.
4. **Player B:** Choose a measurement tool — ruler, meter stick, or tape measure.
5. **Partner B:** Measure and record the actual measurement.
6. Switch roles and repeat until the Recording Sheet is full.

CENTER
Recording Sheet

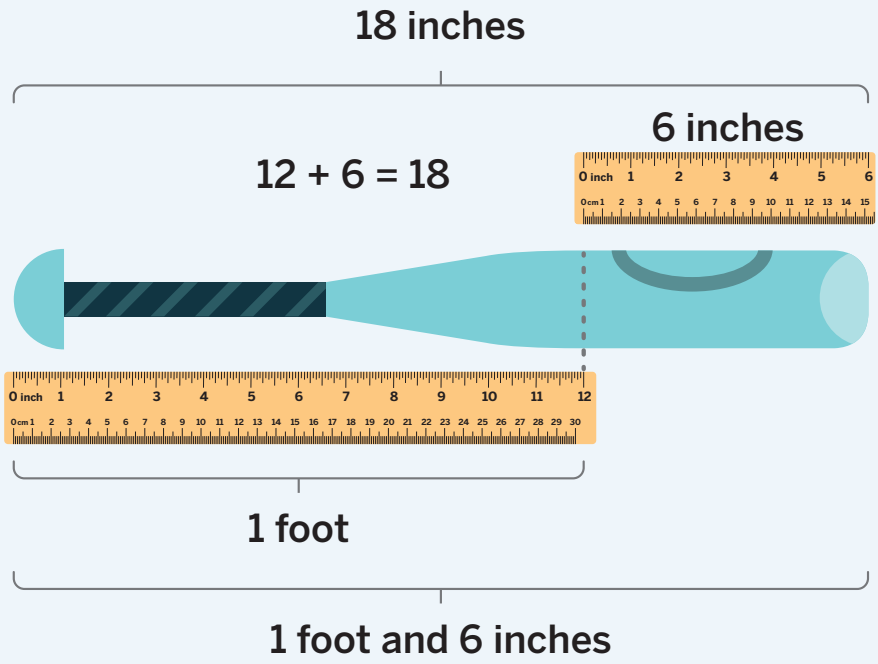
Name _____ Date _____

Estimate and Measure (continued)

Object	Unit	Estimate	Actual measurement
crayon	inches	5 inches	3 inches

Summary 3.09

A 12-inch ruler is equal to 1 **foot**. You can measure in feet and in inches. It takes more inches than feet to measure an object.



foot/feet A length unit in the U.S. Customary measurement system. There are 12 inches in a foot.

Practice 3.09

1 An adult hippopotamus is 13 units long. Are the units given as inches or feet? Explain your thinking.

Name _____ Date _____

For Problems 2–5, circle the unit that would be *more* useful for measuring the length of each object.

2



inches

feet

3



inches

feet

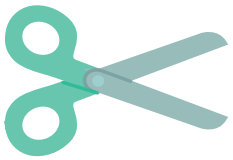
4



inches

feet

5



inches

feet

6 Choose **3** objects to measure. For each object, fill in the table by writing what measurement tool you would use and the units you would use to measure the object.

Object to measure	Measurement tool	Units

Name _____ Date _____

Spiral Review

For Problems 7–10, find the value that makes the equation true.

7 7 + 5 = _____

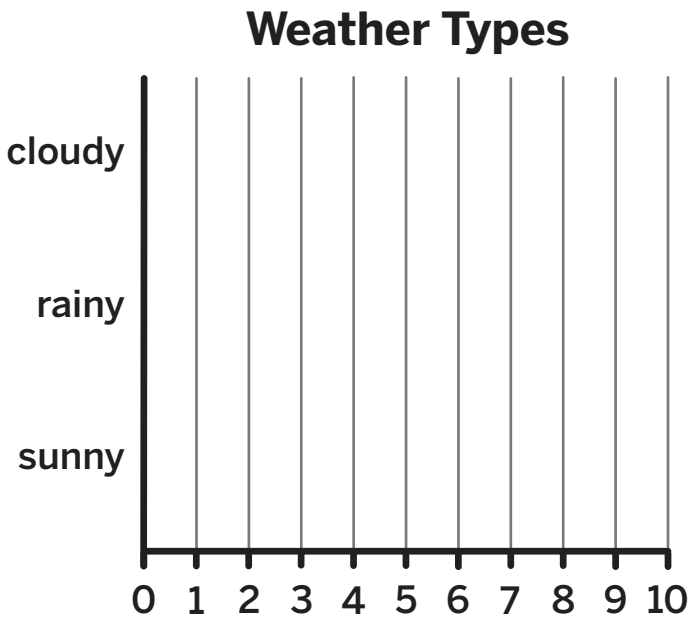
8 17 – 8 = _____

9 14 – 3 = _____

10 4 + 9 = _____

11 The class has been tracking the weather each day. Use the information in the table to complete the bar graph and represent their observations.

Weather	Days
cloudy	7
rainy	9
sunny	5



12 Look at your graph and write an equation to show how many days the class has been tracking the weather.

_____

Unit 3
Lesson
10

Name _____ Date _____

Measure and Compare Objects | Number Strategies | 2.MD.1, 2.NBT.5, SMP.7, SMP.8

Desperate Times, Desperate Measures

Let's measure without starting from 0.



I am a doer of math.
In the Unit Story, Orson felt he had to solve problems on his own. What are some ways Orson could ask for help?

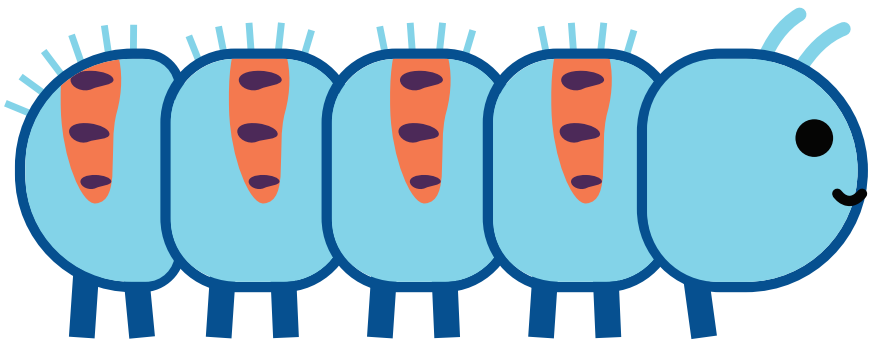
Warm-Up

1 eyes on teacher

Activity 1 Measuring Up

2 Let's look at a broken ruler.

3 Use your ruler to start measuring the length of the caterpillar at a point other than 0.



Discuss

At which points on the ruler could you start your measurement?

Name _____ Date _____

Measuring Up (continued)

4 Use your work from Screen 3 to fill in the table with your starting point, your ending point, and the length of the caterpillar.

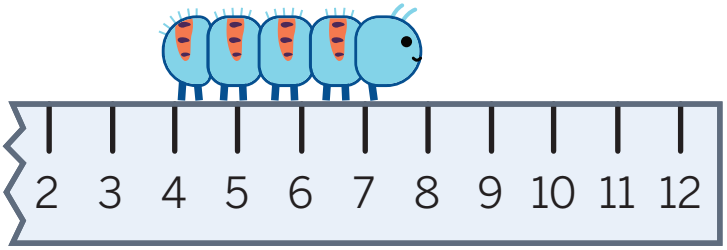
Starting point	Ending point	Length (inches)

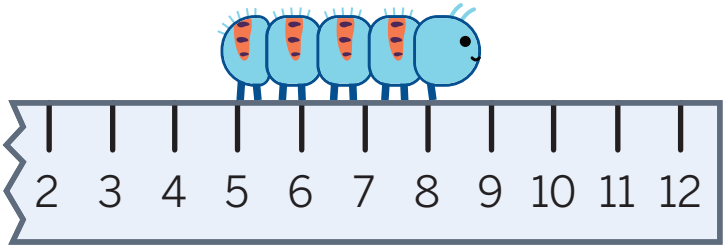
Discuss

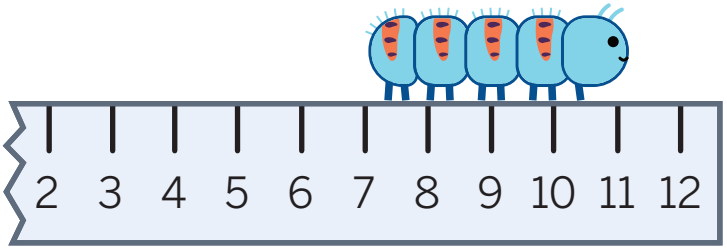
Compare with a partner. What is similar? What is different?

5 ### Discuss

Here are 3 ways students measured the caterpillar. What do you notice?







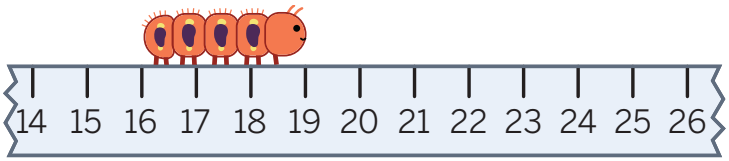
Activity 2

Name _____ Date _____

Caterpillar Chaos

6 Find the length of the caterpillar in inches.

Show or explain your thinking.



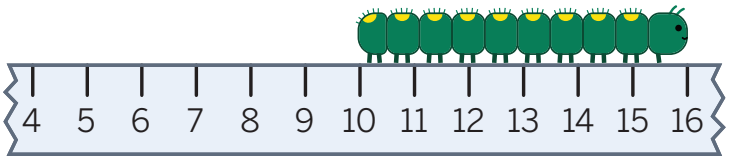
answer: _____ inches

Discuss

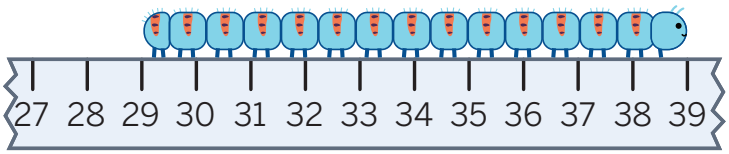
How did you find the length?

7 Find the length of each caterpillar in inches.

Show or explain your thinking.



answer: _____ inches



answer: _____ inches

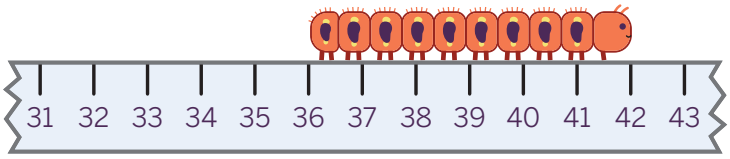
Activity 2

Name _____ Date _____

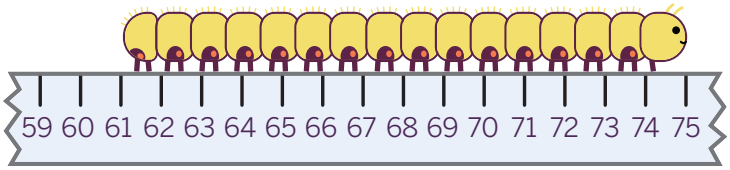
Caterpillar Chaos (continued)

7 Find the length of each caterpillar in inches.

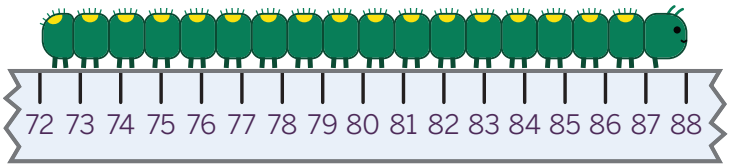
Show or explain your thinking.



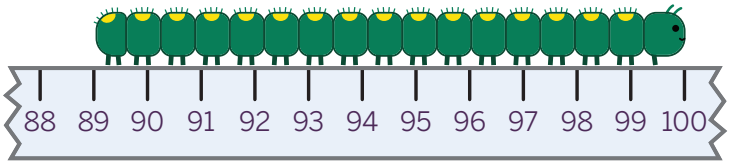
answer: _____ inches



answer: _____ inches



answer: _____ inches

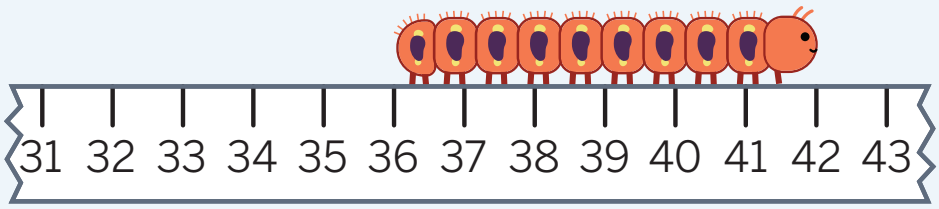


answer: _____ inches

8 **Explain** Let's discuss how we found the length of the caterpillar.

Summary 3.10

You can measure length without starting at 0 on a measurement tool by adding, subtracting, or counting the equal length units between the starting and ending points of the object. The length of the object will stay the same no matter where you start measuring.



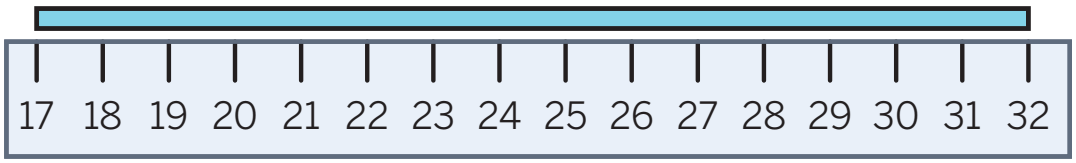
$36 + __ = 42$ $42 - 36 = __$

The caterpillar is 6 inches long.

Practice 3.10

1 Find the length of the rectangle in inches.

Show or explain your thinking.

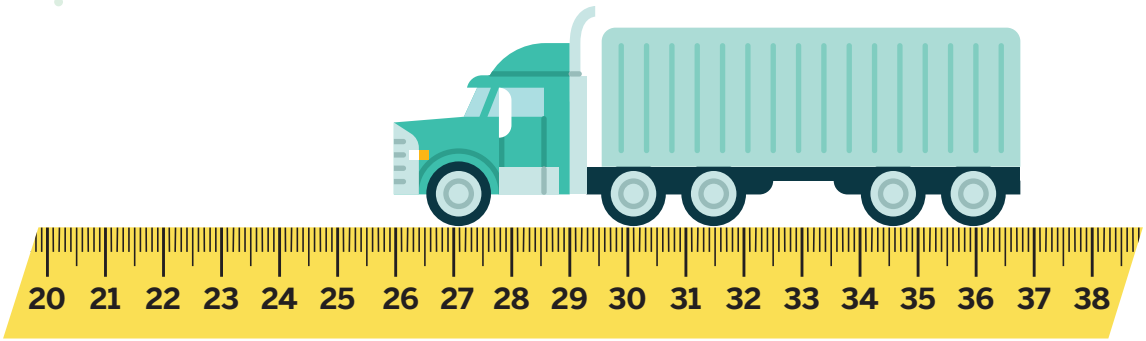


answer: _____ inches

Name _____ Date _____

2 Find the length of the toy truck in inches.

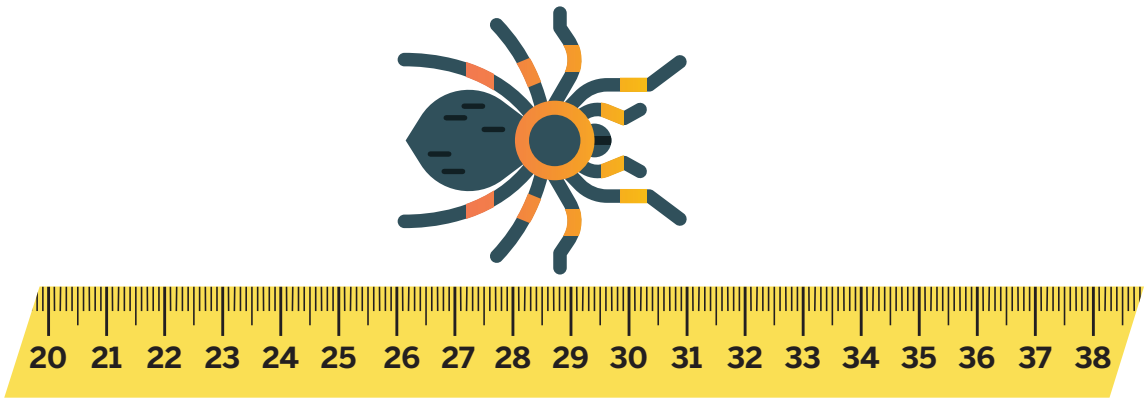
Show or explain your thinking.



answer: _____ inches

3 Find the length of the tarantula in inches.

Show or explain your thinking.



answer: _____ inches

Name _____ Date _____

Spiral Review

For Problems 4–7, find the value that makes the equation true.

4 6 + 8 = _____

5 11 – 5 = _____

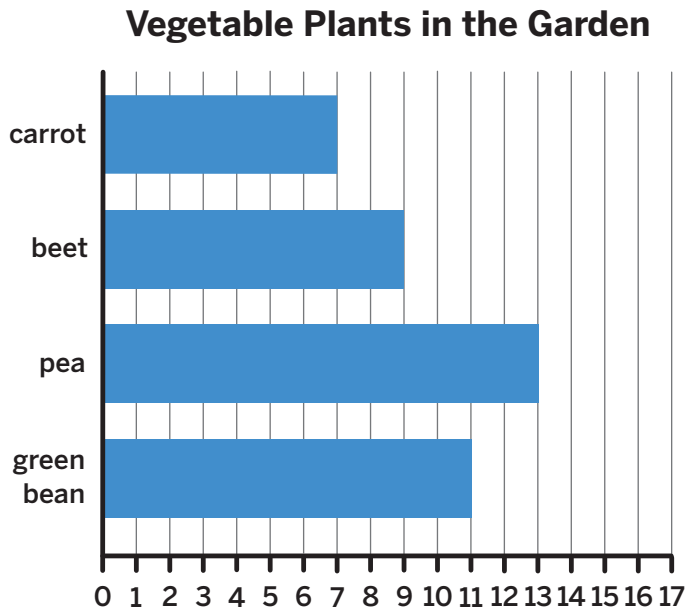
6 15 – 5 = _____

7 3 + 13 = _____

For Problems 8–10, use the bar graph showing the number of vegetable plants growing in the community garden.

8 Write an equation to show how many carrot and beet plants are in the garden. Underline your answer.

_____



9 Which type of vegetable has the *most* plants?

_____

10 Write an equation to show how many *more* pea plants there are than green bean plants. Underline your answer.

_____

Unit 3
Lesson
11

Name _____ Date _____

Problem Solving With Measure | Dollars and Cents | Number Strategies | 2.MD.5, 2.NBT.1, 2.NBT.5, SMP.2, SMP.3, SMP.4, SMP.7

Almost Showtime

Let's solve story problems about length.



Warm-Up

eyes on teacher

I am a doer of math.
How could staying organized with your work help you complete more challenging problems in math class?

Activity
1

Decorating the Auditorium

Solve each story problem. Write 1 or more equations that represent each story problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

1 What is the length of the banner in inches?



Show your thinking.

answer: _____ equation(s): _____

Name _____ Date _____

Decorating the Auditorium (continued)

Show your thinking.

2 Lena and Orson found a second banner that was 59 inches long. How long are the banners altogether?

answer: _____ **equation(s):** _____

3 Lena found another banner that was 95 inches long. She cut a piece that was 35 inches long for Orson. Then she cut another piece that was 23 inches long for the set designer. How long is Lena's banner now?

answer: _____ **equation(s):** _____

4 Discuss

How many unknowns are in Problem 3? How do you know?

Activity 2

Name _____ Date _____

Helping Hands

Solve each story problem. Write 1 or more equations that represent each story problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

Show your thinking.

5 Orson purchased 2 flower garlands. The first garland was 24 inches long and the second garland was 48 inches long. Lena helped him tape them together. How long is the flower garland they made together?

answer: _____ **equation(s):** _____

Name _____ Date _____

Helping Hands (continued)

Show or explain your thinking.

6 Orson paid $16 for the 24-inch piece of flower garland and $27 for the 48-inch piece of flower garland. He had a $10 off coupon. What is the total price Orson paid?

answer: _____ **equation(s):** _____

7 **Discuss**

What was similar about solving Problems 5 and 6? What was different?

Summary 3.11

Story problems can have more than 1 unknown.

Lena found another flower garland that was 82 inches long. She did not need such a long flower garland. She cut a piece that was 25 inches long for Orson. Then she cut another piece that was 14 inches long for the set designer. How long is Lena's flower garland now?

Unknown 1	Unknown 2
What was the length of the flower garland after cutting the piece for Orson?	**What was the length of the flower garland after cutting a piece for the set designer?**

Practice 3.11

1 Solve the story problem. Write 1 or more equations that represent the story problem and underline the answer.

Lena was making a headband from a piece of fabric that was 71 centimeters long. She cut off 18 centimeters of the fabric. How long is Lena's piece of fabric now?

Show your thinking.

answer: _____

equation(s): _____

Name _____ Date _____

For Problems 2 and 3, solve the story problem. Write 1 or more equations that represent the story problem and underline the answer.

Show your thinking.

2 Clare cut off 18 inches from a piece of fabric. There are 64 inches of fabric left. How long was the fabric before it was cut?

answer: _____

equation(s): _____

3 Diego had a piece of ribbon that was 95 inches long. He cut off a piece that was 28 inches long. He cut off another piece that was 34 inches long. How long is Diego's ribbon now?

answer: _____

equation(s): _____

Name _____ Date _____

Spiral Review

For Problems 4–7, find the value that makes the equation true.

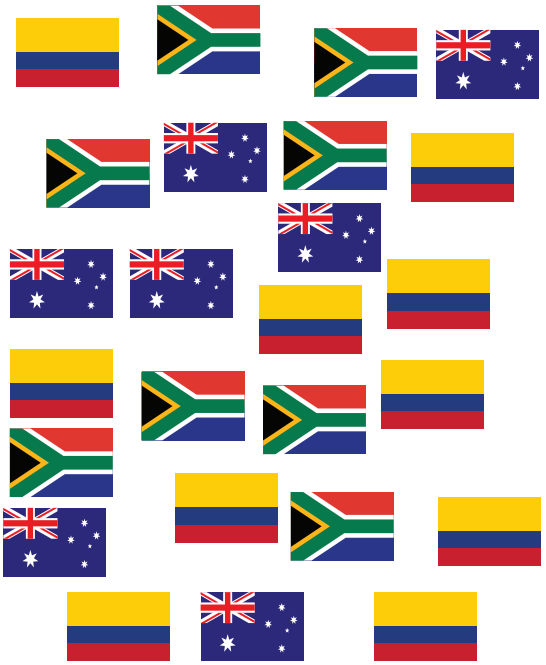
4 8 + 8 = _____

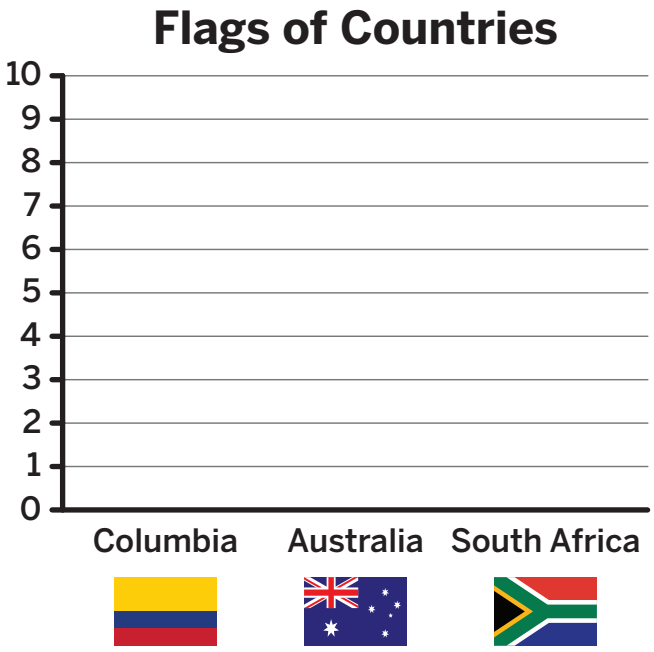
5 16 – 4 = _____

6 14 – 5 = _____

7 9 + 7 = _____

8 Jada and Priya are volunteering at the international festival at school. They are organizing a box of flags from different countries. Complete the bar graph to represent the number of flags they have from each country.





Unit 3
Lesson
12

Name _____ Date _____

Problem Solving With Measure | Number Strategies | 2.MD.5, 2.NBT.5, SMP.2, SMP.3, SMP.6, SMP.7

Measurement Mishaps

Let's solve story problems about length.



Warm-Up

eyes on teacher

I am a doer of math.
How could checking your work make you a better mathematician?

Activity
1

Final Preparations

Solve the story problem. Write 1 or more equations that represent the story problem and underline the answer in the equation.

1 Lena put down 56 feet of tape on the stage and then noticed someone had accidentally removed 20 feet. She went back and put down 34 more feet of tape. How much tape is on the stage now?

Show your thinking.

answer: _____

equation(s): _____

Name _____ Date _____

Final Preparations (continued)

You may use this space for calculations or other work.

2 Discuss

Compare your equations to your partner's equations.
Explain how your equations represent the story problem.

Activity 2

Name _____ Date _____

Measuring at Home

Hands-On

Solve each story problem. Write 1 or more equations that represent each story problem and underline the answer. Use a tape diagram to represent the problem if it is helpful.

Show your thinking.

3 Orson was helping his dad decorate a fence with string lights. They hung lights that were 22 meters long. They added more lights that were 36 meters long. Then 15 meters of lights fell off the fence. How long are the string lights that are still on the fence?

answer: _____

equation(s): _____

Name _____ Date _____

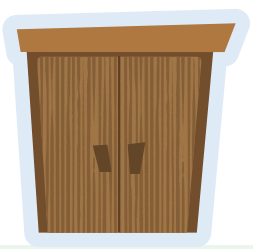
Measuring at Home (continued)

Show your thinking.

4 Lena's brother made a paper chain that was 21 inches long. Lena made a paper chain that was 19 inches longer than her brother's. How long are their paper chains altogether?

answer: _____

equation(s): _____



Summary 3.12

You can use different equations to represent the relationships between amounts in a two-step story problem involving length.

Lena's flower garland was 27 centimeters long. Orson's flower garland was 15 centimeters longer than Lena's. How long are their flower garlands altogether?

27 + 15 + 27 = 69	27 + 27 + 15 = 69	27 + 15 = 42 42 + 27 = 69

Practice 3.12

1 Solve the story problem. Write 1 or more equations that represent the story problem and underline the answer.

Priya and Han worked together to make 1 long paper chain to hang in their classroom. The part Priya made was 24 inches long, and the part Han made was 32 inches long. Han accidentally ripped 12 inches off the chain. How long is their chain now?

Show your thinking.

answer: _____

equation(s): _____

Name _____ Date _____

For Problems 2 and 3, solve the story problem. Write 1 or more equations that represent the story problem and underline the answer.

Show your thinking.

2 Jada had 82 inches of ribbon. She cut off 48 inches to keep and gave the rest to Clare. Clare taped the piece of ribbon to the 27 inches of ribbon she already had. How long is Clare's ribbon now?

answer: _____

equation(s): _____

3 Priya had 28 inches of ribbon. She needed 50 inches in total for her project. Han gave Priya the ribbon she needed. Now, Han has 49 inches of ribbon left. How much ribbon did Han start with?

answer: _____

equation(s): _____

Name _____ Date _____

Spiral Review

For Problems 4–7, find the value that makes the equation true.

4 2 + 17 = _____

5 13 – 6 = _____

6 11 + 5 = _____

7 19 – 8 = _____

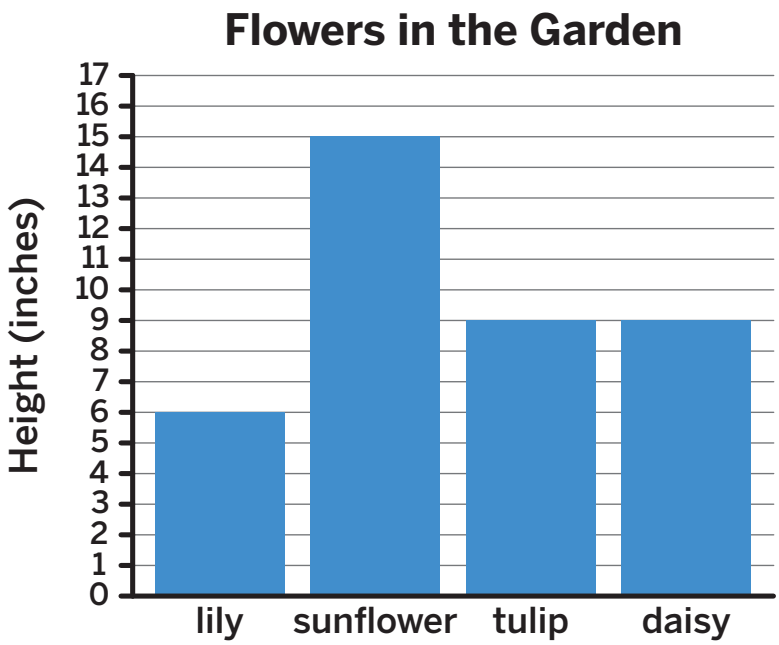
For Problems 8–10, use the bar graph showing the heights of different flowers in the class garden.

8 Which flower is the *tallest*?

_____

9 Which **2** flowers are the *same* height?

_____



10 Write an equation to show the difference in height between the *tallest* flower and the *shortest* flower.

_____

Sub-Unit

3

Creating Line Plots

Unit Story: What Orson Imagined



Pixel-Shot/Shutterstock.com

Orson measured the lengths of costumes and props when he was fixing things for the play.

How could he represent the length data?

Unit 3
Lesson
13

Name _____ Date _____

Measure and Compare Objects | Represent Data | 2.MD.9, SMP.2, SMP.6

Messy Measurements

Let's learn about a new way to represent data.



I am a doer of math.
What are some ways you could stay organized when you are doing math?

Warm-Up

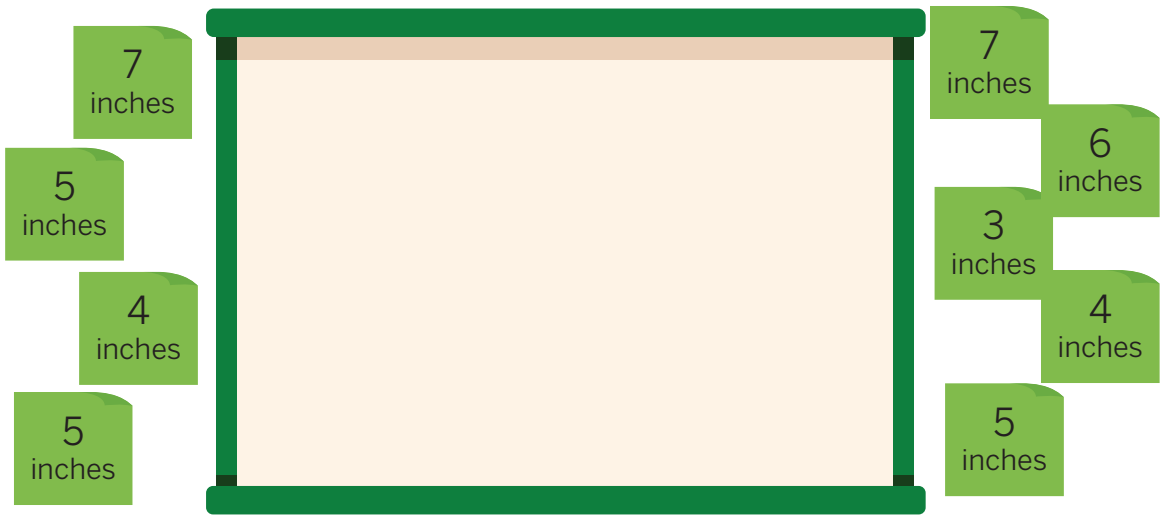
1-2 eyes on teacher

Activity 1

Let's Get Organized!

3 Help Marcos organize the measurement data on the board.

Show or explain your thinking.



Name _____ Date _____

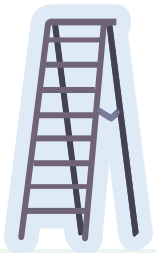
Let's Get Organized! (continued)

4 Discuss

Let's look at ways other students organized the data.
Compare your board to other students' boards.
What do you notice? What do you wonder?

5 Discuss

Let's compare representations.



Activity 2

Name _____ Date _____

Dot, Dot, Line Plot

6 Design a Challenge

- Use the *Design a Challenge* sheet to create your own line plot. Draw symbols to represent the 5–8 ribbon measurements you chose in your line plot.
- Trade your *Design a Challenge* sheet with a partner.
- Represent your partner's data in a table.
- Repeat with a new partner. Complete as many challenges as you have time for.

Challenge 1

Length of ribbon (inches)	1	2	3	4	5	6	7	8
Number of ribbons								

Challenge 2

Length of ribbon (inches)	1	2	3	4	5	6	7	8
Number of ribbons								

Name _____ Date _____

Dot, Dot, Line Plot (continued)

Challenge 3

Length of ribbon (inches)	1	2	3	4	5	6	7	8
Number of ribbons								

Challenge 4

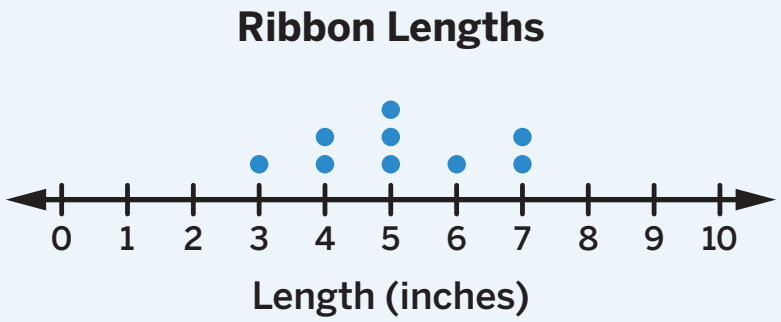
Length of ribbon (inches)	1	2	3	4	5	6	7	8
Number of ribbons								

Challenge 5

Length of ribbon (inches)	1	2	3	4	5	6	7	8
Number of ribbons								

Summary 3.13

Line plots can help you make sense of data collected from measuring the lengths of different objects.



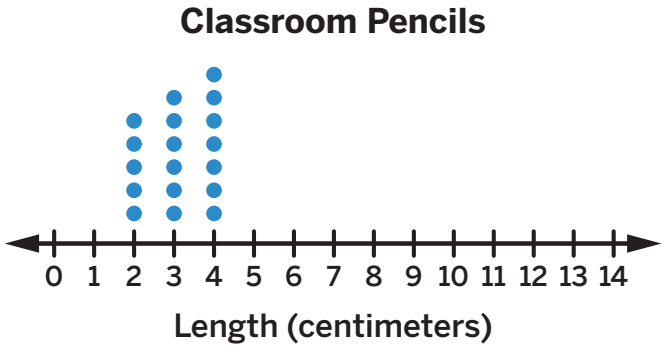
line plot A graph that shows symbols, such as dots or Xs, to show how many of each measurement.

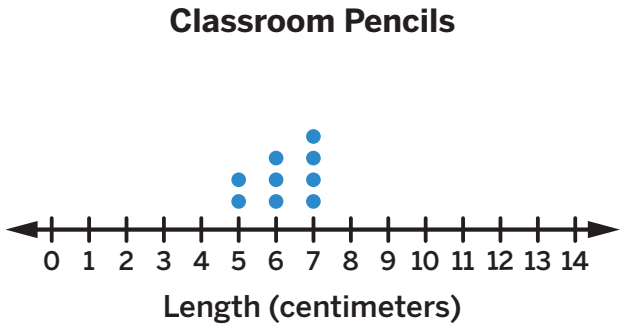
Practice 3.13

1 Clare collected data about the lengths of pencils in her class.

Pencil	A	B	C	D	E	F	G	H	I
Length (inches)	6	5	7	6	7	7	7	5	6

Circle the line plot that represents the data.



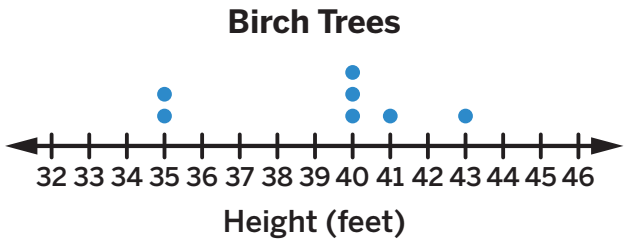


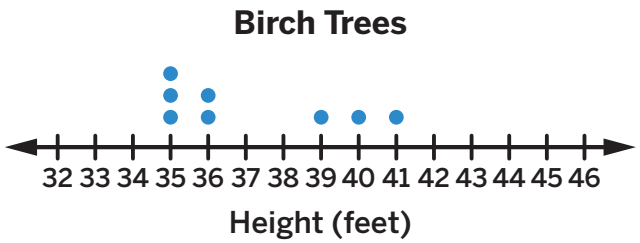
Name _____ Date _____

2 Han collected data about the lengths of birch trees in his neighborhood.

Birch Trees	A	B	C	D	E	F	G
Length (Feet)	40	41	40	35	43	35	40

Circle the line plot that represents the data.





Spiral Review

For Problems 3 and 4, find the value of the expression.

Show your thinking.

3 44 + 19

answer: _____

Name _____ Date _____

Show your thinking.

4 50 – 25

answer: _____

5 The school librarian was organizing books on a cart. On Monday, she put 57 books on the cart. On Tuesday, students checked out 28 books from the cart. On Wednesday, the librarian put 33 more books on the cart. How many books are on the cart now?

Show your thinking.

answer: _____

equation: _____

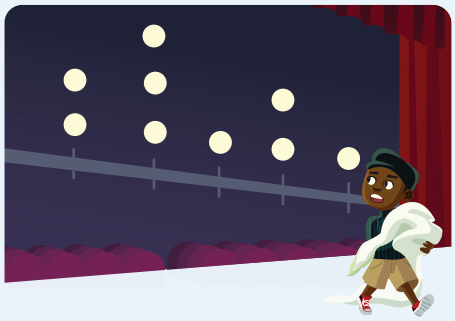
Unit 3
Lesson
14

Name _____ Date _____

Measure and Compare Objects | Represent Data | CC2 Problem Solving With Measure

2.MD.9, 2.MD.1, 2.NBT.5, 2.OA.2, SMP.4, SMP.7

Bracelets and Wristbands



Let's measure lengths and represent data in line plots.

Warm-Up

eyes on teacher

I am a doer of math.
What are some ways you have organized data?

Activity 1 Anthony's Bracelets

Hands-On

Help Anthony measure the lengths of his bracelets and represent the measurements.

1 Measure and record the lengths of Anthony's bracelets in inches.

Bracelet	A	B	C	D	E	F	G	H
Length (inches)								

Name _____ Date _____

Anthony's Bracelets (continued)

2 Create a line plot to represent the lengths of Anthony's bracelets in inches.

Draw



Data Talk!

3 What is the difference in length between the *longest* and *shortest* bracelets?

_____

Activity 2

Name _____ Date _____

Lena's Wristbands

The data in this table shows the lengths of Lena's wristbands in centimeters. Create a line plot to represent the data.

Wristband	Length (centimeters)
1	17
2	15
3	22
4	25
5	22
6	15
7	18
8	23

Name _____ Date _____

Lena's Wristbands (continued)

4 Create a line plot to represent the lengths of the wristbands.

Draw



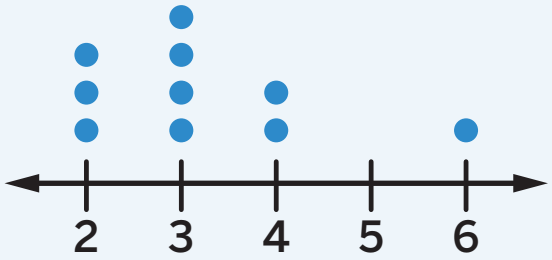
5 **Discuss**

Explain how you created your line plot.

Summary 3.14

Line plots show equal length units. You can look at the data to choose the starting and ending numbers of a line plot.

Measuring Screws



Length (inches)

Screw	1	2	3	4	5	6	7	8	9	10
Length (inches)	2	6	3	3	4	2	3	4	3	2

Practice 3.14

1 Clare made new bracelets for her family. To know how long to make them, she measured their old bracelets and recorded them in the table shown.

Name	Dad	Grandpa	Mom	Auntie	Lena	Papa
Length (inches)	7	10	8	8	6	6

Create a line plot to represent the length of each bracelet.

Draw



Name _____ Date _____

Han's dad was building a playhouse. He cut pieces of wood to different lengths. He wanted to organize the wood, so he made a table to show the length of each piece. Use the information for Problems 2–4.

Wood piece	1	2	3	4	5	6	7	8	9
Length (feet)	9	11	7	14	9	11	9	6	12

2 Create a line plot to represent the length of each piece of wood.

Draw



3 What is the difference in length between the *longest* and *shortest* pieces of wood?

_____

4 What length of wood was cut the *most*?

_____

Name _____ Date _____

Spiral Review

For Problems 5 and 6, find the value of the expression.

Show your thinking.

5 62 + 15

answer: _____

6 83 – 28

answer: _____

7 Diego and Jada are organizing their car collections. They have 17 red cars. They have 36 more blue cars than red cars. How many blue cars do they have?

Show your thinking.

answer: _____

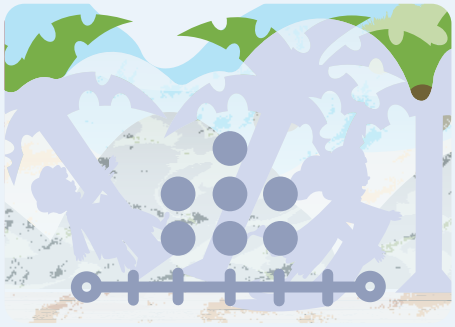
Unit 3
Lesson
15

Name _____ Date _____

Measure and Compare Objects | Represent Data | Problem Solving With Measure | 2.MD.9, 2.MD.1, 2.NBT.5, 2.OA.2, SMP.2, SMP.6, SMP.7, SMP.8

Choosing a Bookshelf

Let's create line plots to interpret length data.



I am a doer of math.
What data would you like to collect and represent with a line plot? Why?

Warm-Up

eyes on teacher

Activity 1 Gathering Information

Hands-On

You will be given a ruler to measure the heights of your books.

1. Choose a length unit and use a ruler to measure the heights of your books.

Height of book

Name _____ Date _____

Gathering Information (continued)

2 Create a line plot to represent the heights of the books you measured.

Draw





Activity 2

Name _____ Date _____

Answering Questions

Answer the questions using your line plot from Activity 1.

3 What is the height of the *shortest* book?

_____

4 What is the height of the *tallest* book?

_____

5 What is the difference between the heights of the *tallest* book and the *shortest* book?

Show or explain your thinking.

answer: _____

6 How many books are in your collection?

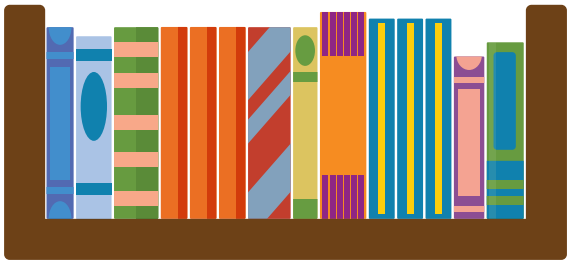
_____

Name _____ Date _____

Answering Questions (continued)

7 Which shelf would you choose to store your books? Justify your thinking by using your data.

Shelf A



Shelf height: 15 inches
Shelf height: 38 centimeters

Shelf B



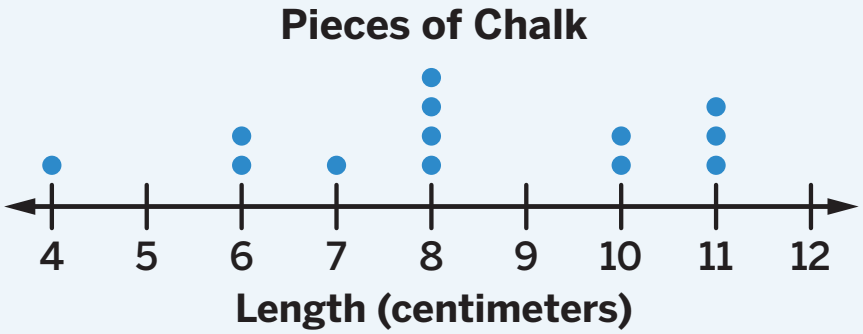
Shelf height: 11 inches
Shelf height: 28 centimeters



Summary 3.15

Recording length data in line plots can help you make and justify real-world decisions. It is important to organize and include labels when making line plots so others can understand the data.

question: How long of a box do I need to fit all my pieces of chalk?



answer: I need a box that has a length of 11 centimeters to fit all the pieces of chalk.

Practice 3.15

For Problems 1 and 2, use the line plot in the Summary.

1 What is the difference between the length of the *longest* and *shortest* pieces of chalk?

Show or explain your thinking.

answer: _____

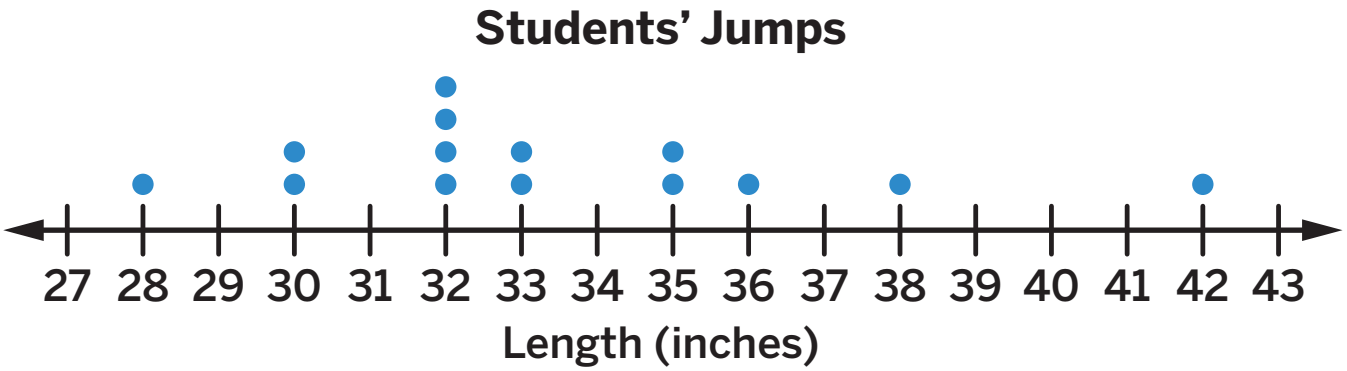
2 How many pieces of chalk are represented in the line plot?

_____

Practice 3.15

Name _____ Date _____

For Problems 3–5, use the line plot showing lengths of jumps that each student made in gym class.



3 What is the difference in length between the *longest* jump and the *shortest* jump?

Show or explain your thinking.

answer: _____

4 What length of jump occurred the *most*?

_____

5 How many students' jumps are represented in the line plot?

_____

Name _____ Date _____

Spiral Review

For Problems 6 and 7, find the value of the expression.

Show your thinking.

6 53 + 28

answer: _____

7 64 – 26

answer: _____

8 Solve the story problem. Write 1 or more equations that represent the story problem and underline the answer.

Priya made paper flowers to sell at a craft fair. She made 34 flowers on Monday and 26 flowers on Tuesday. Then she made some more flowers on Wednesday. Priya made 85 paper flowers in all. How many flowers did she make on Wednesday?

Show your thinking.

answer: _____

equation(s): _____

Notes:

Math at Work

Do you like thinking about the colors or patterns you want to wear? If so, you're not alone! People have been using dyes to color their clothes for thousands of years!

Fashion designers create clothes, jewelry, shoes, and bags in style. They draw sketches and choose fabrics and colors. They take measurements and calculate the cost of fabric.



Krakenimages.com/Shutterstock.com. Africa Studio/Shutterstock.com.

Math at Home

Use a ruler to estimate the lengths of 5 objects in your home, such as different sizes of shoes or different books on a shelf. Create a line plot to display the results.

Math Mindset

Why is it important to include the units when stating an object's length?

Unit 4

Addition and Subtraction on the Number Line

Big Ideas in This Unit

CC1 Measure and Compare Objects

CC2 Problem Solving With Measure

CC3 Number Strategies | Skip Counting to 100

Questions for Investigation

- How can I use a number line to represent numbers within 100?
- How can I use a number line to represent addition and subtraction?

Explore: Where Am I?
How can you find the location of numbers?

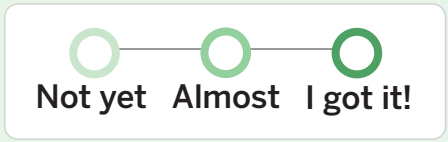
Unit Story: A Seed's Journey
In this story, Sid the seed goes on a journey before it begins to grow.



Natali Daniel/Shutterstock.com

Watch Your Knowledge Grow

This is the math you'll explore in this unit. Rate your understanding to see how your knowledge grows!



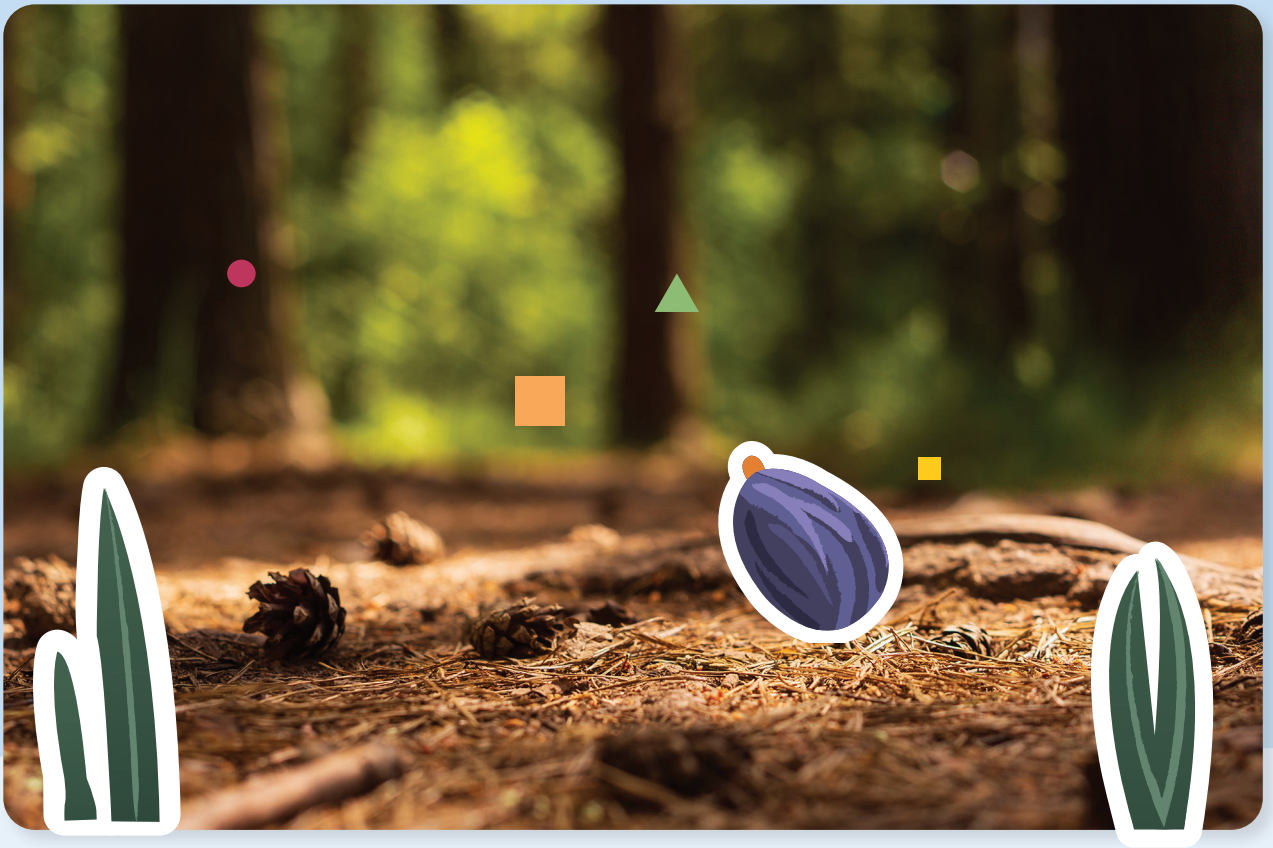
I can . . .	Before	After
Describe the structure of a number line.		
Represent locations on a number line.		
Create number lines using skip-counting patterns.		
Skip-count by 2, 5, 10, and 100.		
Determine which number is greater using a number line.		
Represent counting on and counting back using a number line.		
Write addition and subtraction equations to represent number lines.		
Represent addition and subtraction using a number line.		
Compare addition and subtraction strategies.		
Solve one- and two-step addition and subtraction story problems within 100.		

Sub-Unit

1

The Structure of the Number Line

Unit Story: A Seed's Journey



Shaplov Evgeny/Shutterstock.com

Sid falls from the tree, tumbles through the air, and lands on the forest floor.

How could you represent the locations of the tree and Sid on a number line?

Name _____ Date _____

Measure and Compare Objects | Building Toward: 2.MD.6, SMP.1, SMP.6, SMP.7

Explore: Where Am I?

How can you find the location of numbers?



I can be all of me in math class.
Sid grew up into a tree. What might you be when you grow up?

Warm-Up

eyes on teacher

Discuss What do you notice? What do you wonder?



Activity

Name _____ Date _____

Each of the people in your group will be given a number.

- Organize yourselves into a line based on your numbers.
- Explain how you know where your number belongs.
- Draw a representation on the chart paper of how you organized yourselves.

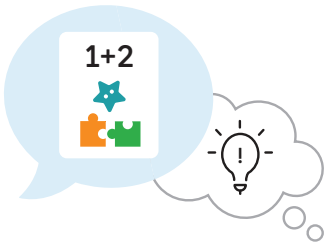
Ways to be a mathematician

1 I can take my time to think about a challenging problem before trying to solve it.



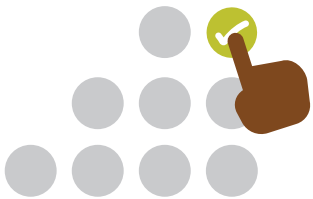
Not yet Almost I got it!

2 I can work carefully and try to be clear when I share my ideas.



Not yet Almost I got it!

3 I can see how ideas are connected and use patterns to help solve problems.



Not yet Almost I got it!

Unit 4
Lesson
2

Name _____ Date _____

Measure and Compare Objects | 2.MD.6, SMP.6, SMP.7

Time to Line Up!

Let's explore the features of a number line.



Warm-Up

eyes on teacher

I can be all of me in math class.
How would you describe a mathematician?

Activity
1

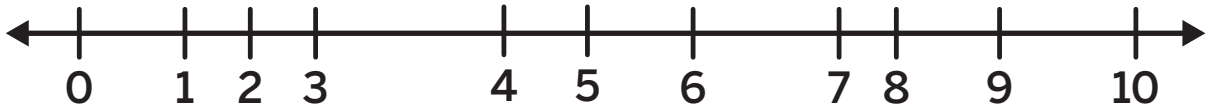
What is a Number Line?

Examine each student's representation and discuss what you notice.

Jada's representation



Han's representation



Clare's representation



Name _____ Date _____

What is a Number Line? (continued)

1 Discuss

What do you notice about each representation?
What would you change about them?

2

Choose **1** representation. Explain how you would change it and why you would make the change.

Activity 2

Name _____ Date _____

Locating Numbers

For Problem 3, label each tick mark with a number. Then use the number line to complete Problems 4 and 5.

3



4 Locate 6 on the number line. Mark it with a point.

5 Locate a number on the number line that is *greater* than 6. Mark it with a point.

Use the number line for Problems 6–8.



6 Locate 9 on the number line. Mark it with a point.

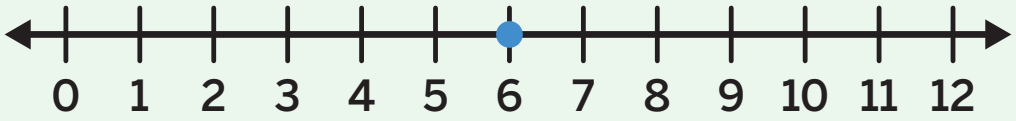
7 **Discuss**

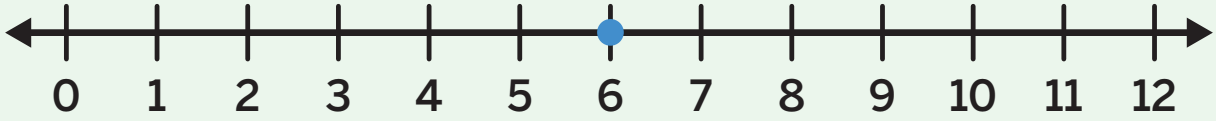
How did you use the number line to help you locate 9?

8 Locate a number on the number line that is *less* than 9. Mark it with a point.

Summary 4.02

A **number line** is another way to represent numbers. The tick marks on a number line are equally spaced. The numbers, tick marks, and **points** on a number line represent distances from 0.



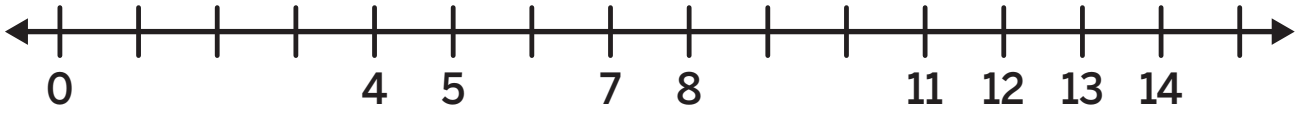


number line A diagram that represents numbers as distances from 0 using equally-spaced tick marks.

point A location on a number line or graph.

Practice 4.02

Use the number line for Problems 1–3.



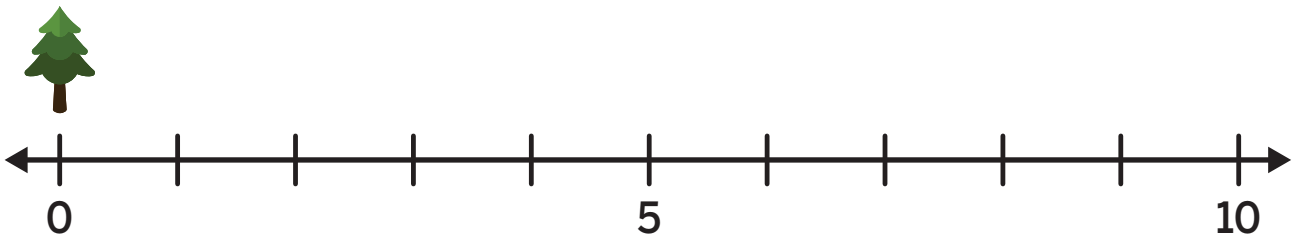
1. Label each tick mark on the number line.

2. Locate 10 on the number line. Mark it with a point.

3. Locate 15 on the number line. Mark it with a point.

Name _____ Date _____

Use the number line for Problems 4–6.



4 Label each tick mark on the number line.

5 Locate 8 on the number line. Mark it with a point.

6 Locate a number that is *greater* than 8 and mark it with a point.

Spiral Review

For Problems 7–10, find the number that makes the equation true.

7 4 + 13 = _____

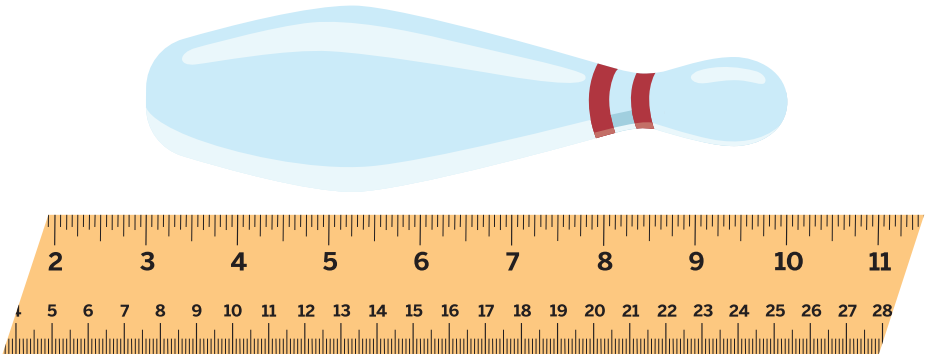
8 15 – 8 = _____

9 8 + 7 = _____

10 17 – 4 = _____

Name _____ Date _____

11 Measure the length of the bowling pin in inches.



answer: _____

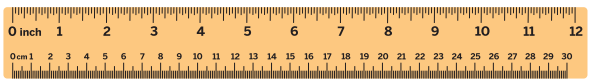
12 Clare is measuring the length of 1 wall in her bedroom. Circle the measuring tool she should use.



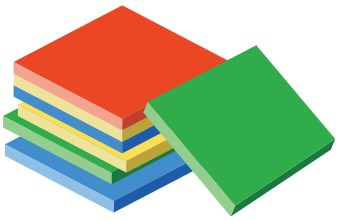
centimeter cube



10–centimeter rod



ruler



inch tile

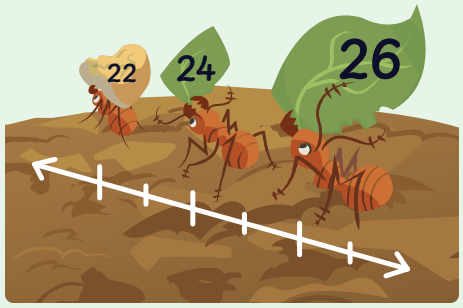
Unit 4
Lesson
3

Name _____ Date _____

Measure and Compare Objects | 2.MD.6, 2.NBT.2, SMP.6, SMP.7

What's That Number?

Let's locate numbers on number lines.



Warm-Up

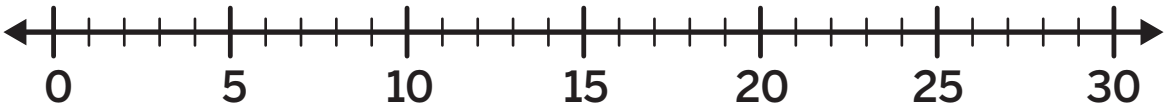
eyes on teacher

I can be all of me in math class.
What makes you a mathematician?

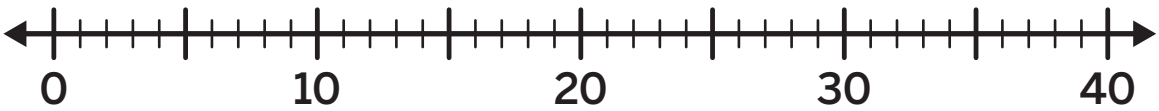
Activity 1 Locating the Numbers

Locate each number on the number line. Mark it with a point.

1 24



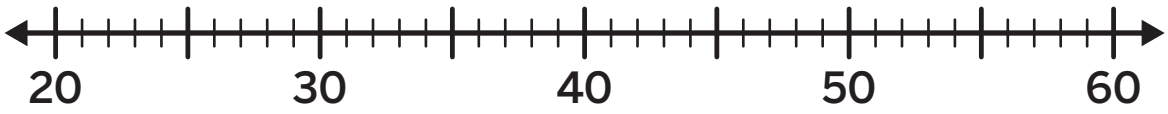
2 37



Name _____ Date _____

Locating the Numbers (continued)

3 38



4 83



5 **Discuss**

Justify how you know your points represent the location of the numbers on the number lines.

Activity 2

Name _____ Date _____

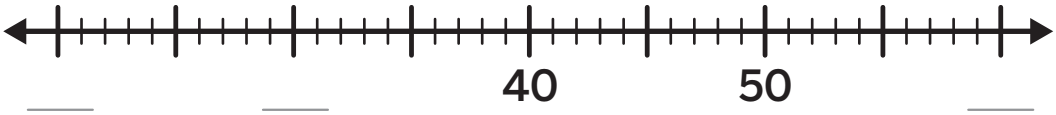
Are You Missing Something?

Fill in the missing numbers on the number line. Then locate and mark the number with a point.

6 17



7 35



8 43

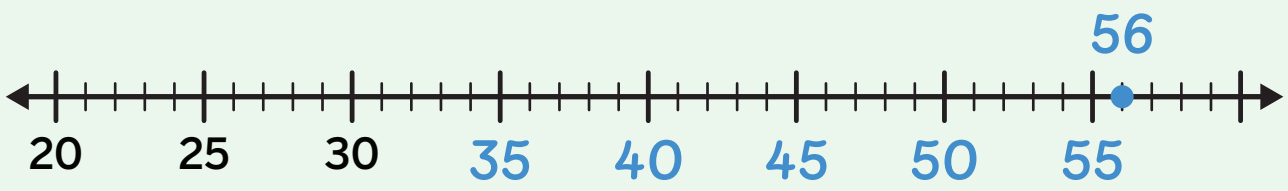


9 **Discuss**

How did you find the missing numbers?

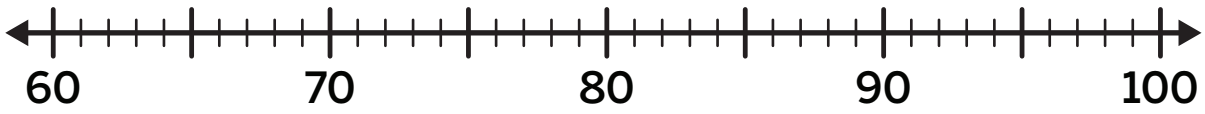
Summary 4.03

Each tick mark on a number line represents a distance from 0.
You can use labeled tick marks on a number line to help you locate other numbers.

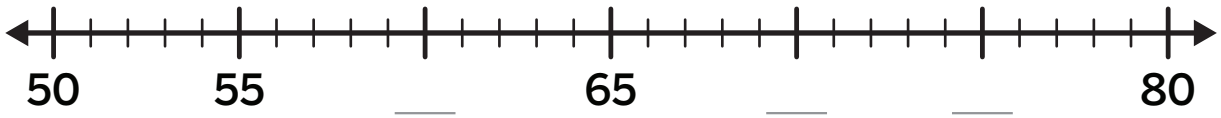


Practice 4.03

1 Locate 79 on the number line. Mark it with a point.



2 Fill in the missing numbers on the number line.
Locate 74 and mark it with a point.



Name _____ Date _____

For Problems 3–5, use the number line.



3 Fill in the missing numbers on the number line.

4 Locate 42 on the number line. Mark it with a point.

5 Locate 59 on the number line. Mark it with a point.

Spiral Review

6 Diego counts the money in his piggy bank. He has 2 quarters, 3 dimes, and 12 pennies. How much money does Diego have?

Show your thinking.

answer: _____

Name _____ Date _____

For Problems 7–9, find the value of the expression.

Show your thinking.

7 24 + 35

answer: _____

8 67 – 43

answer: _____

9 56 + 12

answer: _____

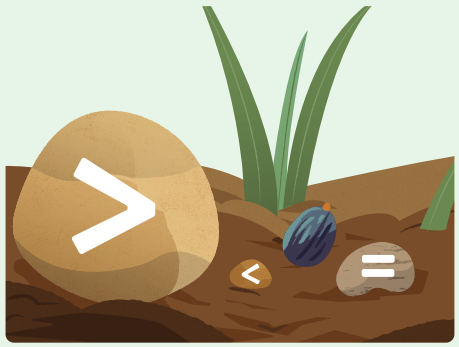
Unit 4
Lesson
4

Name _____ Date _____

Measure and Compare Objects 2.MD.6, 2.NBT.2, SMP.7, SMP.8

Greater Than, Less Than, or Equal To

Let's compare numbers using the number line.



Warm-Up

eyes on teacher

I can be all of me in math class.
How can your actions show that you are a mathematician?

Activity 1 Rolling to Compare

Hands-On

You and your partner will be given a number line and number cubes.

1. Roll 2 number cubes and make a two-digit number. Record your number and your partner's number in the table. Then compare the numbers using >, <, or =.

Partner A	>, <, or =	Partner B

Name _____ Date _____

Rolling to Compare (continued)

2 Discuss

For each comparison, locate and label your numbers on the number line. Use the number line to help you justify why your comparison statement is true.

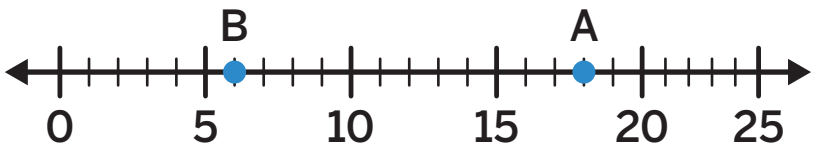


Activity 2

Name _____ Date _____

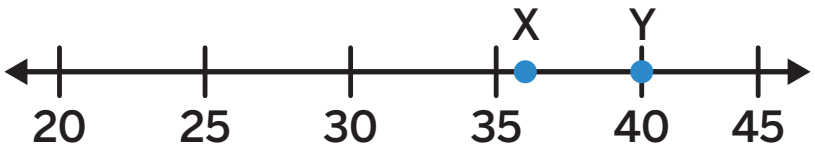
Comparing More Numbers

Use the number lines to compare points. Fill in the blank with >, <, or =.



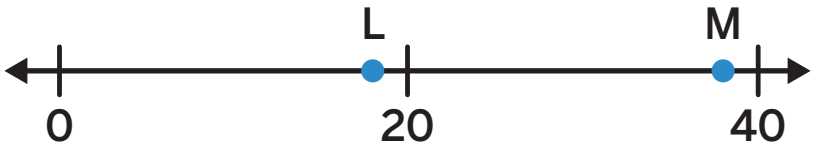
3 Point A is _____ Point B.

4 Point B is _____ Point A.



5 Point X is _____ Point Y.

6 Point Y is _____ Point X.



7 Point L is _____ Point M.

8 Point M is _____ Point L.

Name _____ Date _____

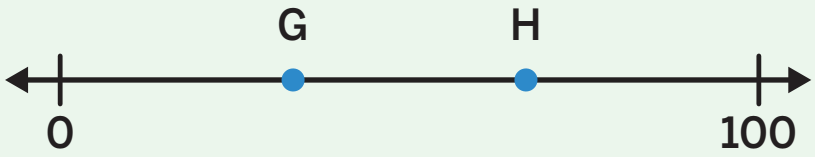
Comparing More Numbers (continued)

9 Look at the number line with Points L and M. Justify how you know which point represents the greater number and which point represents the smaller number.



Summary 4.04

You can use a number line to justify comparison statements. Numbers increase to the right and decrease to the left on a number line.



$G < H$ $H > G$

Practice 4.04

Use the number line for Problems 1–4.



1 Locate 13 on the number line. Mark it with a point.

2 Locate 27 on the number line. Mark it with a point.

For Problems 3 and 4, fill in the blank with <, >, or =.

3 13 _____ 27

4 27 _____ 13

Name _____ Date _____

For Problems 5 and 6, use the number lines to compare the numbers. Fill in the blank with >, <, or =.

5 44 _____ 75



6 36 _____ 16



Spiral Review

7 Diego had 3 quarters. He found 4 nickels on the sidewalk. How much money does Diego have now?

Show your thinking.

answer: _____

Name _____ Date _____

For Problems 8–13, find the value of the expression.

Show your thinking.

8 52 + 13

answer: _____

9 81 – 45

answer: _____

10 38 + 32

answer: _____

11 79 – 50

answer: _____

12 17 + 27

answer: _____

13 67 – 44

answer: _____

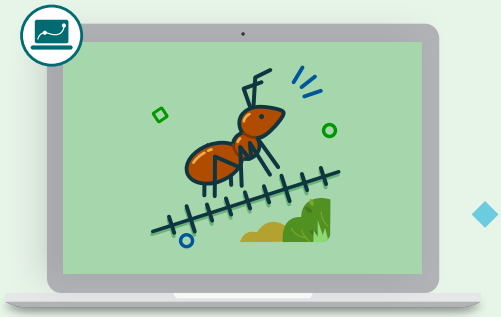
Unit 4
Lesson
5

Name _____ Date _____

Measure and Compare Objects 2.MD.6, 2.NBT.7.1, SMP.2, SMP.3, SMP.7

In Full Bloom

Let's estimate numbers on a number line.



Warm-Up 1-2 eyes on teacher

We are a math community. Who are mathematicians in your communities?

Activity 1 Planting Seeds

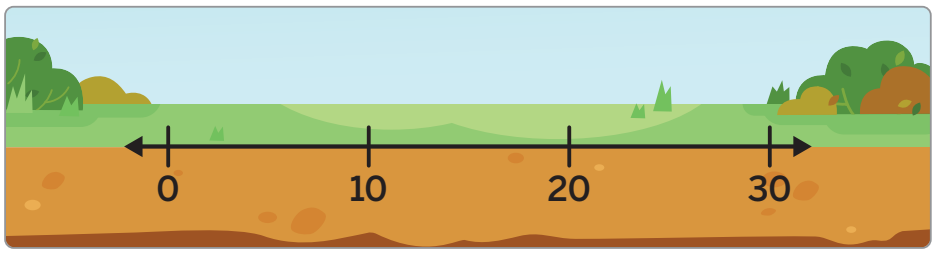
3 Discuss

Let's discuss what you noticed about the estimates.

For Screens 4–6, estimate where the number is located. Mark and label a point on the number line to show your estimate.

Show your thinking.

4 15

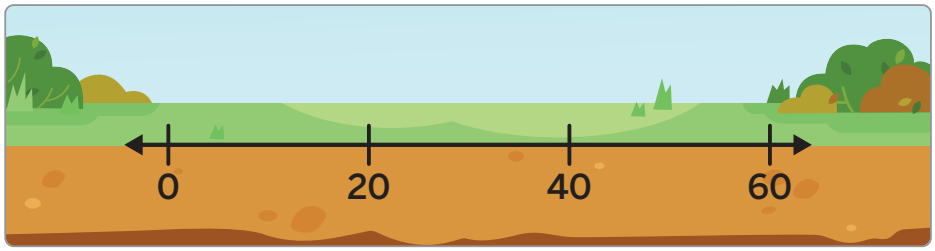


Name _____ Date _____

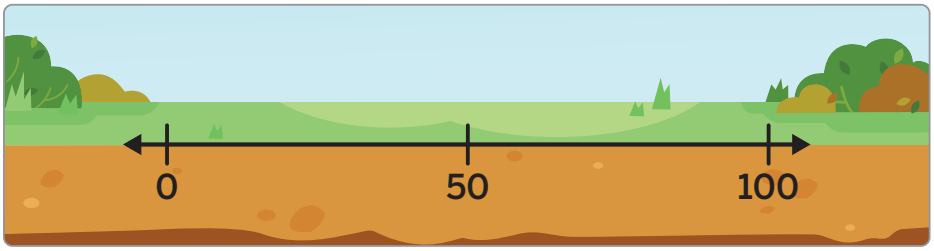
Planting Seeds (continued)

Show your thinking.

5 46



6 30



7 Discuss

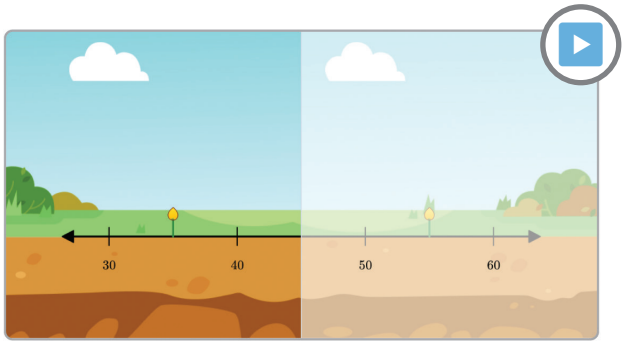
Let's compare Han's and Jada's estimates.

Activity 2

Name _____ Date _____

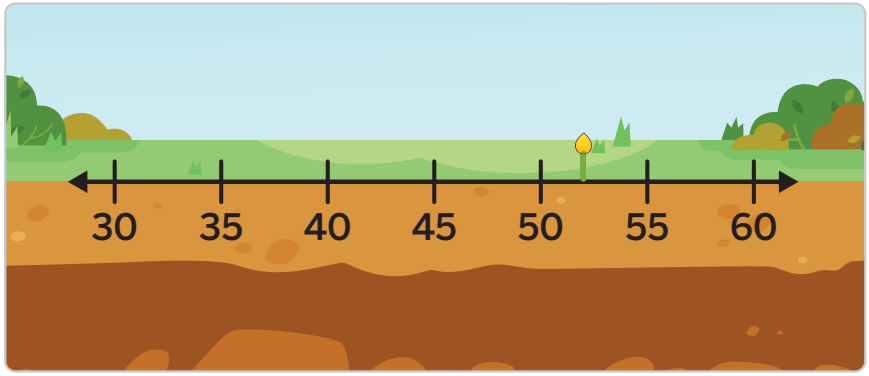
From Seeds to Flowers

8 Let's watch a video.

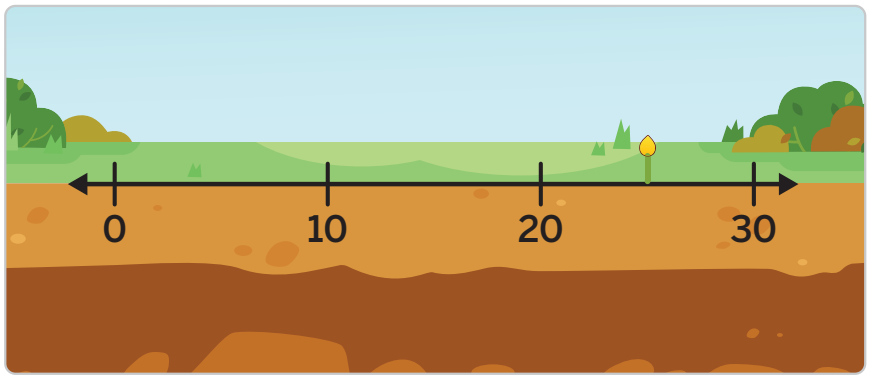


For Screens 9–11, write an estimate for where the plant is located on the number line. You can show your work in the image if it is helpful.

9 What number could this be? _____



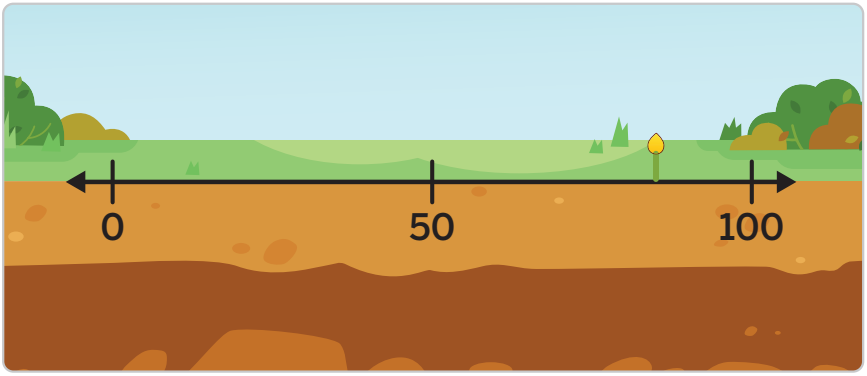
10 What number could this be? _____



Name _____ Date _____

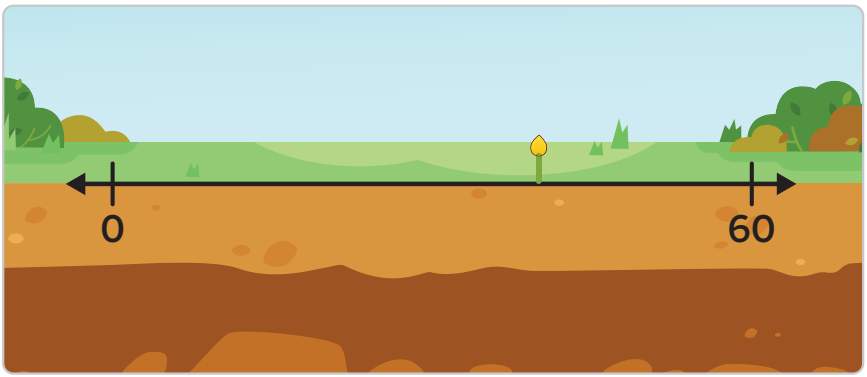
From Seeds to Flowers (continued)

11 What number could this be? _____



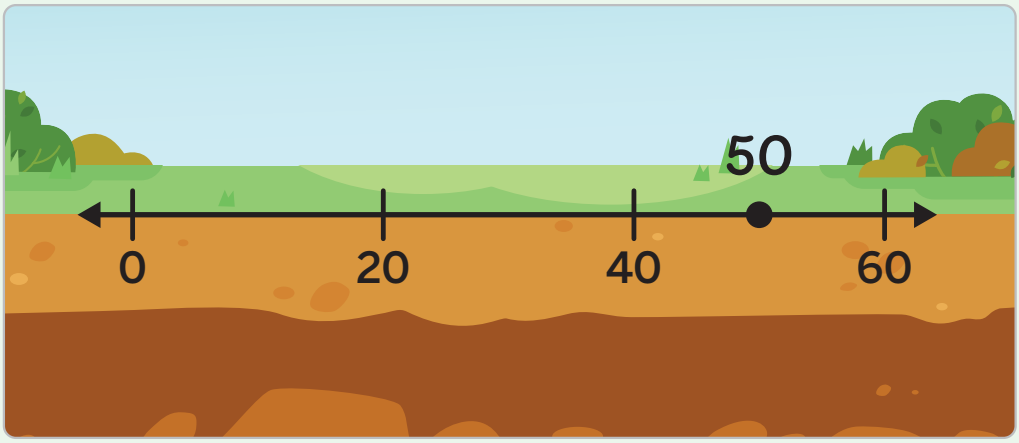
12 **Discuss**

What is a reasonable estimate for where the plant is located on the number line? How do you know your estimate is reasonable? You can show your work in the image if it is helpful.



Summary 4.05

You can use labeled points to estimate the number that is represented by an unlabeled point.



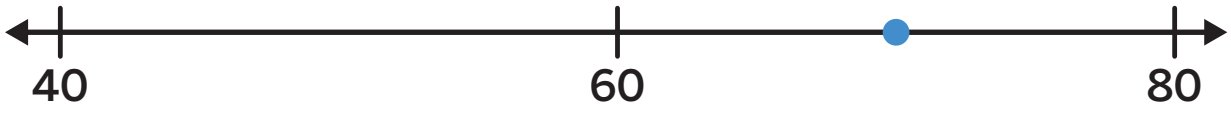
Practice 4.05

For Problems 1 and 2, write an estimate for where the point is located on the number line. You can show your work on the number line if it is helpful.

1 What number could this be? _____



2 What number could this be? _____



Name _____ Date _____

3 Clare counted the number of students in her class and marked a point on the number line. What number could her point represent?



_____

Spiral Review

4 Circle the equation you could use to find the value of 9 – 4.

4 + 5 = 9

3 + 7 = 10

8 – 1 = 9

5 + 3 = 8

For Problems 5–7, find the value of the first equation. Then use the first equation to find the value of the second equation.

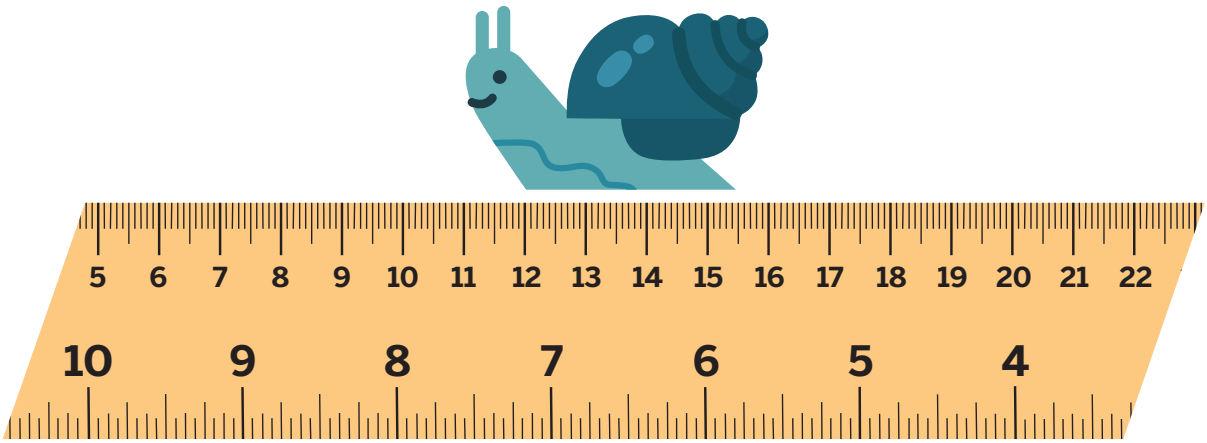
5 4 + 3 = _____ 7 – 3 = _____

6 8 – 2 = _____ 6 + 2 = _____

7 3 + 6 = _____ 9 – 3 = _____

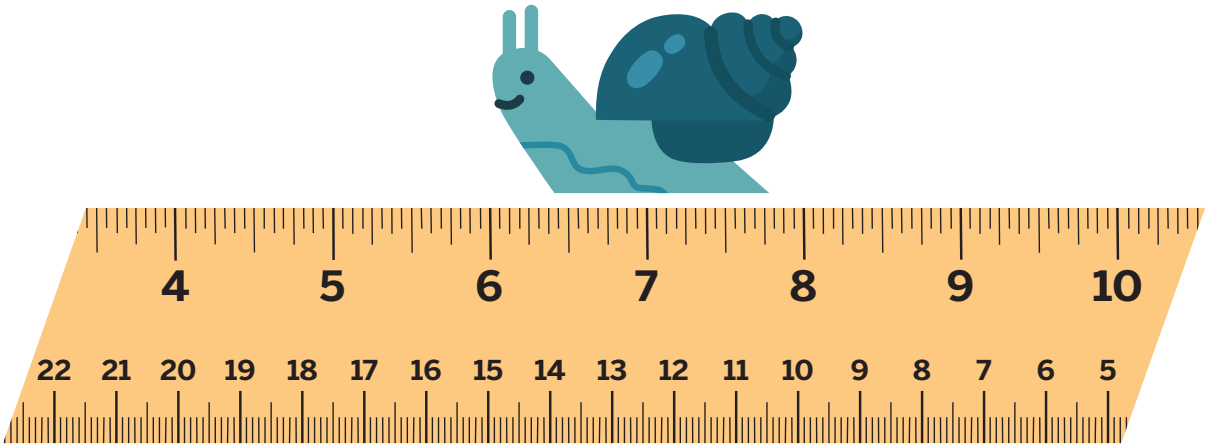
Name _____ Date _____

8 Measure the length of the snail in centimeters.



_____

9 Measure the length of the snail in inches.



_____

Notes:

Sub-Unit

2

Adding and Subtracting on the Number Line

Unit Story: A Seed's Journey



martiroz/Shutterstock.com

Sid was taken on a journey before it settled and was ready to grow.

How could you represent Sid's journey on a number line?

Unit 4
Lesson
6

Name _____ Date _____

Measure and Compare Objects | Skip Counting to 100 | 2.MD.6, 2.NBT.2, 2.NBT.5, SMP.6, SMP.7

Don't Let the Bug Get Away!

Let's explore counting on a number line.



Warm-Up

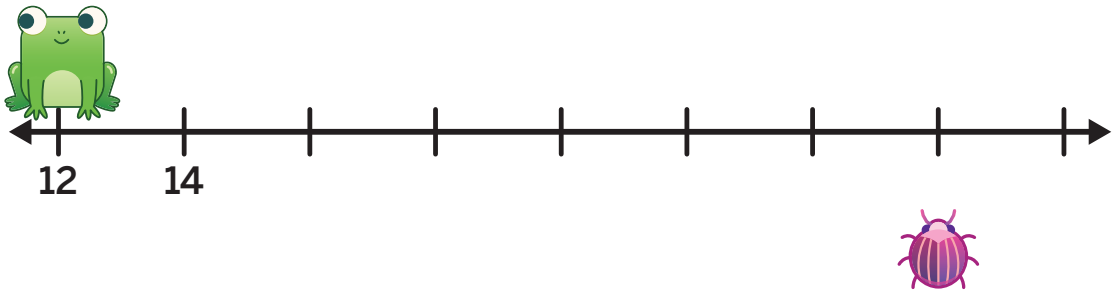
1 eyes on teacher

We are a math community.
Who are some mathematicians in your school? What do you think makes them a mathematician?

Activity 1 Navigating Number Lines

2 Write a number to represent where the bug is located on the number line.

Show your thinking.



answer: _____

Discuss

How did you find where the bug is located?

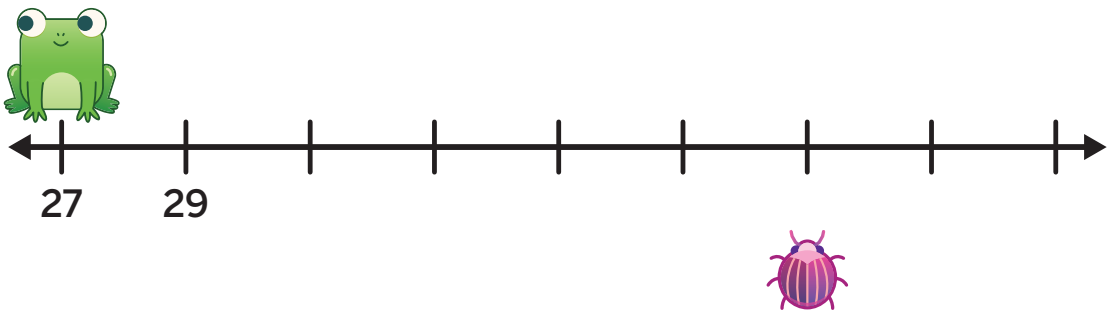
Name _____ Date _____

Navigating Number Lines (continued)

For Screens 3–5, write a number to represent where the bug is located on the number line.

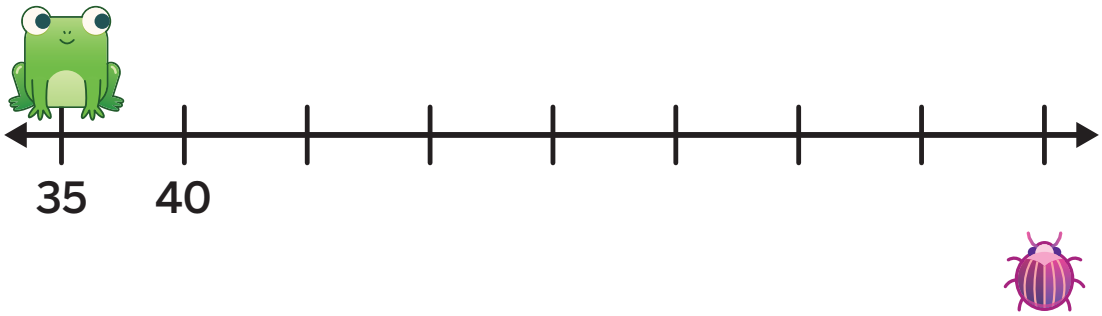
Show your thinking.

3



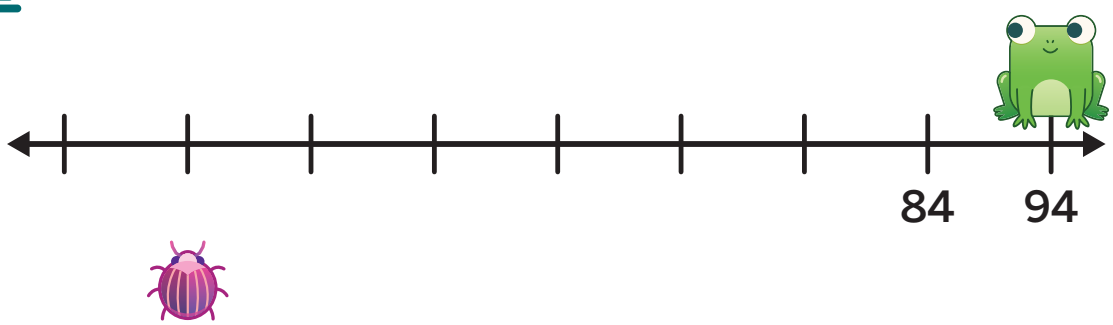
answer: _____

4



answer: _____

5



answer: _____

Activity 2

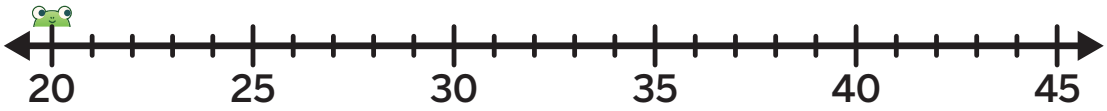
Name _____ Date _____

A Very Buggy Lunch

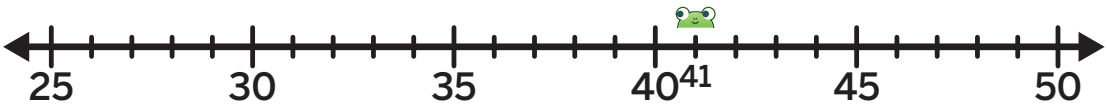
For Screens 6–9, show how the frog could jump by 1, 2, 5, or 10 to reach the bug.

Draw

6 There is a bug located at 43.



7 There is a bug located at 32.



Activity 2

Name _____ Date _____

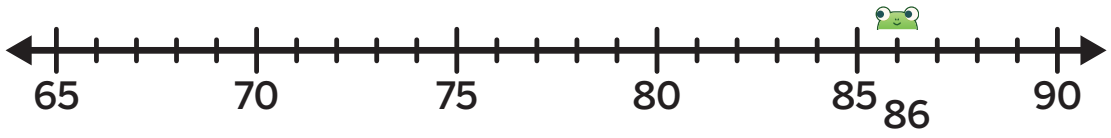
A Very Buggy Lunch (continued)

Draw

8 There is a bug located at 98.

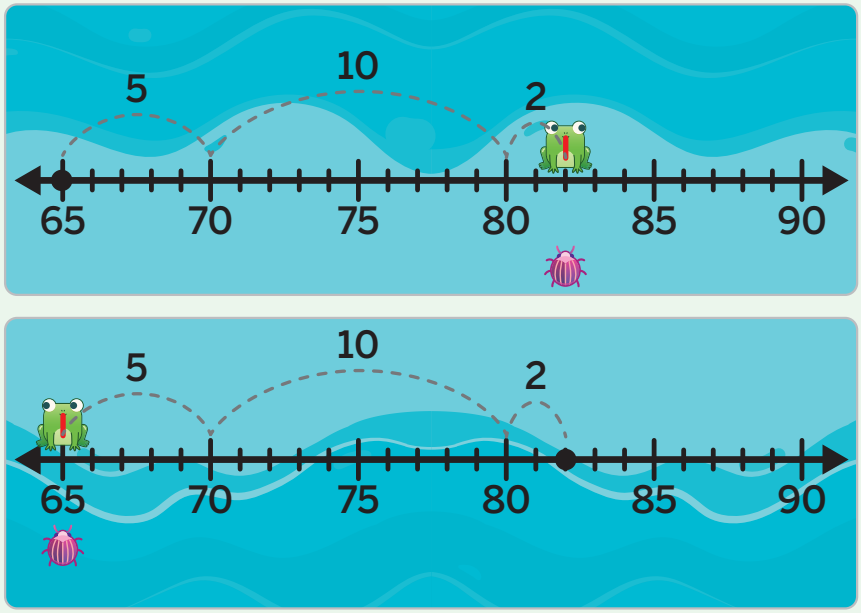


9 There is a bug located at 66.



Summary 4.06

You can use a number line to represent counting on and counting back.

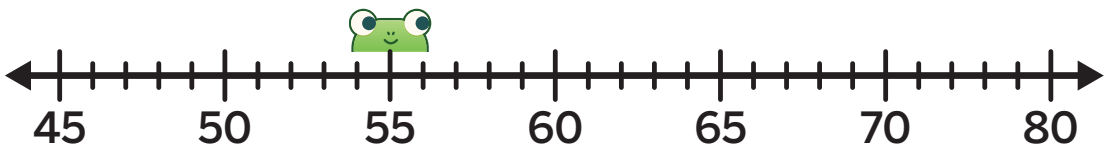


Practice 4.06

For Problems 1 and 2, use the number line to show how the frog could jump by 1, 2, 5, or 10 to reach the bug.

Draw

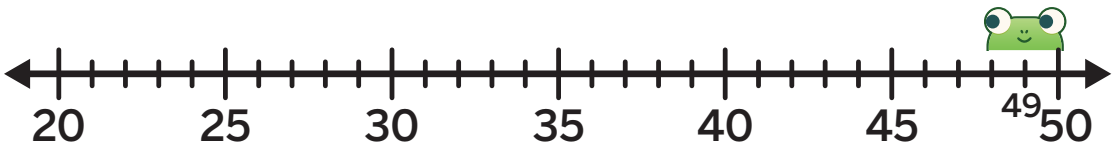
1 There is a bug located at 62.



Name _____ Date _____

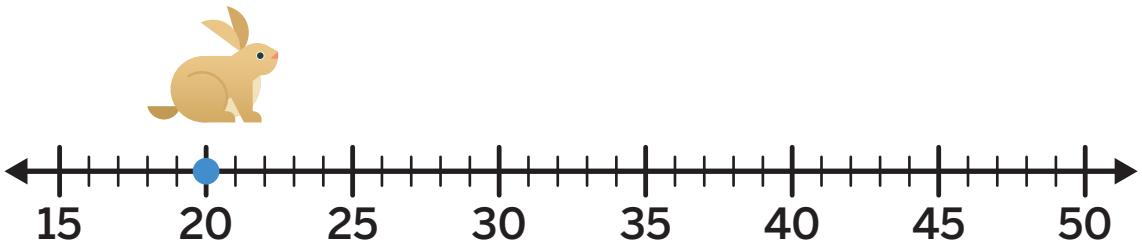
Draw

2 There is a bug located at 30.



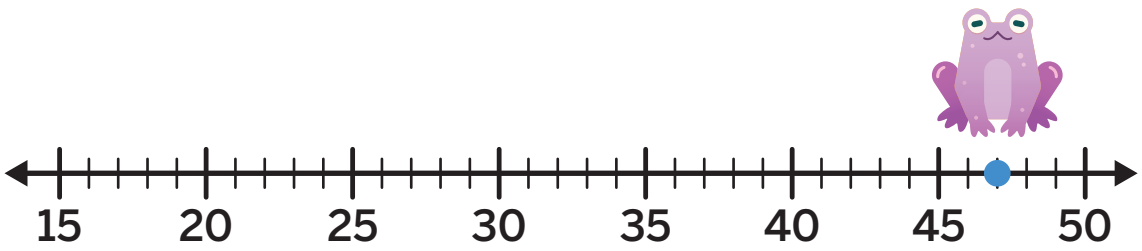
For Problems 3 and 4, the number line represents number of feet.

3 The rabbit started at 20 feet and jumped 17 feet to the right.



Where did the rabbit land? _____

4 The frog started at 47 feet and jumped 15 feet to the left.



Where did the frog land? _____

Name _____ Date _____

Spiral Review

5 Shawn had $35. Shawn bought a ticket to the museum for $12. How much money does Shawn have left?

Show your thinking.

answer: _____ **equation:** _____

For Problems 6 and 7, find the value of the expression.

Show your thinking.

6 44 + 23

answer: _____

7 95 – 81

answer: _____

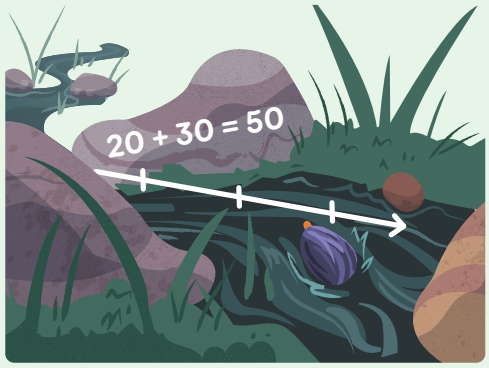
Unit 4
Lesson
7

Name _____ Date _____

Number Strategies 2.MD.6, 2.NBT.2, 2.NBT.5, SMP.2, SMP.7

Jump Around

Let's represent addition and subtraction with equations and number line diagrams.



We are a math community. How can we support other mathematicians in our classroom?

Warm-Up

eyes on teacher

Activity 1

Introducing the Center, Jump the Line

Stage 1 fluency

Pairs Let's add and subtract using a number line.

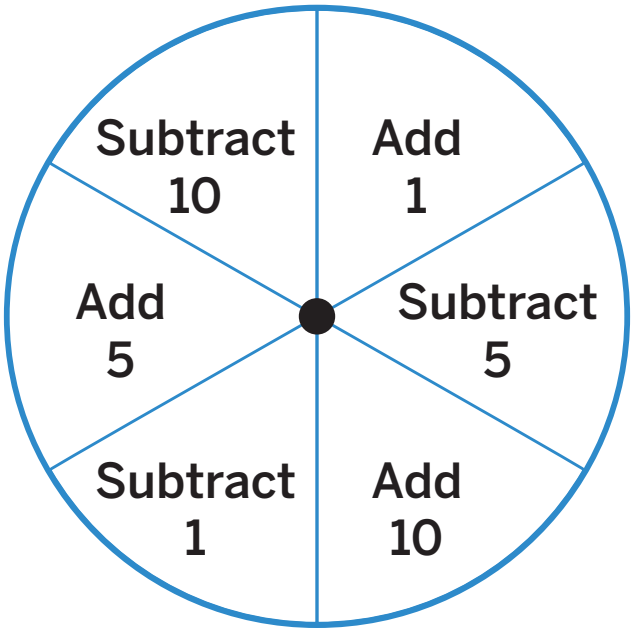
You'll need: 6 base-ten units, dry-erase marker, paper clips, pencil, sheet protectors, Gameboard, Spinner

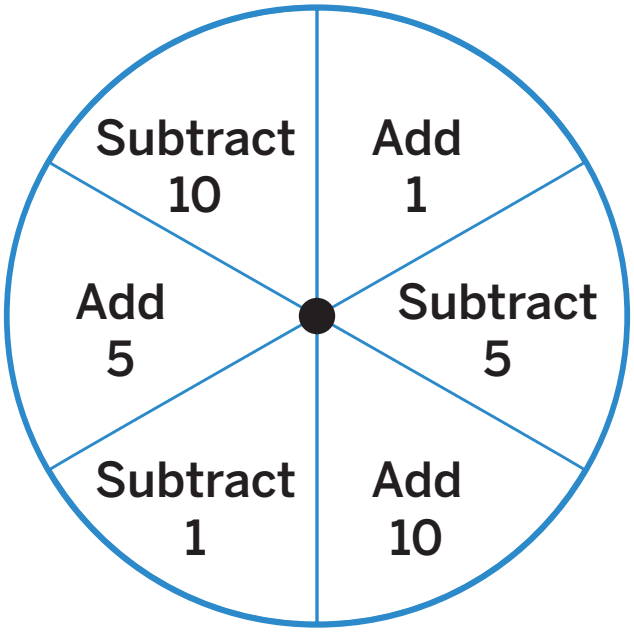
How to Play

1. Choose a start number for each number line. Both players place a cube above each start number.
2. Mark a target number on each number line with a point. The target numbers for today are 35, 35, and 70.
3. Spin the Spinner. Add or subtract on 1 or more number lines as you move your cube the distance you spun to try to reach the target number.
4. Take turns spinning and moving cubes. The first player to land on 2 target numbers wins.

Name _____ Date _____

Jump the Line (continued)





Activity 2

Name _____ Date _____

Following the Arrow

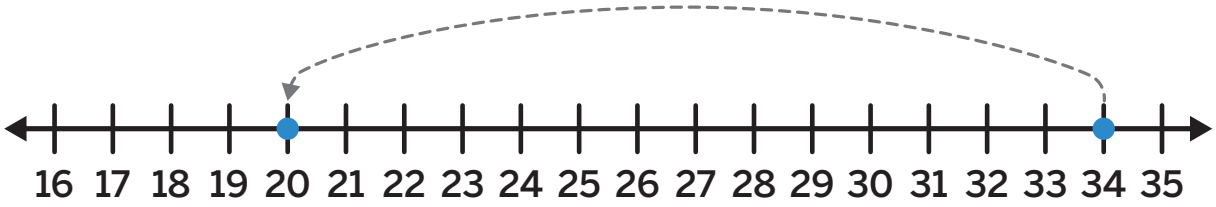
Write an equation that matches each number line.

1



equation: _____

2



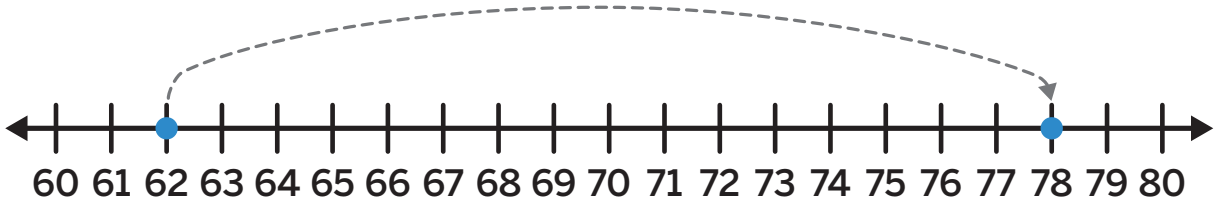
equation: _____



Name _____ Date _____

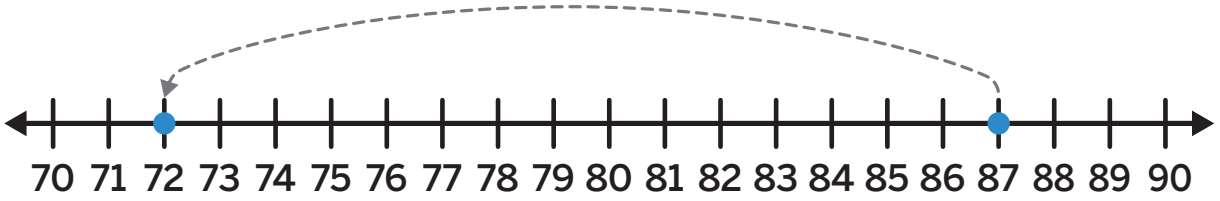
Following the Arrow (continued)

3



equation: _____

4



equation: _____

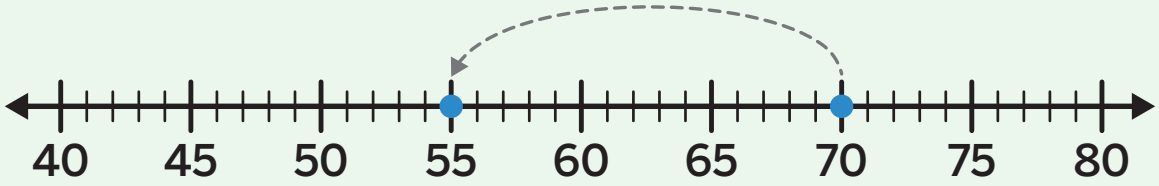
5 **Discuss**

Compare your equations with your partner's equations. Explain how your equations are represented on the number lines.

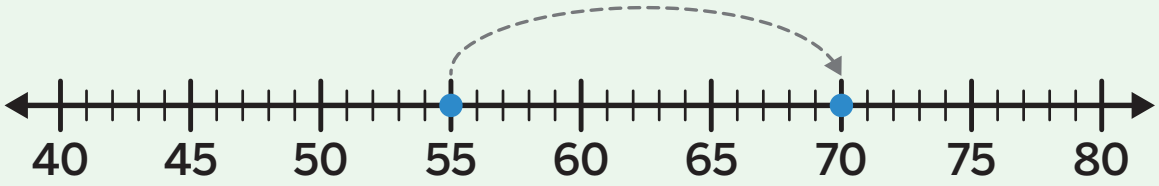
Summary 4.07

You can use arrows to represent addition and subtraction on a number line. An arrow pointing to the right can represent addition and an arrow pointing to the left can represent subtraction.

$70 - 15 = 55$



$55 + 15 = 70$



Practice 4.07

1 Circle the equation that is represented by the number line.

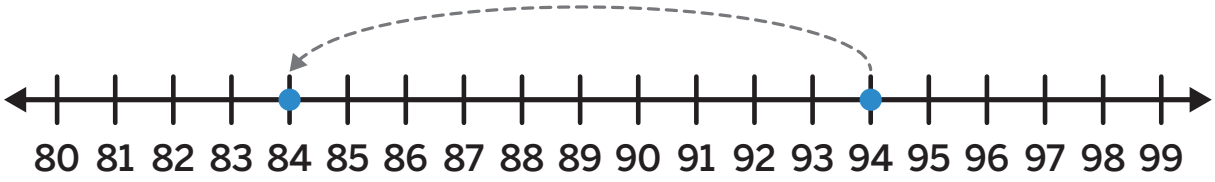


$45 - 12 = 33$

$33 + 12 = 45$

Name _____ Date _____

2 Circle the equation that is represented by the number line.

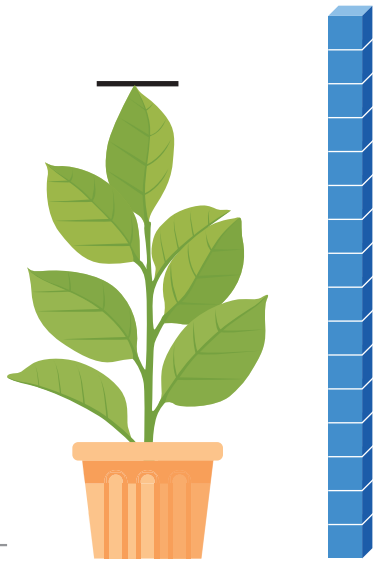


94 – 10 = 84

84 + 10 = 94

Spiral Review

3 Measure the height of the house plant in centimeters.



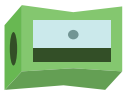
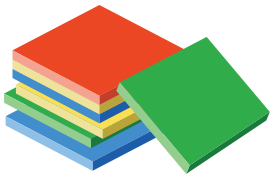
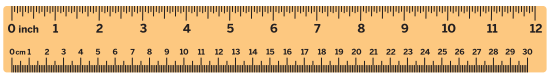
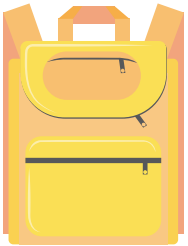
_____

4 Circle the expression that could help find the value of 87 + 3.

5 + 5 6 + 4 7 + 3 8 + 2

Name _____ Date _____

For Problems 5–8, draw lines to match each object with the appropriate unit of measurement.

	Object	Unit
5	 bus	 centimeter
6	 pencil sharpener	 inch
7	 pencil	 foot
8	 book bag	 meter

Unit 4
Lesson
8

Name _____ Date _____

Number Strategies 2.MD.6, 2.NBT.5, SMP.6, SMP.7

Arrows Forward and Back

Let's represent addition and subtraction on a number line.



I can be all of me in math class. Seeds can look different, but share attributes. How are mathematicians similar and different?

Warm-Up

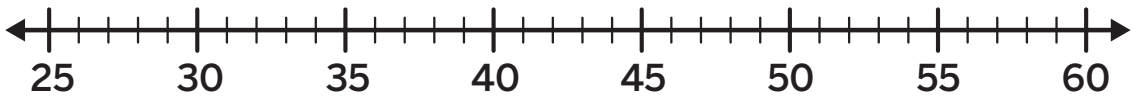
eyes on teacher

Activity 1 Representing Equations

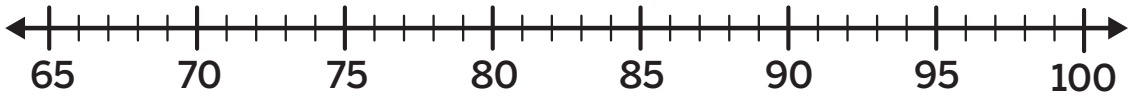
Represent each equation on the number line using arrows.

Show your thinking.

1. $45 + 12 = 57$



2. $90 - 15 = 75$

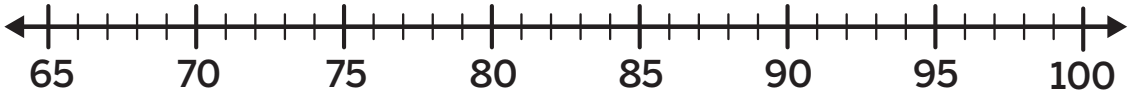


Name _____ Date _____

Representing Equations (continued)

Show your thinking.

3 85 + 13 = 98



4 **Discuss**

Compare your representations from Problems 1–3 with your partner's representations. Explain how you represented each equation on the number line using arrows.

Activity 2

Name _____ Date _____

Comparing Representations

Hands-On

You and your partner will be given a number line, chart paper, and markers to create a visual display.

5 Find the value of 50 + 24. Show your thinking on the visual display in **2** ways. One representation must be on a number line.

6 On your display, write an explanation of how your number line diagram represents your thinking.

Name _____ Date _____

Comparing Representations (continued)

7 Discuss

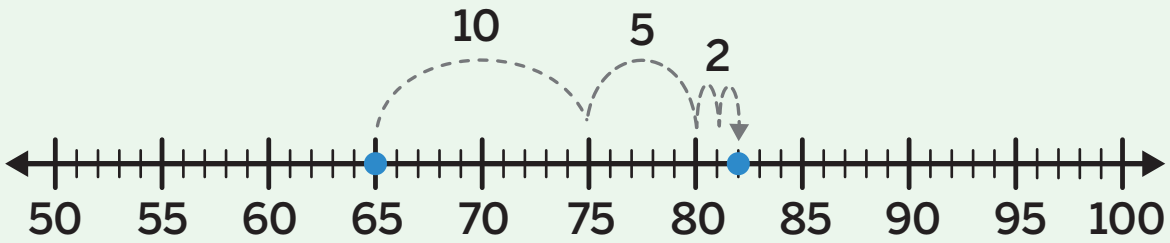
What is similar about your 2 representations?
What is different?



Summary 4.08

You can use number lines to represent addition and subtraction. More than 1 jump may be needed to represent certain strategies.

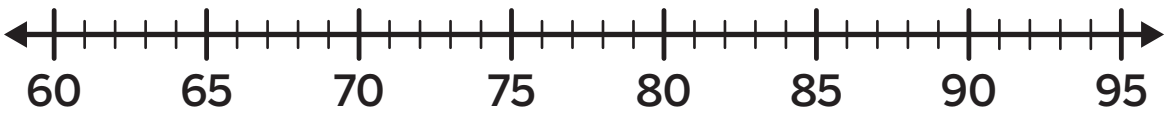
$$65 + 17 = 82$$



Practice 4.08

1 Use the number line to represent the equation $90 - 22 = 68$.

Show your thinking.

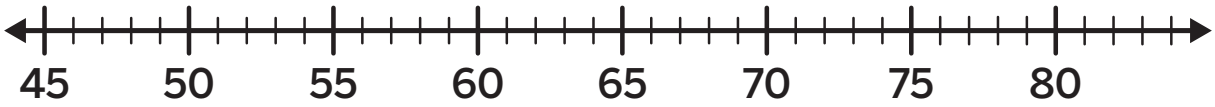


Name _____ Date _____

For Problems 2 and 3, use the number line to represent the equation.

Show your thinking.

2 $50 + 27 = 77$

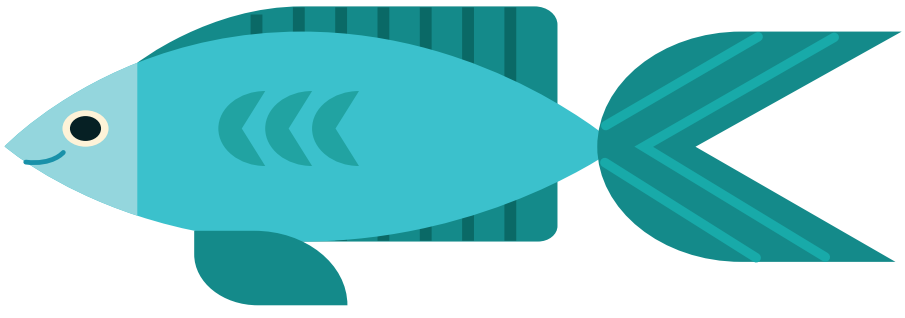


3 $72 - 19 = 53$



Spiral Review

4 Measure the length of the fish in inches.





_____

Name _____ Date _____

For Problems 5–8, find the value of the expression.

5 8 – 2 _____

6 4 + 5 _____

7 7 – 3 _____

8 5 + 5 _____

For Problems 9–12, find the value of the expression.

Show your thinking.

9 25 + 45

answer: _____

10 78 – 22

answer: _____

11 93 – 37

answer: _____

12 24 + 35

answer: _____

Unit 4
Lesson
9

Name _____ Date _____

Number Strategies 2.MD.6, 2.NBT.5, SMP.2, SMP.7

A Hop, Skip, and a Jump Away

Let's represent and compare addition strategies on a number line.



I can be all of me in math class. What are some things mathematicians say? When do you say these things in math class?

Warm-Up

eyes on teacher

Activity 1 On the Number Line

Diego and Han found the value of the expression 33 + 45. They began using number lines to represent their thinking. Use arrows to complete Diego's and Han's representations.

1 Diego's representation:

Show your thinking.

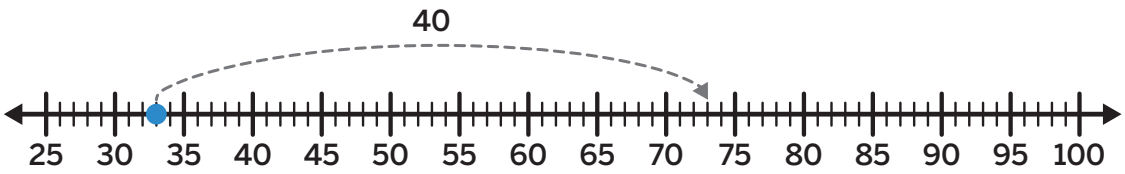


Name _____ Date _____

On the Number Line (continued)

2 Han's representation:

Show your thinking.



3 **Discuss**

Explain to your partner how you completed Diego's and Han's representations. What is similar and different about the way you completed the representations?

Activity 2

Name _____ Date _____

To Jump or Not to Jump?

Hands-On

Find the value of each expression. You can choose to represent your thinking in the workbox or on a number line.

Show your thinking.

4 75 + 22

answer: _____

5 17 + 47

answer: _____

Name _____ Date _____

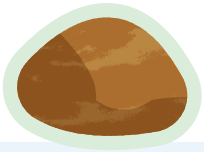
To Jump or Not to Jump? (continued)

6 Discuss

Explain how you represented your addition strategies with your partner.

Explain why you chose that representation to show your thinking.

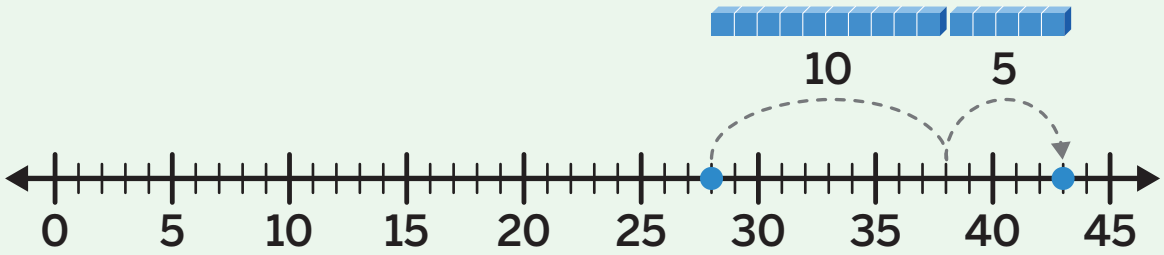




Summary 4.09

There are many different addition strategies that can be used to find the value of an expression. A number line can help represent those strategies.

$$28 + 15 = 43$$
$$28 + 10 + 5 = 43$$



Practice 4.09

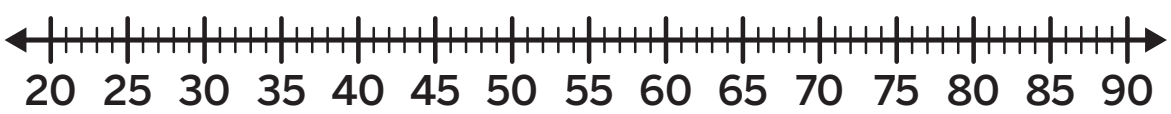
1 Find the value of the expression 28 + 60.

Show your thinking.

answer: _____

2 Use the number line to represent the expression 28 + 60.

Show your thinking.



Name _____ Date _____

3 Use the number line to represent the expression 34 + 21.

Show your thinking.



Spiral Review

4 Priya is collecting coins for a school fundraiser. She collects 1 quarter, 5 nickels, 3 dimes, and 8 pennies. How much money does she have?

Show your thinking.

answer: _____

Name _____ Date _____

For Problems 5–7, fill in the missing numbers.

5 Shawn is counting by 5.

15, _____, 25, 30, _____, _____, 45, _____, _____

6 Diego is counting by 10.

30, 40, _____, _____, 70, _____, _____, _____

7 Priya is counting by 10.

23, 33, _____, 53, _____, 73, _____, _____

Unit 4
Lesson
10

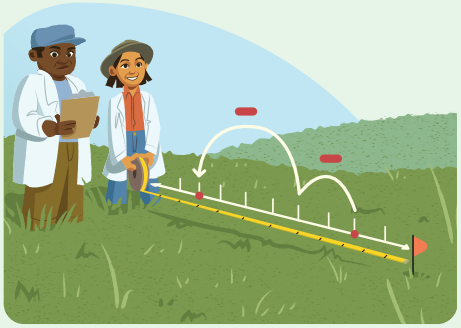
Name _____ Date _____

Problem Solving With Measure | Number Strategies

2.MD.6, 2.MD.5, 2.NBT.5, 2.OA.1, SMP.2, SMP.7, SMP.8

The Space Between

Let's represent subtraction strategies on a number line.



I can be all of me in math class.
Sid the seed went through a long journey before becoming a tree. How are mathematicians like Sid?

Warm-Up

eyes on teacher

Activity 1

Different Ways to Find the Difference

Hands-On

Find the value of each expression. For *at least* 2 expressions, represent your thinking on a number line. You may also show your thinking in the workbox if it is helpful.

Show your thinking.

1 93 – 46

answer: _____

Activity 1

Name _____ Date _____

Different Ways to Find the Difference (continued)

Show your thinking.

2 75 – 68

answer: _____

3 57 – 24

answer: _____

4 **Discuss**

Find an expression for which you and your partner both represented your thinking on a number line. Compare how you used the number line to represent your thinking.

Activity 2

Name _____ Date _____

Observations in the Outback

Hands-On

Solve each story problem and represent your thinking on a number line. Write an equation that represents each story problem and underline the answer.

5 Scientists were tracking the footprints of red kangaroos using wires and measurement tools. They had a wire that was 65 meters long. They cut off 33 meters of the wire. How many meters long is the wire now?

Show your thinking.

answer: _____

equation: _____

Name _____ Date _____

Observations in the Outback (continued)

6 Another scientist was tracking the amount of seeds that a pink robin collected. On Monday, the pink robin collected 87 seeds. On Tuesday, it collected 85 seeds. How many *more* seeds did the pink robin collect on Monday than Tuesday?

Show your thinking.

answer: _____

equation: _____

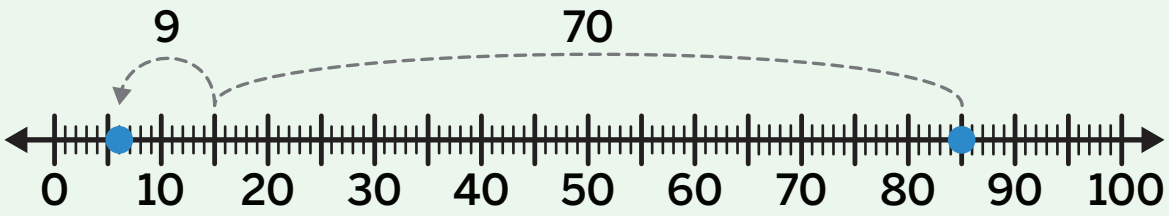


Summary 4.10

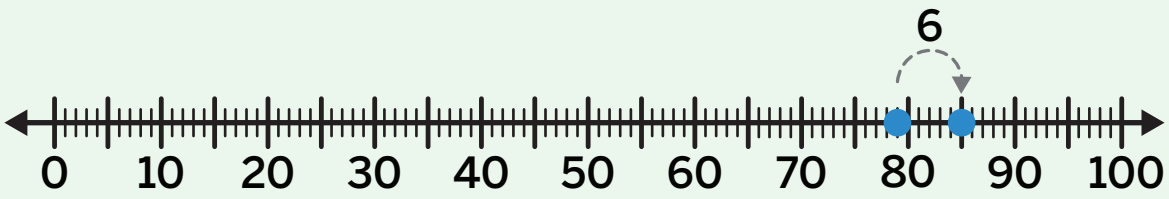
You can count up or count back to find the difference between 2 numbers. Both strategies can be represented on a number line.

$$85 - 79$$

Count back



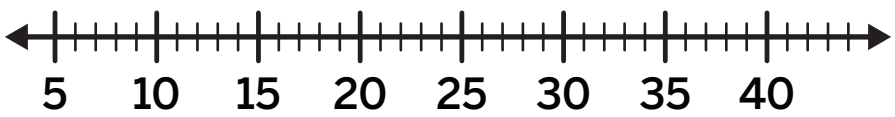
Count up



Practice 4.10

1 Use the number line to represent the expression 33 – 26.

Show your thinking.

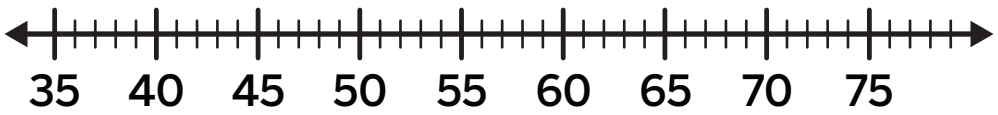


Name _____ Date _____

For Problems 2 and 3, find the value of the expression. Use the number line to represent your thinking.

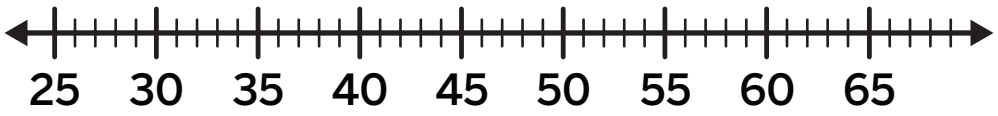
Show your thinking.

2 74 – 37



answer: _____

3 52 – 19



answer: _____

Spiral Review

4 Circle the equation that could help you find the value of 18 – 5.

10 – 8 = 2

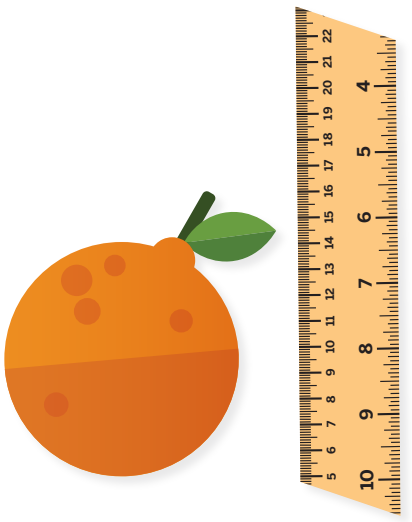
10 + 8 = 18

8 – 5 = 3

4 + 4 = 8

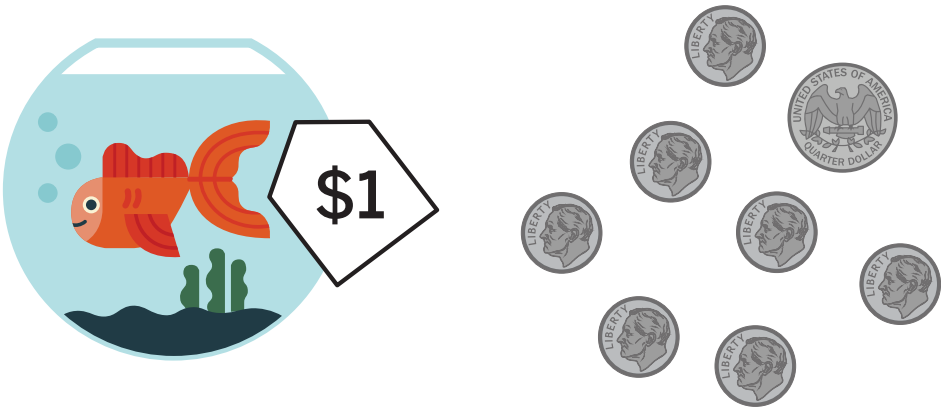
Name _____ Date _____

5 Measure the height of the grapefruit in centimeters.



_____

Clare wants to buy a fish. The image shows the price of the fish and the amount of money that Clare has. Use the image for Problems 6 and 7.



6 How much money does Clare have?

_____

7 Does Clare have enough money to buy the fish?
Write *yes* or *no*.

_____

Unit 4
Lesson
11

Name _____ Date _____

Problem Solving With Measure | Number Strategies

2.OA.1, 2.MD.5, 2.MD.6, 2.NBT.5, SMP.2, SMP.3, SMP.7

Showing Strategies

Let's represent unknown values on number lines.



We are a math community.
Sid got help along its journey. How can mathematicians get the help they need?

Warm-Up

eyes on teacher

Activity 1

Where Is the Unknown Value?

Hands-On

Solve each story problem and represent your thinking on a number line. Write an equation that represents each story problem and underline the answer.

Show your thinking.

1 There were 28 sunny days in Ballarat last year. This year, there were 44 sunny days. What is the difference in sunny days between the two years?

answer: _____ **equation:** _____

Name _____ Date _____

Where Is the Unknown Value? (continued)

2 This year there were 44 sunny days in Ballarat. In a typical year, there are 53 sunny days. How many *fewer* sunny days were there in Ballarat this year than in a typical year?

Show your thinking.

answer: _____

equation: _____

3 **Discuss**

Find someone with a number line representation that looks different from yours. What is different about it? Why do you think the representations are different?

Activity 2

Name _____ Date _____

Comparing Strategies

Hands-On

Solve each story problem and represent your thinking. Write an equation that represents each story problem and underline the answer. Use a number line if it is helpful.

4 The young silver wattle tree grew 34 inches this year. It is now 78 inches tall. How many inches tall was the tree last year?

Show your thinking.

answer: _____

equation: _____

Name _____ Date _____

Comparing Strategies (continued)

5 There are 81 new saplings this year. 27 of them are silver wattle trees and the rest are water pear trees. How many saplings are water pear trees?

Show your thinking.

answer: _____

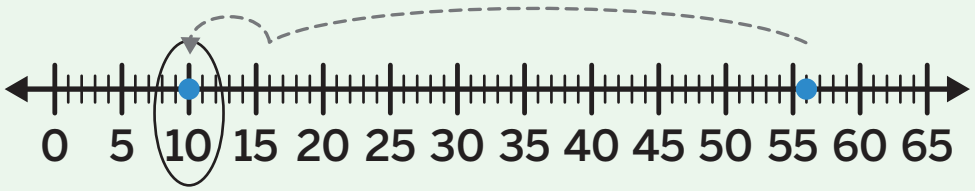
equation: _____

6 **Discuss**

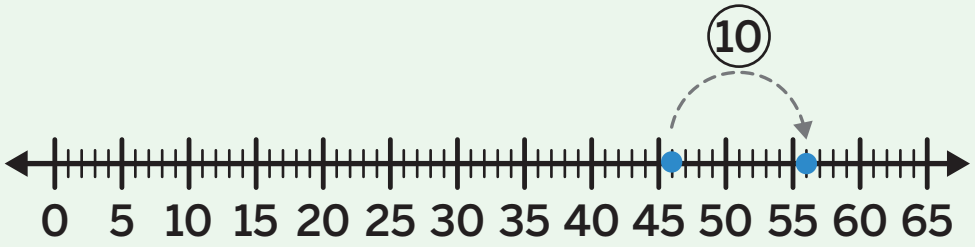
What is similar and different about how you and your partner solved the problems?
What is similar and different about how you and your partner represented your thinking?

Summary 4.11

Number lines can be used to represent addition and subtraction strategies. Depending on the chosen strategy, the unknown value can be represented by the jumps, starting point, or ending point.



56 – 46 = ___



Practice 4.11

1 Solve the story problem. Write an equation that represents the story problem and underline the answer. Use a number line if it is helpful.

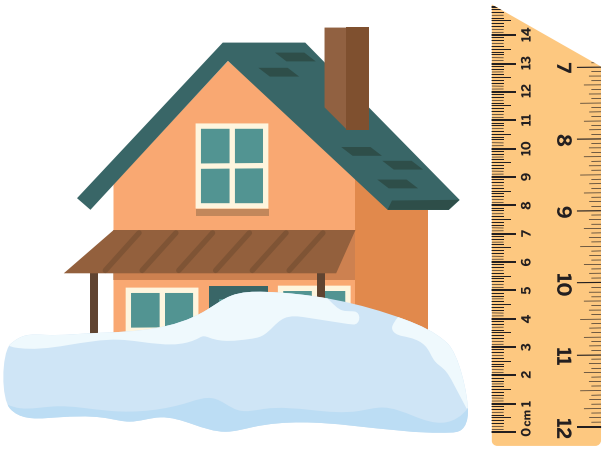
A jackfruit tree needs 40 inches of rainfall. Last year, there were 28 inches of rainfall. How many *more* inches of rain did the tree need?

Show your thinking.

answer: _____ **equation:** _____

Name _____ Date _____

Use the picture of the snowfall for Problems 2 and 3.



2 Measure the height of the snowfall in centimeters. What is the height?

_____

3 A typical snowfall has 23 centimeters of snow. How many *fewer* centimeters of snow fell than a typical snowfall?

Show your thinking.

answer: _____

Name _____ Date _____

Spiral Review

For Problems 4–6, find the value of the expression.

Show your thinking.

4 62 + 33

answer: _____

5 72 – 21

answer: _____

6 24 + 17

answer: _____

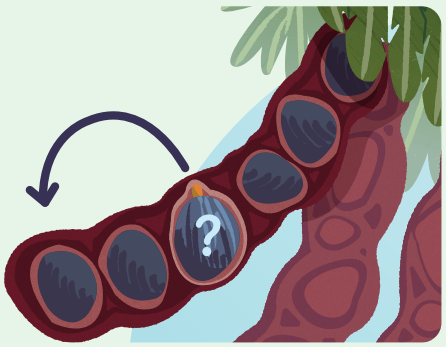
Unit 4
Lesson
12

Name _____ Date _____

Number Strategies 2.OA.1, 2.MD.6, 2.NBT.5, SMP.2, SMP.4, SMP.7, SMP.8

Where Are the Tick Marks?

Let's compare representations of story problems.



I can be all of me in math class. Mathematicians learn from their mistakes. How is this similar to how you learn in math class?

Warm-Up

eyes on teacher

Activity
1

Card Sort: Representing Stories

Hands-On

You and your partner will be given a set of cards with story problems, number lines, and equations.

1 Match each story problem with a number line and 1 or more equations that could be used to represent it. Write the letters of the matching cards in the table.

Story problem card	Number line card	Equation card(s)
A		
B		
C		
D		

Name _____ Date _____

Card Sort: Representing Stories (continued)

2 Discuss

Explain how you know the number line and 1 or more equations match a story problem.

Activity 2

Name _____ Date _____

All Kinds of Representations

Use the story problem to complete Problems 3 and 4.

A parrot ate 24 silver wattle seeds in the morning and 42 more in the afternoon. How many total seeds did the parrot eat?

Show your thinking.

3 Represent the story problem on the open number line.



4 Solve the problem using any strategy. Write an equation that represents the story problem and underline the answer.

answer: _____ **equation:** _____

Name _____ Date _____

All Kinds of Representations (continued)

Use the story problem to complete Problems 5 and 6.

Some kids collected seeds to plant in their yards. They collected 55 seeds from the field. They lost 17 seeds on their walk home. How many seeds did they have left?

Show your thinking.

5 Represent the story problem on the open number line.



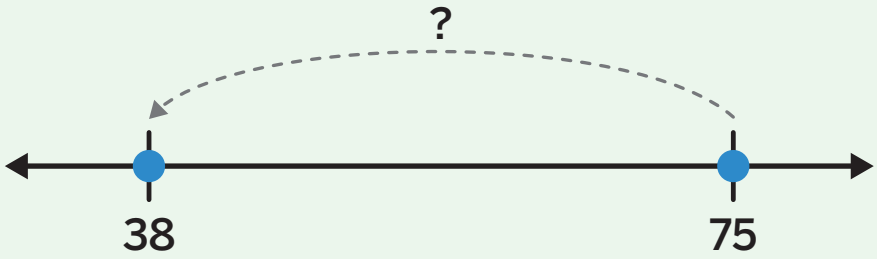
6 Solve the problem using any strategy. Write an equation that represents the story problem and underline the answer.

answer: _____ **equation:** _____

Summary 4.12

Open number lines are number lines without numbers or tick marks. You can draw points, tick marks, numbers, and arrows on them to help you make sense of story problems. Using open number lines can help you decide on a strategy to solve.

There are 75 pods on a silver wattle tree.
Some fall off. Now there are 38 pods.
How many pods fell off?



open number line A blank number line on which tick marks, points, numbers, and arrows can be added to represent problems and strategies.

Practice 4.12

1 Read and solve the story problem in the Summary. Use a number line if it is helpful. Write an equation that represents the story problem and underline the answer.

Show your thinking.

answer: _____ **equation:** _____

Name _____ Date _____

Spiral Review

For Problems 2–4, find and circle the value of the expression.

Show your thinking.

2 36 + 44

70 80 74 86

3 56 – 34

32 42 22 12

4 78 – 57

31 30 41 21

Name _____ Date _____

For Problems 5 and 6, fill in the missing numbers.

5 Diego is counting on by 10.

12, 22, _____, _____, 52, _____, _____, _____

6 Priya is counting on by 5.

65, 70, _____, 80, _____, 90, _____, _____

7 Clare is counting her money. She has 87 cents. Circle the group of coins that belongs to Clare.









Unit 4
Lesson
13

Name _____ Date _____

Number Strategies 2.OA.1, 2.MD.6, 2.NBT.5, SMP.1, SMP.4, SMP.7

Friends of Seeds

Let's represent and solve story problems.



We are a math community.
Animals help seeds move to new places to be planted. Who helps you in math class?

Warm-Up

eyes on teacher

Activity 1 A Sticky Situation

Represent each story problem on the open number line. Then solve the story problem. Write 1 or more equations that represent each story problem and underline the answer.

Use the story problem to complete Problems 1 and 2.

There were 61 burrs on a burweed stem. A deer walked through it and some burrs stuck to its fur. There are 32 burrs left on the stem. How many burrs are stuck on the deer?

Show your thinking.

1 Represent the story problem on the open number line.



Name _____ Date _____

A Sticky Situation (continued)

Show your thinking.

2 Solve the problem in a way that makes sense to you.

answer: _____ **equation(s):** _____

Use the story problem to complete Problems 3 and 4. A dandelion had 89 seeds. The wind blew off 45 seeds. Then a rabbit hopped by and brushed off 30 more seeds. How many seeds are left on the dandelion?

3 Represent the story problem on the open number line.



4 Solve the problem in a way that makes sense to you.

answer: _____

equation(s): _____

Activity 2

Name _____ Date _____

Lunch in the Wild

Hands-On

Represent and solve each story problem in a way that makes sense to you. Write 1 or more equations that represent the story problem and underline the answer.

5 There were 74 wildflowers in a field. Some deer came by and ate 40 of them. The next day, 37 more wildflowers bloomed. How many wildflowers are in the field now?

Show your thinking.

answer: _____

equation(s): _____

Name _____ Date _____

Lunch in the Wild (continued)

6 Pigeons ate 23 silver wattle seeds. Cockatoos ate 42 more seeds than the pigeons. How many seeds did they eat altogether?

Show your thinking.

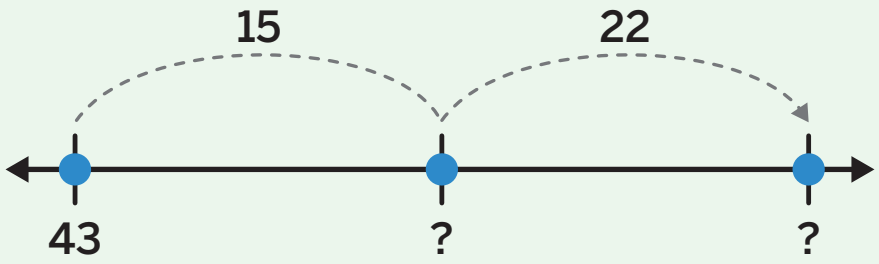
answer: _____

equation(s): _____



Summary 4.13

You can use open number line representations to help you make sense of the known and unknown amounts in two-step story problems.



Practice 4.13

1 Represent and solve the story problem. Write 1 or more equations that represent the story problem and underline the answer.

There were 54 butterflies in the garden on Monday. On Tuesday, there were 27 *fewer* butterflies. On Wednesday, there were 62 *more* butterflies than on Tuesday. How many butterflies were in the garden on Wednesday?

Show your thinking.

answer: _____

equation(s): _____

Name _____ Date _____

Use the story problem to complete Problems 2 and 3.

The mail carrier delivered 46 packages on Friday and 62 packages on Saturday. How many *more* packages were delivered on Saturday?

Show your thinking.

2 Represent the story problem on the open number line.



3 Solve the problem in a way that makes sense to you. Write 1 or more equations that represent the story problem and underline the answer.

answer: _____

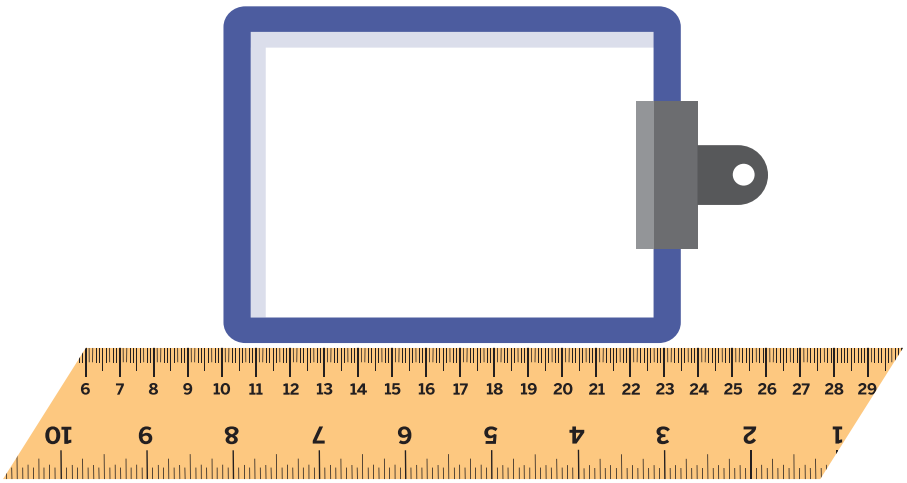
equation(s): _____

Name _____ Date _____

Spiral Review

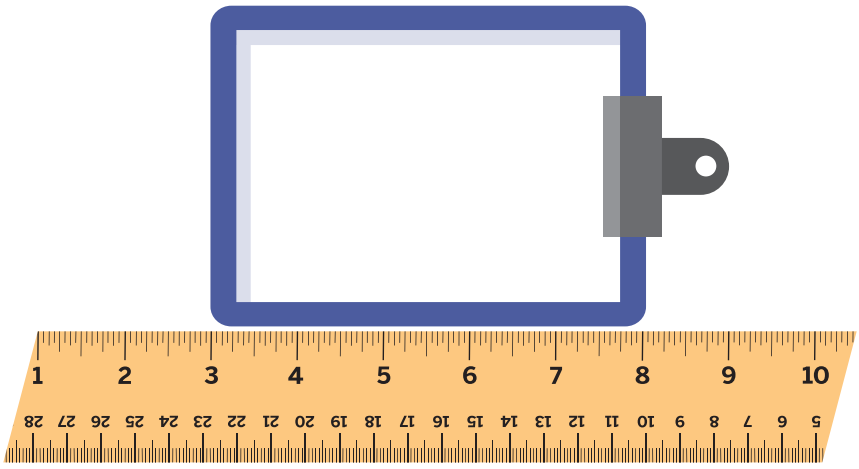
4 Find the value of the expression 13 + 6. _____

5 Measure the length of the clipboard to the top of the clip in centimeters.



_____

6 Measure the length of the clipboard to the top of the clip in inches.



_____

Math at Work

Some trees grow faster than others. A willow tree can grow 96 inches in 1 year! A maple tree can grow 18 inches in 1 year. How many more inches can a willow tree grow in 1 year than a maple tree?

Arborists take care of trees and shrubs. They plant trees, trim trees, and help protect trees from diseases. They might add and subtract to compare tree heights and predict how they will grow.



Jirus Malawong/Shutterstock.com, Schager/Shutterstock.com

Math in the World

Fully grown willow trees can be almost as wide as they are tall! If a willow tree is 47 feet tall and 39 feet wide, how much taller is the tree than it is wide?



Vivid Brands/Shutterstock.com

Math Mindset

What are two numbers that you can use this number line to help you either add or subtract?

