IMKH California

An IM K–12 Math Curriculum

GRADE 2

Student Edition

UNITS

5 | 6

Illustrative Mathematics
LEARN MATH FOR LIFE

Kendall Hunt

Book 3

Certified by Illustrative Mathematics®

ISBN 9798385165551

K5_vII

20240207

Table of Contents

UNIT 6 GEOMETRY, TIME, AND MONEY

GRADE 2

UNIT

5

Numbers to 1,000

Content Connections

In this unit you will use the base-ten system and number lines to explore three-digit numbers. You will make connections by:

- **Exploring Changing Quantities** while adding and subtracting two- and three- digit numbers and explaining your work using drawings or other representations.

- **Discovering Shape and Space** while using a number line to represent the relative distance of whole numbers within 1,000 from 0.
- **Taking Wholes Apart, Putting Parts Together** while skip counting, counting bundles of 10, and using expanded notation to understand the composition and place value of numbers to 1,000.
- **Reasoning with Data** while using a variety of representations to build understanding of three-digit numbers including base-ten blocks, base-ten diagrams/drawings, number lines, expressions or equations.

Addressing the Standards

As you work your way through **Unit 5 Numbers to 1,000,** you will use some mathematical practices that you may have started using in kindergarten and have continued strengthening over your school career. These practices describe types of thinking or behaviors that you might use to solve specific math problems.

Mathematical Practices	**Where You Use these MPs**
MP1 Make sense of problems and persevere in solving them.	Lesson 7
MP2 Reason abstractly and quantitatively.	Lesson 9 and 13
MP3 Construct viable arguments and critique the reasoning of others.	Lesson 4, 9, and 12
MP4 Model with mathematics.	Lesson 14
MP5 Use appropriate tools strategically.	Lesson 7, 11, and 12
MP6 Attend to precision.	Lesson 4, 6, and 11
MP7 Look for and make use of structure.	Lesson 1, 2, 3, 5, and 6
MP8 Look for and express regularity in repeated reasoning.	Lesson 1, 2, 8, and 10

The California Common Core State Standards for Mathematics (CA CCSSM) describe the topics you will learn in this unit. Many of these topics build upon knowledge you already have and challenge you to expand upon that knowledge. The table below shows what standards are being addressed in this unit.

Big Ideas You Are Studying	**California Content Standards**	**Lessons Where You Learn This**
• Dollars and Cents • Problem Solving with Measure • Skip Counting to 100	**2.NBT.1** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens—called a "hundred." b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	Lesson 1, 3, 4, 5, 8, 9, 11, 12, 13, and 14
• Dollars and Cents • Problem Solving with Measure • Skip Counting to 100	**2.NBT.1a** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens—called a "hundred."	Lesson 1, 2, 3, and 7

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Dollars and Cents • Problem Solving with Measure • Skip Counting to 100	**2.NBT.1b** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	Lesson 2 and 3
• Represent Data • Dollars and Cents	**2.NBT.2** Count within 1000; skip-count by 2s, 5s, 10s, and 100s.	Lesson 1, 2, 3, and 8
• Skip Counting to 100	**2.NBT.3** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	Lesson 4, 5, 6, and 11

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Number Strategies	**2.NBT.4** Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	Lesson 9, 10, 11, 12, and 13
• Dollars and Cents • Number Strategies	**2.NBT.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	Lesson 3 and 7
• Skip Counting to 100	**2.NBT.8** Mentally add 10 or 100 to a given number 100–900 and mentally subtract 10 or 100 from a given number 100–900.	Lesson 10 and 12
• Measure and Compare Objects • Squares in an Array	**2.MD.6** Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, . . . , and represent whole-number sums and differences within 100 on a number line diagram.	Lesson 8 and 9

Unit 5, Lesson 1

Addressing CA CCSSM 2.NBT.1, 2.NBT.1a, 2.NBT.2; building towards 2.NBT.1; practicing MP7 and MP8

How Do We Compose a Hundred?

Let's compose a hundred.

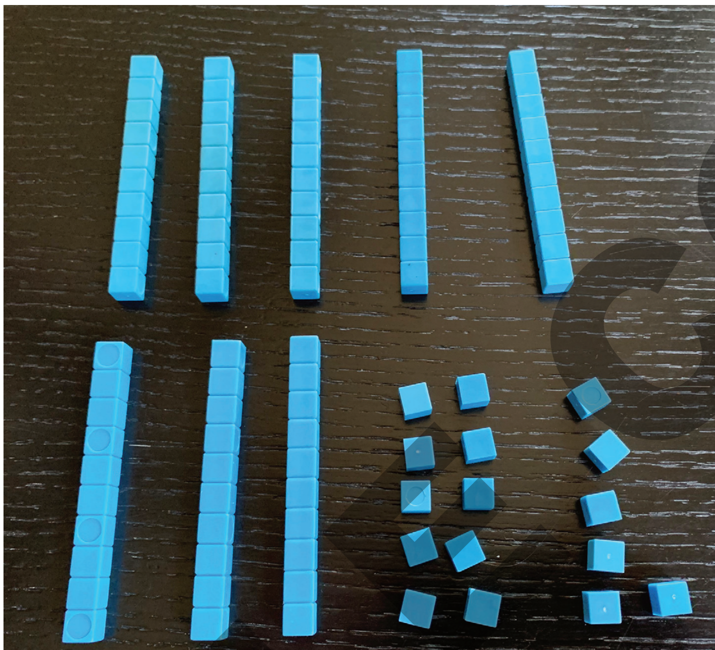
Sec A

Activity 1

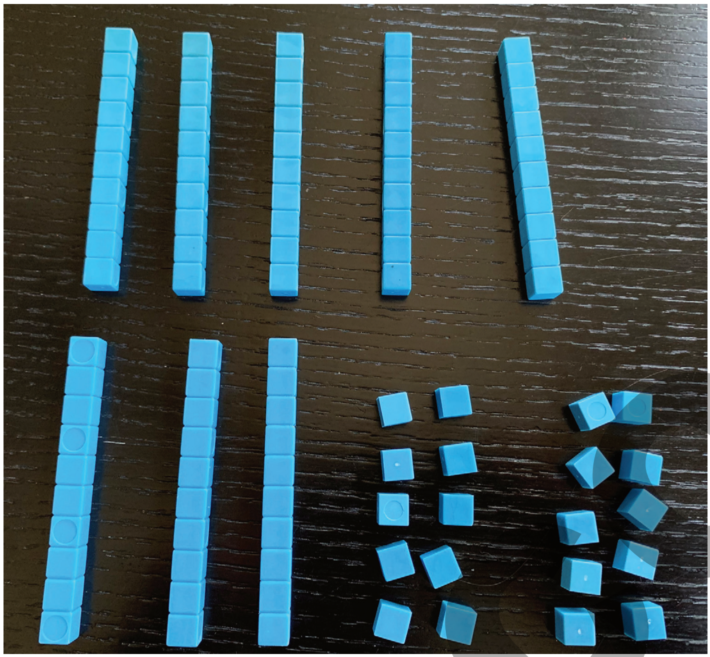
How Do We Make a Hundred?

Sec A

1. How many do you see? How do you see them?



2. Andre added more blocks.



a. What is the value of his blocks now?

b. How many tens and ones does he have?

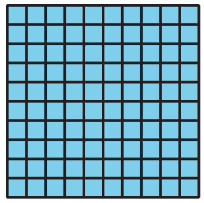
3. Andre made the same number with the fewest number of blocks possible. Draw a base-ten diagram to show how the number looks now. Use your base-ten blocks to help.

Sec A

Activity 2

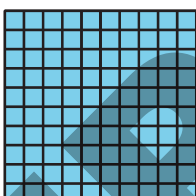
Different Ways to Make 100

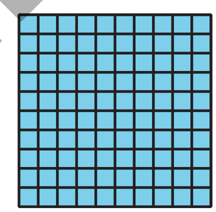
Three students look at 100 small squares arranged this way.

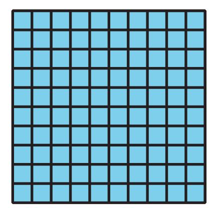


1. Match the diagrams to the statements. Label each diagram with a, b, or c.

   A. Priya said, "I see 100 ones."
   B. Kiran said, "I see 10 tens."
   C. Lin said, "I see 1 hundred."







2. Represent 100 + 11 with blocks or a diagram.

Sec A

Unit 5, Lesson 2

Addressing CA CCSSM 2.NBT.1a, 2.NBT.1b, 2.NBT.2; practicing MP7 and MP8

Make Hundreds

Let’s represent hundreds in different ways.

Sec A

Activity 1

Make Hundreds

1. Build each number with base-ten blocks. Record how many you use.

   a. Build 90. ____________ tens

   b. Build 110. ____________ tens

   c. Build 150. ____________ tens

2. How many base-ten blocks do you need to build 200?

   ____________ tens

3. How many base-ten blocks do you need to build 300?

   ____________ tens

4. How many base-ten blocks do you need to build 300 if you can use 1 hundred block?

   1 hundred ____________ tens

5. How many tens do you need to build 300 if you can use 2 hundreds blocks?

   2 hundreds ____________ tens

6. How many tens do you need to build 300 if you can only use hundreds blocks?

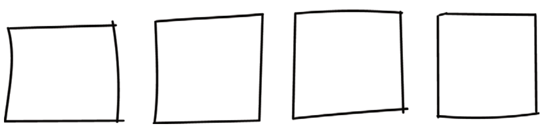
   ____________ hundreds ____________ tens

Activity 2

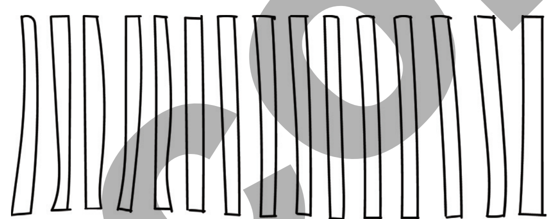
How Many Hundreds?

Han and Jada represented 700 using different base-ten blocks. Then they each started a base-ten diagram to show their work.

Jada



Han



Jada only used hundreds.

Han only used tens.

1. Use base-ten blocks to show how Jada and Han each represented 700 with their blocks.

2. Explain how you know both ways of using base-ten blocks show 700.

3. Complete Jada's base-ten diagram.

4. Why do you think Han's diagram would take longer to finish than Jada's?

Unit 5, Lesson 3

Addressing CA CCSSM 2.NBT.1, 2.NBT.1a, 2.NBT.1b, 2.NBT.2, 2.NBT.5; practicing MP7

Sec A

Compose 3-Digit Numbers

Let's compose 3-digit numbers.

Warm-up

Number Talk: Add Tens and Ones

Find the value of each expression mentally.

- 42 + 42
- 21 + 63
- 50 + 34
- 48 + 36

Activity 1

Sort Blocks by Value

1. Sort the blocks.

   - We have _________ hundreds.
   - We have _________ tens.
   - We have _________ ones.

2. Represent the same value. Use the fewest number of blocks possible.

   - We have _________ hundreds.
   - We have _________ tens.
   - We have _________ ones.

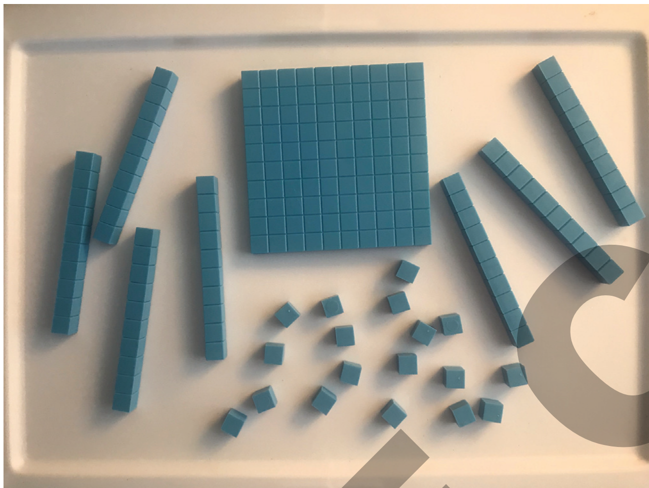
3. Represent the value of your blocks. Show your thinking using drawings, numbers, or words.

Activity 2

The Same But Different

Sec A

Mai's blocks

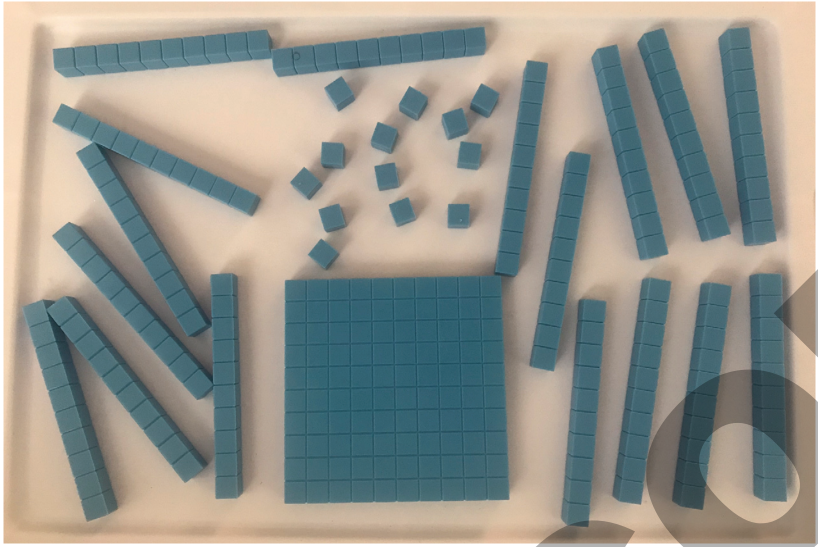


1. Mai has ______ hundreds _____ tens _____ ones.

2. Draw a base-ten diagram that represents the same total value. Use the fewest number of each unit.

3. What is the value of Mai's blocks?

Diego's blocks



4. Diego has ______ hundreds _____ tens _____ ones.

5. Draw a base-ten diagram that represents the same total value. Use the fewest number of each unit.

6. What is the value of Diego's blocks?

Unit 5, Lesson 4

Addressing CA CCSSM 2.NBT.1, 2.NBT.3; practicing MP3 and MP6

Sec A

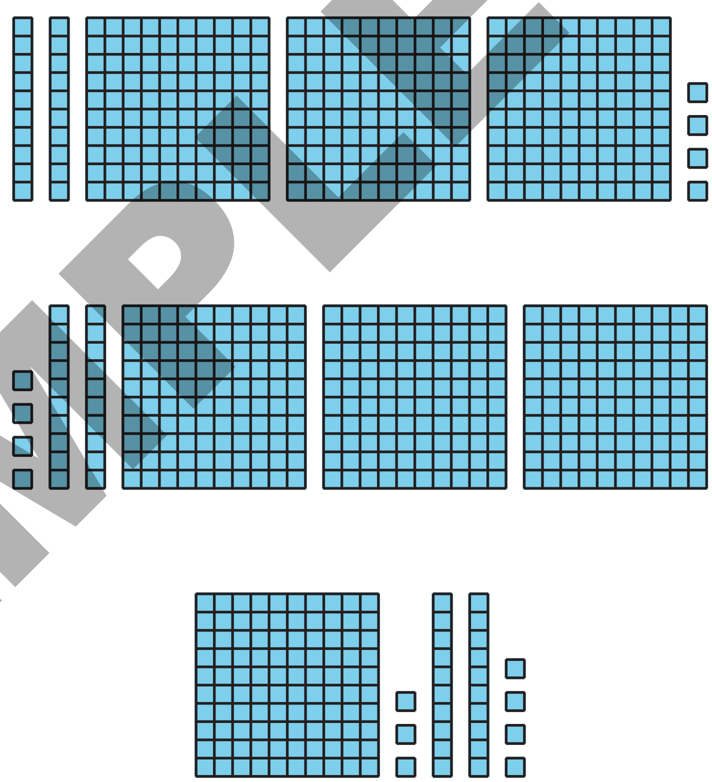
Write 3-Digit Numbers

Let's represent 3-digit numbers using base-ten numerals.

Warm-up

How Many Do You See: Blocks

How many do you see? How do you see them?



Activity 1

Place Value Riddles

Solve each riddle. Write the 3-digit number. Use the table to organize the digits.

riddle	hundreds	tens	ones	3-digit number
1				
2				
3				
4				
5				
6				

1. I have 2 ones, 7 tens, and 6 hundreds.
2. I have 3 ones, 5 tens, and 2 hundreds.
3. I have 7 hundreds, 5 ones, and 3 tens.
4. I have 5 hundreds, no tens, and 9 ones.
5. I have 4 ones, 6 tens, and 3 hundreds.
6. I have 8 tens, 1 hundred, and no ones.

Activity 2

Mixed-Up Digits

Sec A

Find the number that makes each equation true. Use base-ten blocks or diagrams if they help.

1. 4 hundreds + 6 tens + 2 ones = ____________

2. 7 ones + 2 hundreds + 6 tens = ___________

3. 3 tens + 5 hundreds = _________

4. 325 = ______ hundreds + _________ones + _________tens

5. 70 + 300 + 2 = ______________

6. 836 = 6 + 800 + ____________

7. Clare and Elena try to find the number that makes the equation true.

   7 ones + 3 hundreds = _____________.

   They wrote different answers.

   - Clare wrote 7 ones + 3 hundreds = 37.
   - Elena wrote 7 ones + 3 hundreds = 307.

   Who is correct? Explain how you know.

   ____

   ____

   ____

Unit 5, Lesson 5

Addressing CA CCSSM 2.NBT.1, 2.NBT.3; building towards 2.NBT.4; practicing MP7

Sec A

Expanded Form of Numbers

Let's represent 3-digit numbers as a sum of the value of each digit.

Warm-up

True or False: Value of Digits

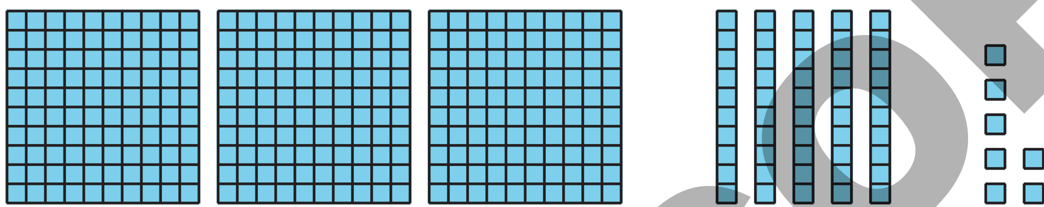
Decide if each statement is true or false. Be prepared to explain your reasoning.

- $800 + 90 + 7 = 897$
- $156 = 50 + 100 + 6$
- $407 = 70 + 400$
- $632 = 22 + 10 + 600$

Activity 1

Expressions and 3-Digit Numbers

1. Andre has 3 hundreds. Tyler has 5 tens. Mai has 7 ones. They want to represent the amount with an expression.



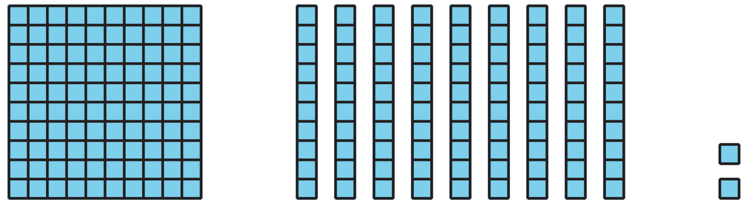
Write an expression to represent the sum of their values.

__________ + __________ + __________

Write the total value as a 3-digit number.

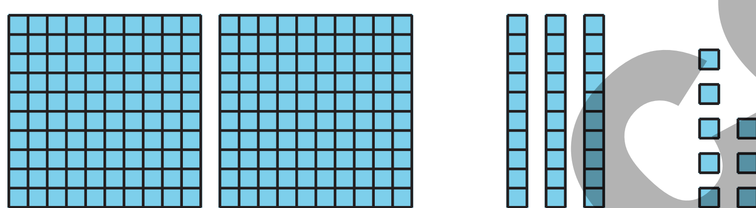
____

Write each number as the sum of hundreds, tens, and ones. This is called expanded form. Then write the 3-digit number.



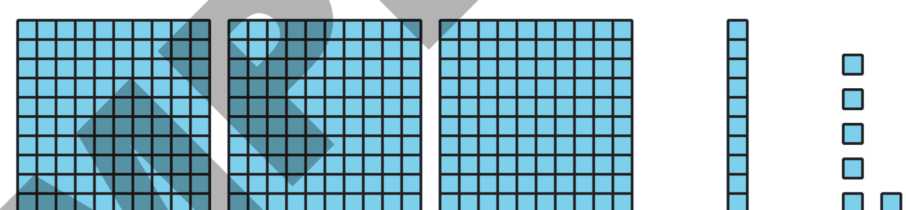
2. Expanded form: ______________

   3-digit number: ______________



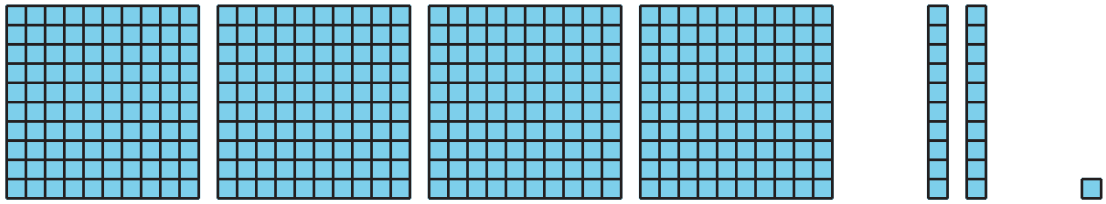
3. Expanded form: ______________

   3-digit number: ______________



4. Expanded form: ______________

   3-digit number: ______________



5. Expanded form: ______________

3-digit number: ______________

Sec A

Sec A

Activity 2

Make It and Expand It

1. Roll the number cubes.
   Make the largest number possible.
   Write it as a 3-digit number. __________
   Write it in expanded form.

   ____

2. Roll the number cubes.
   Make the smallest number possible.
   Write it as a 3-digit number. _____________
   Write it in expanded form.

   ____

3. Roll the number cubes.

   Use the same digits. Make a different number than your partner.

   Write it in expanded form.

   ____

   Write it as a 3-digit number. ____________

Unit 5, Lesson 6

Addressing CA CCSSM 2.NBT.3; practicing MP6 and MP7

Represent Numbers in Different Ways

Let's represent numbers in different ways.

Warm-up

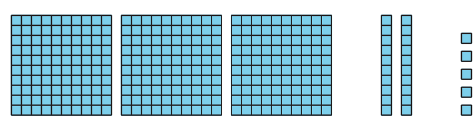
Which Three Go Together: Numbers in Different Ways

Which 3 go together?

A

three hundred twenty-five

B



C

253

D

3 hundreds,
2 tens, 5 ones

Activity 1

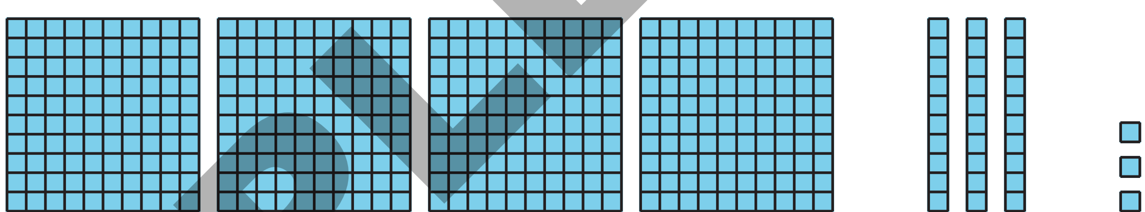
Numbers as Words

1. Fill in the blanks. Represent 248 with words.
   two ____________forty- _________

2. Fill in the blanks. Represent 562 with words.

   __________ hundred _________- _______

3. Represent this number with words.



____

4. Represent 627 with words.

____

5. Represent 900 + 50 + 1 with words.

6. Represent three hundred eighteen in 2 different ways.

Sec A

Activity 2

Represent the Numbers

Represent the number on your poster. Use:

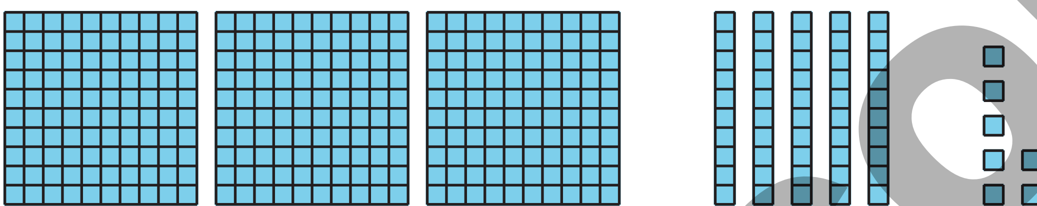
- a 3-digit number
- a base-ten diagram
- expanded form
- words

If you have time: Represent the number using tens and ones. Then represent the number in a different way.

Section A Summary

Sec A

We learned that a **hundred** is a group of 10 tens or 100 ones. We represented hundreds with base-ten blocks and diagrams. We represented numbers using hundreds, tens, and ones. We learned to read and write 3-digit numbers. We used the **expanded form** to write a number as the sum of the values of its digits.



3 hundreds 5 tens 7 ones

357

300 + 50 + 7

three hundred fifty-seven

Unit 5, Lesson 7

Addressing CA CCSSM 2.NBT.1a, 2.NBT.5; building towards 2.NBT.4; practicing MP1 and MP5

Center Day 1

Let's use place value to identify numbers and practice adding and subtracting.

Sec A

Warm-up

True or False: Compare to 100

Decide if each statement is true or false. Be prepared to explain your reasoning.

- $100 > 99$
- $100 < 99+1$
- $98 + 3 > 100$
- $50 + 50 + 50 > 100$

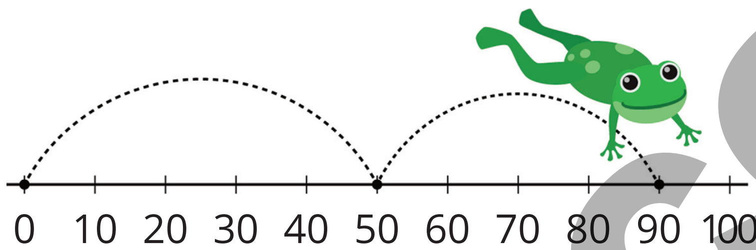
Activity 2

Centers: Choice Time

Sec A

Choose a center.

Jump the Line



Mystery Number

Number Puzzles

$$14 = 8 + \boxed{}$$

Practice Problems

11 Problems

1 Pre-unit

a. 35 has ________ tens and _______ ones.

b. 52 has _______ tens and ________ones.

2 Pre-unit

Write <, >, or = in each box to make the statement true.

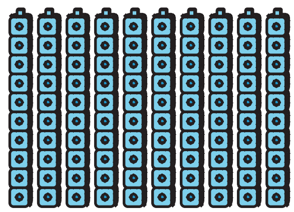
a. 90 + 5 ☐ 70 + 10 + 10 + 10 + 5

b. 116 ☐ 100 + 10 + 6

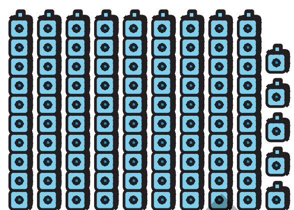
c. 10 + 10 + 20 + 3 ☐ 38

Select **all** pictures that show 100.

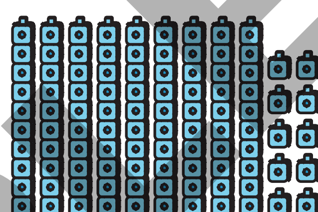
A.



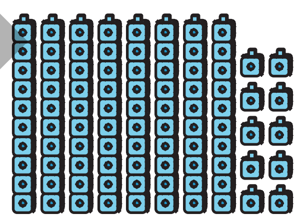
B.



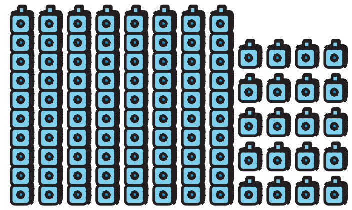
C.



D.

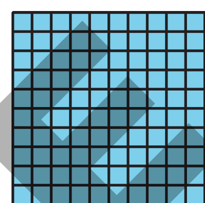


E.



4 from Unit 5, Lesson 1

How do you see each of these in the picture? Explain your reasoning.



a. 100 ones

b. 10 tens

c. 1 hundred

5 from Unit 5, Lesson 2

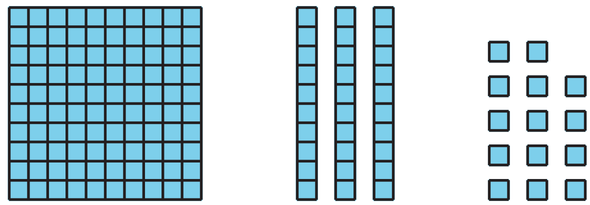
a. How many hundreds have the same value as 50 tens? Explain your reasoning.

b. How many tens have the same value as 6 hundreds? Explain your reasoning.

Sec A

6 from Unit 5, Lesson 3

Here is a base-ten diagram.



a. Draw another base-ten diagram. Represent the same total value. Use the fewest number of each unit.

b. Write the number represented by the diagram as a 3-digit number.

c. Can you make the same number with more base-ten blocks? Show your thinking using drawings, numbers, or words.

7 from Unit 5, Lesson 4

a. What 3-digit number has 5 hundreds, 1 ten, and 6 ones?

b. What 3-digit number has 6 tens, 1 hundred, and 5 ones?

c. What 3-digit number has 1 one, 5 tens, and 6 hundreds?

8 from Unit 5, Lesson 5

a. Represent each sum as a 3-digit number.

$300 + 80 + 6$

$40 + 7 + 600$

b. Represent each number as the sum of hundreds, tens, and ones.

823

407

9 from Unit 5, Lesson 6

Represent the number 235 in these ways.

a. a base-ten diagram

b. expanded form

c. words

____

10 Exploration

a. Can you represent 218 without using any hundreds? Explain your reasoning.

b. Can you represent 218 without using any tens? Explain your reasoning.

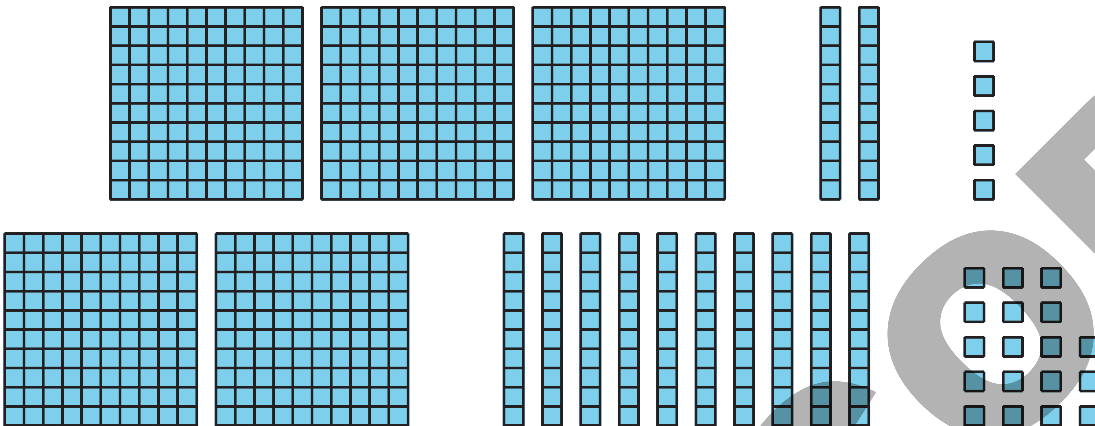
c. Can you represent 218 without using any ones? Explain your reasoning.

Sec A

11 Exploration

Sec A

Here are base-ten diagrams for 2 numbers.



a. Which diagram represents a greater number? Explain how you know.

b. Which diagram is it easier to understand? Explain your reasoning.

Unit 5, Lesson 8

Addressing CA CCSSM 2.MD.6, 2.NBT.1, 2.NBT.2; practicing MP8

Three-Digit Numbers on the Number Line

Sec B

Let's locate and represent 3-digit numbers on the number line.

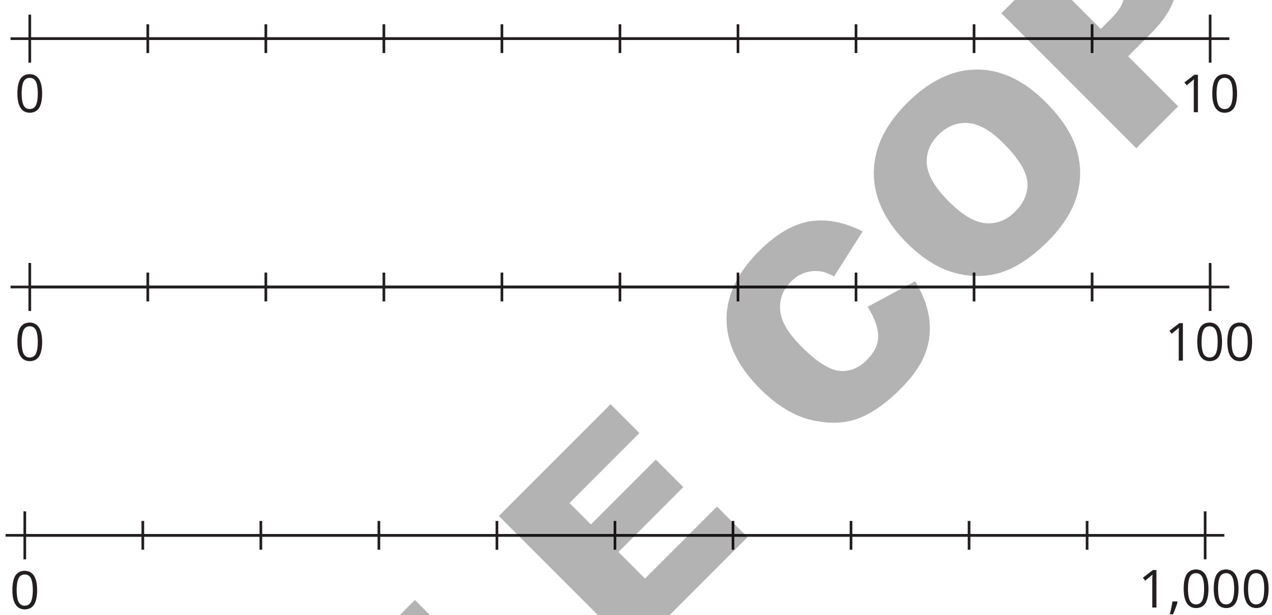
count by 100	100	200	300	400	500	600	700	800	900	1000

KH | iM Illustrative® Mathematics LEARN MATH FOR LIFE

Activity 1

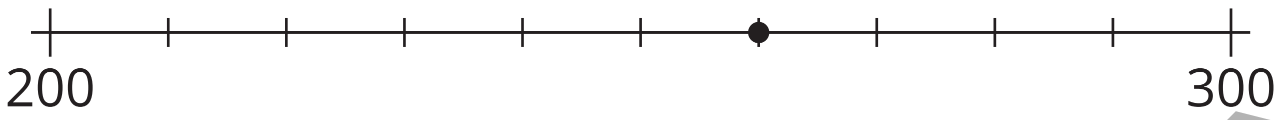
Label 3-Digit Numbers

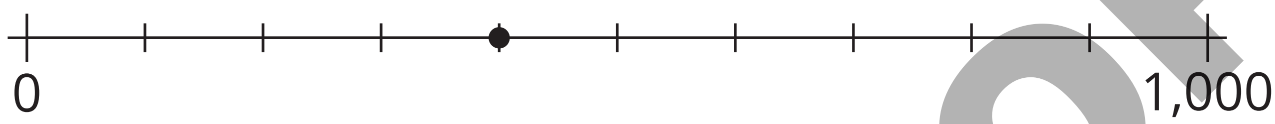
What do you notice? What do you wonder?

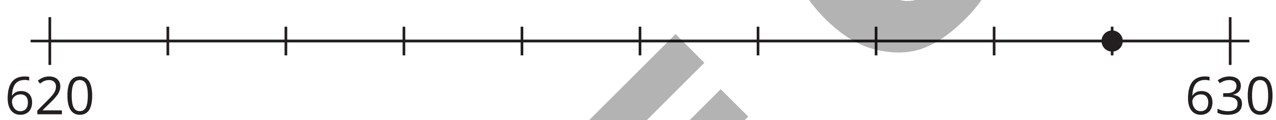


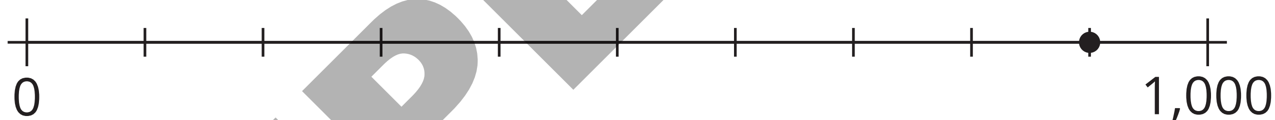
Locate and label 30, 300, and 3 on the number lines.

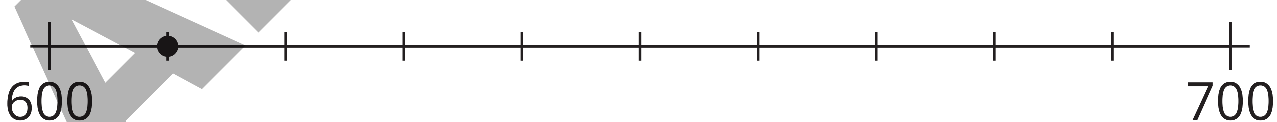
Label each point with the number it represents.

1. 

2. 

3. 

4. 

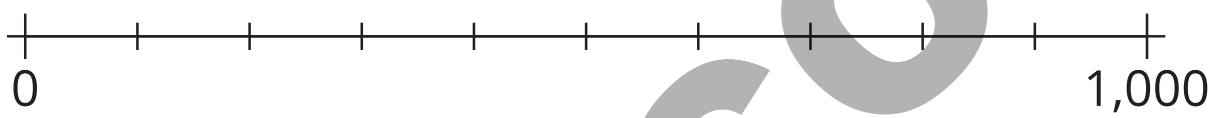
5. 

Activity 2

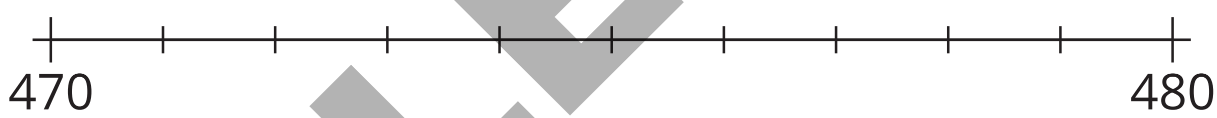
Represent 3-Digit Numbers on a Number Line

Locate and label the number on the number line. You can label each tick mark with the number it represents if it helps.

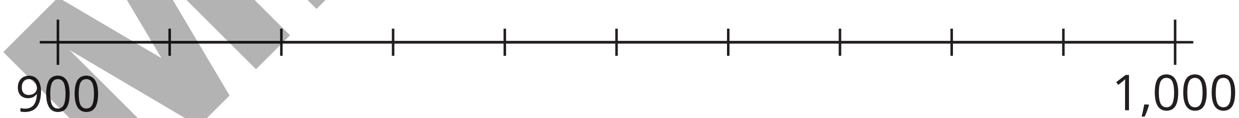
1. 700



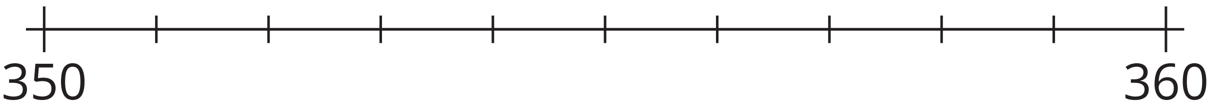
2. 472



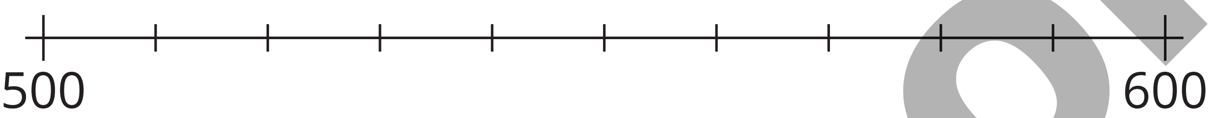
3. 940



4. 356



5. 590



Sec B

Unit 5, Lesson 9

Addressing CA CCSSM 2.MD.6, 2.NBT.1, 2.NBT.4; building on 2.MD.6; building towards 2.NBT.4; practicing MP2 and MP3

Compare Numbers on the Number Line

Let's compare numbers on the number line.

Warm-up

Estimation Exploration: Hundreds

What number could this be?

1. Record an estimate that is:

too low	about right	too high

2. Record an estimate that is:

too low	about right	too high

Sec B

Activity 1

Compare Comparisons

Compare 371 and 317. Use <, >, or =.

____

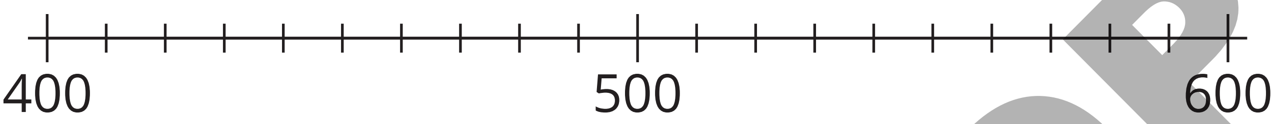
Show your thinking using drawings, numbers, or words.

Activity 2

Compare in Different Ways

Sec B

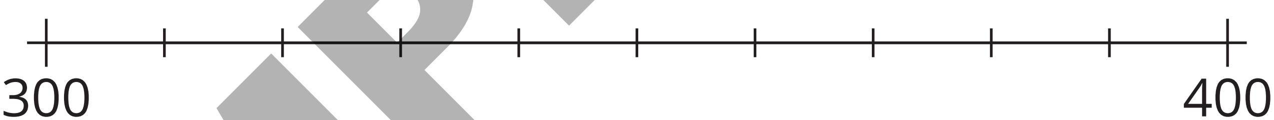
1. Locate and label 420 and 590.



Use <, >, or = to compare 420 and 590.

____

2. Estimate the location of 378 and 387. Mark each number with a point. Label the point with the number it represents.

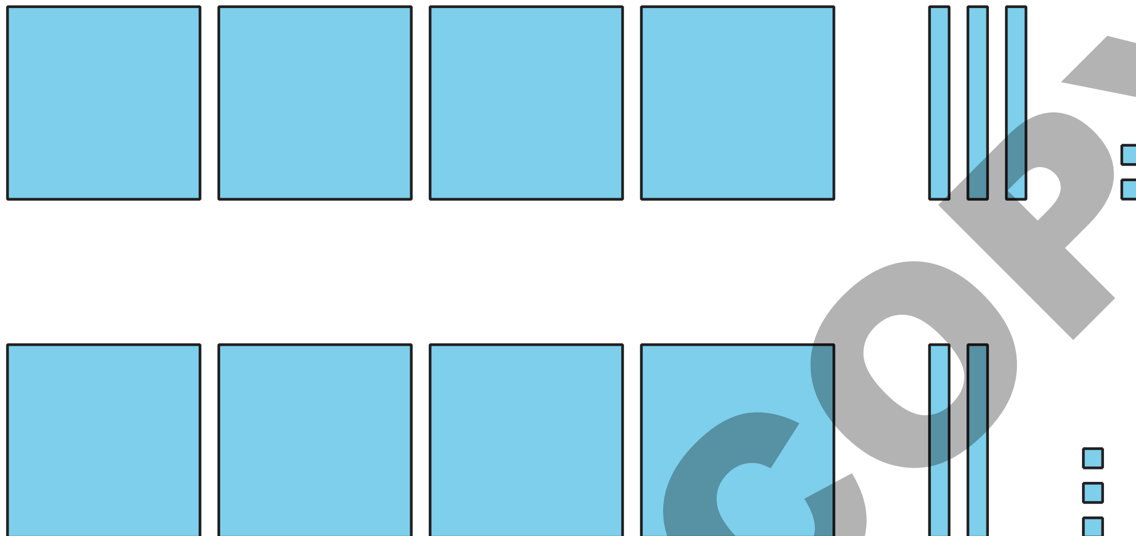


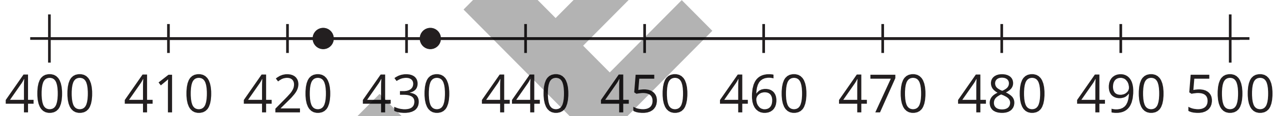
Use <, >, or = to compare 378 and 387.

____

Sec B

3. Diego and Jada compare 2 numbers. Use their work to find out what numbers they compared. Then use <, >, or = to compare the numbers.





4. Which representation helped you the most? Explain your reasoning?

Unit 5, Lesson 10

Addressing CA CCSSM 2.NBT.4, 2.NBT.8; practicing MP8

Place Value Comparisons (Part 1)

Sec B

Let's use place value to compare 3-digit numbers.

Warm-up

Number Talk: Add Tens

Find the value of each expression mentally.

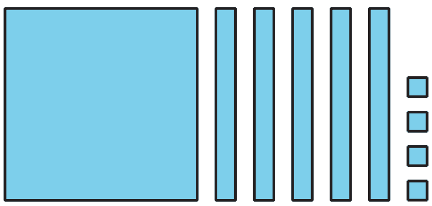
- $36 + 40$
- $46 + 30$
- $59 + 40$
- $69 + 30$

Activity 1

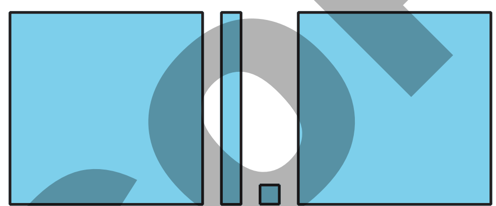
Compare by Place

Who has more? How do you know?

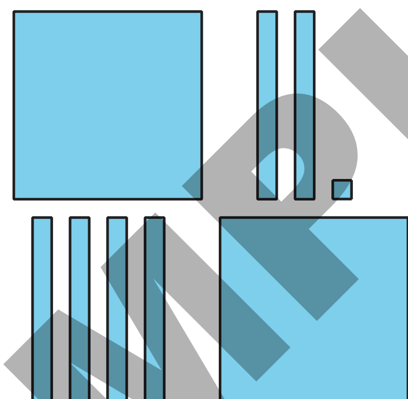
Mai

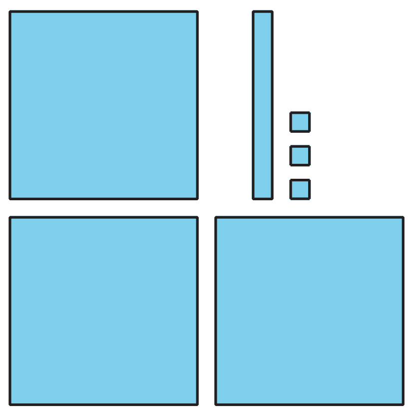


Tyler

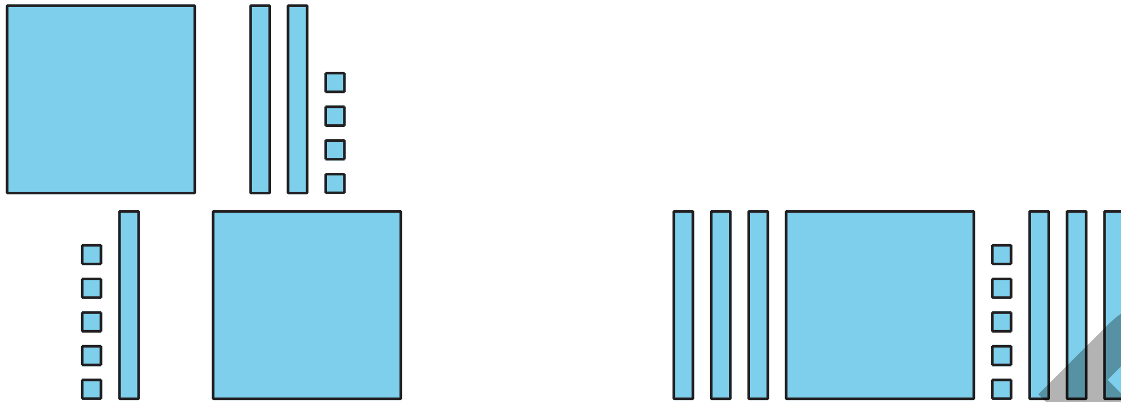


Write each value as a 3-digit number. Use the symbols <, >, or = to compare the numbers.



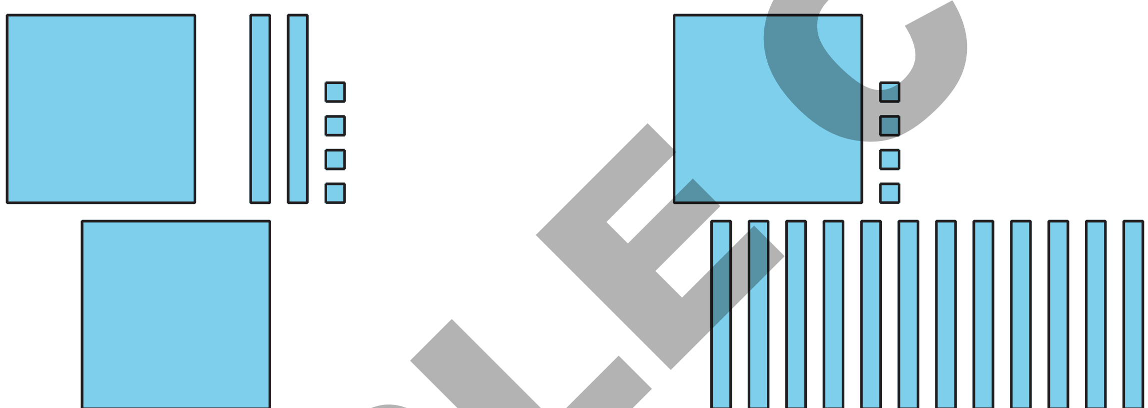


1.



2.

________ $\square$ ________



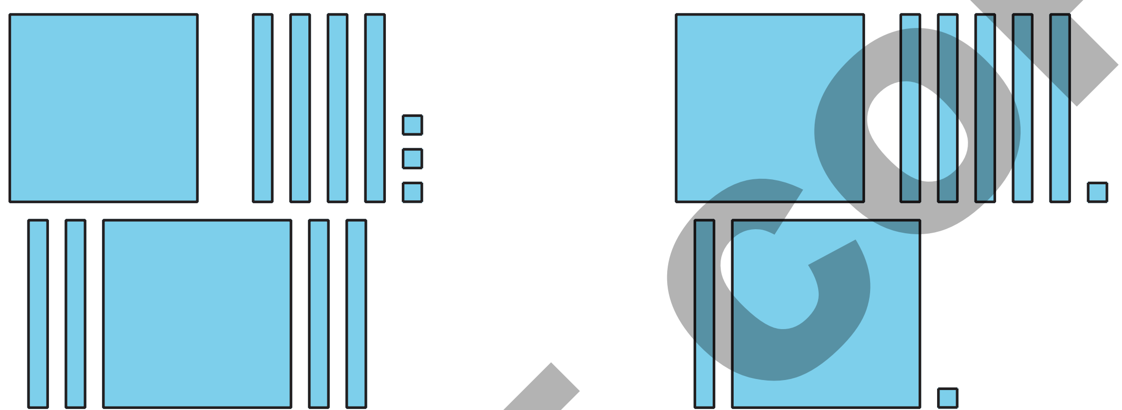
3.

________ $\square$ ________

Activity 2

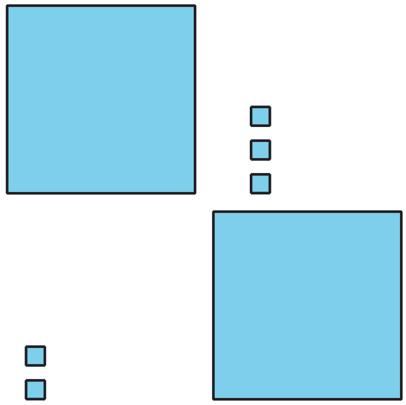
Compare Hundreds, Tens, and Ones

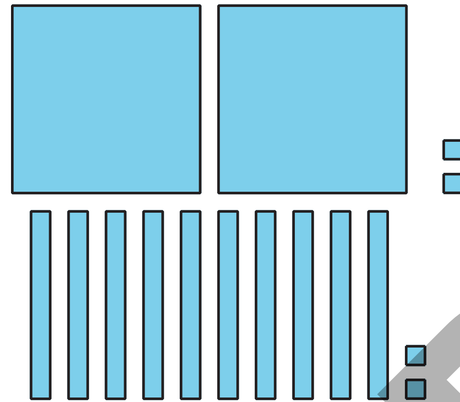
Compare the base-ten diagrams. Write each value as a 3-digit number. Use the symbols >, <, or = to compare the numbers.



1.

_______ ☐ _______

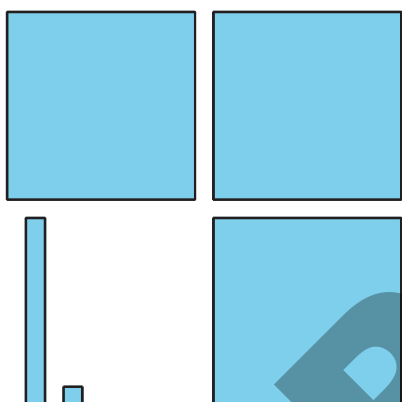


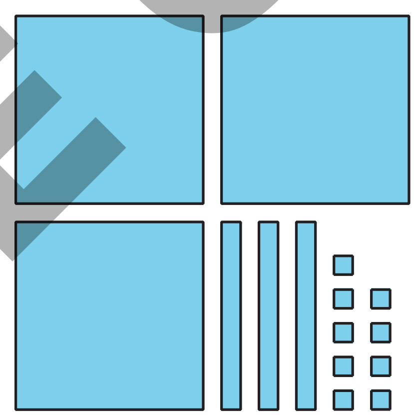


Sec B

2.

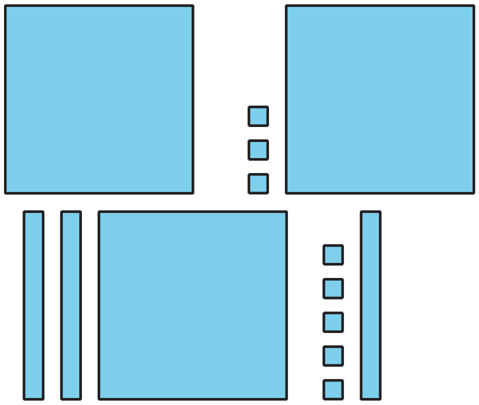
________ ☐ ________

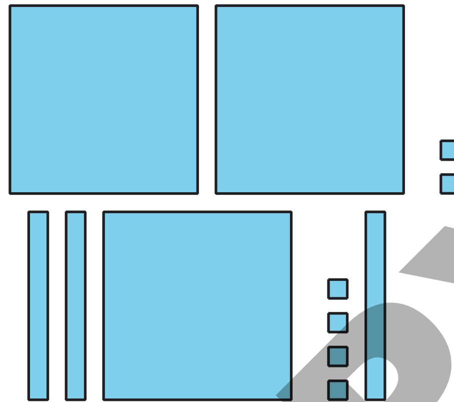




3.

________ ☐ ________





4.

______ $\square$ ______

5. How do you know which value is greater in the last problem?

Sec B

Unit 5, Lesson 11

Addressing CA CCSSM 2.NBT.1, 2.NBT.3, 2.NBT.4; practicing MP5 and MP6

Place Value Comparisons (Part 2)

Sec B

Let's compare 3-digit numbers using place value.

Warm-up

True or False: Greater Than or Less Than

Decide if each statement is true or false. Be prepared to explain your reasoning.

- $86 > 80 + 4$
- $400 + 40 + 6 < 846$
- $330 < 300 + 3$
- $500 + 50 > 505$

Activity 1

Compare and Explain

Compare the numbers.

1.

<, >, or =

521 ☐ 523

Show your thinking using drawings, numbers, or words.

2.

<, >, or =

889 ☐ 878

3. Find the number that makes each comparison true. Use each number only once.

810 529 752 495

Sec B

a. ______ > 519

b. 687 < ______

c. ______ < 501

d. ______ > 793

Unit 5, Lesson 12

Addressing CA CCSSM 2.NBT.1, 2.NBT.4, 2.NBT.8; practicing MP3 and MP5

Order Numbers

Let’s put numbers in order.

Sec B

Warm-up

Number Talk: Subtract Tens

Find the value of each expression mentally.

- 80 – 50
- 87 – 50
- 76 – 40
- 66 – 30

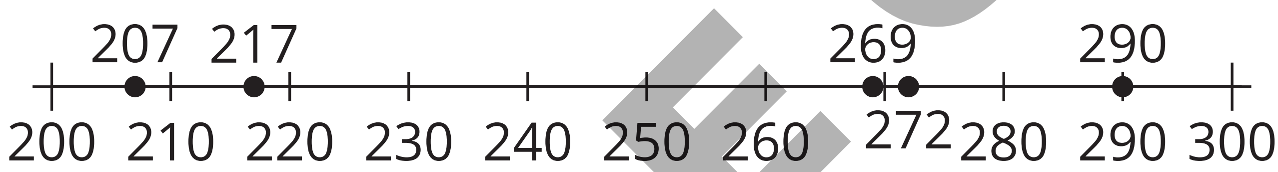
Activity 1

Who is Out of Order?

Kiran and Andre put a list of numbers in order from least to greatest.

Kiran	Andre
207, 217, 272, 269, 290	207, 217, 269, 272, 290

Andre disagreed with Kiran. He used a number line to justify his answer.

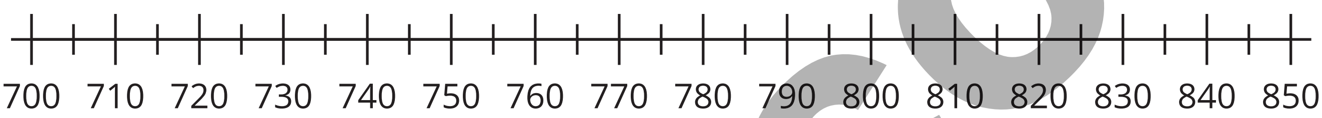


Who do you agree with? Explain your reasoning.

Activity 2

Order Numbers

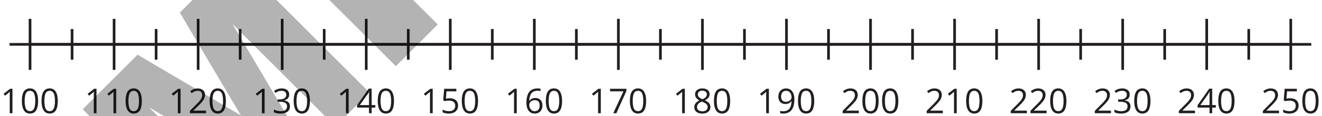
1. Estimate the locations of 839, 765, 788, 815, and 719. Mark each number with a point. Label each point with the number it represents.



Order the numbers from least to greatest.

__________, __________, __________, __________, __________

2. Estimate the locations of 199, 245, 173, 218, and 137. Mark each number with a point. Label each point with the number it represents.



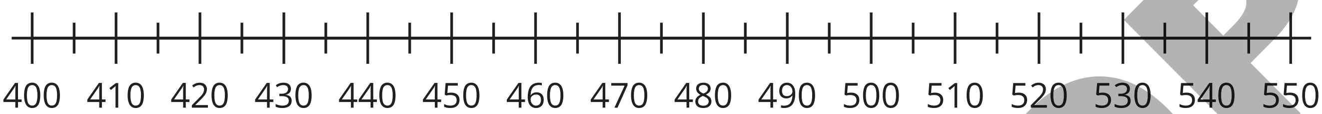
Order the numbers from greatest to least.

__________, __________, __________, __________, __________

3. Order the numbers from least to greatest.
545, 454, 405, 504, and 445

_________, _________, _________, _________, _________

Show your thinking using the number line.

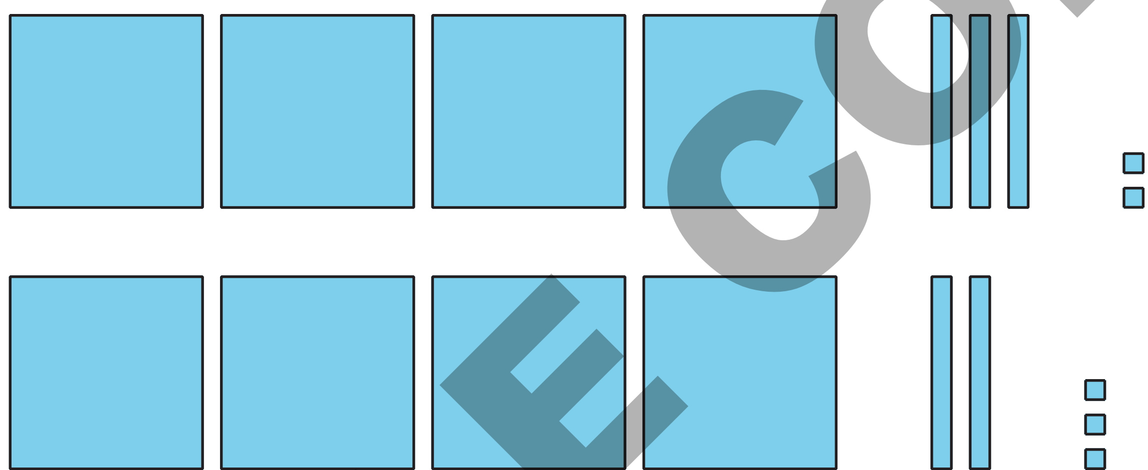


4. Was it more helpful for you to put the numbers in order first or put them on the number line first?

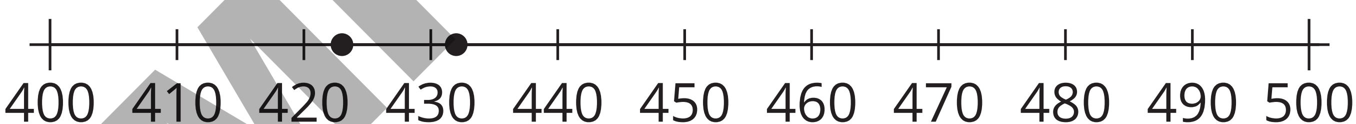
Section B Summary

We compared 3-digit numbers. We used number lines and base-ten diagrams. We used the value of the digits in base-ten numerals to compare numbers. We explained our thinking.

We learned that diagrams help when comparing numbers. We compared hundreds to hundreds, tens to tens, and ones to ones. We learned that diagrams help with digits too.



The number line shows the numbers in order. We can tell which number is greater using its location on the number line.



Sec B

We wrote expressions using the $<$, $>$, and $=$ symbols.

$432 > 423$

432 is greater than 423

$423 < 432$

423 is less than 432

Unit 5, Lesson 13

Addressing CA CCSSM 2.NBT.1, 2.NBT.4; building towards 2.NBT.4; practicing MP2

Center Day 2

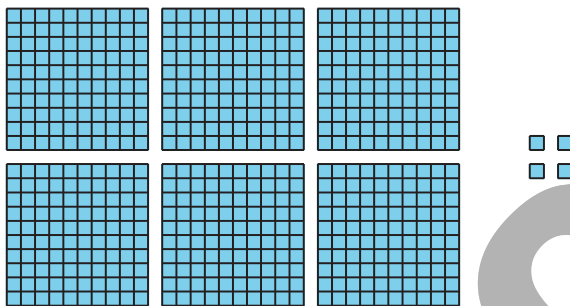
Let's work on place value.

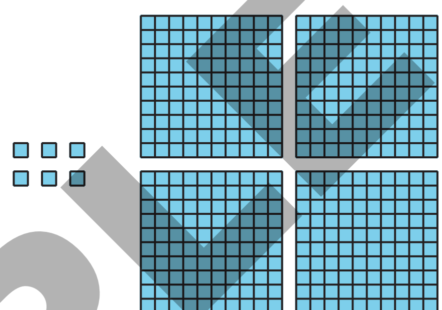
Sec B

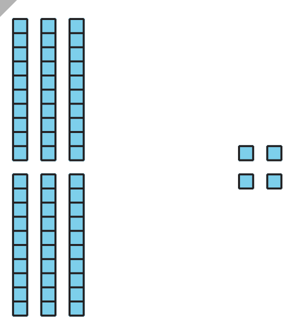
Warm-up

How Many Do You See: Place Value

How many do you see? How do you see them?







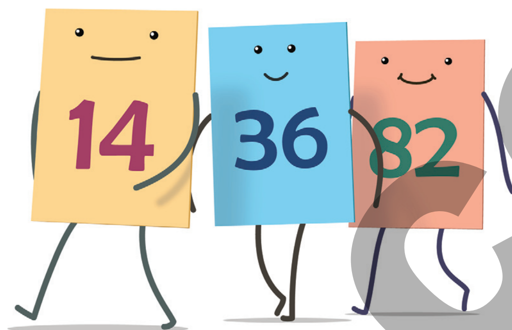
Sec B

Activity 2

Centers: Choice Time

Choose a center.

Get Your Numbers in Order



Greatest of Them All

Mystery Number

Unit 5, Lesson 14

Addressing CA CCSSM 2.NBT.1; practicing MP4

Around the School

Let's think about what numbers can represent in a school.

Sec B

Warm-up

Estimation Exploration: School Supplies

How many total school supplies are on the table?

Record an estimate that is:

too low	about right	too high

Sec B

Activity 1

What Could It Be?

Sec B

Here are some numbers that represent quantities of objects. What might each number represent? Think of something each number could **not** represent. Record your ideas.

number	It might represent:	It could not represent:
1		
3		
56		
110		
408		

Activity 2

It’s in Our Classroom

Fill in the numbers your teacher gives you. Then complete the other columns.

number	It might represent:	It could not represent:

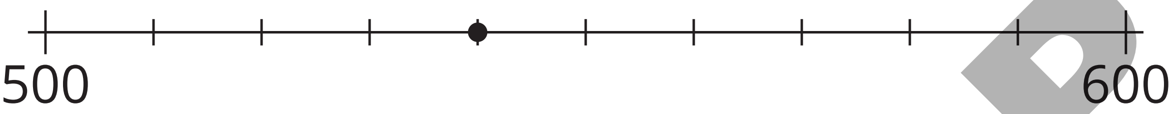
Sec B

Practice Problems

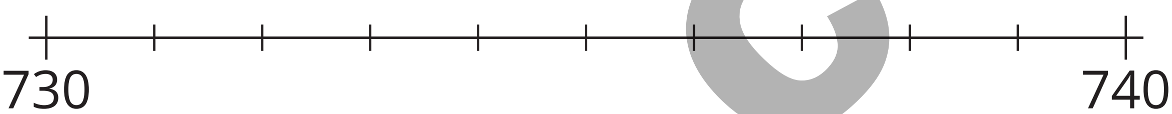
7 Problems

1 from Unit 5, Lesson 8

a.

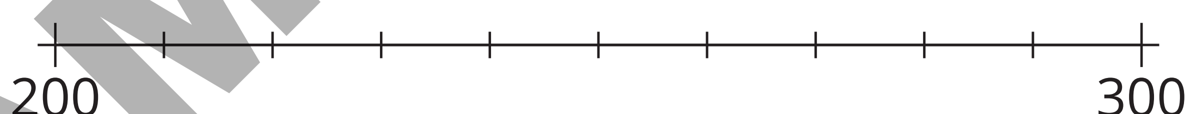


b. Locate and label 738.



2 from Unit 5, Lesson 9

a. Estimate the locations of 247 and 274. Mark each number with a point. Label the points with the number it represents.

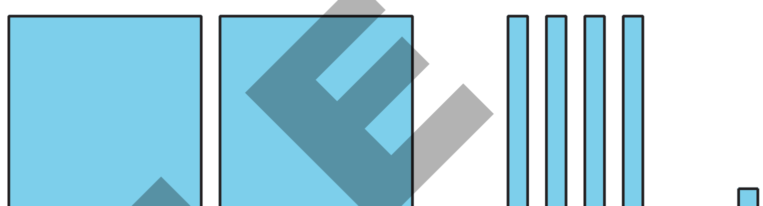


b. Use <, >, or = to compare 247 and 274. Explain your reasoning.

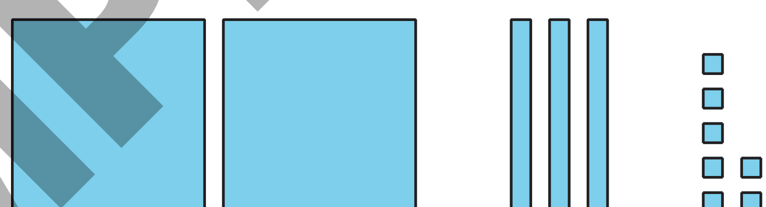
3 from Unit 5, Lesson 10

Here are diagrams for 2 numbers.

A



B



a. Which 2 numbers are represented in the diagrams?

b. Which number is greater? Explain how you know.

c. Use <, >, or = to compare the numbers.

4 from Unit 5, Lesson 11

a. Find the number that makes both equations true.

_____ < 513

_____ > 479

b. Can you find one number that makes both equations true? Explain your reasoning.

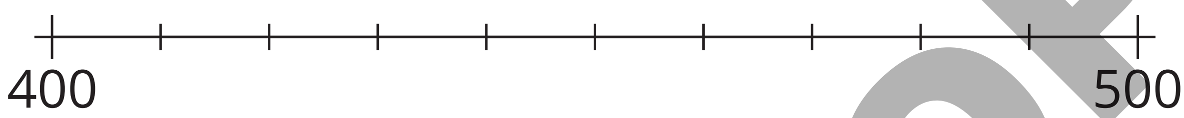
_____ > 718

_____ < 709

Sec B

5 from Unit 5, Lesson 12

a. Locate 441, 418, 481, 487, and 429. Mark each number with a point. Label each point with the number it represents.



b. Order the numbers from greatest to least.

Sec B

6 Exploration

Mile markers on roads use numbers in order. During a trip, Mai saw this mile marker first. The last one she saw was Mile 173.

a. Show the first and last mileage markers Mai saw on the number line.

100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180

b. Which mile markers with 0 in the ones place did Mai pass? Label these numbers on the number line. Explain your reasoning.

7 Exploration

a. What is the greatest 3-digit number you can make with 2, 3, 6, 7, and 9? Each number can only be used one time. Explain your reasoning.

b. What is the smallest 3-digit number you can make with 6, 3, 9, 7, and 2? (You can't use a number more than once.) Explain your reasoning.

Sec B

GRADE 2

UNIT

6

Geometry, Time, and Money

Content Connections

In this unit you will partition shapes into equal parts, use fractions and skip counting to tell time, and solve money story problems. You will make connections by:

- **Discovering Shape and Space** while dividing shapes into equal shares and using appropriate vocabulary to describe fractions.
- **Reasoning with Data** while telling time to the nearest 5 minutes.
- **Taking Wholes Apart, Putting Parts Together** while using skip counting to understand time.

- **Exploring Changing Quantities** while combining dollars and cents and connecting money values to place values.

Addressing the Standards

As you work your way through **Unit 6 Geometry, Time, and Money,** you will use some mathematical practices that you may have started using in kindergarten and have continued strengthening over your school career. These practices describe types of thinking or behaviors that you might use to solve specific math problems.

Mathematical Practices	Where You Use these MPs
MP1 Make sense of problems and persevere in solving them.	Lesson 3, 5, and 14
MP2 Reason abstractly and quantitatively.	Lesson 10, 11, 18, 19, and 21
MP3 Construct viable arguments and critique the reasoning of others.	Lesson 7, 8, 13, 19, and 20
MP4 Model with mathematics.	Lesson 22
MP5 Use appropriate tools strategically.	Lesson 5
MP6 Attend to precision.	Lesson 1, 2, 4, 6, 7, and 13
MP7 Look for and make use of structure.	Lesson 4, 8, 15, 16, and 17
MP8 Look for and express regularity in repeated reasoning.	Lesson 9, 12, and 16

The California Common Core State Standards for Mathematics (CA CCSSM) describe the topics you will learn in this unit. Many of these topics build upon knowledge you already have and challenge you to expand upon that knowledge. The table below shows what standards are being addressed in this unit.

Big Ideas You Are Studying	**California Content Standards**	**Lessons Where You Learn This**
• Seeing Fractions in Shapes	**2.G.1** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	Lesson 1, 2, 3, 4, 5, 6, 10, and 14
• Represent Data • Skip Counting to 100 • Seeing Fractions in Shapes • Squares in an Array	**2.G.3** Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of,* etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	Lesson 7, 8, and 9

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Measure and Compare Objects • Problem Solving with Measure	**2.MD.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	Lesson 3
• Represent Data • Seeing Fractions in Shapes	**2.MD.7** Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. Know relationships of time (e.g., minutes in an hour, days in a month, weeks in a year).	Lesson 11, 12, and 13
• Dollars and Cents	**2.MD.8** Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*	Lesson 15, 16, 17, 18, 19, 20, 21, and 22

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Dollars and Cents • Problem Solving with Measure • Skip Counting to 100	**2.NBT.1** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens—called a “hundred.” b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	Lesson 10
• Represent Data • Dollars and Cents	**2.NBT.2** Count within 1000; skip-count by 2s, 5s, 10s, and 100s.	Lesson 12, 15, and 16

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Skip Counting to 100	**2.NBT.3** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	Lesson 5
• Dollars and Cents • Number Strategies	**2.NBT.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	Lesson 5, 8, 14, 15, 16, 17, 18, 19, 20, 21, and 22
• Dollars and Cents • Number Strategies	**2.NBT.6** Add up to four two-digit numbers using strategies based on place value and properties of operations.	Lesson 14, 15, 17, and 21
• Skip Counting to 100	**2.NBT.8** Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	Lesson 15

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Problem Solving with Measure • Number Strategies	**2.OA.1** Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	Lesson 18, 19, 20

Unit 6, Lesson 1

Addressing CA CCSSM 2.G.1, building on 1.G.1; building towards 2.G.1; practicing MP6

Identify and Sort Shapes

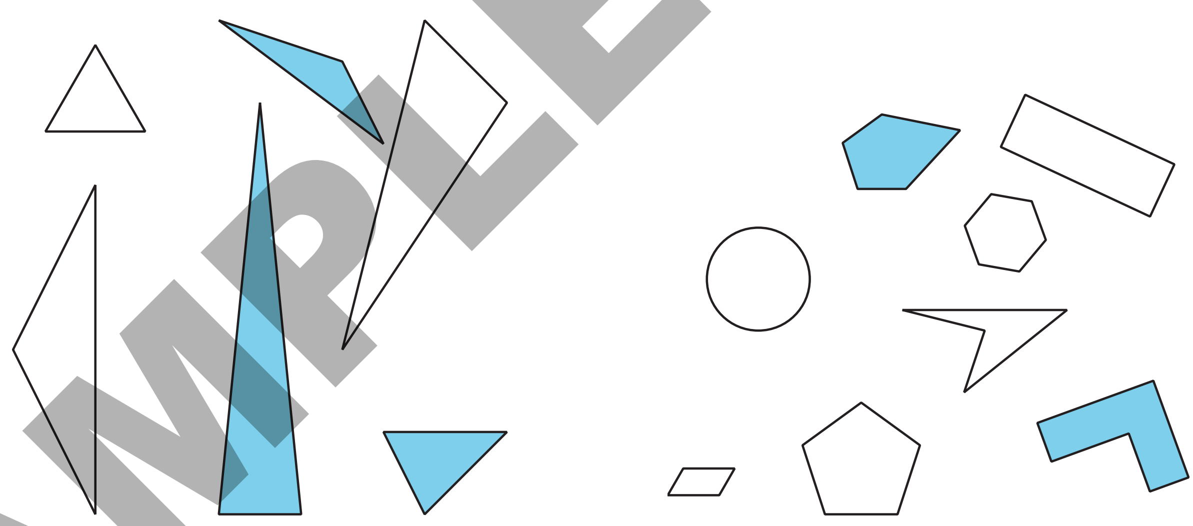
Let's sort and name shapes, based on their sides and corners.

Sec A

Warm-up

Notice and Wonder: Groups of Shapes

What do you notice? What do you wonder?



Activity 1

Card Sort: Shapes

Sec A

Your teacher will give you a set of cards that show shapes.

Sort the shapes into categories of your choosing. Be ready to explain the meaning of your categories.

Activity 2

Penta-What?

Gather clues to find out what kind of shapes belong in each category.

triangle pentagon hexagon quadrilateral

1. Ask the teacher if a shape card belongs in 1 of these categories.

   Use this question frame:

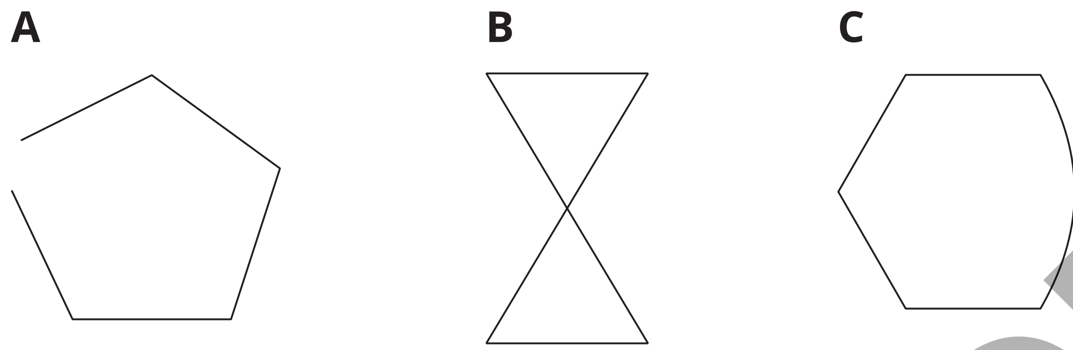
   Is Shape ______a ____________________ ?

2. Use your clues to make a true statement.

   Shape ______is a ____________________because it has __________ __________________________________.

Sec A

3. Do these shapes belong to any of the categories? Explain your reasoning.



Activity 3

Compare Shapes

Pick 1 shape card.
Name and describe your shape to a partner.

Sec A

Sec A

Unit 6, Lesson 2

Addressing CA CCSSM 2.G.1; practicing MP6

Draw Shapes

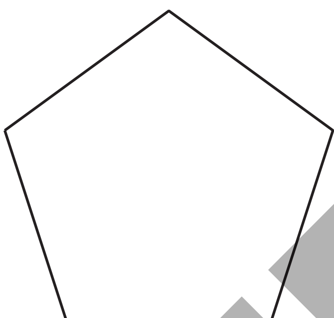
Let’s recognize and draw triangles, quadrilaterals, pentagons, and hexagons.

Warm-up

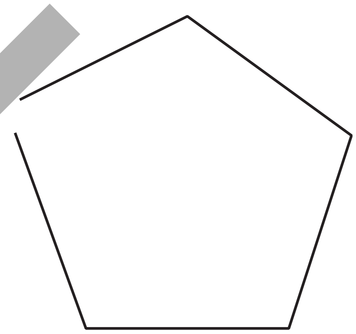
Which Three Go Together: 5-Sided Shapes

Which 3 go together?

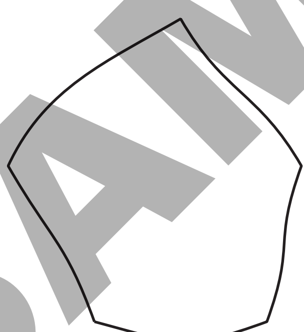
A



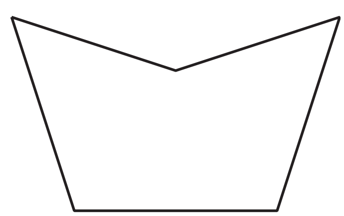
B



C



D

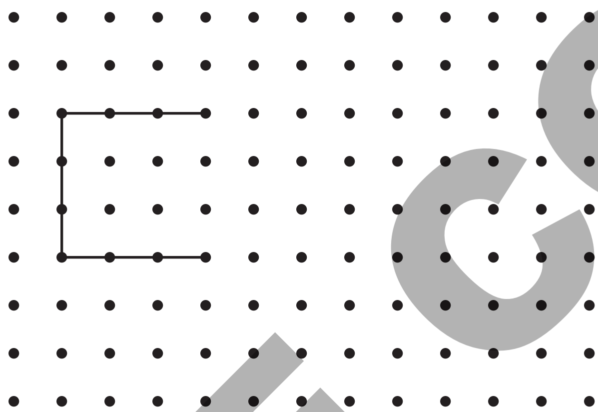


Sec A

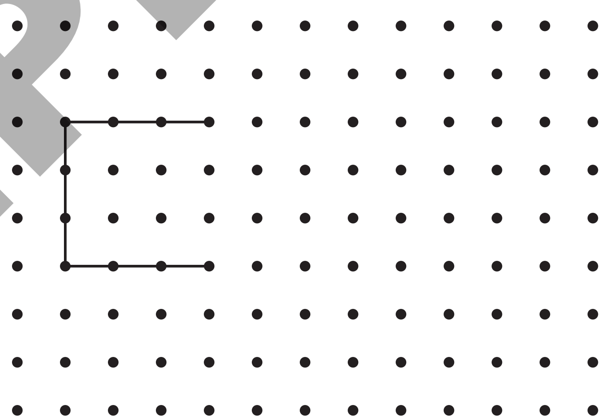
Activity 1

Draw Shapes

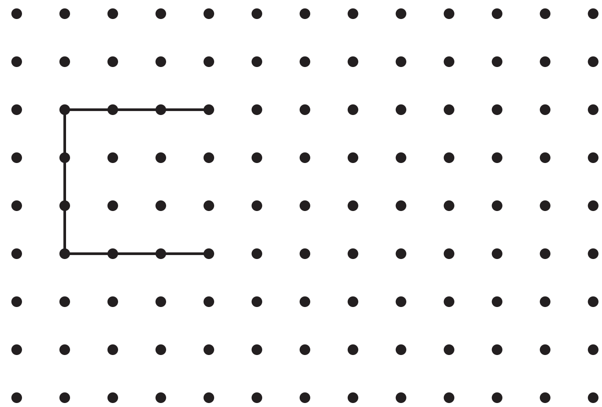
1. Complete the shape to make a quadrilateral. Then draw a different 4-sided shape.



2. Complete the shape to make a pentagon. Then draw a different 5-sided shape.



3. Complete the shape to make a hexagon. Then draw a different 6-sided shape.

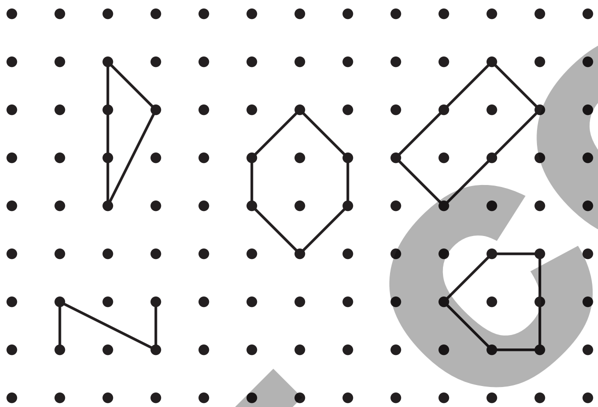


4. Compare your shapes with your partner. How are the shapes alike? How are they different?

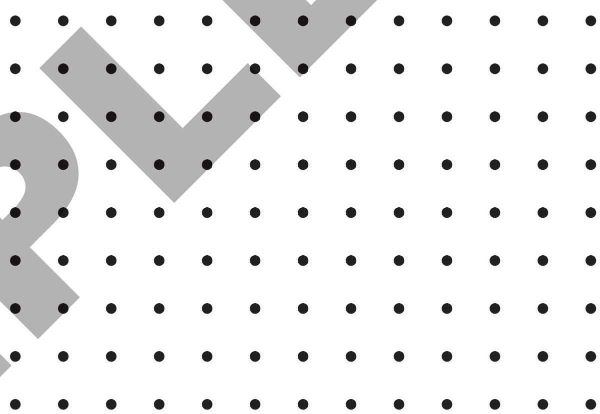
Activity 2

What Shape Could It Be?

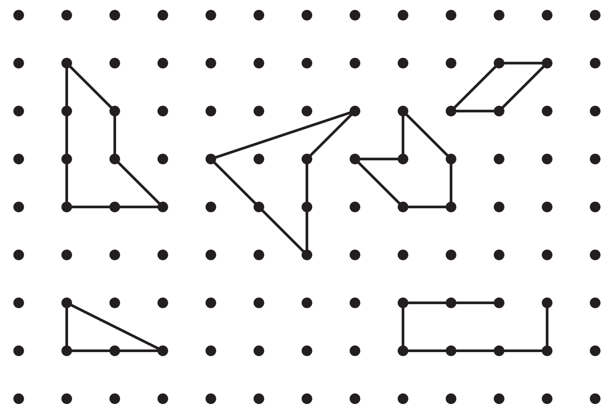
1. Clare draws a shape with fewer than 5 sides. Circle shapes that could be her shape.



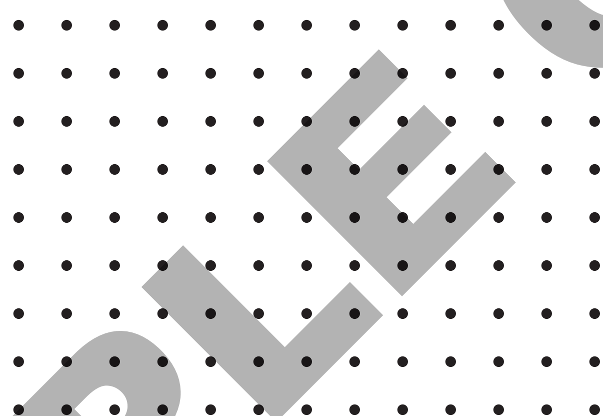
2. Draw a different shape that could be Clare's shape.



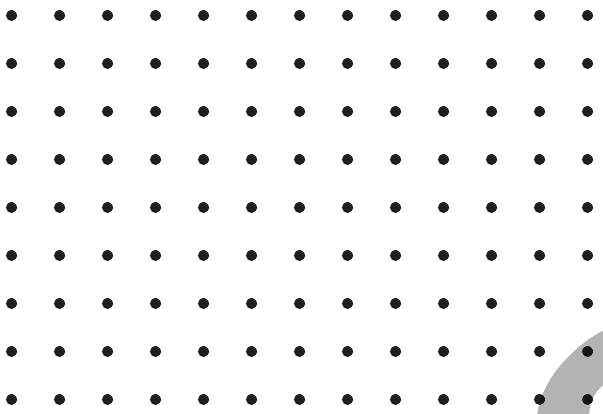
3. Andre draws a shape with 4 corners. Circle shapes that could be his shape.



4. Draw a different shape that could be Andre's shape.



5. Han draws a shape with more corners than Andre’s shape. Draw 2 shapes that could be Han’s shape.



Unit 6, Lesson 3

Addressing CA CCSSM 2.G.1, 2.MD.1; practicing MP1

Sec A

Specific Side Lengths

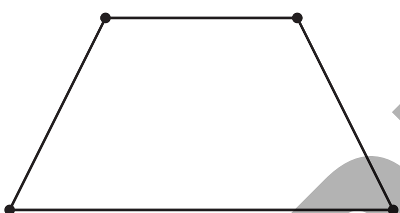
Let's find and draw shapes with specific side lengths.

Warm-up

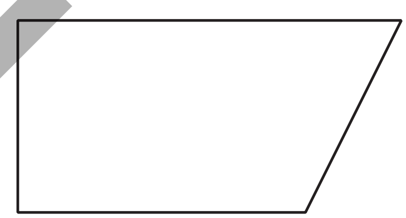
Which Three Go Together: Different Shapes

Which 3 go together?

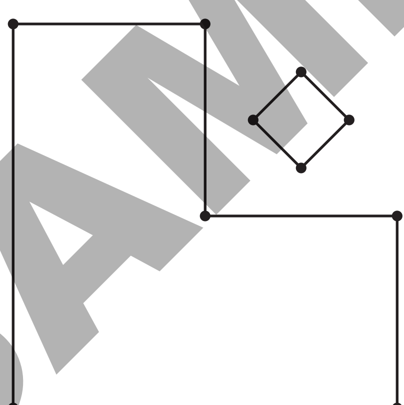
A



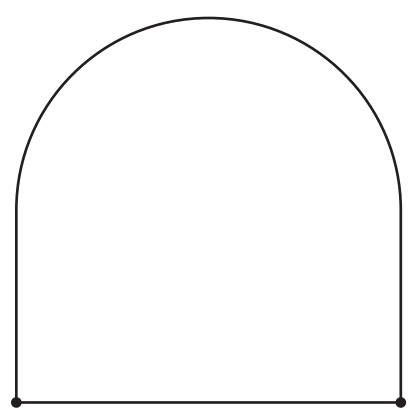
B



C



D

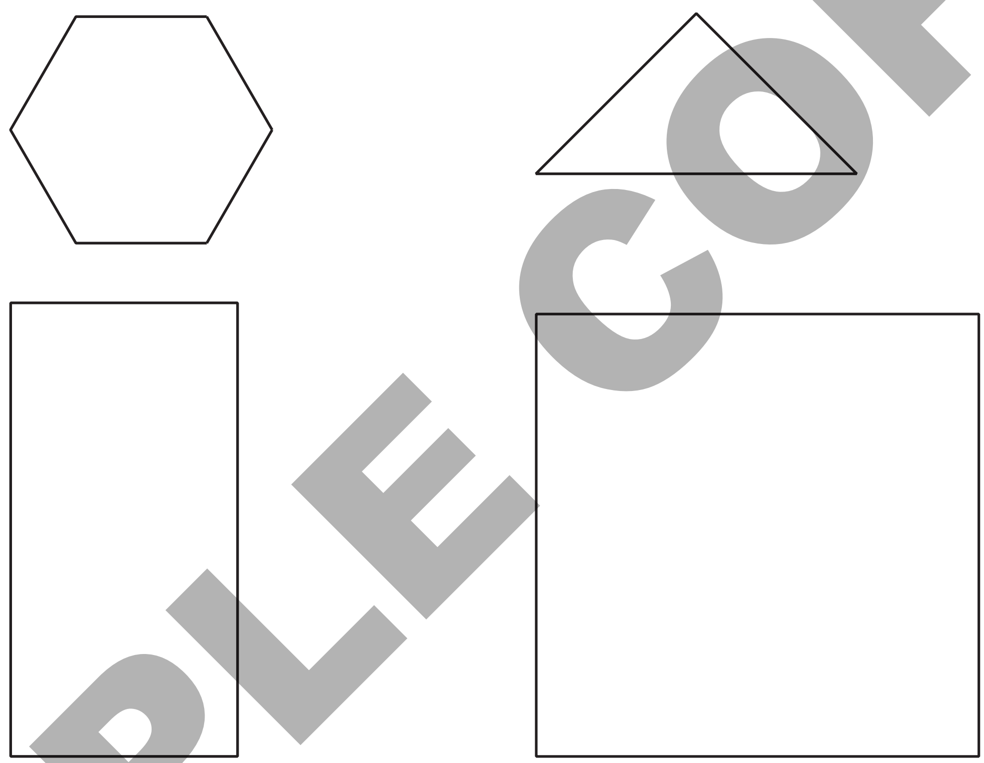


Activity 1

Measure Twice, Draw Once

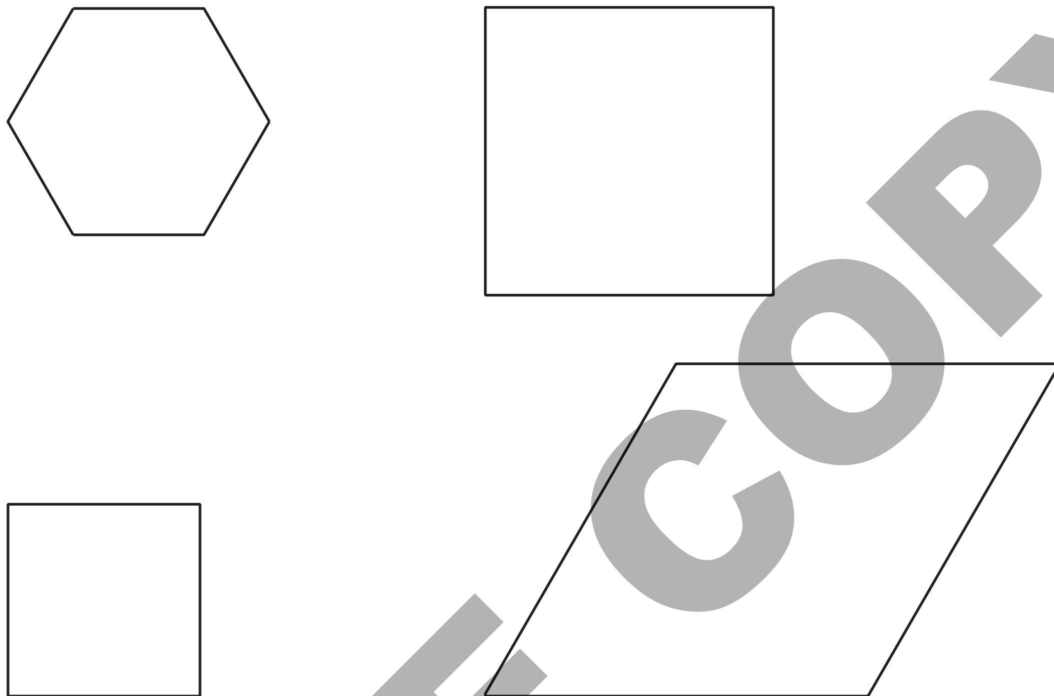
Sec A

1. Diego draws a shape with fewer than 5 sides. Two sides are 3 centimeters long. Circle shapes that could be his shape.



2. Tyler draws a shape with 4 sides. Each side is 2 inches long.

a. Circle shapes that could be his shape.



b. Draw another shape that could be Tyler's shape.

3. Priya draws a shape with more sides than Tyler's shape. Only 1 side of her shape is 2 inches long. Draw 2 shapes that could be her shape.

Sec A

Activity 2

Build a Shape

Sec A

1. Choose your own attributes. Circle 1 in each row.

sides	3	4	5	6
corners	3	4	5	6
side length	1 side is 2 in.	2 sides are 2 in.	2 sides are 3 in.	4 sides are 2 in.
square corners	0	1	2	all square corners

Draw and name a shape with your attributes. If you can't draw the shape, explain your reasoning.

Shape:

Name:________________________

2. Choose new attributes. Circle 1 in each row.

sides	3	4	5	6
corners	3	4	5	6
side length	1 side is 2 in.	2 sides are 2 in.	2 sides are 3 in.	4 sides are 2 in.
square corners	0	1	2	all square corners

Draw and name a shape with your attributes. If you can't draw the shape, explain your reasoning.

Shape:

Name: ____________________

Sec A

3. Choose new attributes. Circle 1 in each row.

sides	3	4	5	6
corners	3	4	5	6
side length	1 side is 2 in.	2 sides are 2 in.	2 sides are 3 in.	4 sides are 2 in.
square corners	0	1	2	all square corners

Draw and name a shape with your attributes. If you can't draw the shape, explain your reasoning.

Shape:

Name: ____________________

4. Cover your attribute table. Trade papers with your partner. Guess which attributes they used.

   If you have time: Are there any attributes that are impossible to put together to make a shape? Show your thinking, using drawings, numbers, or words.

Unit 6, Lesson 4

Addressing CA CCSSM 2.G.1; practicing MP6 and MP7

Sec A

Solid Shapes

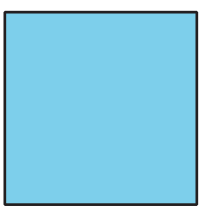
Let's identify and describe solid shapes.

Warm-up

Notice and Wonder: What Is That Shape?

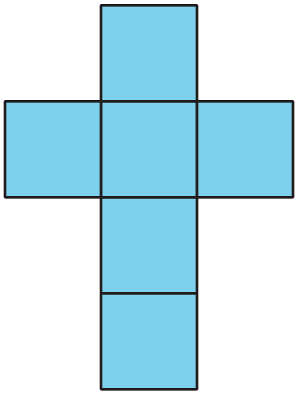
What do you notice? What do you wonder?

A

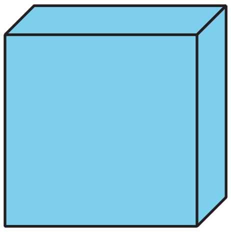


B

C



D



Sec A

Sec A

Activity 1

What Is the Missing Shape?

Make a poster that describes your solid shape. Show your thinking, using drawings, numbers, or words. Help other groups name your shape.

Activity 2

Card Sort: Sort and Build Solid Shapes

Your teacher will give you a set of cards that show designs made up of different shapes.

1. Sort the cards into categories of your choosing. Be ready to explain the meaning of your categories.
2. Match 1 of your cards to a solid shape.

Sec A

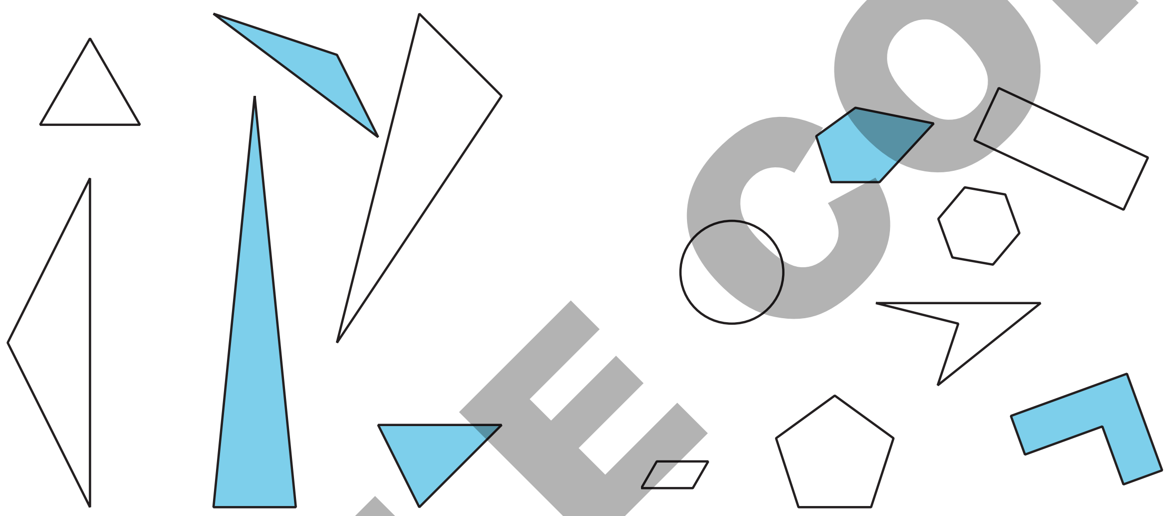
3. Which shape designs can you fold to make cubes? Explain your reasoning.

4. Fold your 2 shape designs into cubes. Compare your cubes with your partner.

Section A Summary

We named and drew shapes, based on their numbers of sides and corners. We drew shapes with different side lengths.

- A triangle is a shape with 3 sides and 3 corners
- A quadrilateral is a shape with 4 sides and 4 corners.
- A pentagon is a shape with 5 straight sides and 5 corners.
- A hexagon is a shape with 6 straight sides and 6 corners.



We described solid shapes, based on the number and shape of their faces. A face is a flat side of a solid shape. For example, a cube is a solid shape with 6 square faces that are the same size.

Unit 6, Lesson 5

Addressing CA CCSSM 2.G.1, 2.NBT.3, 2.NBT.5; practicing MP1 and MP5

Sec A

Center Day 1

Let's work with shapes.

Warm-up

Number Talk: Add 5

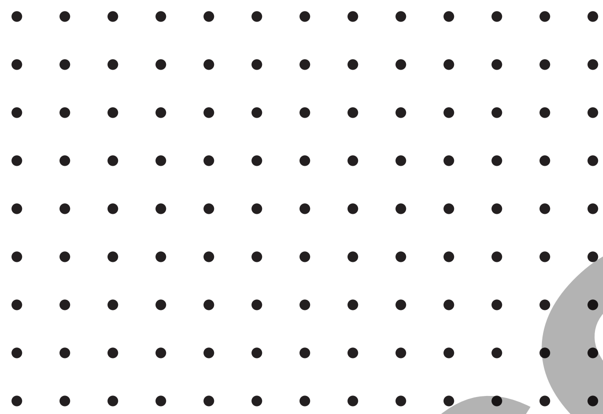
Find the value of each expression mentally.

- 5 + 30 + 5
- 50 + 30 + 5
- 50 + 5 + 30 + 5
- 500 + 30 + 5

Practice Problems

10 Problems

1 Pre-unit

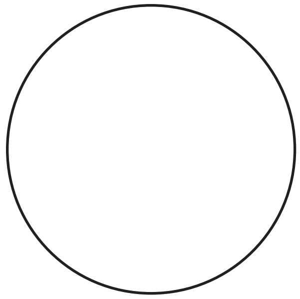


a. Draw a rectangle. Label it A.

b. Draw a triangle. Label it B.

2 Pre-unit

a. Split the circle into 2 equal-size parts.



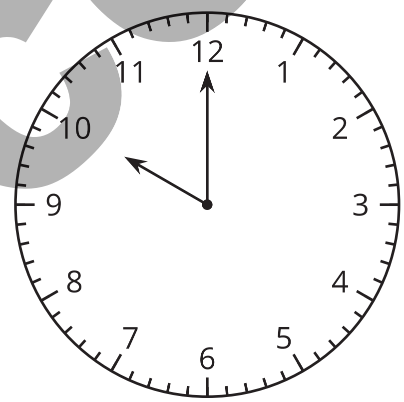
Sec A

b. Split the rectangle into 4 equal-size parts.

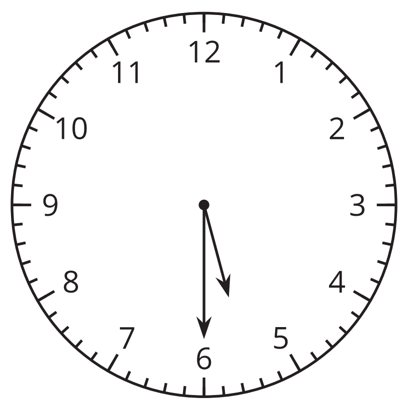
3 Pre-unit

Write the time each clock shows.

a. ______ : ______



b. ______ : ______



4 Pre-unit

Find the value of each expression.

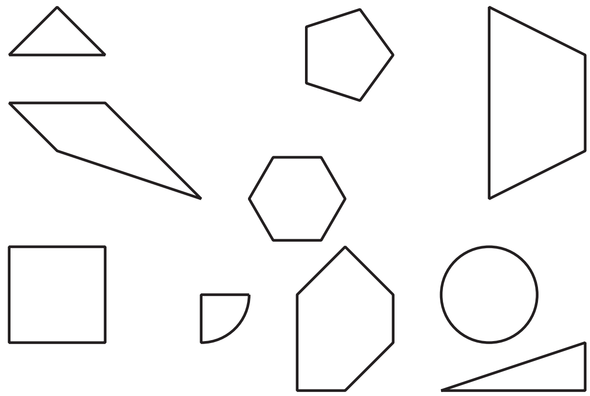
a. $25 + 25 + 10 + 5$

b. $83 - 42$

c. $37 + 54$

d. $66 - 49$

5 from Unit 6, Lesson 1



a. Find a triangle. Label it A. Explain how you know it is a triangle.

____

____

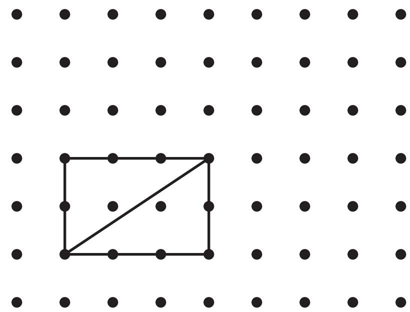
b. Find a pentagon. Label it B. Explain how you know it is a pentagon.

____

____

6 from Unit 6, Lesson 2

a. Diego says his shape is a pentagon. Do you agree? Explain your reasoning.



b. Draw a pentagon on the grid.

Sec A

7 from Unit 6, Lesson 3

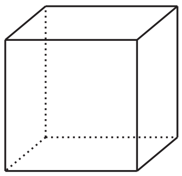
a. Draw a quadrilateral with 3 sides that are 2 inches long.

Sec A

b. Draw a different quadrilateral with 3 sides that are 2 inches long.

8 from Unit 6, Lesson 4

Describe this solid shape.



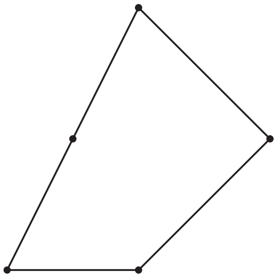
9 Exploration

Priya says this shape is a quadrilateral.

Han says this shape is a pentagon.

Who do you agree with?

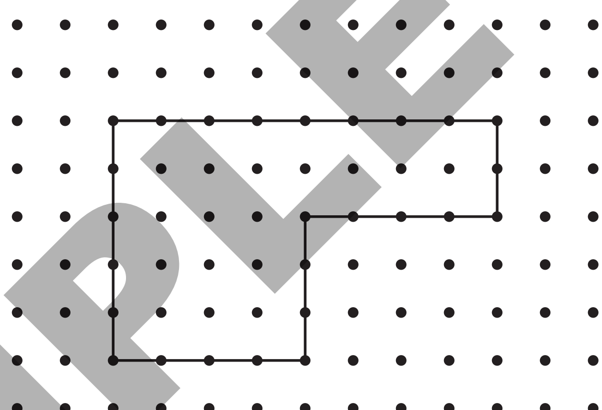
Explain your reasoning.



10 Exploration

a. Can you draw a pentagon with 5 square corners? Use the dots if they are helpful.

b. Elena says this hexagon has 6 square corners. Do you agree? Explain your reasoning.



Unit 6, Lesson 6

Addressing CA CCSSM 2.G.1; building on 1.G.2; building towards 2.G.3; practicing MP6

Compose and Decompose Shapes

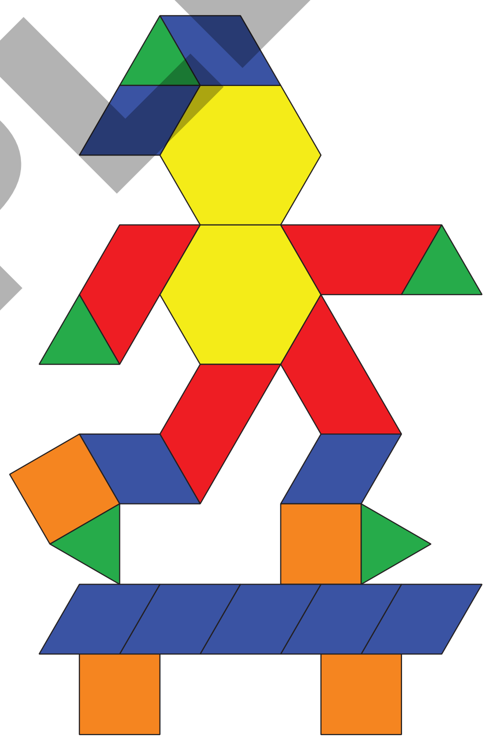
Let's make shapes with equal-size smaller shapes.

Sec B

Warm-up

Notice and Wonder: A Picture of Shapes

What do you notice? What do you wonder?



Activity 1

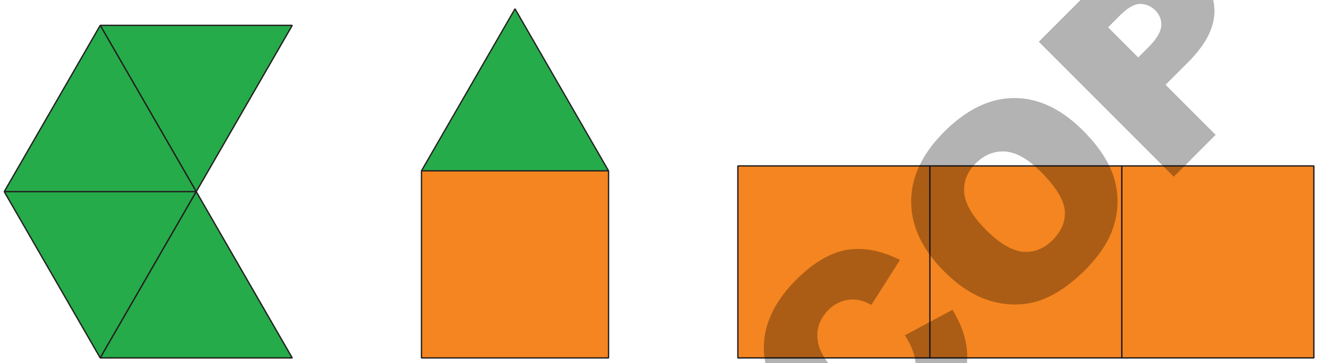
Many Ways to Compose Shapes

Mai used pattern blocks to make this design. Work with a partner to make the same design, without using yellow hexagons.

Activity 2

Compose Shapes with Equal-Size Pieces

What is the same? What is different?



- Compose 3 different shapes. Use 2, 3, or 4 of the same equal-size shapes.
- Show the outline of each block on the dot paper.

Name each shape and explain how you composed it.

1. I used ______________________________

   to compose a _________________________.

2. I used ______________________________

   to compose a _________________________.

3. I used ______________________________

   to compose a _________________________.

Unit 6, Lesson 7

Addressing CA CCSSM 2.G.3; practicing MP3 and MP6

Make Halves, Thirds, and Fourths

Sec B

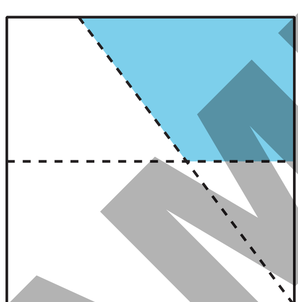
Let's make halves, thirds, and fourths (or quarters).

Warm-up

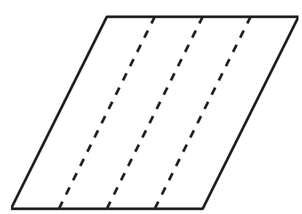
Which Three Go Together: Compare Equal-Size Pieces

Which 3 go together?

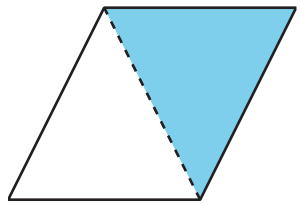
A



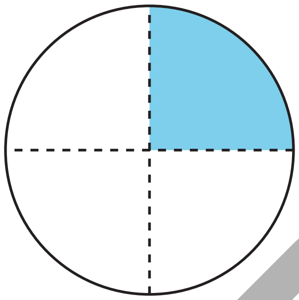
B



C



D



Activity 1

Fold Equal-Size Pieces

1. Fold the rectangle to make 2 equal-size pieces. Cut them out.

   Each piece is called a ______________.

   Compare with your partner. Tell them how you know the pieces are equal.

2. Fold the rectangle to make 4 equal-size pieces. Cut them out.

   Each piece is called a _____________.

   Compare with your partner. Tell them how you know the pieces are equal.

3. Fold the rectangle to make 3 equal-size pieces. Cut them out.

   Each piece is called a _______________.

   Compare with your partner. Tell them how you know the pieces are equal.

Sec B

Activity 2

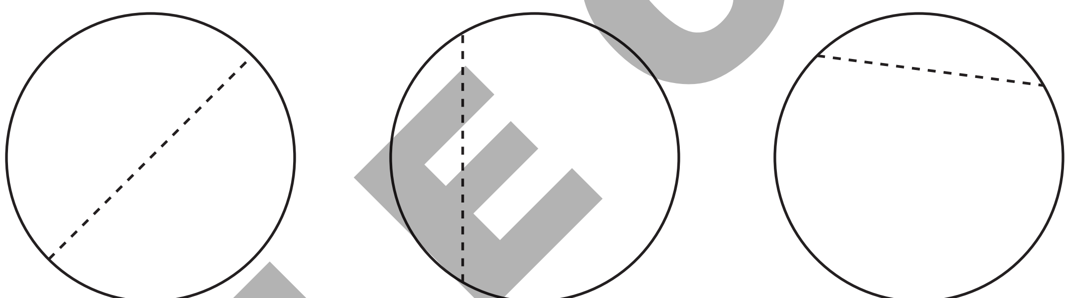
That's Not It

Sec B

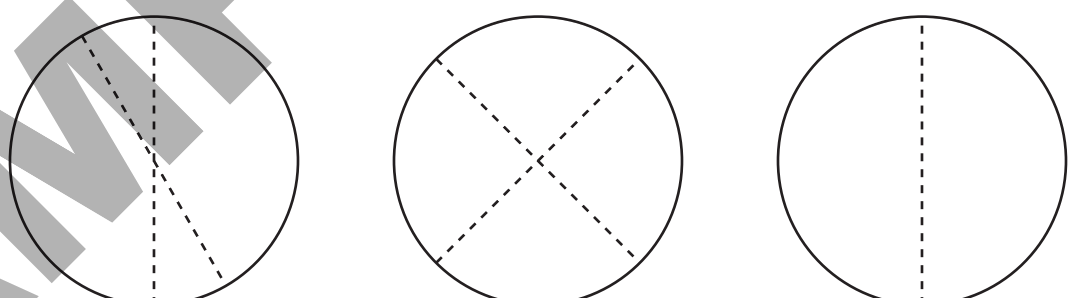
1. Noah looks for examples of circles partitioned into halves, thirds, or fourths.

   a. Put an X on the **2** circles in each row that are not examples.

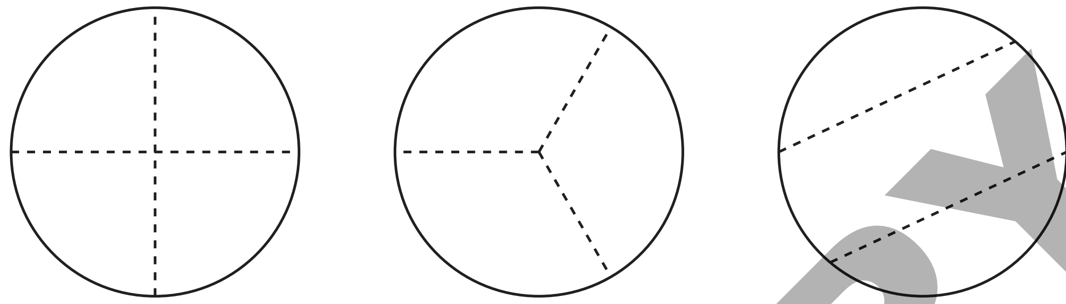
   halves



   fourths

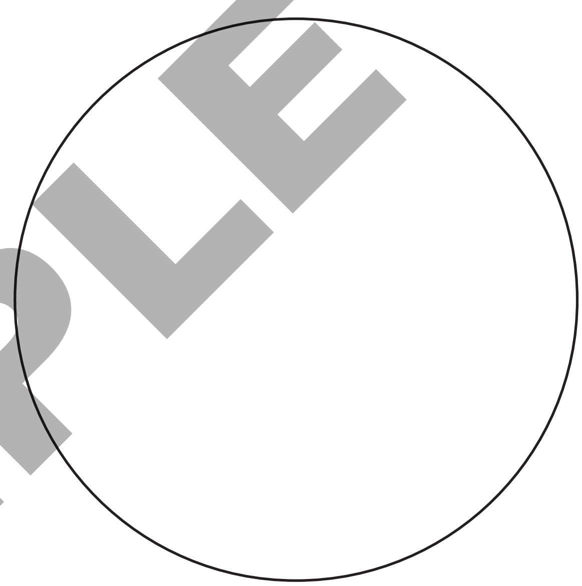


thirds



b. Why are the shapes you marked **not** examples of halves, fourth, or thirds? Explain your reasoning to your partner.

2. Partition this circle into thirds.



Unit 6, Lesson 8

Addressing CA CCSSM 2.G.3, 2.NBT.5; building on 2.NBT.2; practicing MP3 and MP7

Are All Pieces Created Equal?

Let's make halves, thirds, and fourths in different ways.

Sec B

Warm-up

Number Talk: 5 Ones

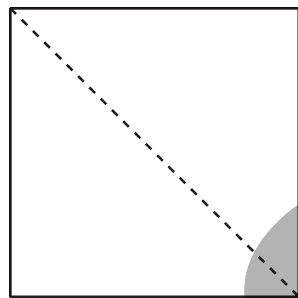
Find the value of each expression mentally.

- 25 – 15
- 40 – 15
- 65 – 25
- 60 – 30

Activity 1

Make Quarters and Halves

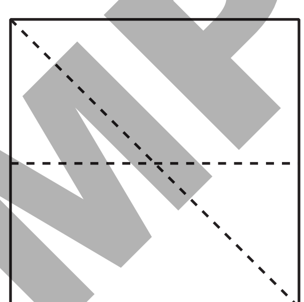
Lin partitions this square into quarters. She starts by splitting the square into halves.



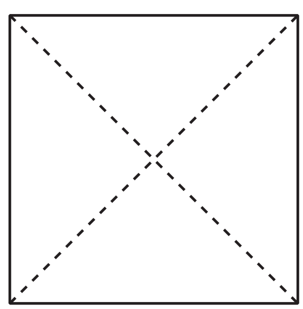
After she draws the first line, she tries 3 different ways to make fourths.

1. Which shape shows fourths or quarters? Explain your reasoning.

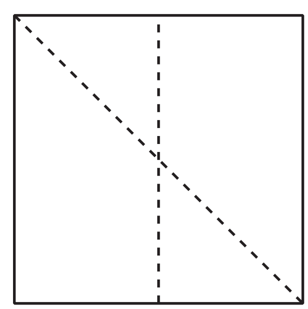
A



B



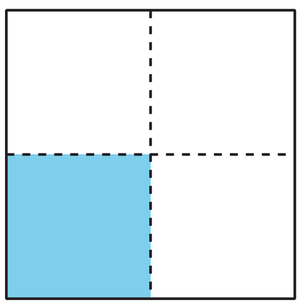
C



Sec B

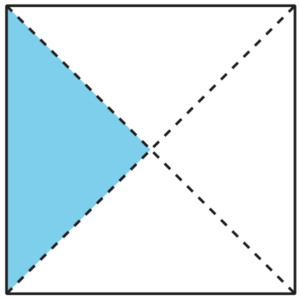
2. Name the shaded piece.

A



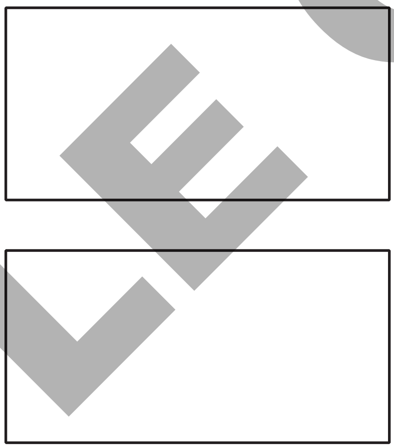
Shape A has a ____________________ shaded.

B



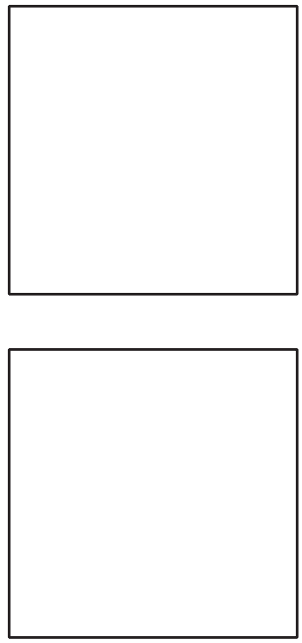
Shape B has a ___________________ shaded.

3. Show 2 different ways to partition the rectangle into quarters or fourths. Shade a fourth of each rectangle.



Sec B

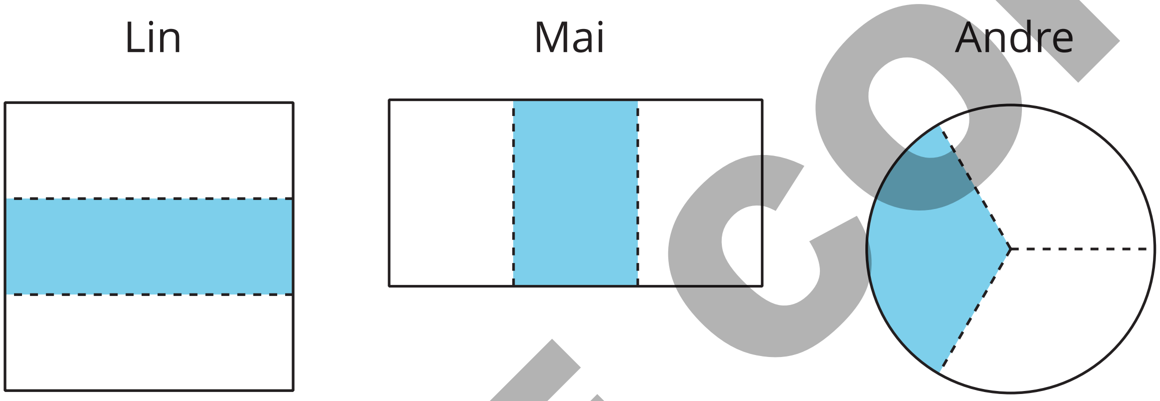
4. Show 2 different ways to partition the square into halves.
   Shade **half** of each square.



Activity 2

Make Equal-Size Pieces

1. Lin, Mai, and Andre are asked to shade a third of a shape.

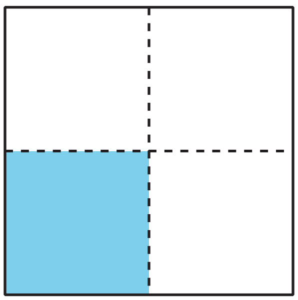


Do all their shapes show a third shaded? Explain your reasoning.

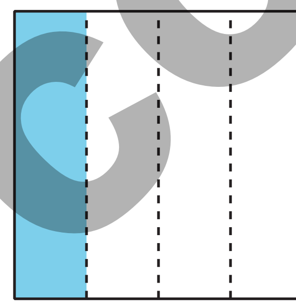
2. Partition the rectangle into thirds. Shade a third of the shape.

3. Diego's dad makes 2 square pans of cornbread. He cuts the pans into pieces for his family.

Diego's brother



Diego



Diego's little brother is upset because he thinks his piece of cornbread is smaller than Diego's. Do you agree? Explain your reasoning.

Addressing CA CCSSM 2.G.3; building towards 2.MD.7; practicing MP8

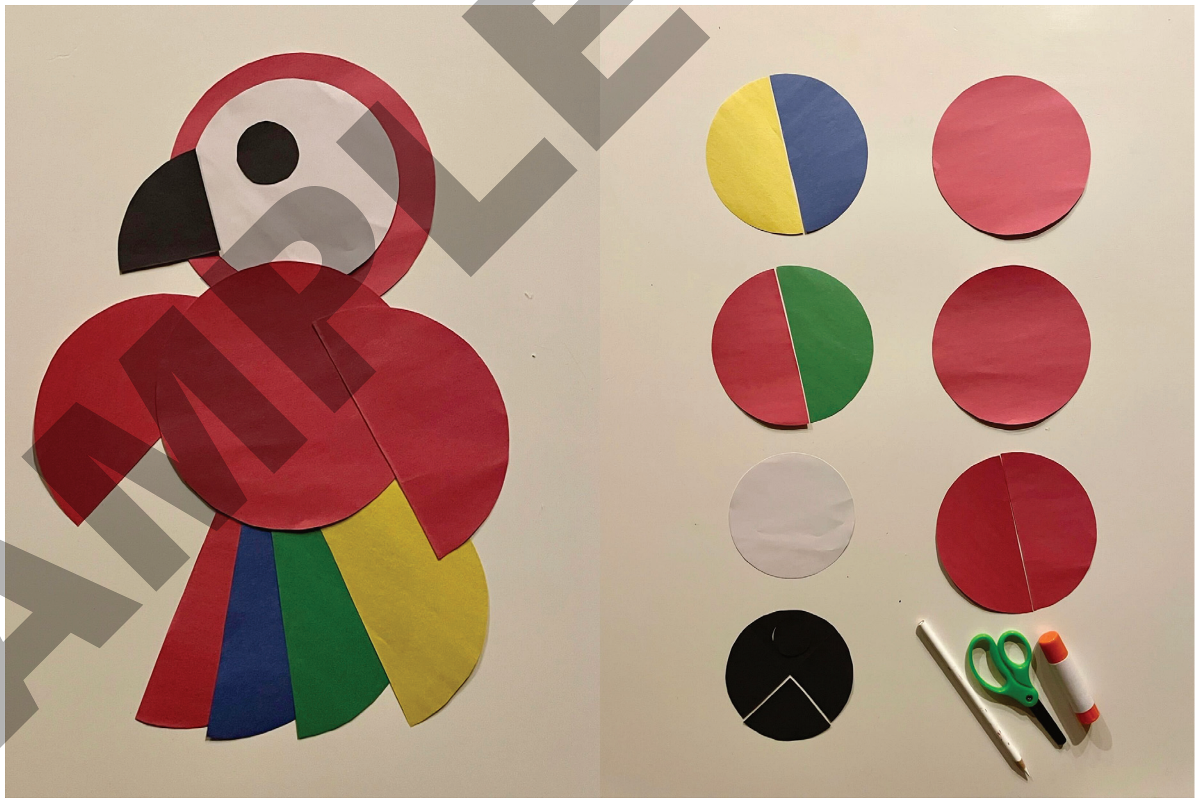
You Took the Whole Thing!

Let's talk about the whole.

Warm-up

Notice and Wonder: Crafts with Circles

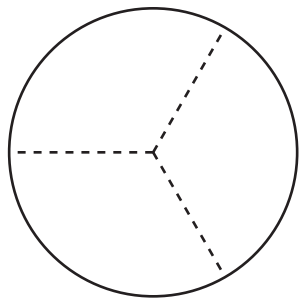
What do you notice? What do you wonder?



Activity 1

A Circle to Share

Clare's friends share a paper circle to make a craft. The image shows how they cut it.



1. Clare takes 3 pieces of the circle to make her craft. Her friends get upset with her.

    a. Why are her friends upset?

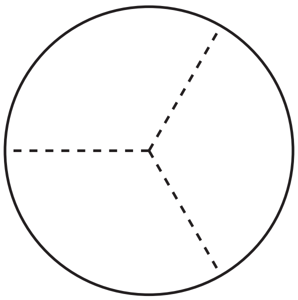
    ____

    ____

    b. How many thirds does Clare take?

c. How much of the circle is left?

2. **Craft Pieces**



Group

Priya

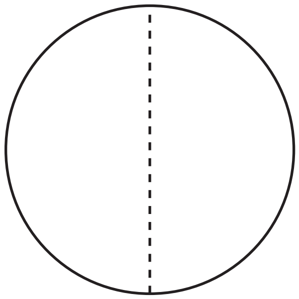
Han

Diego

a. Priya gets ____________ of the circle.

b. Together, Priya, Han, and Diego have ____________ of the circle.

3. **Craft Pieces**



Group

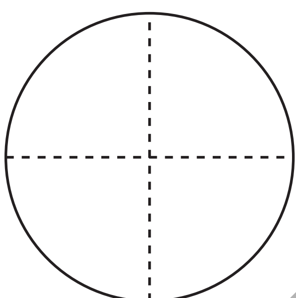
Jada

Mai

a. Each person gets ____________________ of the circle.

b. Together, Jada, and Mai have ________________of the circle.

4. **Craft Pieces**



Group

Elena

Tyler

Lin

Kiran

a. How many pieces does each person get?

____

b. How many pieces does the group have in all?

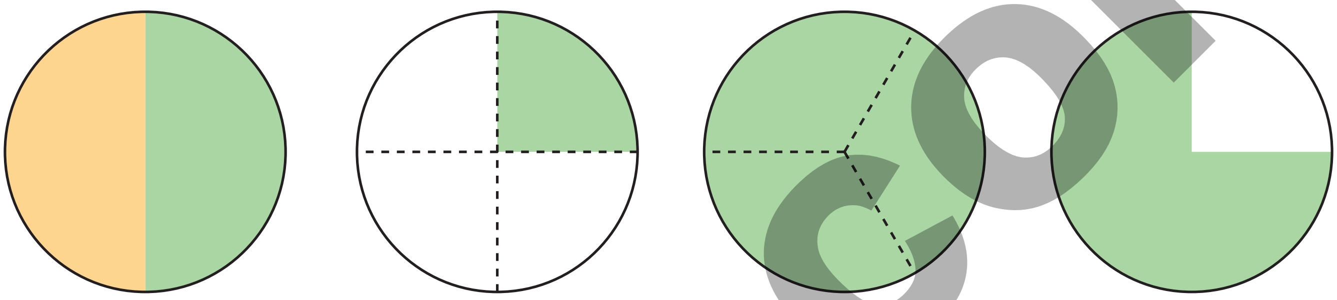
____

Activity 2

Equal-Size Shares of the Circle

Students painted these circles in art class.

A B C D



Write the letter of each image next to the matching story.

1. Noah painted most of his circle green. He left a quarter of the circle for Diego to paint. ________
2. Lin painted half of her circle green. Elena finished painting the circle. ________
3. Tyler split his circle into 4 equal-size pieces. He painted a quarter of the circle. ________
4. Mai, Clare, and Priya split a circle. They each painted an equal-size piece. ________

a. How much of the circle did each person paint?

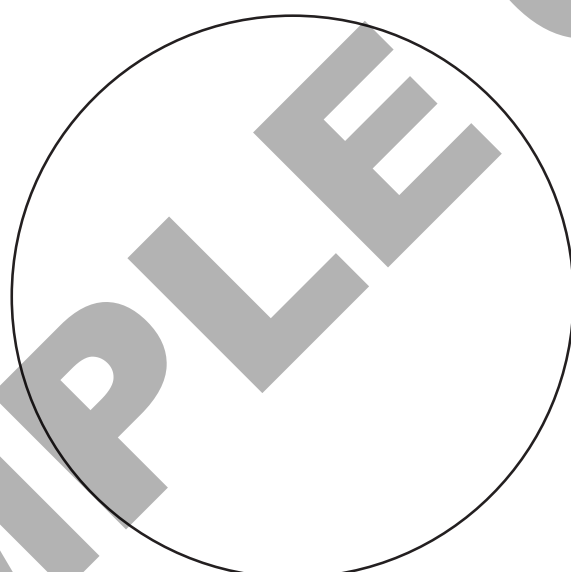
____

b. How much of the circle did they paint in all?

____

5. Now you try.

   - Partition the circle into 4 equal-size pieces.
   - Shade a quarter of the circle red.
   - Shade the rest of the circle blue.

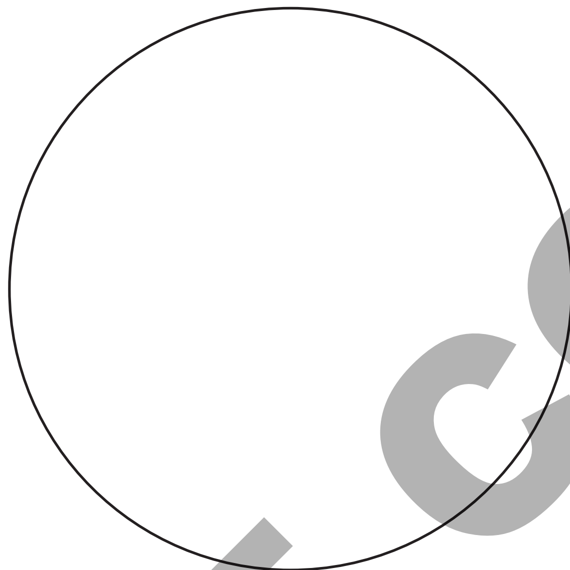


How much of the circle is shaded? _________________

6. ○ Partition the circle into 2 equal-size pieces.

○ Shade one half of the circle blue.

○ Shade the other piece yellow.



How much of the circle is yellow? ______________

How much of the circle is shaded? ________________

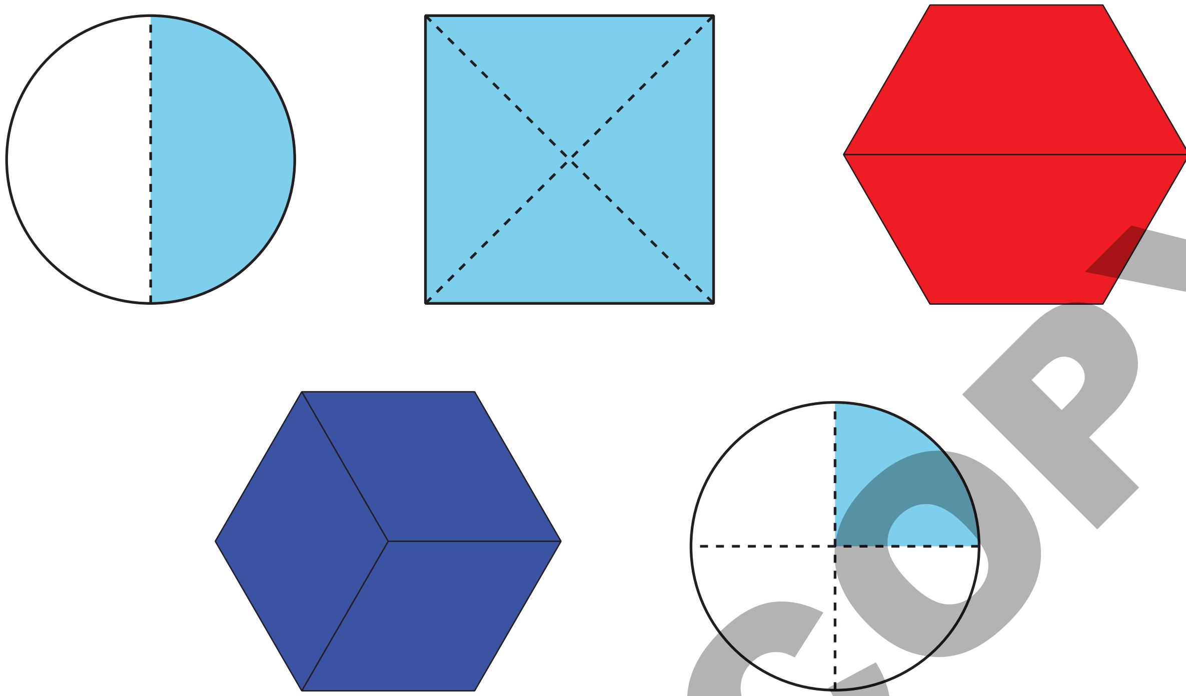
Section B Summary

We composed and decomposed shapes. Sometimes the pieces make up a whole shape, but all the pieces are not the same size. Sometimes the whole is partitioned into equal-size pieces with special names. We partitioned shapes into halves, thirds, and fourths. We learned that halves, thirds, and fourths of the same shape can look different. We learned that we can say a whole shape is 2 **halves**, 3 **thirds**, 4 f**ourths**, or 4 quarters.

Sec B

- When a whole shape is split into 2 pieces that are the same size, one piece is called **a half.**
- When a whole shape is split into 3 pieces that are the same size, one piece is called **a third.**
- When a whole shape is split into 4 pieces that are the same size, one piece is called **a fourth.**

How can you use halves, thirds, fourths, or quarters to describe the pieces of these shapes? How can you use halves, thirds, fourths, or quarters to describe the whole shape?



Unit 6, Lesson 10

Addressing CA CCSSM 2.G.1, 2.NBT.1; practicing MP2

Center Day 2

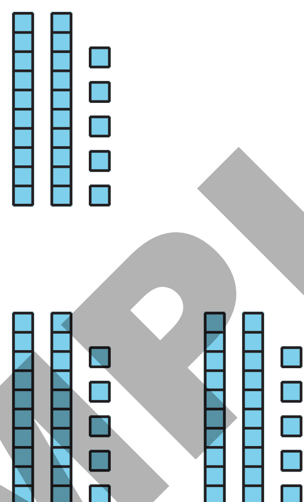
Let's work with shapes.

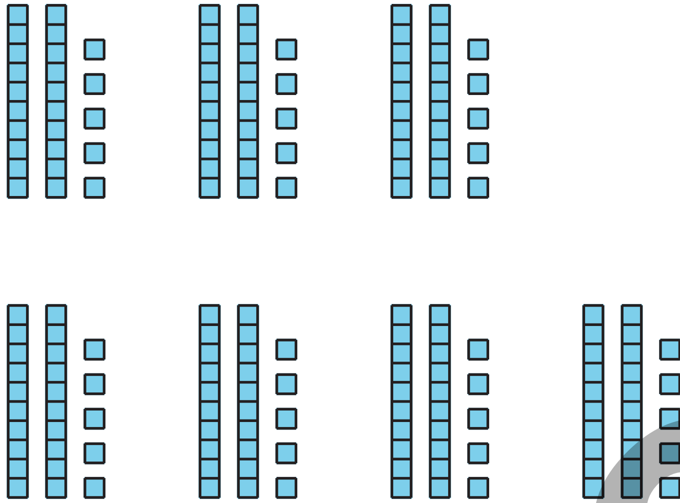
Sec B

Warm-up

How Many Do You See: Base-Ten Blocks

How many do you see? How do you see them?





Sec B

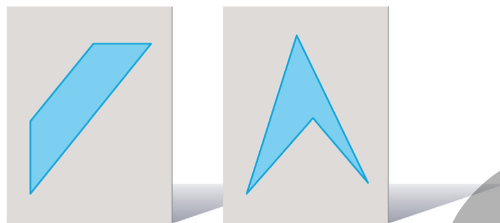
Activity 2

Centers: Choice Time

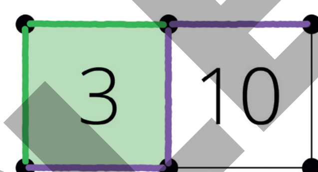
Sec B

Choose a center:

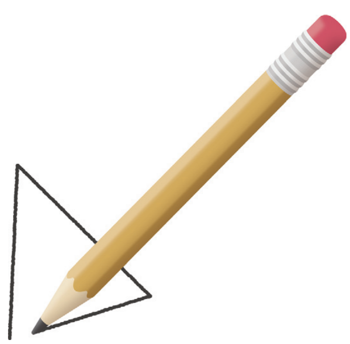
How Are They the Same?



Capture Squares



Can You Draw It?

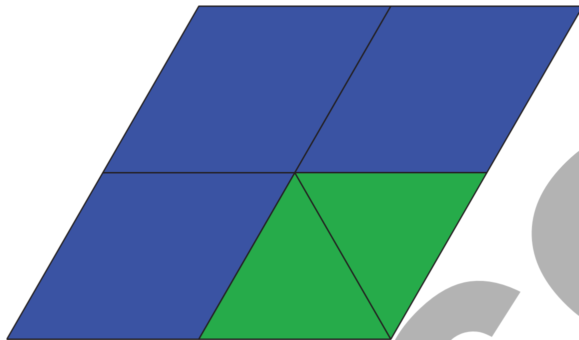


Practice Problems

6 Problems

1 from Unit 6, Lesson 6

Lin made this pattern block shape.



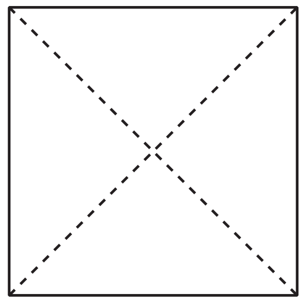
a. Describe the blocks Lin used to make her shape.

b. Build Lin's shape, using only equal-size shapes.

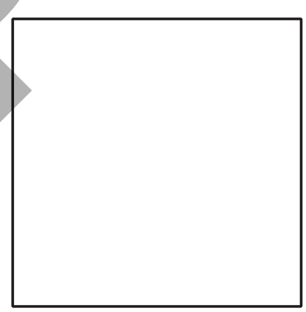
2 from Unit 6, Lesson 7

Sec B

a. Andre says each part of the square is a fourth. Do you agree? Explain your reasoning.

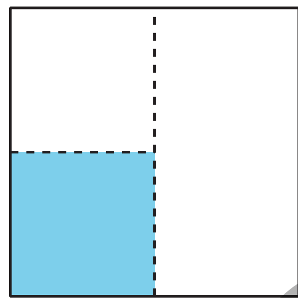


b. Partition the square into 4 equal-size parts in a different way.



3 from Unit 6, Lesson 8

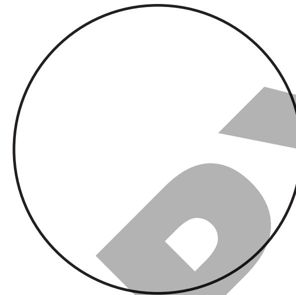
Diego cuts a square into 2 equal-size pieces. Then he cuts 1 of those pieces into 2 equal-size pieces. He says the shaded part is a third of the square. Do you agree? Explain your reasoning.



4 from Unit 6, Lesson 9

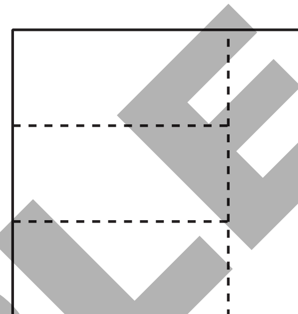
a. Partition the circle into 4 equal-size parts.
b. Shade 3 parts blue and 1 part red.
c. How much of the circle did you shade?

____



5 Exploration

Is the square partitioned into fourths? Explain your reasoning.



____

____

____

6 Exploration

Can you partition the square into equal-size parts?

a. 4 equal-size parts with 3 of the parts different shapes

b. 4 equal-size parts with 4 of the parts different shapes

Unit 6, Lesson 11

Addressing CA CCSSM 2.MD.7; building on 1.MD.3; building towards 2.MD.7; practicing MP2

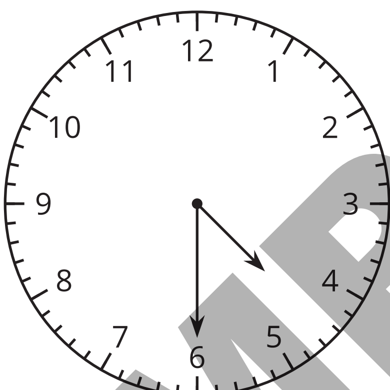
Tell Time with Halves and Quarters

Let's tell time with halves and quarters.

Sec C

Warm-up

What Do You Know about Ways to Tell Time?

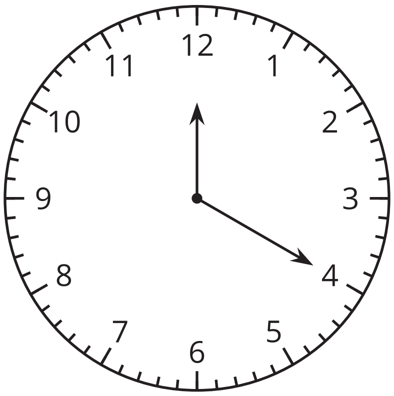


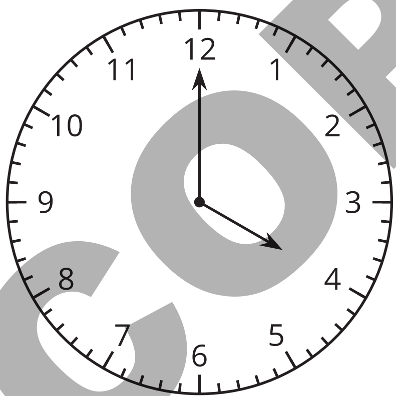
What do you know about telling time? What words do you use to talk about time?

Activity 1

Tell Time to the Hour and Half Hour

1. Circle the clock that shows 4 o’clock.

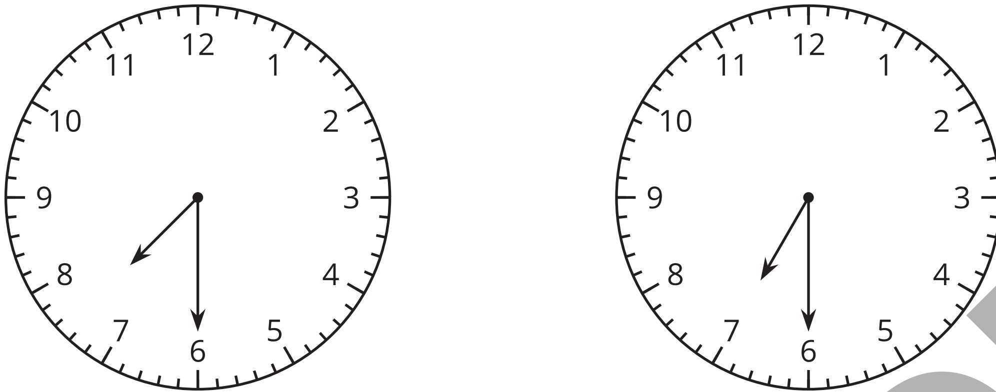




Why doesn’t the other clock show 4 o’clock? Explain your reasoning.

Sec C

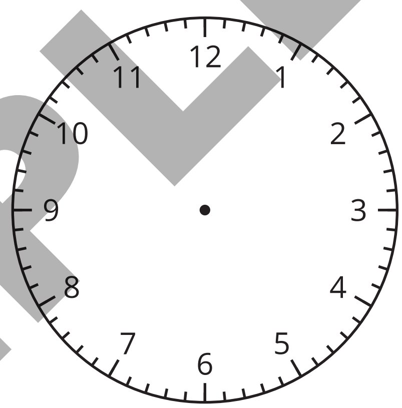
2. Circle the clock that shows half past 7.



Why doesn't the other clock show half past 7? Explain your reasoning.

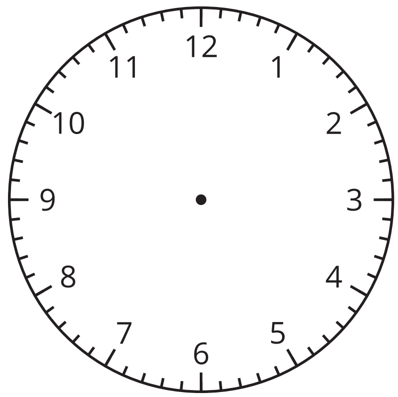
Sec C

3. Draw hands on the clock to show 10:00.



Illustrative® Mathematics
LEARN MATH FOR LIFE

4. Draw hands on the clock to show 1:30.

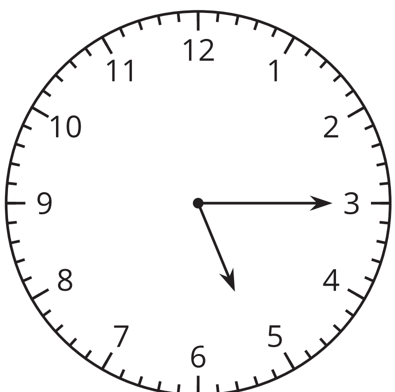


Activity 2

Card Sort: Halves and Quarters

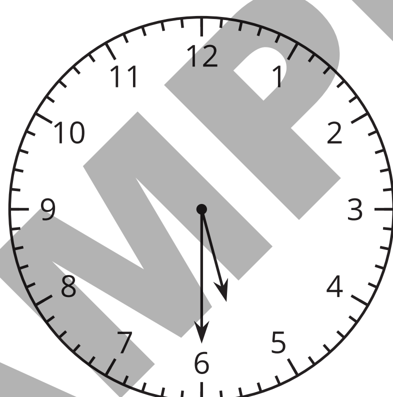
1. Your teacher will give you a set of cards. Match each clock face with a circle and a phrase. Be ready to explain your reasoning.
2. Write the time shown on each clock. Use the words “half past,” “quarter past,” or “quarter till.”

a.



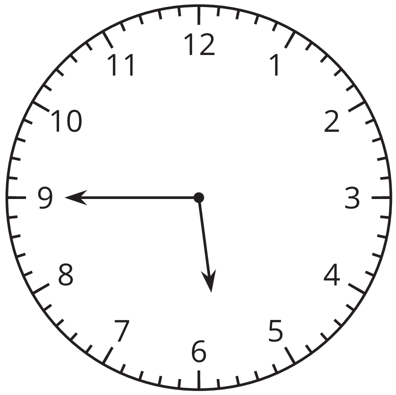
____

b.



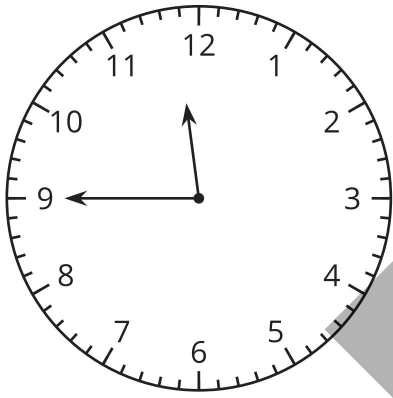
____

c.



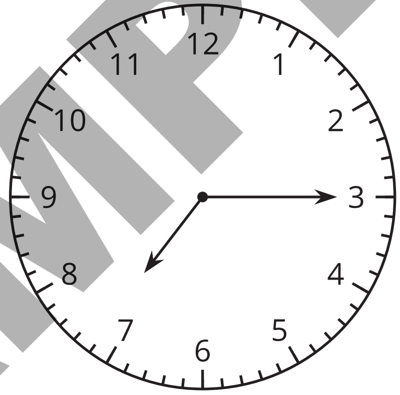
____

d.



____

e.



____

Unit 6, Lesson 12

Addressing CA CCSSM 2.MD.7, 2.NBT.2; building towards 2.MD.7; practicing MP8

Count by 5 to Tell Time

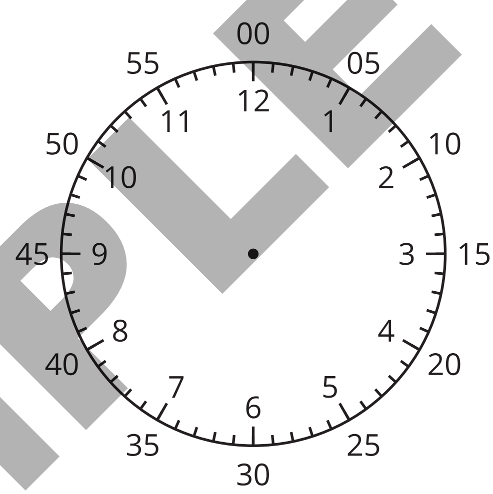
Let's tell time.

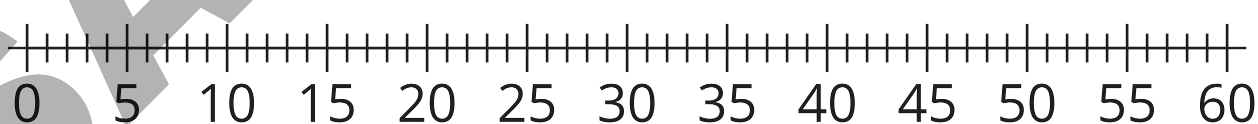
Warm-up

Sec C

Notice and Wonder: Number Line and Clock

What do you notice? What do you wonder?

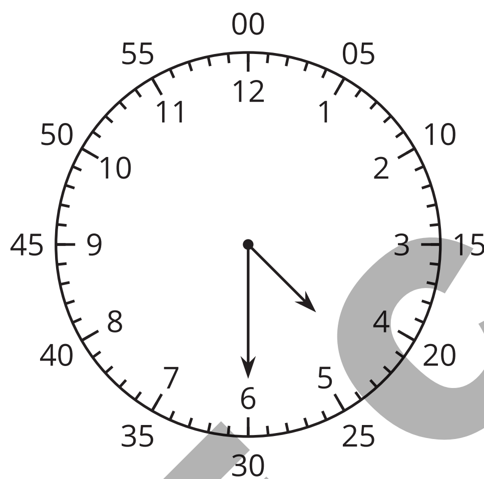




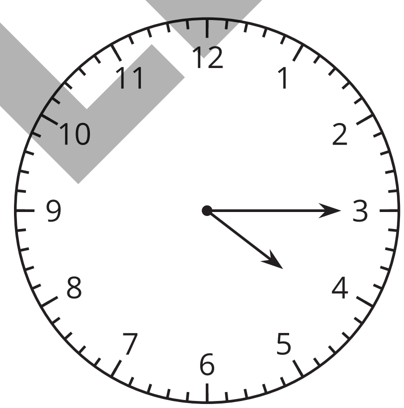
Activity 1

Count by 5 on the Clock

1. Discuss 2 ways to read the time on this clock.



2. What time does this clock show?



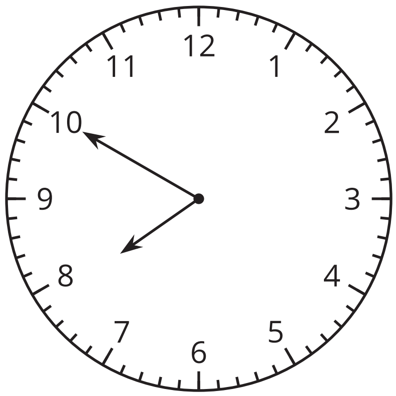
3. Read the time on each clock card with your partner. Put the clocks in order, based on the times they show.

Activity 2

Write the Time

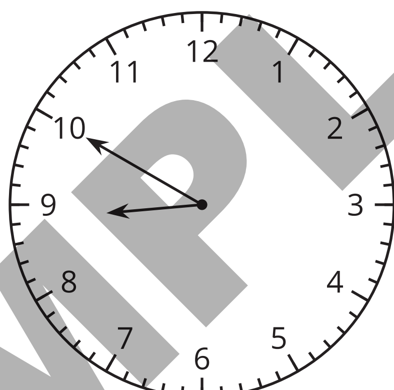
Write the time shown on each clock.

1.



_____ : _____

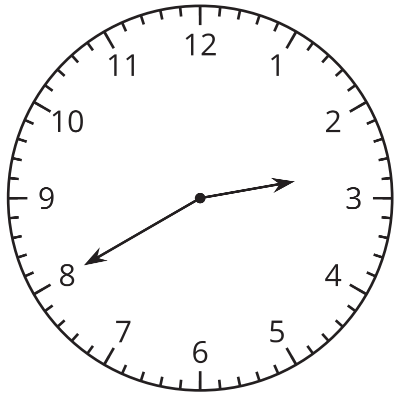
2.



_____ : _____

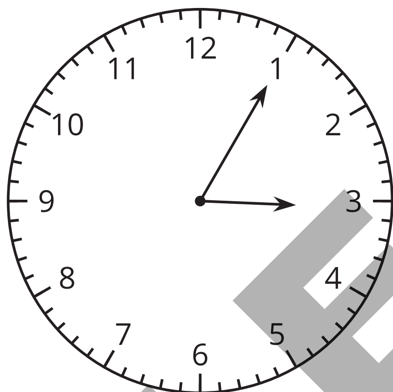
Sec C

3.



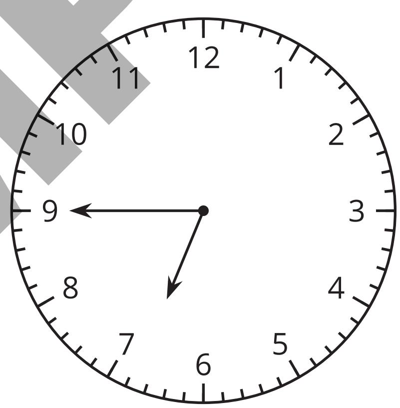
_____ : _____

4.



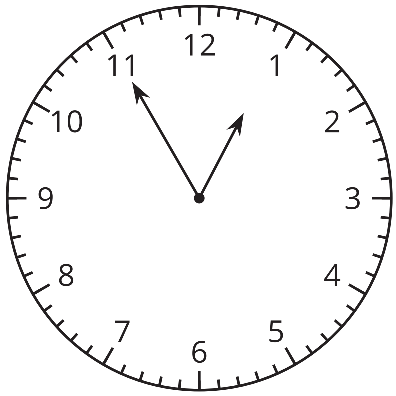
_____ : _____

5.



_____ : _____

6.



____ : ____

Sec C

Unit 6, Lesson 13

Addressing CA CCSSM 2.MD.7; practicing MP3 and MP6

Is It a.m. or p.m.?

Let’s read and write times, using a.m. or p.m.

Sec C

Activity 1

What Is the Time of Day?

1. Create your own representation for the hours in a day.
   - Circle and label the time you eat breakfast, lunch, and dinner.
   - Shade the time you might be sleeping.

Sec C

2. Show the time of day for each activity. Fill in the blank with a.m. or p.m. Explain your reasoning to your partner.

   a. Diego goes to baseball practice at 3:00 __________.
   b. Mai eats breakfast at 7:00 _________.
   c. Tyler eats lunch at 12:00 _________.
   d. Elena walks her dog at 2:00 __________.
   e. Han gets on the school bus at 8:00 __________.
   f. The second-grade class eats a snack at 10:00 __________.

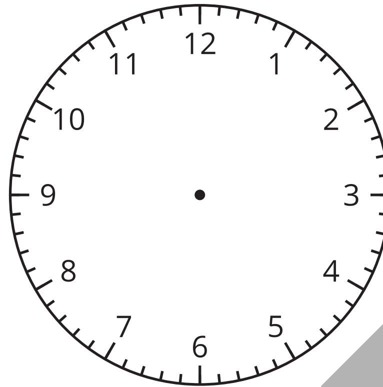
Activity 2

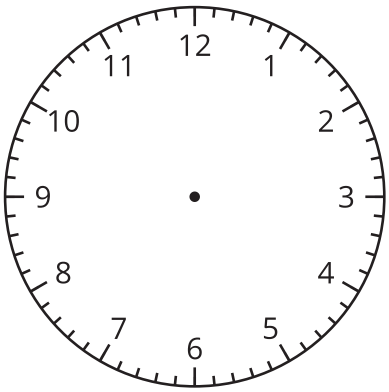
Tell Time with a.m. and p.m.

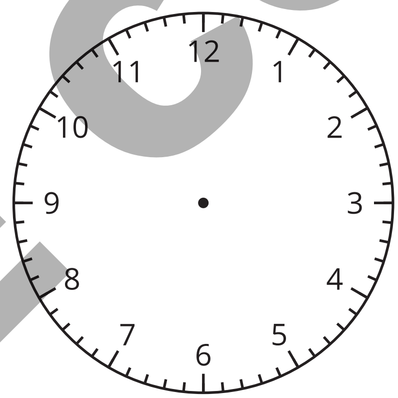
- Label each activity with a.m. or p.m.
- Draw a line to the time when the activity could take place.
- Draw hands on the clock to show the time.

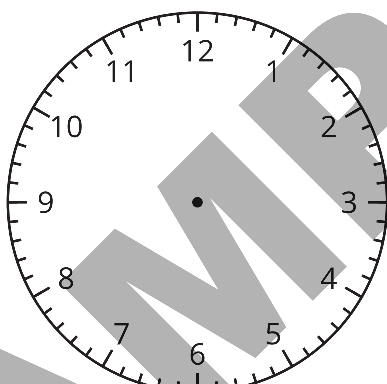
activity	time
do homework ________	1:50
get ready for bed ___________	12:05
eat lunch __________	4:35
on the way to school _________	8:10
in bed sleeping ________	7:55

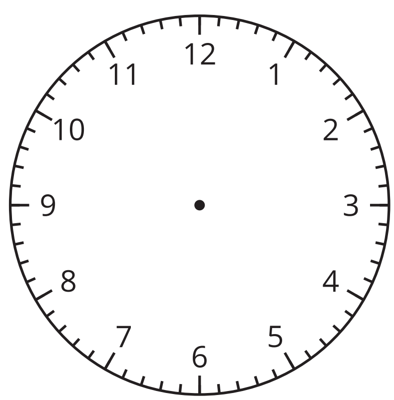
Sec C







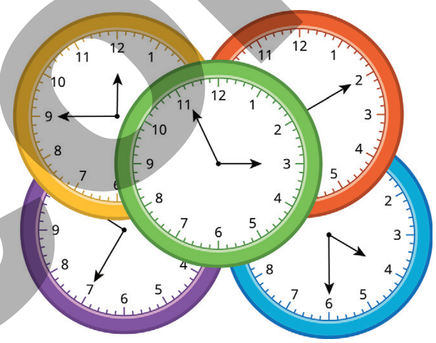




KH | iM Illustrative® Mathematics LEARN MATH FOR LIFE

Section C Summary

We learned to read clocks to tell and write the time to the nearest 5 minutes. We told the time in hours and minutes by starting at 1 and counting on by 5. We used “half past,” “quarter past,” or “quarter till” to tell time, using the minute hand. We used “a.m.” and “p.m.” to tell and show the time of day.



Unit 6, Lesson 14

Addressing CA CCSSM 2.G.1, 2.NBT.5, 2.NBT.6; practicing MP1

Center Day 3

Let's notice shapes in books, and practice adding and subtracting.

Warm-up

Sec C

Number Talk: Adding Up to 4 Two-digit Numbers

Find the value of each expression mentally.

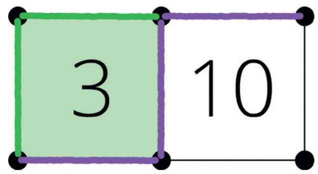
- $10 + 15 + 20 + 10$
- $5 + 30 + 20$
- $15 + 20 + 30$
- $25 + 15 + 5 + 15$

Activity 2

Centers: Choice Time

Choose a center.

Capture Squares



Number Puzzles

$$14 = 8 + \boxed{}$$

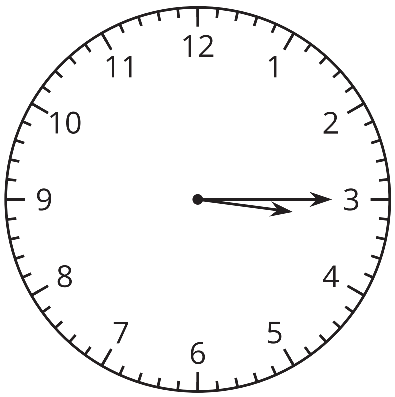
Picture Books

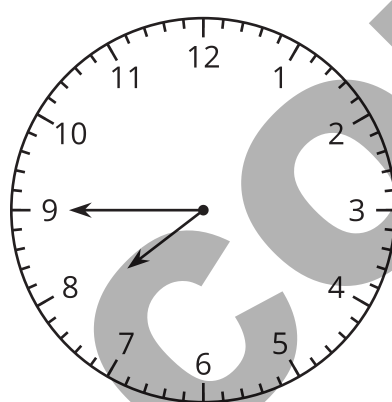
Practice Problems

6 Problems

1 from Unit 6, Lesson 11

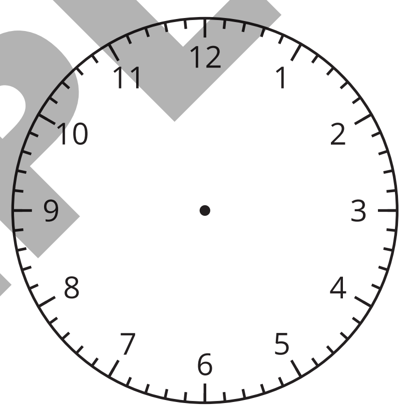
a. Write the time shown on the clocks. Use the words “half past,” “quarter past,” or “quarter till.”



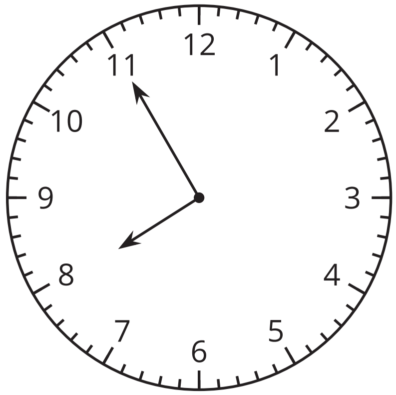


________________ ________________

b. Draw hands on the clock face to show half past 5.



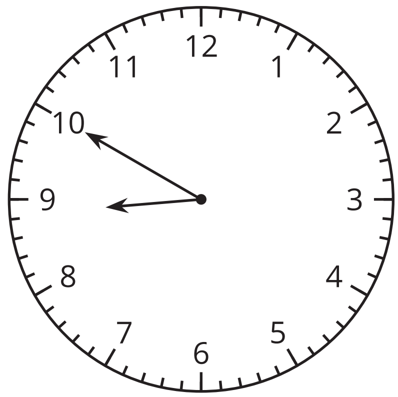
2 from Unit 6, Lesson 12



Priya says that the clock shows 7:11. Do you agree? Explain your reasoning.

3 from Unit 6, Lesson 13

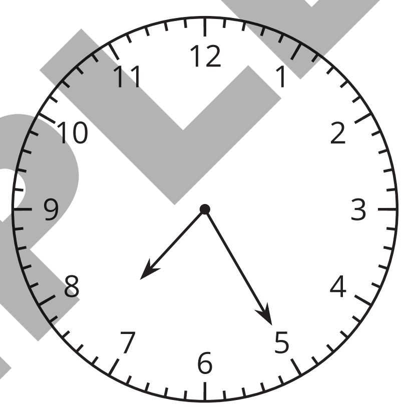
a.



The clock shows when Clare goes to bed.

Write the time with “a.m.” or “p.m.” __________

b.



The clock shows when Noah goes to school.

Write the time with “a.m.” or “p.m.” __________

4 Exploration

Mai gets to school at 7:35 a.m. She leaves school to go home 375 minutes later. What time does Mai go home? Explain your reasoning.

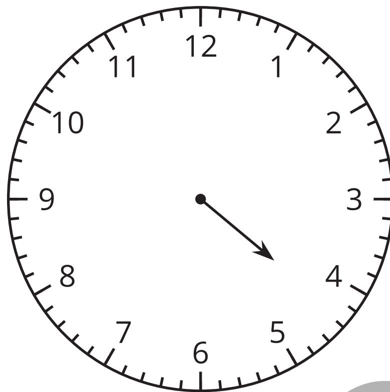
5 Exploration

Fill in the table with some of the things you do. Add a time for each activity.

activity	time
wake up	
leave for school	

6 Exploration

This clock only has an hour hand.



What can you say about the time shown on the clock?

Unit 6, Lesson 15

Addressing CA CCSSM 2.MD.8, 2.NBT.2, 2.NBT.5, 2.NBT.6, 2.NBT.8; building towards 2.MD.8; practicing MP7

Identify Pennies, Nickels, and Dimes

Let's learn about coins and their values.

Warm-up

Sec D

What Do You Know about Money?

What do you know about money?

Activity 1

Show Me the Money

Name the coins in each collection. Find the value in cents. The cent sign (¢) is a symbol used to represent cents. Show your thinking, using drawings, numbers, or words.

1. Andre's coins

a. Circle the name of the coins in this collection.

dimes   nickels   pennies

b. What is the value of the coins?

2. Clare's coins

a. Circle the name of the coins in this collection.

dimes nickels pennies

b. What is the value of the coins?

Sec D

3. Han's coins

a. Circle the name of the coins in this collection.

dimes nickels pennies

b. What is the value of the coins?

4. Show 2 different ways to make 10¢. Show your thinking, using drawings, numbers, or words.

Activity 2

Compare Coins

Name the coins in each collection. Then find the value in cents. Show your thinking, using drawings, numbers, or words.

1. Mai's coins

a. Circle the names of the coins in this collection.

dimes nickels pennies

b. What is the value of the coins?

Sec D

2. Andre's coins

a. Circle the names of the coins in this collection.

dimes nickels pennies

b. What is the value of the coins?

3. Clare's coins

a. Circle the names of the coins in this collection.

dimes nickels pennies

b. What is the value of the coins?

Sec D

4. Priya's coins

a. Circle the names of the coins in this collection.

dimes nickels pennies

b. What is the value of the coins?

Sec D

5. Compare your coin names. Tell your partner how you found the values.

6. Whose collection of coins has the least value?

7. Who has the most coins? Does this collection of coins have the greatest value? Explain your reasoning.

Sec D

Unit 6, Lesson 16

Addressing CA CCSSM 2.MD.8, 2.NBT.2, 2.NBT.5; practicing MP7 and MP8

Identify Quarters

Let's learn about quarters and find the value of different sets of coins.

Sec D

Activity 1

How Much Is a Quarter Worth?

Write the names and the values of the coins you know.

name	front	back	value
			
			
			
			

Complete the table so each row shows a value in cents. Represent that value with 2 different groups of coins.

coins	value in cents	coins with same value
1. 		
2. 	50 ¢	
3. 		
4. 		
5. 		
6.	80¢	

Sec D

Activity 2

More Coins to Compare

1. Elena's coins

Elena has:

quarters

dimes

nickels

pennies

How many cents? Show your thinking, using drawings, numbers, or words.

2. Tyler's coins

Tyler has:

quarters

dimes

nickels

pennies

How many cents? Show your thinking, using drawings, numbers, or words.

Sec D

KH | iM Illustrative® Mathematics LEARN MATH FOR LIFE

3. Make your own set of coins with a value of 97¢.

   I used:

   quarters

   dimes

   nickels

   pennies

4. Make your own set of coins with a value of 66¢. Use the fewest coins possible.

   I used:

   quarters

   dimes

   nickels

   pennies

Sec D

Unit 6, Lesson 17

Addressing CA CCSSM 2.MD.8, 2.NBT.5, 2.NBT.6; practicing MP7

Let's Make a Dollar

Let's make a dollar.

Warm-up

Number Talk: Add 25

Find the value of each expression mentally.

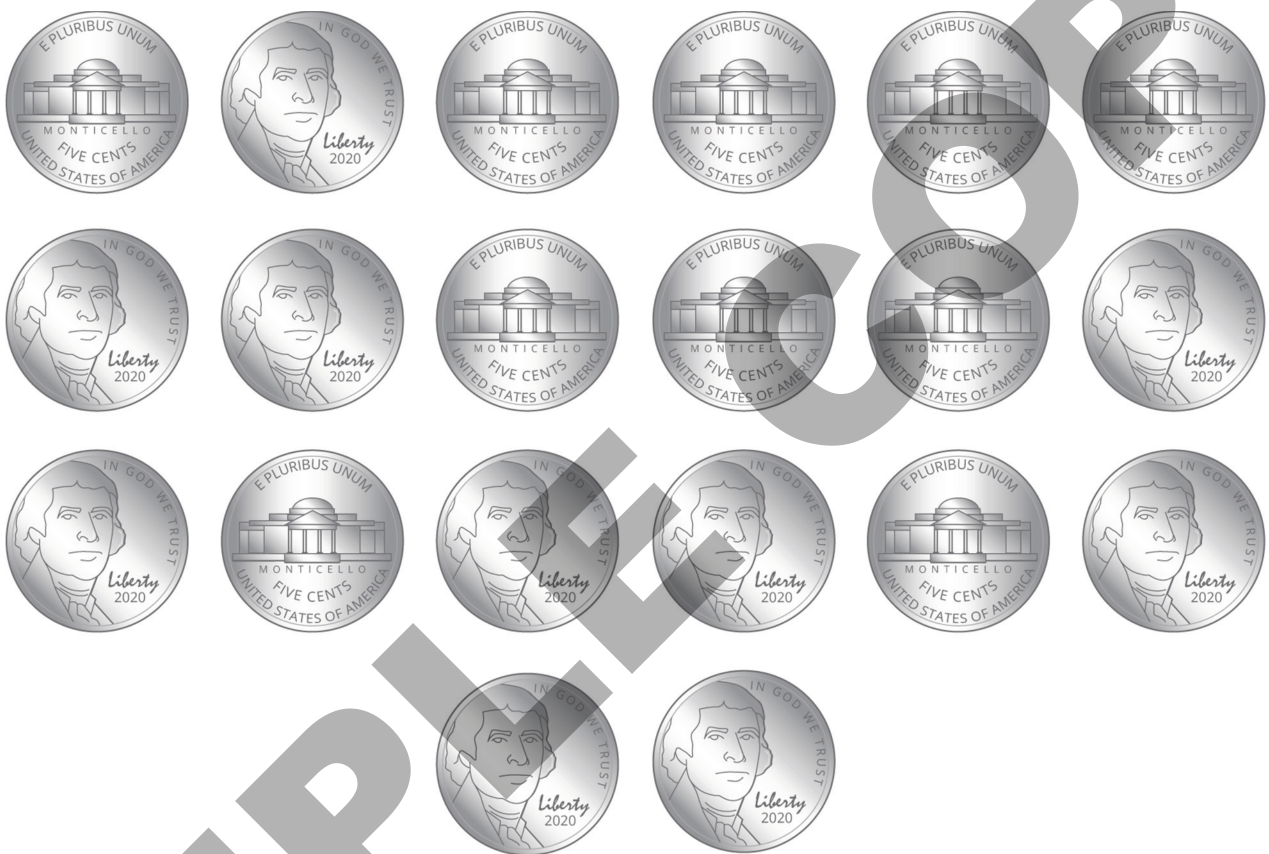
- 25 + 10 + 10 + 5
- 25 + 25
- 25 + 25 + 25
- 25 + 25 + 25 + 25

Sec D

Activity 1

Many Many Cents

1. Coin Collection A



Circle the coins in this collection.

quarters

dimes

nickels

pennies

How many coins? __________

What is the value in cents?

Show your thinking, using drawings, numbers, or words.

2. Coin Collection B

Circle the coins in this collection.

quarters

dimes

nickels

pennies

How many coins?__________

What is the value in cents?

Show your thinking, using drawings, numbers, or words.

3. Coin Collection C

Make a collection that has the same value as Collection A. Use only dimes.

Glue or draw coins here.

How many coins? ____________

What is the value in cents?

Show your thinking, using drawings, numbers, or words.

Sec D

Activity 2

The Value of a Dollar

Sec D

1. Andre empties his pockets. He finds these coins.

How much money does he have? Show your thinking, using drawings, numbers, or words.

2. Han empties his pockets. He finds these coins.

How much money does he have? Show your thinking, using drawings, numbers, or words.

Sec D

3. Priya has \$1 and 18¢ in her pocket.

   a. If Priya only had coins in her pocket, what coins could she have? Represent Priya's coins.

   b. If Priya had a dollar bill and some coins, what coins could she have? Represent Priya's money.

Sec D

Unit 6, Lesson 18

Addressing CA CCSSM 2.MD.8, 2.NBT.5, 2.OA.1; building towards 2.MD.8; practicing MP2

Money Problems

Let's solve money problems.

Warm-up

How Many Do You See: Groups of Coins

How many do you see? How do you see them?


E PLURIBUS UNUM
MONTICELLO
FIVE CENTS
UNITED STATES OF AMERICA
IN GOD WE TRUST
Liberty
2020


IN GOD WE TRUST
Liberty
2020
E PLURIBUS UNUM
MONTICELLO
FIVE CENTS
UNITED STATES OF AMERICA

Sec D

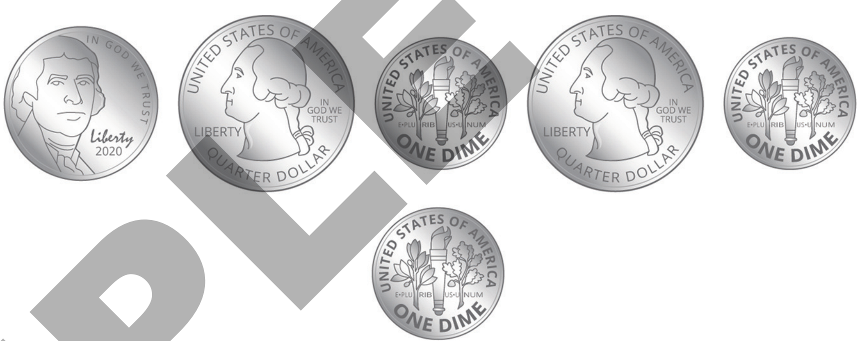
KH | iM Illustrative® Mathematics LEARN MATH FOR LIFE

Activity 1

Shop for School Supplies

items	cost
pack of pencils	75¢
pencil sharpener	35¢
eraser	45¢
pen	18¢

1. Lin has these coins.



Lin buys an eraser. How much money does she have left? Show your thinking, using drawings, numbers, or words.

Sec D

2. Diego has these coins.

Diego buys a pack of pencils. How much money does he have left? Show your thinking, using drawings, numbers, or words.

Activity 2

Shop with a Dollar

Show your thinking, using drawings, numbers, or words.

supplies	cost
notebook	26¢
colored pencils	18¢
pencil box	39¢
glue stick	44¢

Sec D

1. Clare has $1. She buys a pencil box and colored pencils. How much money does she have left?

2. Tyler has $1. He buys a notebook and a pencil box. How much money does he have left?

3. Andre has $1. He wants to buy a glue stick, a pencil box, and colored pencils. Does he have enough money?

Sec D

Unit 6, Lesson 19

Addressing CA CCSSM 2.MD.8, 2.NBT.5, 2.OA.1; practicing MP2 and MP3

More Money Problems

Let's solve money problems with a lot of dollars.

Warm-up

Number Talk: Use 10 to Add within 100

Find the value of each expression mentally.

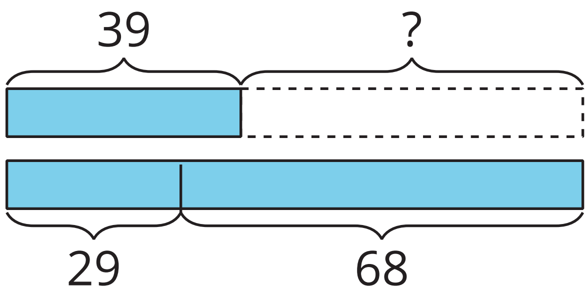
- $18 + 32$
- $28 + 32$
- $28 + 34$
- $38 + 35$

Activity 1

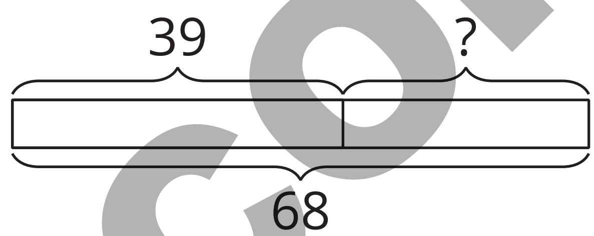
Shop with Friends

Write the letter next to the story problem it represents.

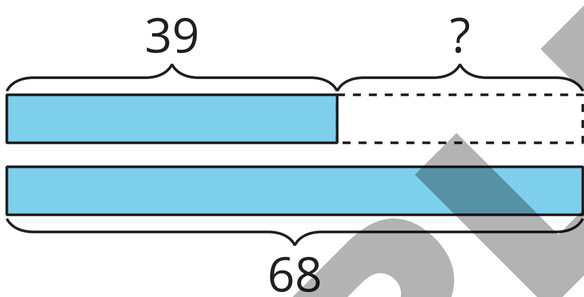
A



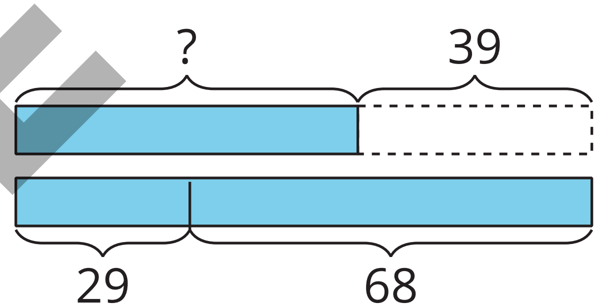
B



C



D



1. A basketball costs $39 less than a soccer ball and a football together.
   The soccer ball costs $29. The football costs $68.
   How many dollars does the basketball cost? _______

2. Jada is saving to buy a giant set of building bricks. The set costs $68. Jada has $39.

   How much more does she need? ____________

3. A pair of pants costs $39.

   A shirt costs $29. A pair of shoes costs $68.

   How many more dollars do the shirt and the shoes cost than the pants? _________

4. Diego has $39. He gets some money for his birthday. Now he has $68.

   How much money does Diego get for his birthday? __________

Activity 2

Money among Friends

Show your thinking, using drawings, numbers, or words. Label your final answer with the dollar sign ($).

1. Mai has $27, Elena has $48, and Jada has $16. How much money do they have in all?

2. Tyler has $45, Andre has $36, and Noah has $28. How much less money does Tyler have than Andre and Noah together?

3. Lin has $19. Lin and Han have $45 in all. Then Han gets $17 more. How much money does he have now?

Section D Summary

We learned the values of quarters, dimes, nickels, and pennies. We learned how to recognize each coin. We used addition and counting strategies to find the values of coin collections. We learned that 1 dollar has the same value as 100 cents. We combined coins to make $1. We also solved story problems about money.

name	front	back	value
			
			
			
			
			

Unit 6, Lesson 20

Addressing CA CCSSM 2.MD.8, 2.NBT.5, 2.OA.1; building on 2.NBT.4, 2.NBT.6; practicing MP3

Does My Answer Make Sense?

Let's decide if our answers make sense.

Warm-up

True or False: Is It Greater?

Sec D

Decide if each statement is true or false. Be prepared to explain your reasoning.

- $20 + 20 + 20 > 100$
- $41 + 30 + 23 > 100$
- $46 + 33 + 24 > 100$

Activity 1

Noah's Estimate

supplies	cost
notebook	26¢
colored pencil	18¢
pencil box	39¢
glue stick	44¢

1. Noah has $1 to spend at the school store. He thinks that he can buy a glue stick, a pencil box, and a notebook.

   Does Noah's estimate make sense? Explain your reasoning to your partner.

Sec D

2. Noah tries to buy each set of items. Estimate if he will spend less than or more than $1. Explain your reasoning to your partner.

    a. 2 glue sticks
    b. 2 pencil boxes and 1 colored pencil
    c. 2 glue sticks and 1 colored pencil
    d. 4 notebooks

Activity 2

Solve and Reason

supplies	cost
notebook	26¢
colored pencil	18¢
pencil box	39¢
glue stick	44¢

1. Solve 1 of the problems. Show your thinking, using drawings, numbers, or words.

    a. Andre buys a glue stick and a notebook. He has 15 cents left over. How much money did he start with?

    b. Jada buys a pencil box and 2 colored pencils. Lin buys 2 glue sticks. Who spends more? How much more?

2. Trade work with a partner. Decide whether your partner's answer makes sense. Explain your reasoning.

Sec D

Unit 6, Lesson 21

Addressing CA CCSSM 2.MD.8, 2.NBT.5, 2.NBT.6; practicing MP2

Center Day 4

Let's compare coin collections and work with shapes.

Warm-up

Number Talk: Coin Counting Connections

Find the value of each expression mentally.

- 20 + 25 + 5 + 5
- 15 + 25 + 25
- 25 + 15 + 25 + 6
- 20 + 15 + 30 + 7

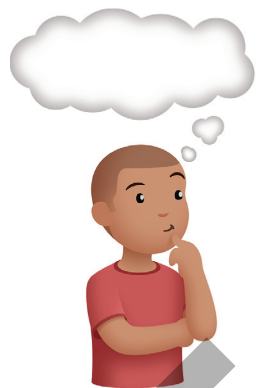
Sec D

Activity 2

Centers: Choice Time

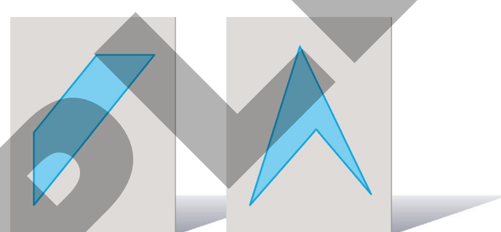
Choose a center.

Would You Rather?

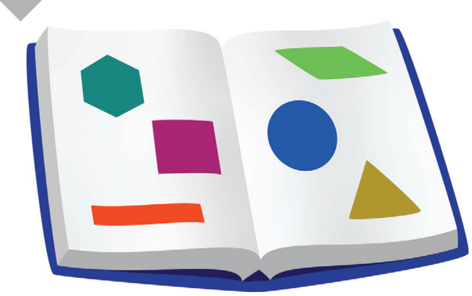


Sec D

How Are They the Same?



Picture Books



KH | iM Illustrative® Mathematics LEARN MATH FOR LIFE

Unit 6, Lesson 22

Addressing CA CCSSM 2.MD.8, 2.NBT.5; building towards 2.MD.8; practicing MP4

Spending Money

Let's think about spending money.

Warm-up

Notice and Wonder: The Fair

What do you notice? What do you wonder?

Activity 1

Han's Spending Money

Han has \$40 to spend this weekend. He and his cousins are going to the fair and the aquarium.

Solve the problems. Show your thinking, using drawings, numbers, or words.

1. Han spends \$11 on rides, \$8 on face painting, and \$4 on snacks. How much money does he have left?

Sec D

2. Han wants to play a game that costs \$8. Does he have enough money to play the game? How do you know?

3. What will happen to Han's money if he plays the game? What will happen if he doesn't? Do you think he should play the game? Explain your reasoning.

Sec D

Activity 2

Your Spending Money

1. How much money did you bring to the fair?
   Use the table. Decide how to spend your money.

ride	price
arcade game	$3
roller coaster	$7
Ferris wheel	$4
water ride	$5

snack	price
ice cream	$4
popcorn	$2
cotton candy	$3
candy apple	$5

souvenir	price
T-shirt	\$15
magnet	\$8
bookmark	\$4
postcard	\$2

2. Record the money you spend. What did you buy? How much money do you have left?

Sec D

Practice Problems

7 Problems

1 from Unit 6, Lesson 15

a. Which coins are in the picture?

b. What is the value of the coins altogether?

2 from Unit 6, Lesson 16

a. Which coins are in the picture?

b. What is the value of the coins altogether?

3 from Unit 6, Lesson 17

Select 3 collections of coins that show a dollar.

A. 

B. 

C. 

D. 

E. 

F. 

4 from Unit 6, Lesson 18

Mai has 92 cents. She gives Lin 38 cents. How many cents does Mai have now?

Sec D

5 from Unit 6, Lesson 19

Diego's bike cost $55.

That's $27 less than Clare's bike cost. How many dollars did Clare's bike cost?

6 Exploration

Lin has 7 coins. She has 31 cents in all.

a. What coins could Lin have?

b. Can you find more than 1 possibility? Explain your reasoning.

c. Can you find more than 2 possibilities? Explain your reasoning.

7 Exploration

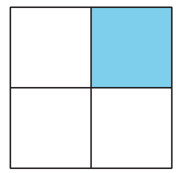
item	cost (cents)
notebook	25
colored pencil	18
pencil box	39
glue stick	44

Jada spent exactly 1 dollar. What could Jada have bought? Find 2 different solutions.

Glossary

- a fourth

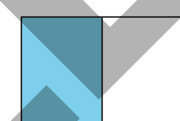
  One of the pieces created when a shape is split into 4 equal parts.

  A fourth, or a quarter, of the square is shaded.

- a half

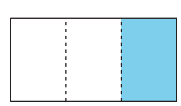
  One of the pieces created when a shape is split into 2 equal parts.

  A half of the rectangle is shaded.

- a third

  One piece of a shape when the shape is split into 3 pieces that are the same size.

  A third of the rectangle is shaded.

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

- centimeter
  A metric unit of length.

  Examples:
  A paper clip is about 1 centimeter wide.
  A staple is about 1 centimeter long.
  A pinkie finger is about 1 centimeter wide.

- compose
  To put a number or shape together using its parts.

  Examples:
  Compose 1 ten from 10 ones.
  Compose 14 from 1 ten and 4 ones.
  Compose 1 rectangle from two triangles.

- cube
  A solid shape with 6 square faces that are the same size.

- data

  A collection of facts, such as numbers, measurements, or observations.

  Examples:
  the color of each pencil in a box
  the number of pencils sold each day
  the length of each pencil in a box

- decompose

  To break apart a number or shape into its parts.

  Examples:
  Decompose 1 ten into 10 ones.
  Decompose 14 into 1 ten and 4 ones.
  Decompose 1 rectangle into 2 triangles.

- expanded form

  A way of writing a number as a sum of the values of the digits.

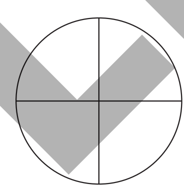
  Example: 482 written in expanded form is 400 + 80 + 2.

- face
  A flat side of a solid shape.

- foot
  A U.S. unit of length.

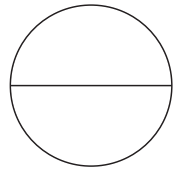
  Examples:
  A ruler is 1 foot long.
  A notebook is about 1 foot long.
  A football is about 1 foot long.

- fourths
  The pieces created when a shape is split into 4 pieces that are the same size.

  The circle is split into fourths, or quarters.

- halves
  The pieces created when a shape is split into 2 pieces that are the same size.



The circle is split into halves.

- hexagon
  A shape with 6 straight sides and 6 corners.

- hundred
  A group of 10 tens or 100 ones.

- inch
  A U.S. unit of length.

  Examples:
  A paper clip is about 1 inch long.
  A quarter is about 1 inch wide.
  The side of a connecting cube is about 1 inch long.

- line plot
  A way to show data with Xs or other marks above a number line. Each mark represents 1 number or 1 measurement.

- meter
  A metric unit of length.

  Examples:
  A baseball bat is about 1 meter long.
  A yardstick is about 1 meter long.
  A door is about 1 meter wide.

- number line
  A diagram that represents numbers as lengths away from 0 along a straight line.

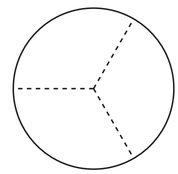
- pentagon
  A shape with 5 straight sides and 5 corners.

- picture graph
  A way to show data using pictures or symbols to represent how many in each group or category.

- quadrilateral
  A flat shape with 4 straight sides and 4 corners.

- thirds

  The pieces created when a shape is split into 3 pieces that are the same size.

  This circle is split into thirds.

Attributions

The *Common Core State Standards* are trademarks of the Common Core State Standards Initiative. © Copyright 2010. National Governors Association Center for Best Practices and Council of Chief State School Officers. All rights reserved. http://www.corestandards.org/

The *5 Practices* are from Smith, M. S., & Stein, M. K. (2011). *5 practices for orchestrating productive mathematics discussions*. National Council of Teachers of Mathematics.

Notice and Wonder and I Notice/I Wonder are trademarks of the National Council of Teachers of Mathematics, reflecting approaches developed by the Math Forum (http://www.nctm.org/ mathforum/), and used here with permission.

Images that are not the original work of Illustrative Mathematics are in the public domain or released under a Creative Commons Attribution (CC-BY) license, and include an appropriate citation. Images that are the original work of Illustrative Mathematics do not include such a citation.

Reference links are provided as a convenience for informational purposes only and were active and accurate at the time of publication. They do not constitute an endorsement or approval by Illustrative Mathematics of any products, services, or opinions of the corporation, organization, or individual. Illustrative Mathematics is not responsible for the content of external sites.

Image Attributions

By adonyig. Pixabay. https://pixabay.com/photos/school-back-to-school-brush-paint-3593263/.

By Alan Levine. CC BY 2.0. pxhere. https://pxhere.com/en/photo/206084.

Colorful Parrot Craft, by Illustrative Mathematics. CC BY 4.0. www.illustrativemathematics.org.

By islandworks. Pixabay. https://pixabay.com/photos/carnival-festival-carousel-festive-2570021/.

Citations

Unit 6: Geometry, Time, and Money

Lesson Grade2.6.B9

Manualidades, M. Y. M. (2016, June 2). 10 Divertidas Manualidades Con Papel. más y más manualidades. Retrieved January 20, 2023, from http://masymasmanualidades.blogspot.com/2016/05/10-divertidas-manualidades-con-papel.html

Notes

Notes

California Common Core State Standards for Mathematics (CA CCSSM) Reference

2.G: Grade 2 – Geometry

Reason with shapes and their attributes.

2.G.1

Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Sizes are compared directly or visually, not compared by measuring. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

2.G.2

Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

2.G.3

Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of,* etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

2.MD: Grade 2 – Measurement and Data

Measure and estimate lengths in standard units.

2.MD.1

Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

2.MD.2

Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

2.MD.3

Estimate lengths using units of inches, feet, centimeters, and meters.

2.MD.4

Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.

2.MD.5

Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

2.MD.6

Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

Work with time and money.

2.MD.7

Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. Know relationships of time (e.g., minutes in an hour, days in a month, weeks in a year). CA

2.MD.8

Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Represent and interpret data.

2.MD.10

Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems See Glossary, Table 1. using information presented in a bar graph.

2.MD.9

Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked offinwhole-numberunits.

2.NBT: Grade 2 – Number and Operations in Base Ten

Understand place value.

2.NBT.1

Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

2.NBT.1a

100 can be thought of as a bundle of ten tens—called a "hundred."

2.NBT.1b

The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

2.NBT.2

Count within 1000; skip-count by 5s, 10s, and 100s.

2.NBT.3

Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

2.NBT.4

Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Use place value understanding and properties of operations to add and subtract.

2.NBT.5

Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

2.NBT.6

Add up to four two-digit numbers using strategies based on place value and properties of operations.

2.NBT.7

Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

2.NBT.7.1

Use estimation strategies to make reasonable estimates in problem solving. CA

2.NBT.8

Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.

2.NBT.9

Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.

2.OA: Grade 2 – Operations and Algebraic Thinking

Represent and solve problems involving addition and subtraction.

2.OA.1

Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. See Glossary, Table 1.

Add and subtract within 20.

2.OA.2

Fluently add and subtract within 20 using mental strategies. See standard 1.OA.6 for a list of mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Work with equal groups of objects to gain foundations for multiplication.

2.OA.3

Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

2.OA.4

Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

California Common Core State Standards for Mathematics Standards for Mathematical Practice

These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

MP1. Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

MP2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

MP3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

- Students build proofs by induction and proofs by contradiction. CA 3.1 (for higher mathematics only).

MP4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

MP5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

MP6. Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

MP7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well-remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

MP8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$.

Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Mathematical Practices to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

IMKH California

An IM K–12 Math Curriculum

GRADE 2

Student Edition

UNITS 5 | 6

Illustrative® Mathematics LEARN MATH FOR LIFE | Kendall Hunt

Book 3

Certified by Illustrative Mathematics®

ISBN 9798385165551

K5_vII

20240207

Table of Contents

UNIT 6 GEOMETRY, TIME, AND MONEY

GRADE 2

UNIT

5

Numbers to 1,000

Content Connections

In this unit you will use the base-ten system and number lines to explore three-digit numbers. You will make connections by:

- **Exploring Changing Quantities** while adding and subtracting two- and three- digit numbers and explaining your work using drawings or other representations.

- **Discovering Shape and Space** while using a number line to represent the relative distance of whole numbers within 1,000 from 0.
- **Taking Wholes Apart, Putting Parts Together** while skip counting, counting bundles of 10, and using expanded notation to understand the composition and place value of numbers to 1,000.
- **Reasoning with Data** while using a variety of representations to build understanding of three-digit numbers including base-ten blocks, base-ten diagrams/drawings, number lines, expressions or equations.

Addressing the Standards

As you work your way through **Unit 5 Numbers to 1,000,** you will use some mathematical practices that you may have started using in kindergarten and have continued strengthening over your school career. These practices describe types of thinking or behaviors that you might use to solve specific math problems.

Mathematical Practices	Where You Use these MPs
MP1 Make sense of problems and persevere in solving them.	Lesson 7
MP2 Reason abstractly and quantitatively.	Lesson 9 and 13
MP3 Construct viable arguments and critique the reasoning of others.	Lesson 4, 9, and 12
MP4 Model with mathematics.	Lesson 14
MP5 Use appropriate tools strategically.	Lesson 7, 11, and 12
MP6 Attend to precision.	Lesson 4, 6, and 11
MP7 Look for and make use of structure.	Lesson 1, 2, 3, 5, and 6
MP8 Look for and express regularity in repeated reasoning.	Lesson 1, 2, 8, and 10

The California Common Core State Standards for Mathematics (CA CCSSM) describe the topics you will learn in this unit. Many of these topics build upon knowledge you already have and challenge you to expand upon that knowledge. The table below shows what standards are being addressed in this unit.

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Dollars and Cents • Problem Solving with Measure • Skip Counting to 100	**2.NBT.1** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens—called a "hundred." b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	Lesson 1, 3, 4, 5, 8, 9, 11, 12, 13, and 14
• Dollars and Cents • Problem Solving with Measure • Skip Counting to 100	**2.NBT.1a** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens—called a "hundred."	Lesson 1, 2, 3, and 7

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Dollars and Cents • Problem Solving with Measure • Skip Counting to 100	**2.NBT.1b** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	Lesson 2 and 3
• Represent Data • Dollars and Cents	**2.NBT.2** Count within 1000; skip-count by 2s, 5s, 10s, and 100s.	Lesson 1, 2, 3, and 8
• Skip Counting to 100	**2.NBT.3** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	Lesson 4, 5, 6, and 11

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Number Strategies	**2.NBT.4** Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	Lesson 9, 10, 11, 12, and 13
• Dollars and Cents • Number Strategies	**2.NBT.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	Lesson 3 and 7
• Skip Counting to 100	**2.NBT.8** Mentally add 10 or 100 to a given number 100–900 and mentally subtract 10 or 100 from a given number 100–900.	Lesson 10 and 12
• Measure and Compare Objects • Squares in an Array	**2.MD.6** Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, . . . , and represent whole-number sums and differences within 100 on a number line diagram.	Lesson 8 and 9

Unit 5, Lesson 1

Addressing CA CCSSM 2.NBT.1, 2.NBT.1a, 2.NBT.2; building towards 2.NBT.1; practicing MP7 and MP8

Sec A

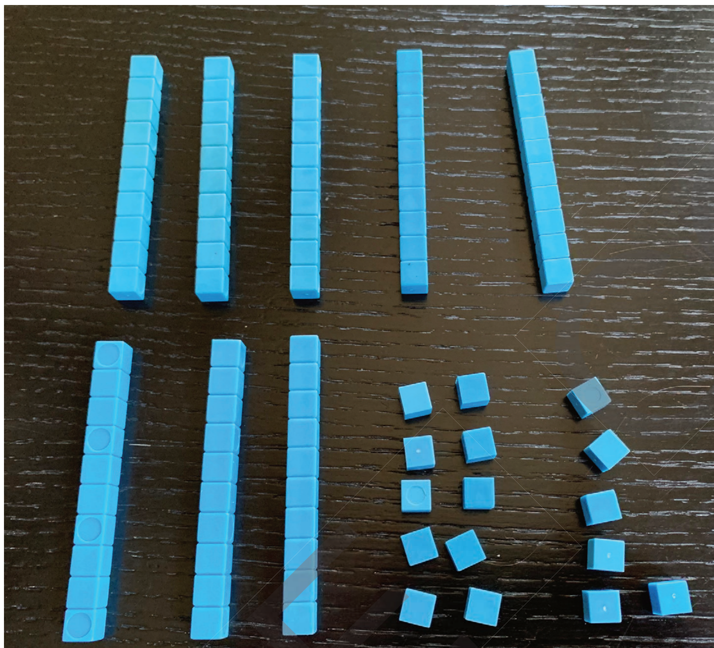
How Do We Compose a Hundred?

Let's compose a hundred.

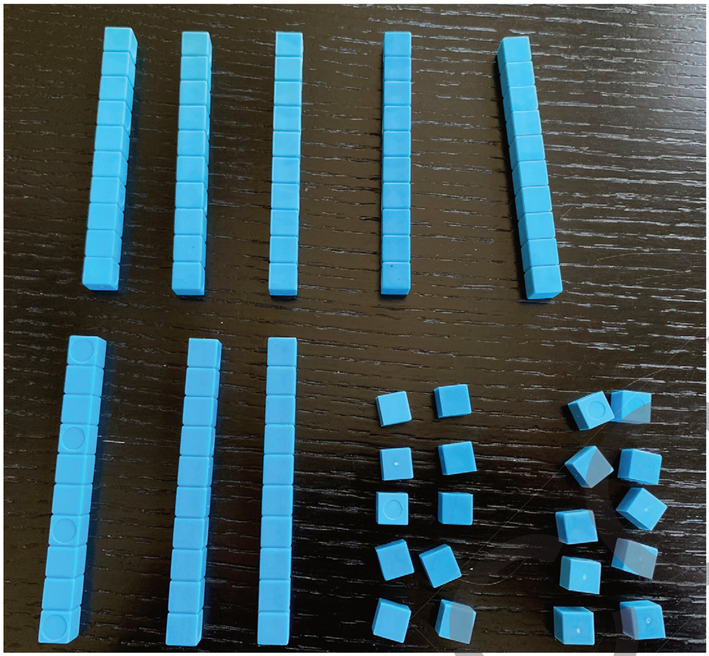
Activity 1

How Do We Make a Hundred?

1. How many do you see? How do you see them?



2. Andre added more blocks.



a. What is the value of his blocks now?

b. How many tens and ones does he have?

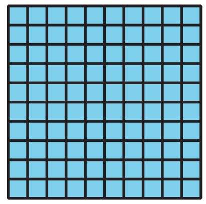
3. Andre made the same number with the fewest number of blocks possible. Draw a base-ten diagram to show how the number looks now. Use your base-ten blocks to help.

Sec A

Activity 2

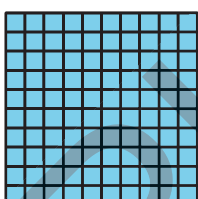
Different Ways to Make 100

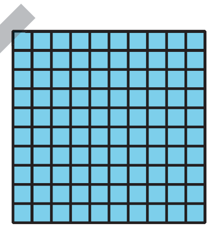
Three students look at 100 small squares arranged this way.

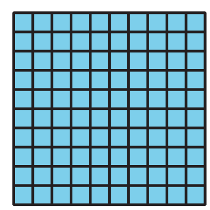


1. Match the diagrams to the statements. Label each diagram with a, b, or c.

   A. Priya said, “I see 100 ones.”
   B. Kiran said, “I see 10 tens.”
   C. Lin said, “I see 1 hundred.”







__________ __________ __________

Sec A

2. Represent 100 + 11 with blocks or a diagram.

Unit 5, Lesson 2

Addressing CA CCSSM 2.NBT.1a, 2.NBT.1b, 2.NBT.2; practicing MP7 and MP8

Make Hundreds

Let's represent hundreds in different ways.

Activity 1

Make Hundreds

Sec A

1. Build each number with base-ten blocks. Record how many you use.

    a. Build 90. ____________ tens

    b. Build 110. ____________ tens

    c. Build 150. ____________ tens

2. How many base-ten blocks do you need to build 200?

    ____________ tens

3. How many base-ten blocks do you need to build 300?

    ____________ tens

4. How many base-ten blocks do you need to build 300 if you can use 1 hundred block?

   1 hundred ____________ tens

5. How many tens do you need to build 300 if you can use 2 hundreds blocks?

   2 hundreds ____________ tens

6. How many tens do you need to build 300 if you can only use hundreds blocks?

   ____________ hundreds ____________ tens

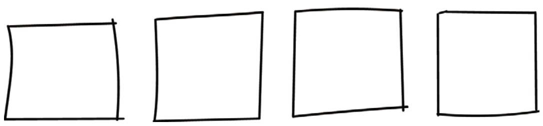
Activity 2

How Many Hundreds?

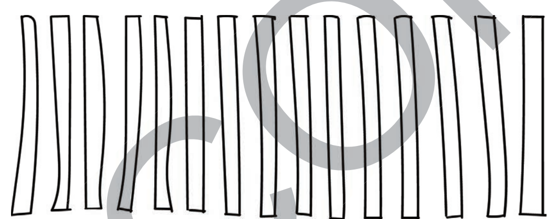
Sec A

Han and Jada represented 700 using different base-ten blocks. Then they each started a base-ten diagram to show their work.

Jada



Han



Jada only used hundreds.

Han only used tens.

1. Use base-ten blocks to show how Jada and Han each represented 700 with their blocks.

2. Explain how you know both ways of using base-ten blocks show 700.

3. Complete Jada's base-ten diagram.

4. Why do you think Han's diagram would take longer to finish than Jada's?

Unit 5, Lesson 3

Addressing CA CCSSM 2.NBT.1, 2.NBT.1a, 2.NBT.1b, 2.NBT.2, 2.NBT.5; practicing MP7

Sec A

Compose 3-Digit Numbers

Let's compose 3-digit numbers.

Warm-up

Number Talk: Add Tens and Ones

Find the value of each expression mentally.

- 42 + 42
- 21 + 63
- 50 + 34
- 48 + 36

Activity 1

Sort Blocks by Value

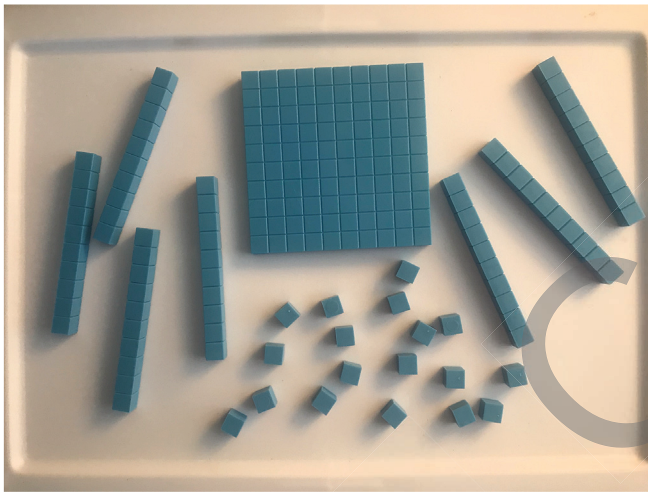
1. Sort the blocks.
   - We have _________ hundreds.
   - We have _________ tens.
   - We have _________ ones.
2. Represent the same value. Use the fewest number of blocks possible.
   - We have _________ hundreds.
   - We have _________ tens.
   - We have _________ ones.
3. Represent the value of your blocks. Show your thinking using drawings, numbers, or words.

Activity 2

The Same But Different

Sec A

Mai's blocks

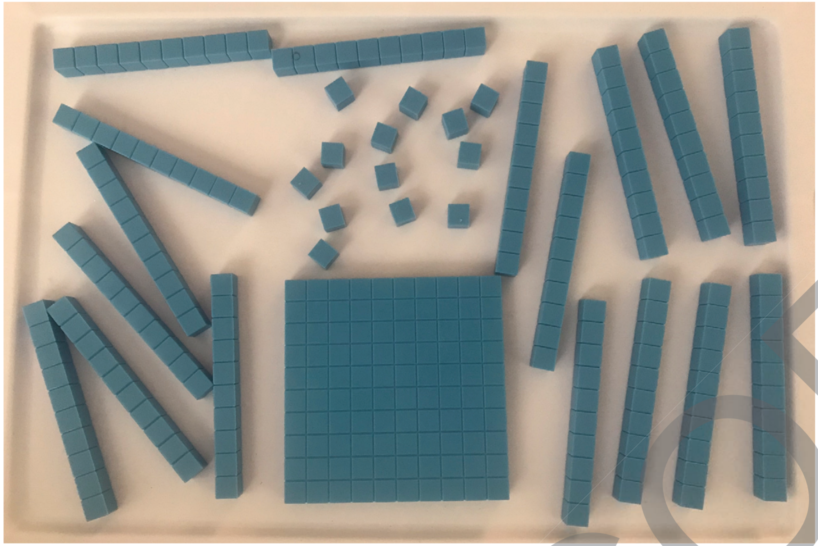


1. Mai has ______ hundreds _____ tens _____ ones.

2. Draw a base-ten diagram that represents the same total value. Use the fewest number of each unit.

3. What is the value of Mai's blocks?

Diego’s blocks



4. Diego has ______ hundreds _____ tens _____ ones.

5. Draw a base-ten diagram that represents the same total value. Use the fewest number of each unit.

6. What is the value of Diego’s blocks?

Unit 5, Lesson 4

Addressing CA CCSSM 2.NBT.1, 2.NBT.3; practicing MP3 and MP6

Sec A

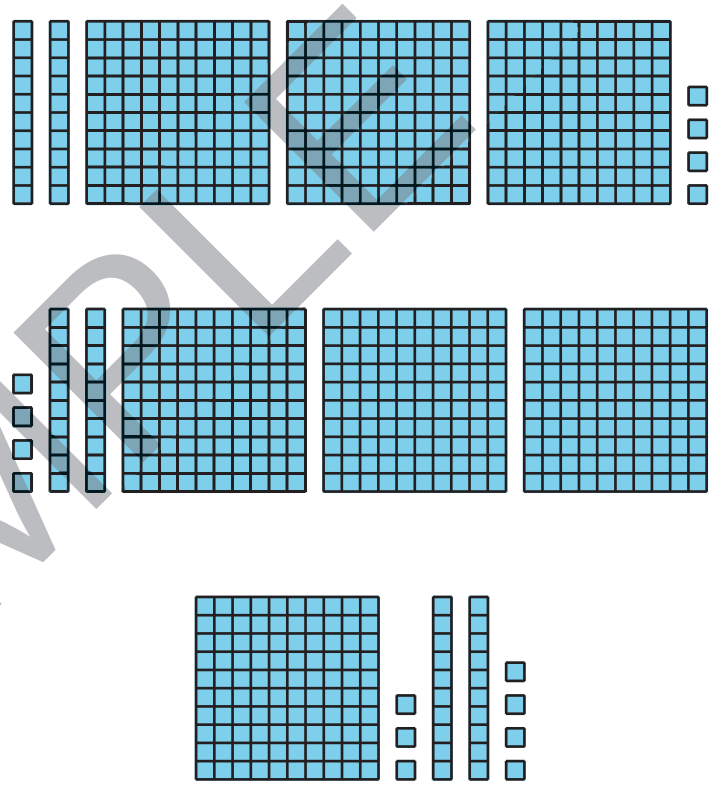
Write 3-Digit Numbers

Let's represent 3-digit numbers using base-ten numerals.

Warm-up

How Many Do You See: Blocks

How many do you see? How do you see them?



Activity 1

Place Value Riddles

Solve each riddle. Write the 3-digit number. Use the table to organize the digits.

riddle	hundreds	tens	ones	3-digit number
1				
2				
3				
4				
5				
6				

1. I have 2 ones, 7 tens, and 6 hundreds.
2. I have 3 ones, 5 tens, and 2 hundreds.
3. I have 7 hundreds, 5 ones, and 3 tens.
4. I have 5 hundreds, no tens, and 9 ones.
5. I have 4 ones, 6 tens, and 3 hundreds.
6. I have 8 tens, 1 hundred, and no ones.

Activity 2

Mixed-Up Digits

Sec A

Find the number that makes each equation true. Use base-ten blocks or diagrams if they help.

1. 4 hundreds + 6 tens + 2 ones = ____________

2. 7 ones + 2 hundreds + 6 tens = ___________

3. 3 tens + 5 hundreds = _________

4. 325 = ______ hundreds + _________ones + _________tens

5. 70 + 300 + 2 = ______________

6. $836 = 6 + 800 +$ ____________

7. Clare and Elena try to find the number that makes the equation true.

   7 ones + 3 hundreds = _____________.

   They wrote different answers.

   - Clare wrote 7 ones + 3 hundreds = 37.
   - Elena wrote 7 ones + 3 hundreds = 307.

   Who is correct? Explain how you know.

   ____

   ____

   ____

Sec A

Unit 5, Lesson 5

Addressing CA CCSSM 2.NBT.1, 2.NBT.3; building towards 2.NBT.4; practicing MP7

Sec A

Expanded Form of Numbers

Let's represent 3-digit numbers as a sum of the value of each digit.

Warm-up

True or False: Value of Digits

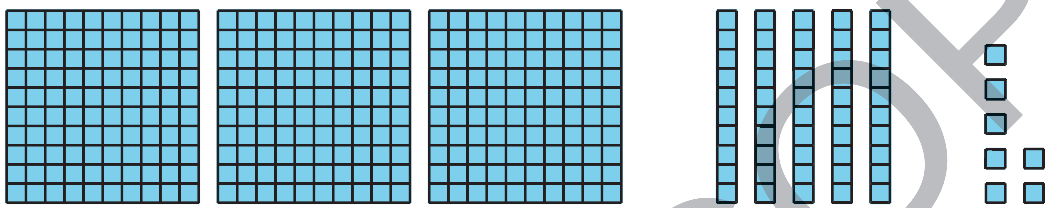
Decide if each statement is true or false. Be prepared to explain your reasoning.

- $800 + 90 + 7 = 897$
- $156 = 50 + 100 + 6$
- $407 = 70 + 400$
- $632 = 22 + 10 + 600$

Activity 1

Expressions and 3-Digit Numbers

1. Andre has 3 hundreds. Tyler has 5 tens. Mai has 7 ones. They want to represent the amount with an expression.



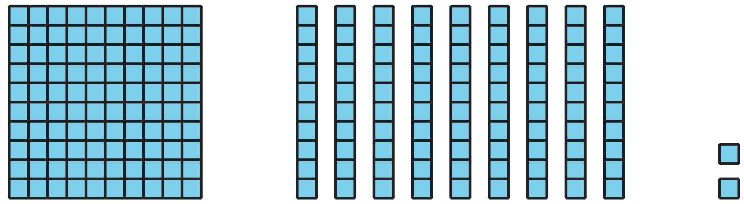
Write an expression to represent the sum of their values.

_______ + _______ + _______

Write the total value as a 3-digit number.

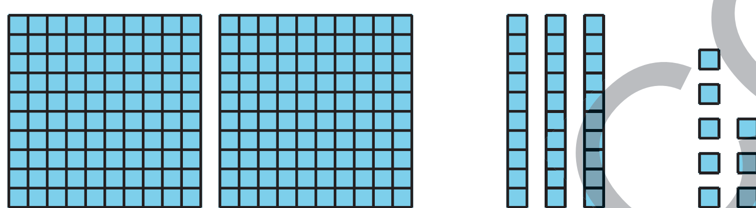
____

Write each number as the sum of hundreds, tens, and ones. This is called expanded form. Then write the 3-digit number.



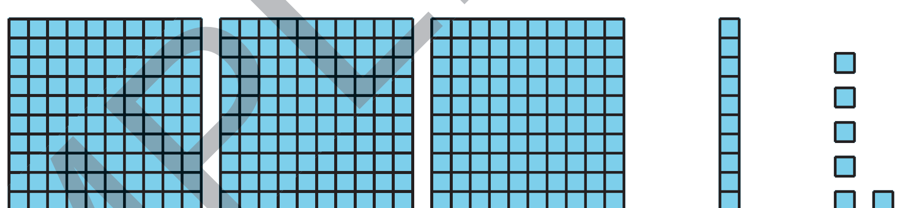
2. Expanded form: ______________

   3-digit number: ______________



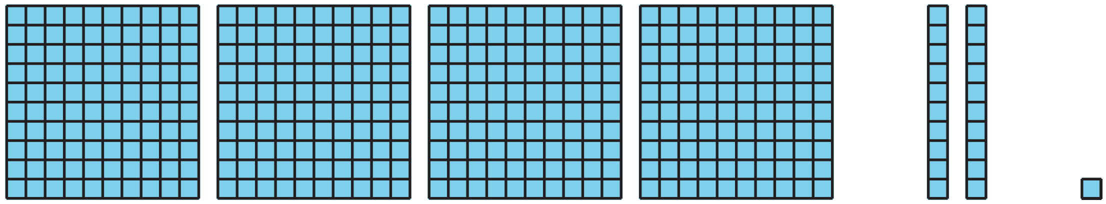
3. Expanded form: ______________

   3-digit number: ______________



4. Expanded form: ______________

   3-digit number: ______________



5. Expanded form: ______________

3-digit number: ______________

Activity 2

Make It and Expand It

1. Roll the number cubes.
   Make the largest number possible.
   Write it as a 3-digit number. __________
   Write it in expanded form.

   ____

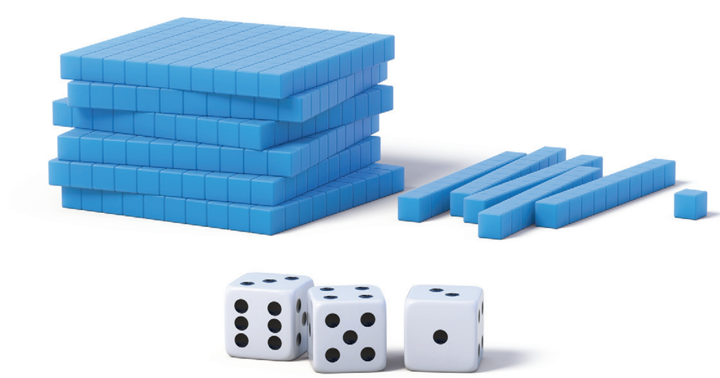
2. Roll the number cubes.
   Make the smallest number possible.
   Write it as a 3-digit number. __________
   Write it in expanded form.

   ____

3. Roll the number cubes.
   Use the same digits. Make a different number than your partner.
   Write it in expanded form.

   ____

   Write it as a 3-digit number. __________



Sec A

Unit 5, Lesson 6

Addressing CA CCSSM 2.NBT.3; practicing MP6 and MP7

Represent Numbers in Different Ways

Let’s represent numbers in different ways.

Warm-up

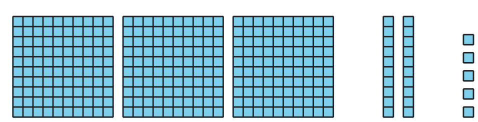
Which Three Go Together: Numbers in Different Ways

Which 3 go together?

A

three hundred twenty-five

B



C

253

D

3 hundreds,
2 tens, 5 ones

Activity 1

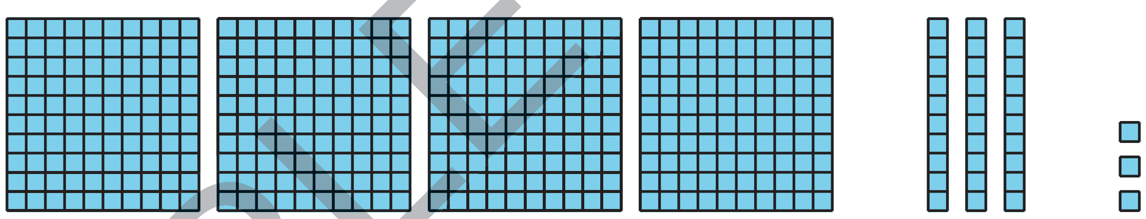
Numbers as Words

1. Fill in the blanks. Represent 248 with words.
   two ____________forty- _________

2. Fill in the blanks. Represent 562 with words.

   __________ hundred _________- _______

3. Represent this number with words.



____

4. Represent 627 with words.

____

5. Represent 900 + 50 + 1 with words.

6. Represent three hundred eighteen in 2 different ways.

Sec A

Activity 2

Represent the Numbers

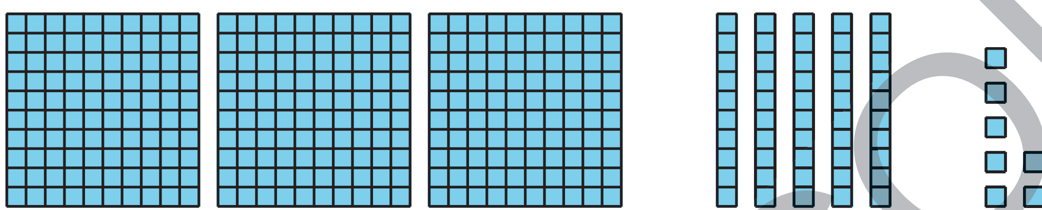
Represent the number on your poster. Use:

- a 3-digit number
- a base-ten diagram
- expanded form
- words

If you have time: Represent the number using tens and ones. Then represent the number in a different way.

Section A Summary

We learned that a **hundred** is a group of 10 tens or 100 ones. We represented hundreds with base-ten blocks and diagrams. We represented numbers using hundreds, tens, and ones. We learned to read and write 3-digit numbers. We used the **expanded form** to write a number as the sum of the values of its digits.



3 hundreds 5 tens 7 ones

357

300 + 50 + 7

three hundred fifty-seven

Unit 5, Lesson 7

Addressing CA CCSSM 2.NBT.1a, 2.NBT.5; building towards 2.NBT.4; practicing MP1 and MP5

Center Day 1

Let's use place value to identify numbers and practice adding and subtracting.

Warm-up

True or False: Compare to 100

Decide if each statement is true or false. Be prepared to explain your reasoning.

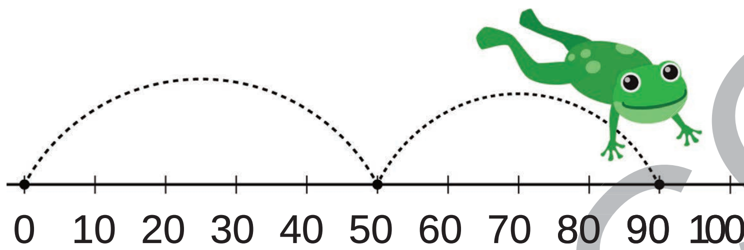
- $100 > 99$
- $100 < 99+1$
- $98 + 3 > 100$
- $50 + 50 + 50 > 100$

Activity 2

Centers: Choice Time

Choose a center.

Jump the Line



Mystery Number

Number Puzzles

$$14 = 8 + \square$$

Practice Problems

11 Problems

1 Pre-unit

a. 35 has _______ tens and _______ ones.

b. 52 has _______ tens and _______ones.

2 Pre-unit

Write <, >, or = in each box to make the statement true.

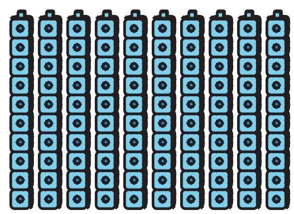
a. $90 + 5$ ☐ $70 + 10 + 10 + 10 + 5$

b. 116 ☐ $100 + 10 + 6$

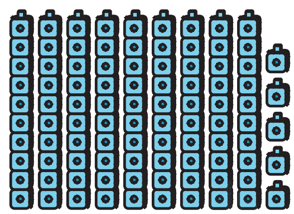
c. $10 + 10 + 20 + 3$ ☐ 38

Select **all** pictures that show 100.

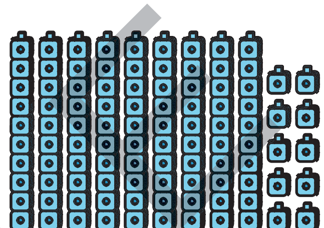
A.



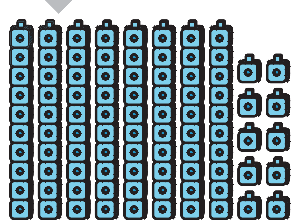
B.



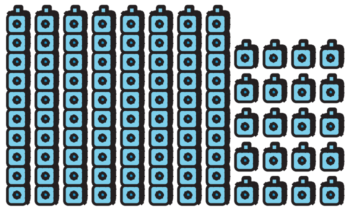
C.



D.

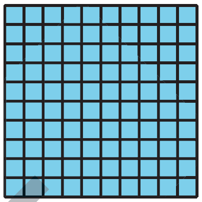


E.



4 from Unit 5, Lesson 1

How do you see each of these in the picture? Explain your reasoning.



a. 100 ones

b. 10 tens

c. 1 hundred

5 from Unit 5, Lesson 2

a. How many hundreds have the same value as 50 tens? Explain your reasoning.

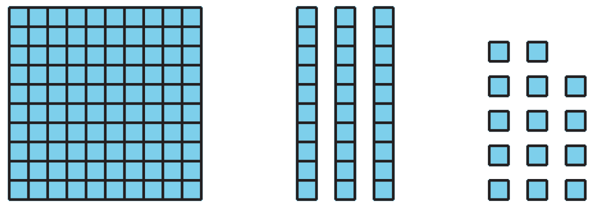
b. How many tens have the same value as 6 hundreds? Explain your reasoning.

Sec A

Sec A

6 from Unit 5, Lesson 3

Here is a base-ten diagram.



a. Draw another base-ten diagram. Represent the same total value. Use the fewest number of each unit.

b. Write the number represented by the diagram as a 3-digit number.

c. Can you make the same number with more base-ten blocks? Show your thinking using drawings, numbers, or words.

7 from Unit 5, Lesson 4

a. What 3-digit number has 5 hundreds, 1 ten, and 6 ones?

b. What 3-digit number has 6 tens, 1 hundred, and 5 ones?

c. What 3-digit number has 1 one, 5 tens, and 6 hundreds?

8 from Unit 5, Lesson 5

a. Represent each sum as a 3-digit number.

$300 + 80 + 6$

$40 + 7 + 600$

b. Represent each number as the sum of hundreds, tens, and ones.

823

407

9 from Unit 5, Lesson 6

Represent the number 235 in these ways.

a. a base-ten diagram

b. expanded form

c. words

Sec A

10 Exploration

a. Can you represent 218 without using any hundreds? Explain your reasoning.

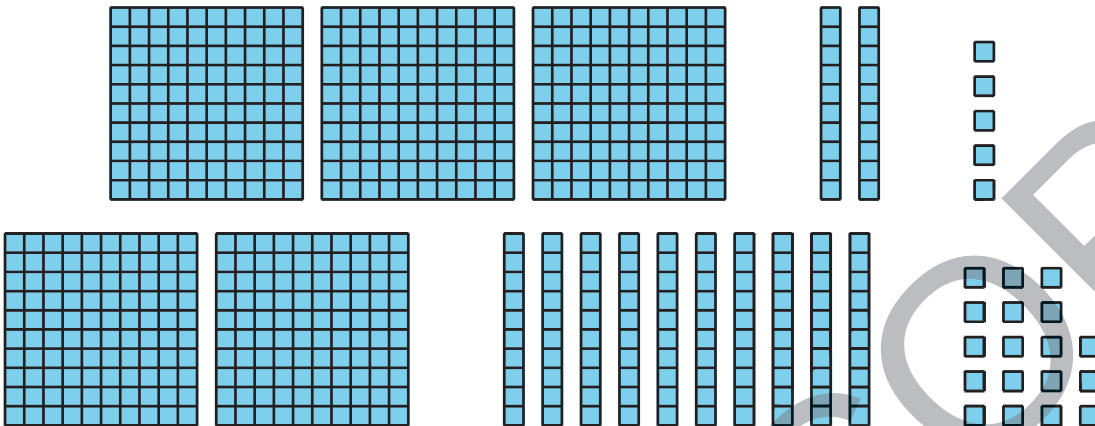
b. Can you represent 218 without using any tens? Explain your reasoning.

c. Can you represent 218 without using any ones? Explain your reasoning.

Sec A

11 Exploration

Here are base-ten diagrams for 2 numbers.



a. Which diagram represents a greater number? Explain how you know.

b. Which diagram is it easier to understand? Explain your reasoning.

Sec A

Unit 5, Lesson 8

Addressing CA CCSSM 2.MD.6, 2.NBT.1, 2.NBT.2; practicing MP8

Three-Digit Numbers on the Number Line

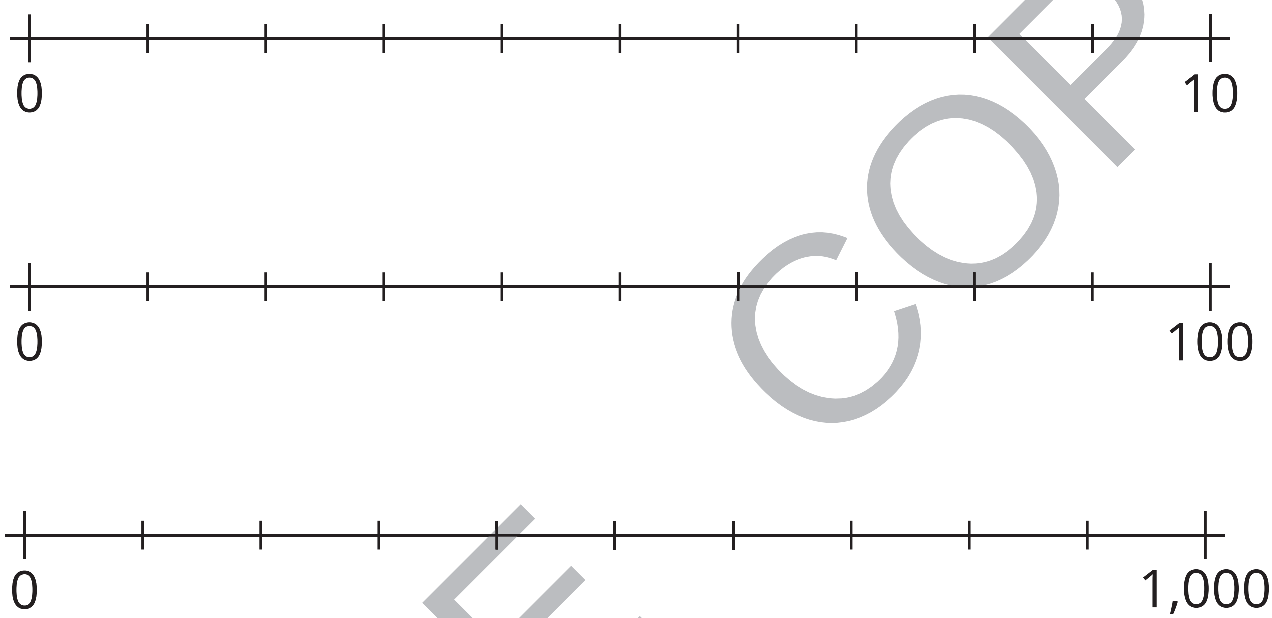
Let's locate and represent 3-digit numbers on the number line.

count by 100	100	200	300	400	500	600	700	800	900	1000

Activity 1

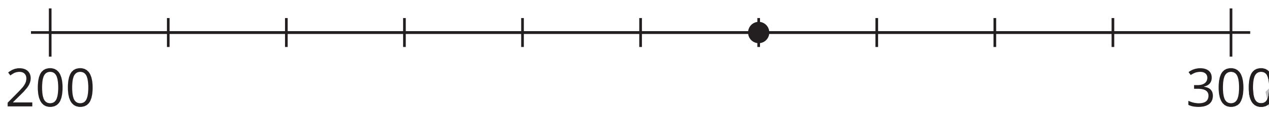
Label 3-Digit Numbers

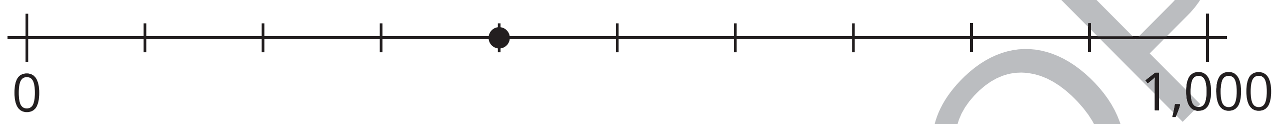
What do you notice? What do you wonder?

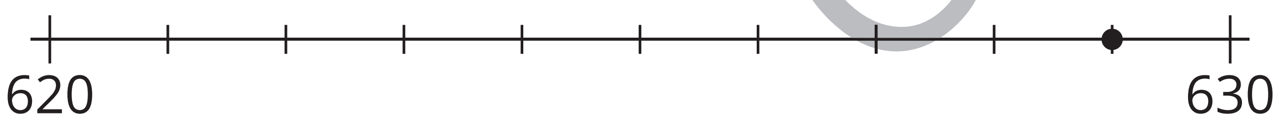


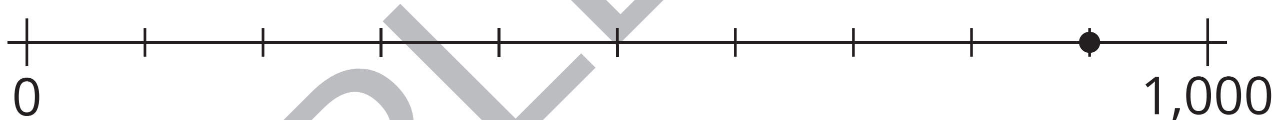
Locate and label 30, 300, and 3 on the number lines.

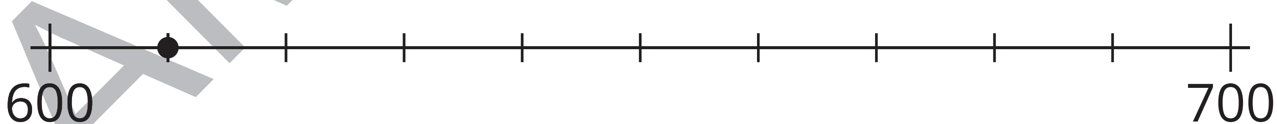
Label each point with the number it represents.

1.


2.


3.


4.


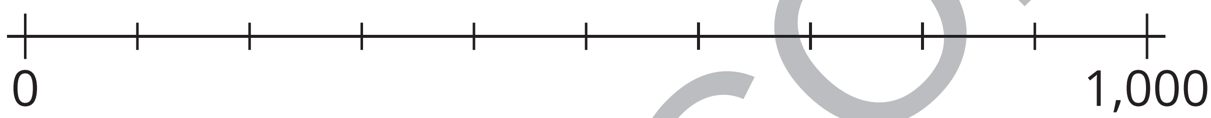
5.


Activity 2

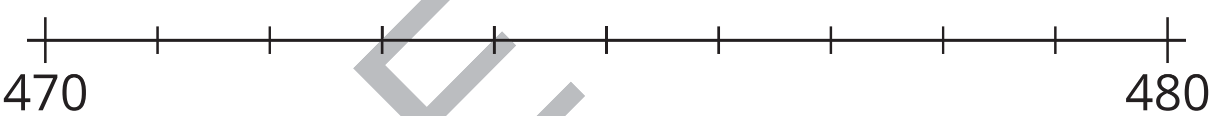
Represent 3-Digit Numbers on a Number Line

Locate and label the number on the number line. You can label each tick mark with the number it represents if it helps.

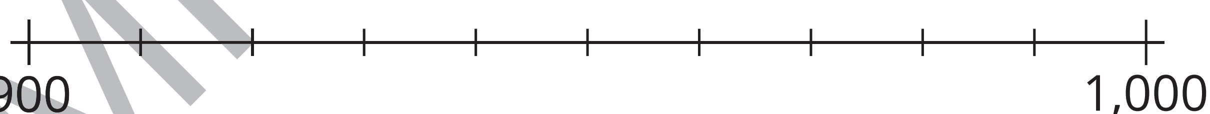
1. 700



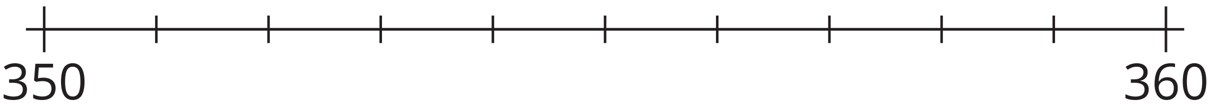
2. 472



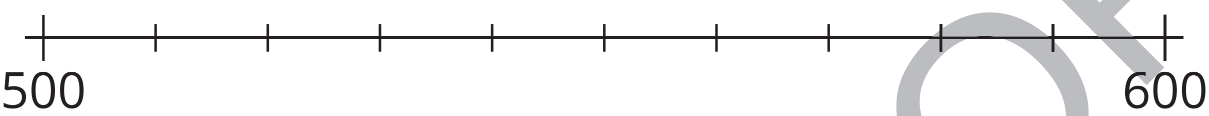
3. 940



4. 356



5. 590



Addressing CA CCSSM 2.MD.6, 2.NBT.1, 2.NBT.4; building on 2.MD.6; building towards 2.NBT.4; practicing MP2 and MP3

Compare Numbers on the Number Line

Let's compare numbers on the number line.

Warm-up

Estimation Exploration: Hundreds

What number could this be?

1. Record an estimate that is:

too low	about right	too high

2. Record an estimate that is:

too low	about right	too high

Sec B

Activity 1

Compare Comparisons

Compare 371 and 317. Use <, >, or =.

____

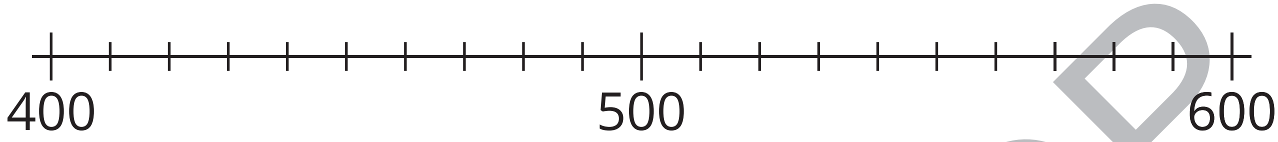
Show your thinking using drawings, numbers, or words.

Activity 2

Compare in Different Ways

Sec B

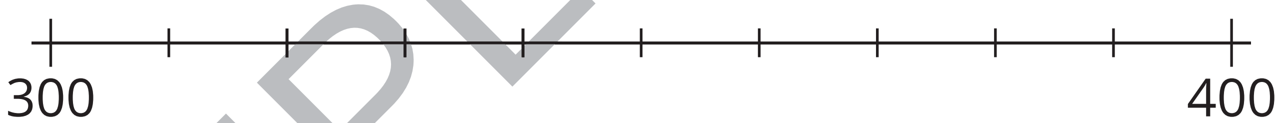
1. Locate and label 420 and 590.



Use <, >, or = to compare 420 and 590.

____

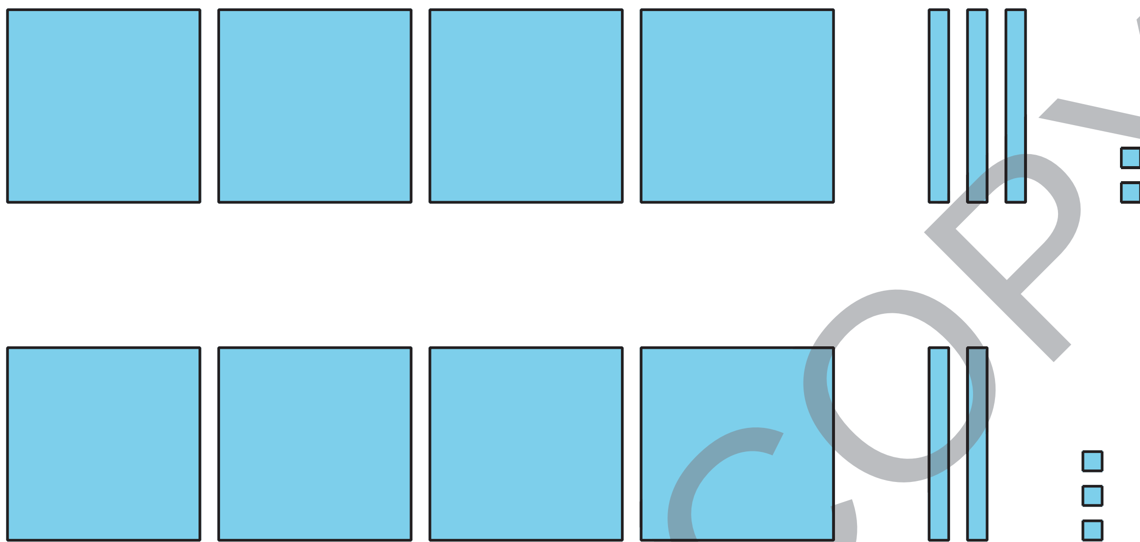
2. Estimate the location of 378 and 387. Mark each number with a point. Label the point with the number it represents.

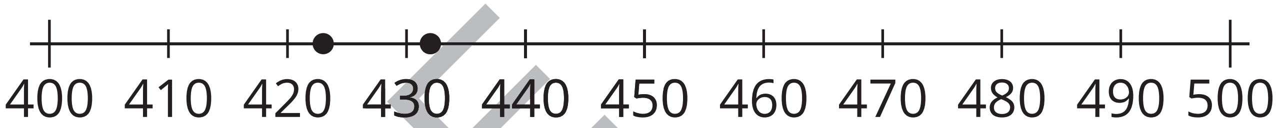


Use <, >, or = to compare 378 and 387.

____

3. Diego and Jada compare 2 numbers. Use their work to find out what numbers they compared. Then use <, >, or = to compare the numbers.





4. Which representation helped you the most? Explain your reasoning?

Unit 5, Lesson 10

Addressing CA CCSSM 2.NBT.4, 2.NBT.8; practicing MP8

Place Value Comparisons (Part 1)

Sec B

Let's use place value to compare 3-digit numbers.

Warm-up

Number Talk: Add Tens

Find the value of each expression mentally.

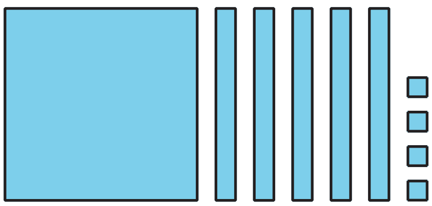
- 36 + 40
- 46 + 30
- 59 + 40
- 69 + 30

Activity 1

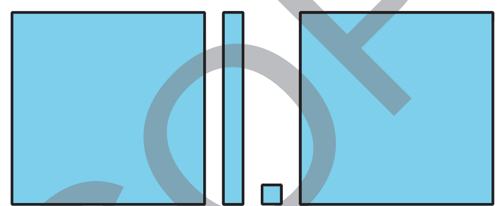
Compare by Place

Who has more? How do you know?

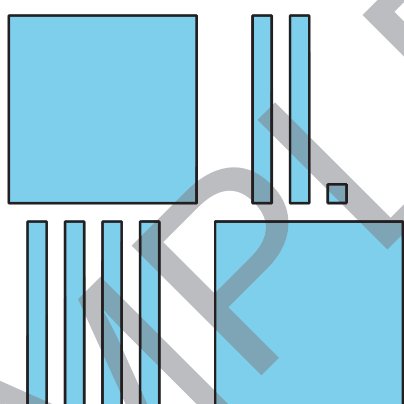
Mai

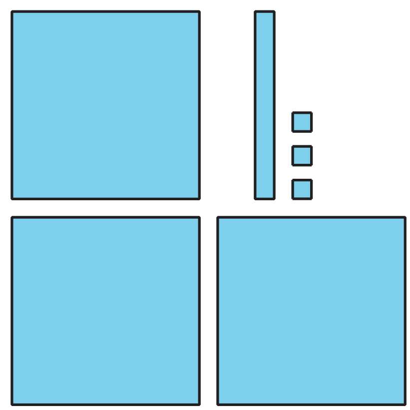


Tyler

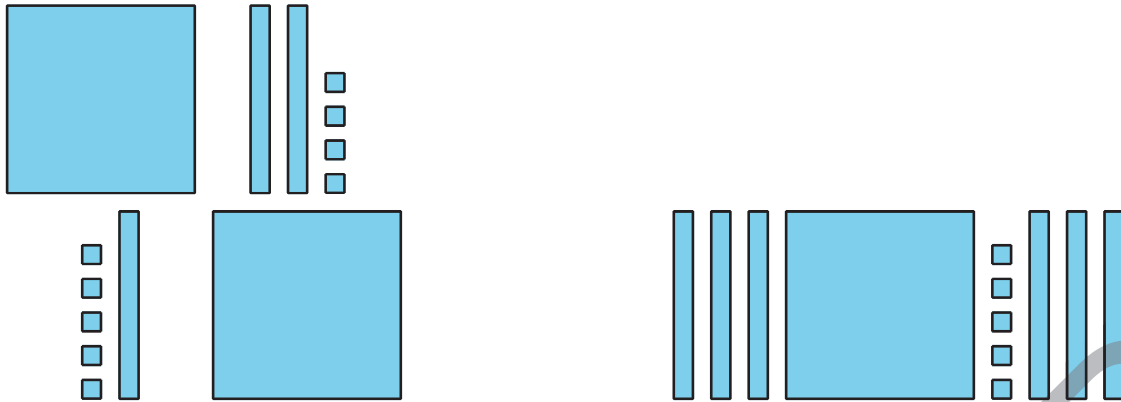


Write each value as a 3-digit number. Use the symbols <, >, or = to compare the numbers.



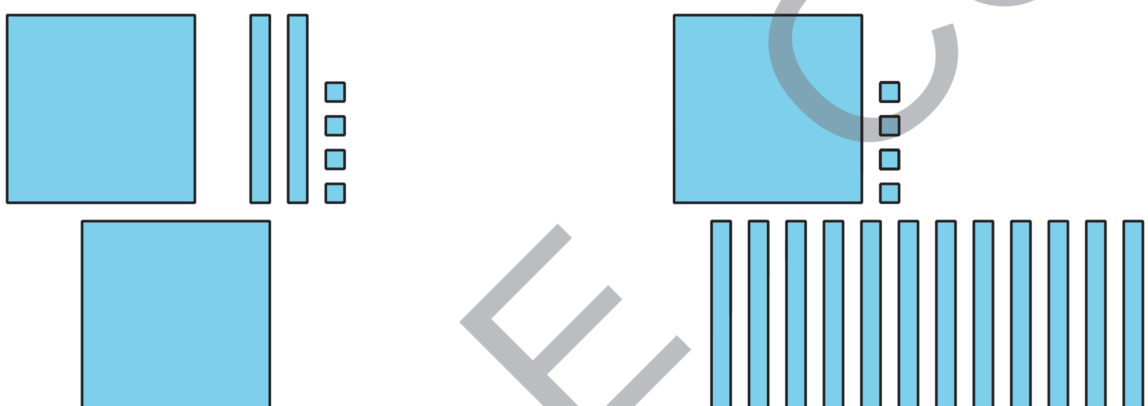


1.



2.

____ ☐ ____



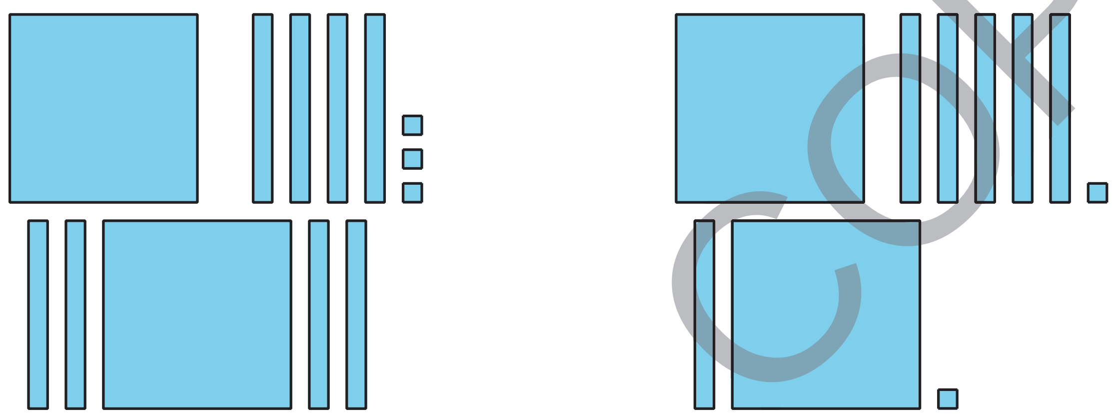
3.

____ ☐ ____

Activity 2

Compare Hundreds, Tens, and Ones

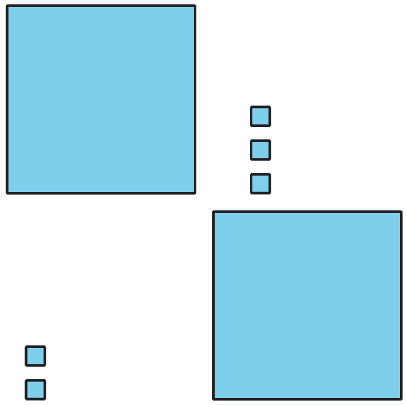
Compare the base-ten diagrams. Write each value as a 3-digit number. Use the symbols >, <, or = to compare the numbers.

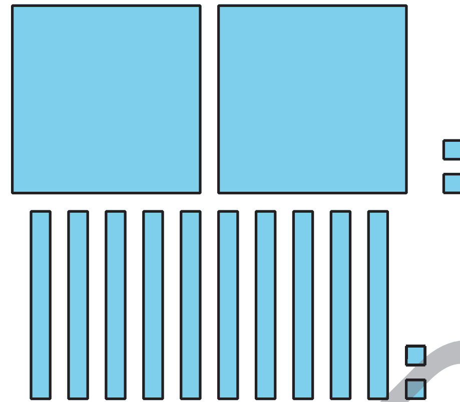


1.

__________ ☐ __________

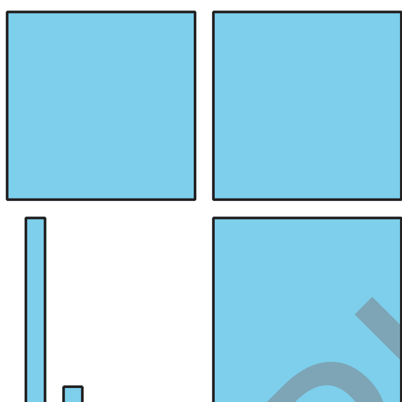
Sec B

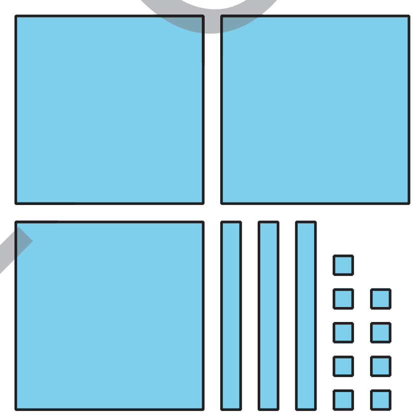




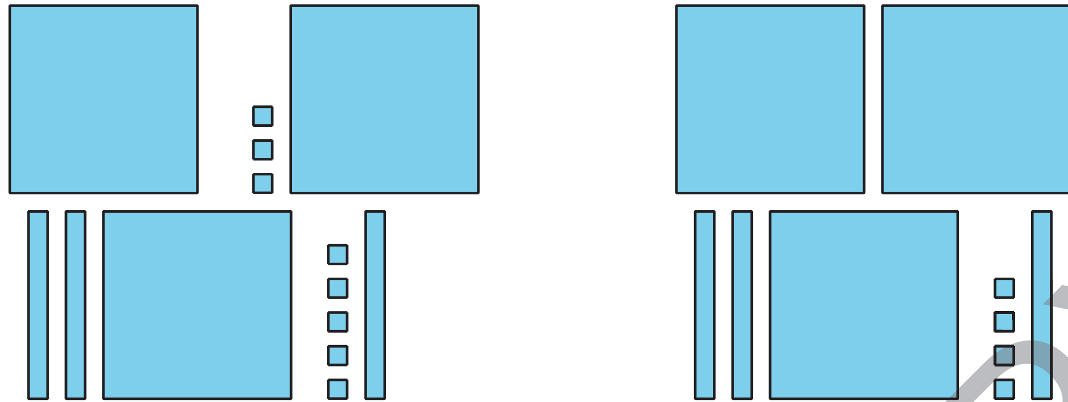
Sec B

2.





3.



4.

______ ☐ ______

5. How do you know which value is greater in the last problem?

____

____

Unit 5, Lesson 11

Addressing CA CCSSM 2.NBT.1, 2.NBT.3, 2.NBT.4; practicing MP5 and MP6

Place Value Comparisons (Part 2)

Sec B

Let's compare 3-digit numbers using place value.

Warm-up

True or False: Greater Than or Less Than

Decide if each statement is true or false. Be prepared to explain your reasoning.

- $86 > 80 + 4$
- $400 + 40 + 6 < 846$
- $330 < 300 + 3$
- $500 + 50 > 505$

Activity 1

Compare and Explain

Compare the numbers.

1.

<, >, or =

521 $\square$ 523

Show your thinking using drawings, numbers, or words.

2.

<, >, or =

889 $\square$ 878

3. Find the number that makes each comparison true. Use each number only once.

810 529 752 495

Sec B

a. _______ > 519

b. 687 < ________

c. ________ < 501

d. _________ > 793

Addressing CA CCSSM 2.NBT.1, 2.NBT.4, 2.NBT.8; practicing MP3 and MP5

Order Numbers

Let's put numbers in order.

Warm-up

Number Talk: Subtract Tens

Find the value of each expression mentally.

- 80 – 50
- 87 – 50
- 76 – 40
- 66 – 30

Sec B

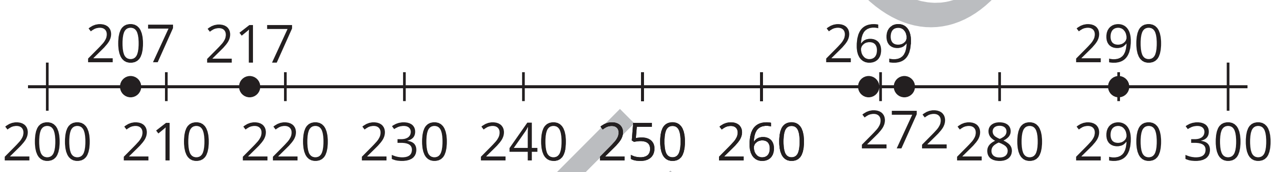
Activity 1

Who is Out of Order?

Kiran and Andre put a list of numbers in order from least to greatest.

Kiran	Andre
207, 217, 272, 269, 290	207, 217, 269, 272, 290

Andre disagreed with Kiran. He used a number line to justify his answer.

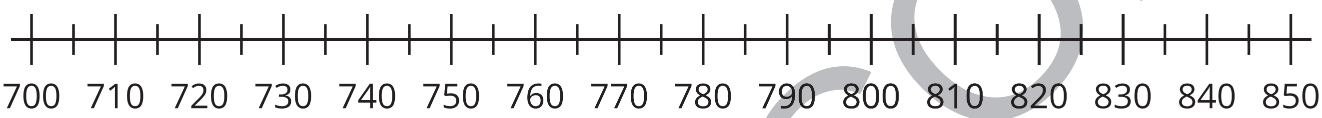


Who do you agree with? Explain your reasoning.

Activity 2

Order Numbers

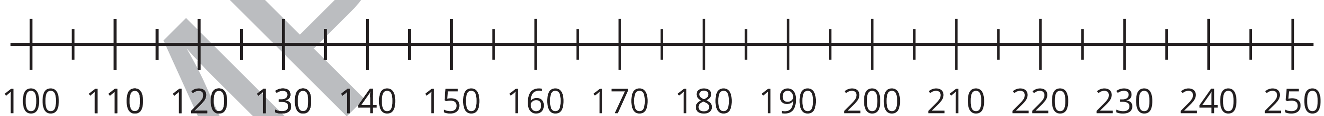
1. Estimate the locations of 839, 765, 788, 815, and 719. Mark each number with a point. Label each point with the number it represents.



Order the numbers from least to greatest.

_________, _________, _________, _________, _________

2. Estimate the locations of 199, 245, 173, 218, and 137. Mark each number with a point. Label each point with the number it represents.



Order the numbers from greatest to least.

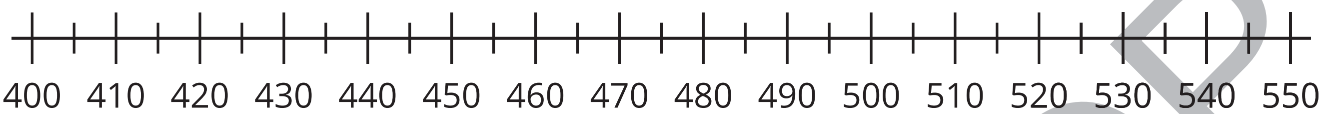
_________, _________, _________, _________, _________

Sec B

3. Order the numbers from least to greatest.
   545, 454, 405, 504, and 445

   ________, ________, ________, ________, ________

   Show your thinking using the number line.



4. Was it more helpful for you to put the numbers in order first or put them on the number line first?

   ____

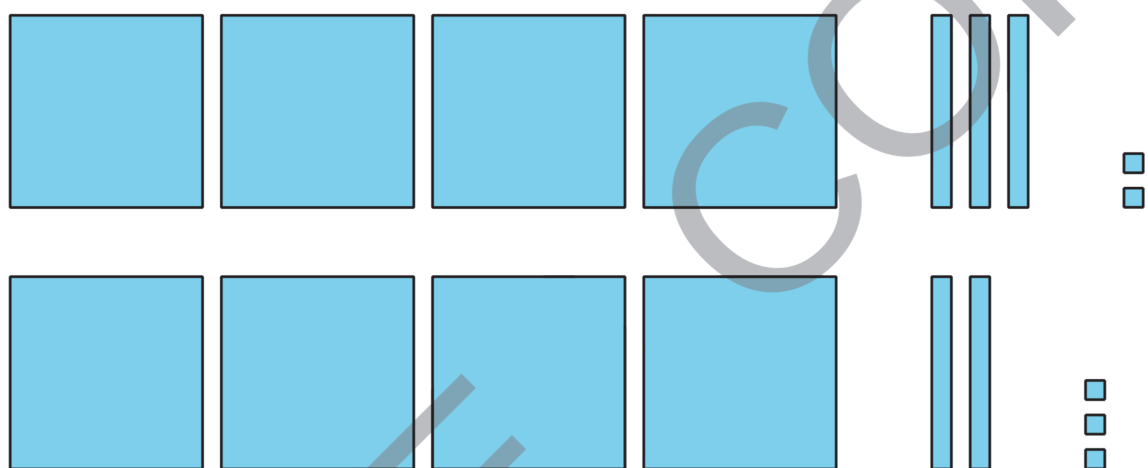
   ____

   ____

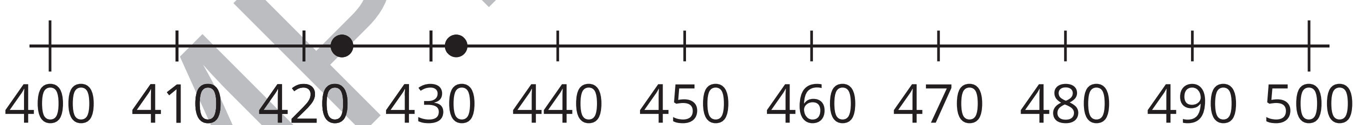
Section B Summary

We compared 3-digit numbers. We used number lines and base-ten diagrams. We used the value of the digits in base-ten numerals to compare numbers. We explained our thinking.

We learned that diagrams help when comparing numbers. We compared hundreds to hundreds, tens to tens, and ones to ones. We learned that diagrams help with digits too.



The number line shows the numbers in order. We can tell which number is greater using its location on the number line.



We wrote expressions using the <, >, and = symbols.

$432 > 423$

432 is greater than 423

$423 < 432$

423 is less than 432

Sec B

Unit 5, Lesson 13

Addressing CA CCSSM 2.NBT.1, 2.NBT.4; building towards 2.NBT.4; practicing MP2

Center Day 2

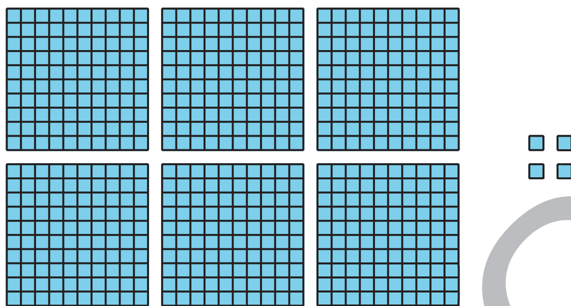
Let's work on place value.

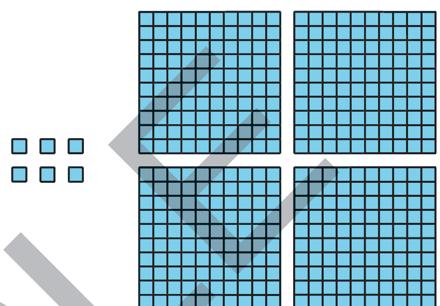
Sec B

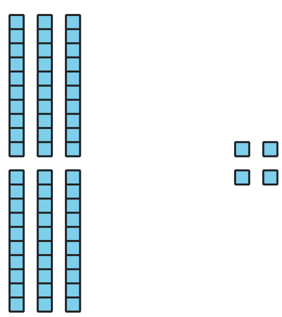
Warm-up

How Many Do You See: Place Value

How many do you see? How do you see them?







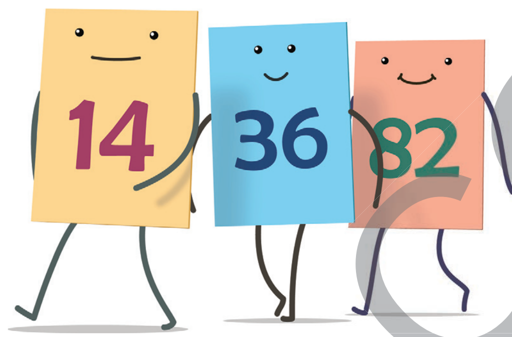
Sec B

Activity 2

Centers: Choice Time

Choose a center.

Get Your Numbers in Order



Greatest of Them All

Mystery Number

Sec B

Unit 5, Lesson 14

Addressing CA CCSSM 2.NBT.1; practicing MP4

Around the School

Let's think about what numbers can represent in a school.

Sec B

Warm-up

Estimation Exploration: School Supplies

How many total school supplies are on the table?

Record an estimate that is:

too low	about right	too high

Sec B

Activity 1

What Could It Be?

Here are some numbers that represent quantities of objects. What might each number represent? Think of something each number could **not** represent. Record your ideas.

Sec B

number	It might represent:	It could not represent:
1		
3		
56		
110		
408		

Activity 2

It’s in Our Classroom

Fill in the numbers your teacher gives you. Then complete the other columns.

number	It might represent:	It could not represent:

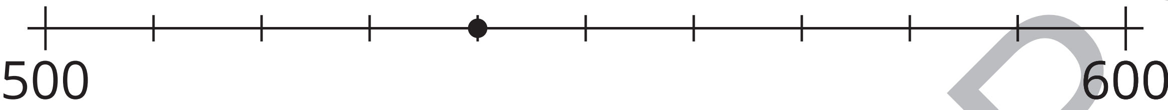
Sec B

Practice Problems

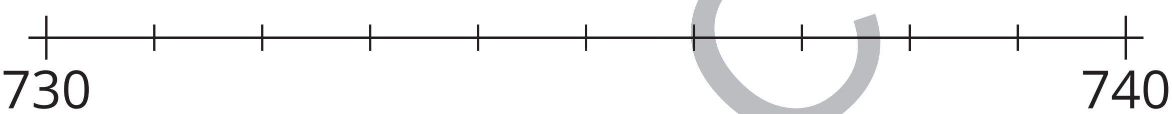
7 Problems

1 from Unit 5, Lesson 8

a.

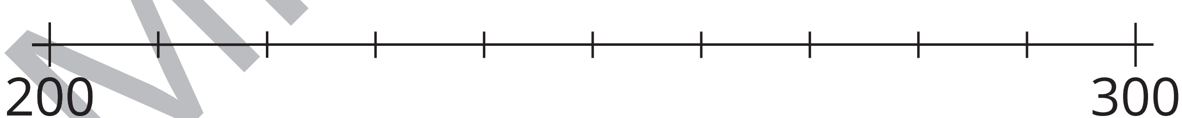


b. Locate and label 738.



2 from Unit 5, Lesson 9

a. Estimate the locations of 247 and 274. Mark each number with a point. Label the points with the number it represents.



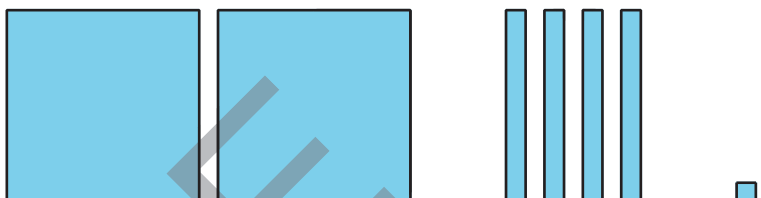
b. Use <, >, or = to compare 247 and 274. Explain your reasoning.

Sec B

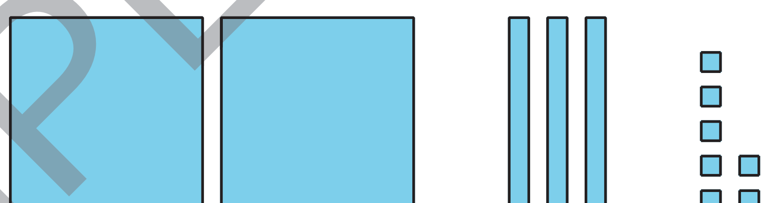
3 from Unit 5, Lesson 10

Here are diagrams for 2 numbers.

A



B



a. Which 2 numbers are represented in the diagrams?

b. Which number is greater? Explain how you know.

c. Use <, >, or = to compare the numbers.

Sec B

4 from Unit 5, Lesson 11

a. Find the number that makes both equations true.

_____ < 513

_____ > 479

b. Can you find one number that makes both equations true? Explain your reasoning.

_____ > 718

_____ < 709

____

____

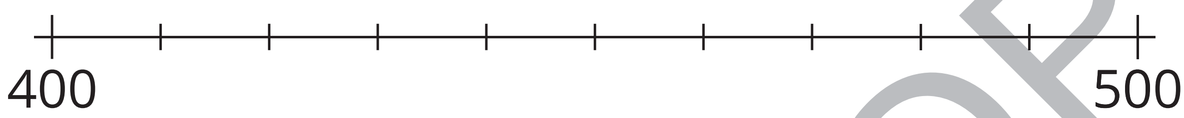
____

Sec B

5 from Unit 5, Lesson 12

Sec B

a. Locate 441, 418, 481, 487, and 429. Mark each number with a point. Label each point with the number it represents.

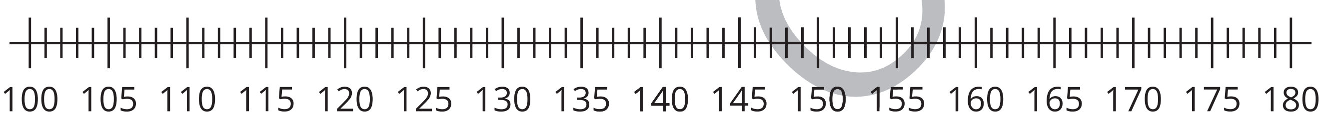


b. Order the numbers from greatest to least.

6 Exploration

Mile markers on roads use numbers in order. During a trip, Mai saw this mile marker first. The last one she saw was Mile 173.

a. Show the first and last mileage markers Mai saw on the number line.



b. Which mile markers with 0 in the ones place did Mai pass? Label these numbers on the number line. Explain your reasoning.

Sec B

7 Exploration

a. What is the greatest 3-digit number you can make with 2, 3, 6, 7, and 9? Each number can only be used one time. Explain your reasoning.

b. What is the smallest 3-digit number you can make with 6, 3, 9, 7, and 2? (You can't use a number more than once.) Explain your reasoning.

Sec B

GRADE 2

UNIT

6

Geometry, Time, and Money

Content Connections

In this unit you will partition shapes into equal parts, use fractions and skip counting to tell time, and solve money story problems. You will make connections by:

- **Discovering Shape and Space** while dividing shapes into equal shares and using appropriate vocabulary to describe fractions.
- **Reasoning with Data** while telling time to the nearest 5 minutes.
- **Taking Wholes Apart, Putting Parts Together** while using skip counting to understand time.

- **Exploring Changing Quantities** while combining dollars and cents and connecting money values to place values.

Addressing the Standards

As you work your way through **Unit 6 Geometry, Time, and Money,** you will use some mathematical practices that you may have started using in kindergarten and have continued strengthening over your school career. These practices describe types of thinking or behaviors that you might use to solve specific math problems.

Mathematical Practices	Where You Use these MPs
MP1 Make sense of problems and persevere in solving them.	Lesson 3, 5, and 14
MP2 Reason abstractly and quantitatively.	Lesson 10, 11, 18, 19, and 21
MP3 Construct viable arguments and critique the reasoning of others.	Lesson 7, 8, 13, 19, and 20
MP4 Model with mathematics.	Lesson 22
MP5 Use appropriate tools strategically.	Lesson 5
MP6 Attend to precision.	Lesson 1, 2, 4, 6, 7, and 13
MP7 Look for and make use of structure.	Lesson 4, 8, 15, 16, and 17
MP8 Look for and express regularity in repeated reasoning.	Lesson 9, 12, and 16

The California Common Core State Standards for Mathematics (CA CCSSM) describe the topics you will learn in this unit. Many of these topics build upon knowledge you already have and challenge you to expand upon that knowledge. The table below shows what standards are being addressed in this unit.

Big Ideas You Are Studying	**California Content Standards**	**Lessons Where You Learn This**
• Seeing Fractions in Shapes	**2.G.1** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	Lesson 1, 2, 3, 4, 5, 6, 10, and 14
• Represent Data • Skip Counting to 100 • Seeing Fractions in Shapes • Squares in an Array	**2.G.3** Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of,* etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	Lesson 7, 8, and 9

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Measure and Compare Objects • Problem Solving with Measure	**2.MD.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	Lesson 3
• Represent Data • Seeing Fractions in Shapes	**2.MD.7** Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. Know relationships of time (e.g., minutes in an hour, days in a month, weeks in a year).	Lesson 11, 12, and 13
• Dollars and Cents	**2.MD.8** Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*	Lesson 15, 16, 17, 18, 19, 20, 21, and 22