IMKH California

GRADE 1

Student Edition

UNITS

1 | 2

Illustrative Mathematics® LEARN MATH FOR LIFE | Kendall Hunt

Book 1
Certified by Illustrative Mathematics®

ISBN 9798385165490

K5_vII

20240207

Table of Contents

UNIT 1 ADDING, SUBTRACTING, AND WORKING WITH DATA

UNIT 2

ADDITION AND SUBTRACTION STORY PROBLEMS

GRADE 1

UNIT

Adding, Subtracting, and Working with Data

Content Connections

In this unit you will solve addition and subtraction problems using different strategies and collect and represent data in various formats. You will make connections by:

- **Reasoning with Data** while collecting, representing, organizing and answering questions about two or more categories of information.
- **Exploring Changing Quantities** while solving addition and subtraction problems with the use of manipulatives and expressions.

Addressing the Standards

As you work your way through **Unit 1 Adding, Subtracting, and Working with Data,** 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 14
MP2 Reason abstractly and quantitatively.	Lesson 1, 2, 11, 12, 14
MP3 Construct viable arguments and critique the reasoning of others.	Lesson 7, 9
MP4 Model with mathematics.	Lesson 15
MP5 Use appropriate tools strategically.	Lesson 12
MP6 Attend to precision.	Lesson 2, 6, 7, 8, 11, 13
MP7 Look for and make use of structure.	Lesson 3, 4, 5, 8, 10
MP8 Look for and express regularity in repeated reasoning.	Lesson 3, 4

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
• Equal Expressions	**1.OA.4** Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.*	Lesson 10
• Measuring with objects • Equal Expressions	**1.OA.5** Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	Lesson 1, 2, 3, 4, 5, 9, 13, and 14

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Equal Expressions • Reasoning about Equality	**1.OA.6** Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).	Lesson 1, 2, 3, 4, 5, 6, 10, 13, and 14
• Make sense of Data	**1.MD.4** Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	Lesson 7, 8, 9, 11, 12, 13, 14, and 15

Addressing CA CCSSM 1.OA.5-6; building on K.CC.4-5; building towards 1.OA.5; practicing MP2

Count and Add

Let's count objects.

Warm-up

What Do You Know about Math?

What do you know about math?

Unit 1, Lesson 2

Addressing CA CCSSM 1.OA.5-6; building on K.CC.1; practicing MP2 and MP6

Sec A

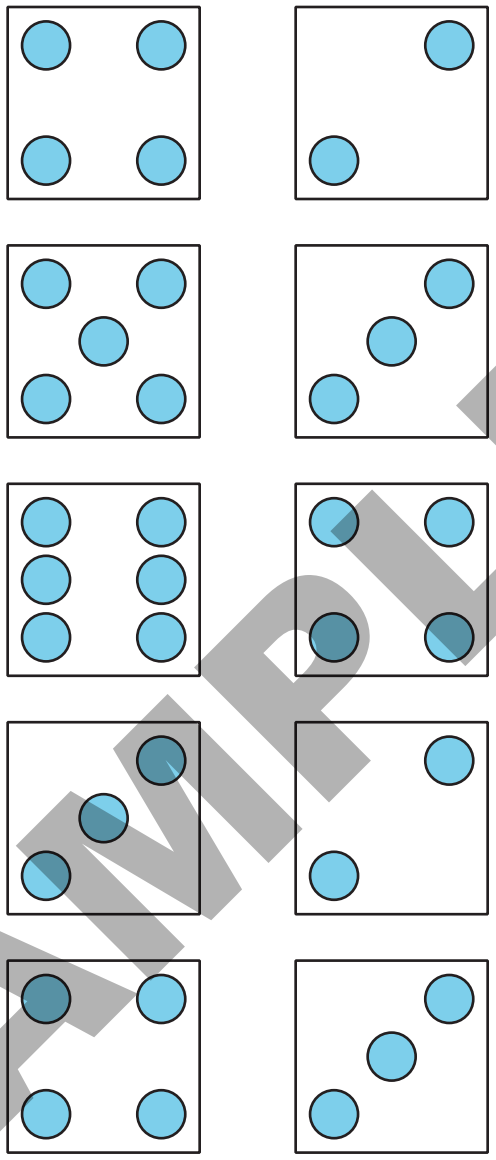
Explore Expressions and Sums

Let's write addition expressions and find the sum of 2 numbers.

Activity 1

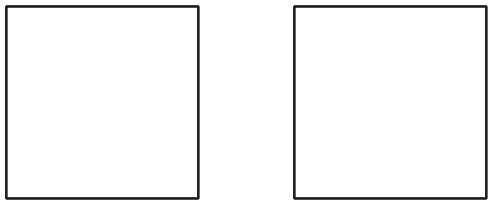
Matching Dot Cards and Expressions

Match each pair of dots to an expression. Then find the total.



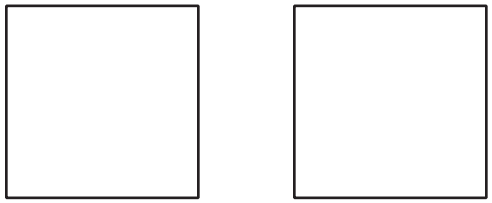
expression	total
3 + 2	
4 + 2	
5 + 3	
6 + 4	
4 + 3	

Draw the missing dots to match the expression. Then find the total.



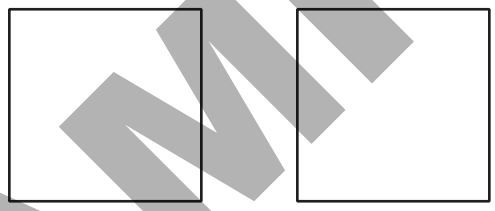
Expression: $4 + 2$

Total: _____



Expression: $5 + 2$

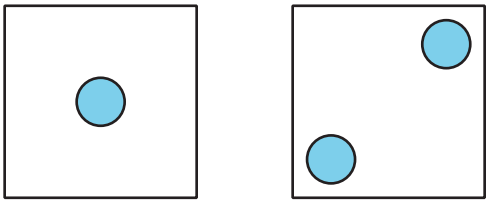
Total: _____



Expression: $2 + 6$

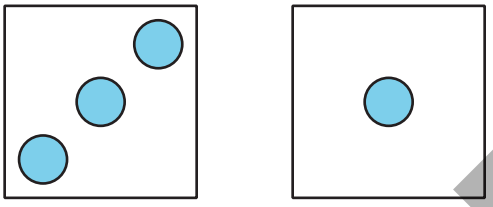
Total: _____

Write the missing expression to match the dots. Then find the total.



Expression: _____

Total: _____



Expression: _____

Total: _____

Addressing CA CCSSM 1.OA.5-6;
practicing MP7 and MP8

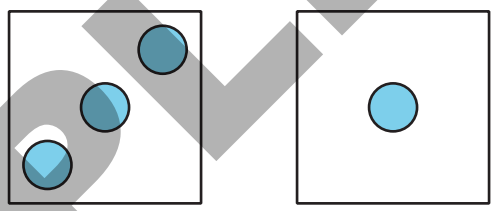
Add 1 or 2

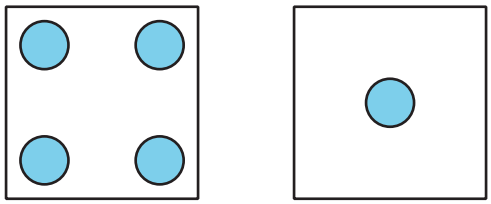
Let's add 1 or 2.

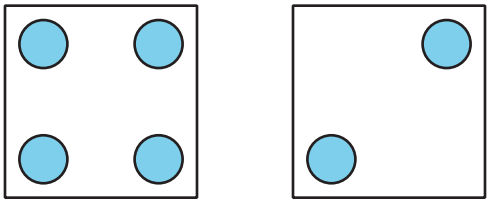
Warm-up

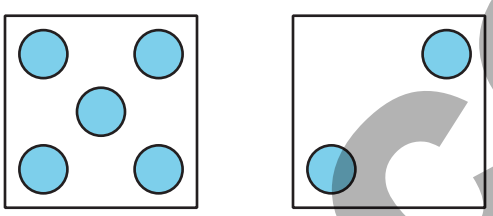
How Many Do You See: Dot Cubes

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







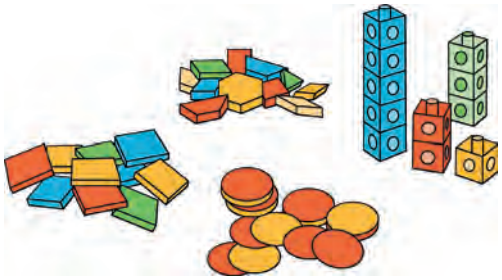


Activity 2

Centers: Choice Time

Choose a center.

Counting Collections



Number Race

Check It Off

Five in a Row: Addition and Subtraction

Addressing CA CCSSM 1.OA.5-6;
practicing MP7 and MP8

More Work with 1 and 2

Let's subtract 1 or 2.

Warm-up

Number Talk: Add 1 or 2

Find the value of each expression mentally.

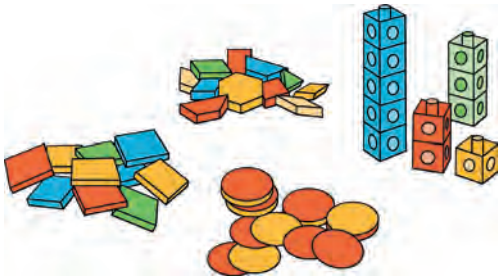
- 6 + 1
- 6 + 2
- 8 + 1
- 8 + 2

Activity 2

Centers: Choice Time

Choose a center.

Counting Collections



Number Race

Check It Off

Five in a Row: Addition and Subtraction

Addressing CA CCSSM 1.OA.5-6; practicing MP7

Explore Addition and Subtraction

Let's add and subtract.

Warm-up

Number Talk: Subtract 1 or 2

Find the value of each expression mentally.

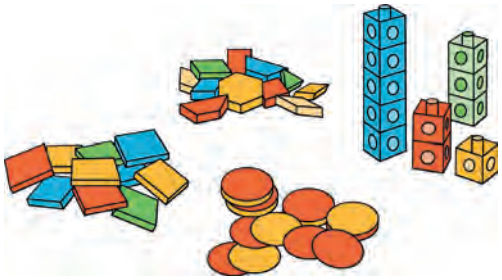
- 6 – 1
- 6 – 2
- 8 – 1
- 8 – 2

Activity 2

Centers: Choice Time

Choose a center.

Counting Collections



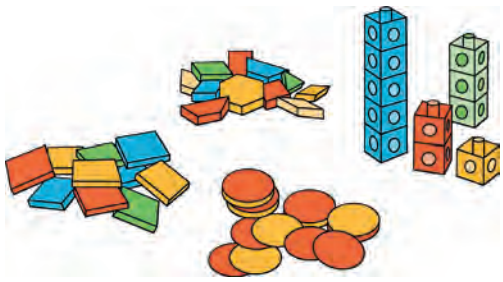
Number Race

Check It Off

Five in a Row: Addition and Subtraction

Section A Summary

We practiced counting collections.



We used different strategies to *add* and *subtract*.

We added 1 or 2 by counting on.

4 + 2 4 . . . 5, 6 The **sum** is 6.

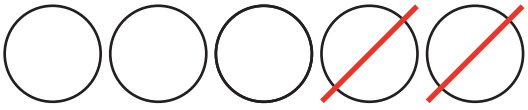
We subtracted 1 or 2 by counting back.

6 – 2 6 . . . 5, 4 The **difference** is 4.

We played games with addition and subtraction within 10.

4 + 3 The sum is 7.

5 – 2 The difference is 3.



Addressing CA CCSSM 1.OA.6; practicing MP6

Center Day 1

Let's play games to practice adding and subtracting.

Warm-up

Which Three Go Together: Addition and Subtraction Equations

Which 3 go together?

A

$12 - 2 = 10$

B

$4 + 6 = 10$

C

$4 + 2 = 6$

D

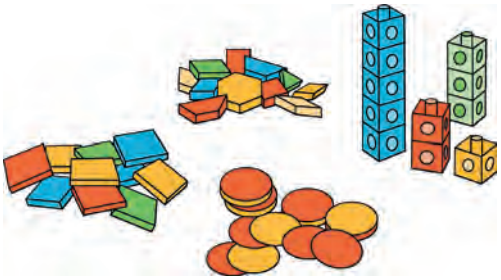
$10 = 8 + 2$

Activity 2

Centers: Choice Time

Choose a center.

Counting Collections



Number Race

Check It Off

Five in a Row: Addition and Subtraction

Find the Pair

Practice Problems

11 Problems

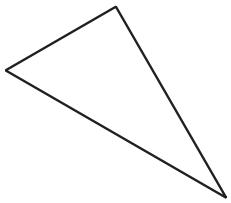
Sec A

1 Pre-unit

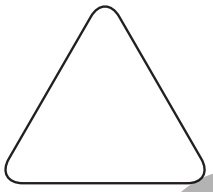
Color 2 shapes that are triangles.

A

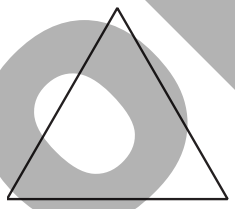
B



C



D

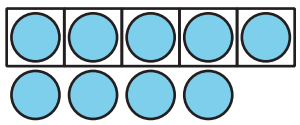


2 Pre-unit

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

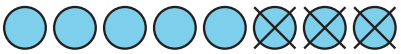
a. _____

b. _____

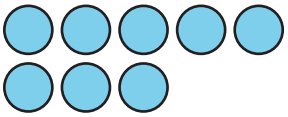


3 Pre-unit

Match the pictures with the expressions.

A. 

1. $6 + 2$

B. 

2. $5 + 3$

C. 

3. $8 - 3$

4 from Unit 1, Lesson 1

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

a. _____

b. _____

5 from Unit 1, Lesson 2

Circle the expression that matches the dots.

A. $2 + 2$

B. $4 + 3$

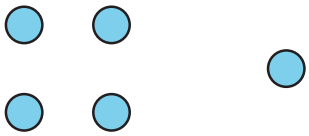
C. $3 + 3$

6 from Unit 1, Lesson 2

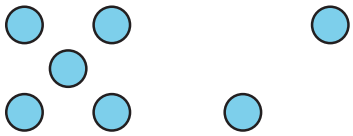
Circle the dots that match the expression: $5 + 1$

A

B



C



7 from Unit 1, Lesson 3

Find the value of each sum.

a. $3 + 1$

b. $3 + 2$

c. $7 + 2$

d. $7 + 1$

8 from Unit 1, Lesson 4

Find the value of each difference.

a. 10 – 1

b. 10 – 2

c. 5 – 2

d. 6 – 1

e. 8 – 2

9 from Unit 1, Lesson 5

How can you use these dots to show a sum or difference?

Fill in the blanks to show 2 ways.

_____ + _____ = _____

_____ − _____ = _____

10 Exploration

Materials needed:

- Number cards 2-10
- 2 dot cubes

Directions:

a. Choose a number card.
Show 2 numbers on the dot cubes that add to make your number.

b. Can you show another way?

11 Exploration

Partner A: Hold up some fingers on each hand.

Partner B: Fill in the blanks to show how many fingers.

_____ + _____ = _____

Switch roles and play again.

_____ + _____ = _____

_____ + _____ = _____

_____ + _____ = _____

Addressing CA CCSSM 1.MD.4; building towards 1.MD.4; practicing MP3 and MP6

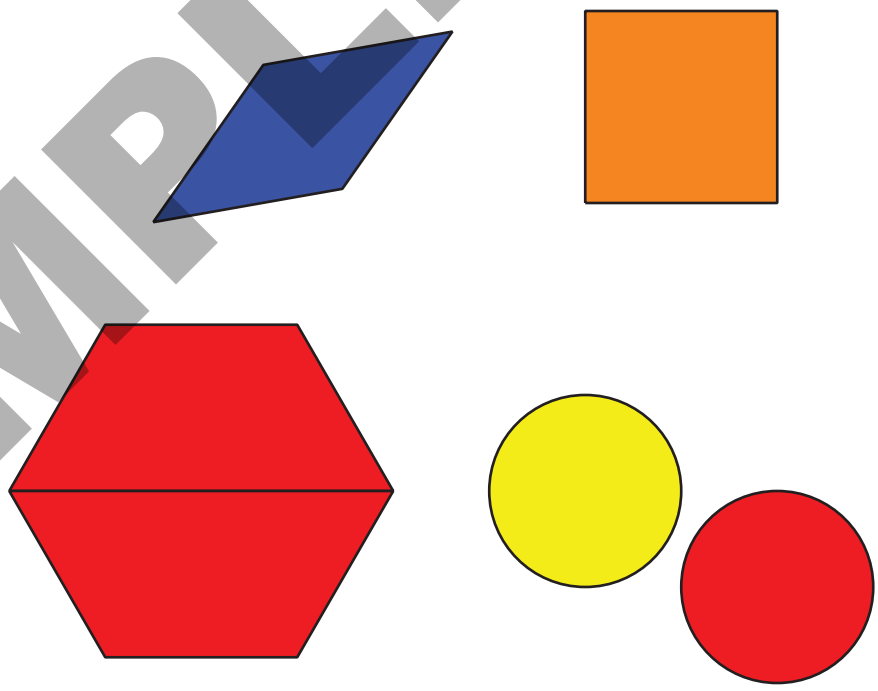
Sort Math Tools

Let's sort objects and describe how many.

Warm-up

Notice and Wonder: Math Tools

What do you notice?
What do you wonder?



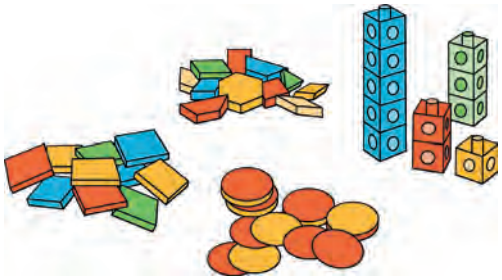
Activity 3

Centers: Choice Time

Choose a center.

Sec B

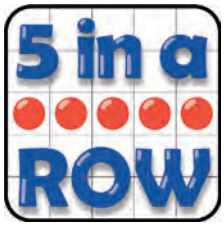
Counting Collections



Number Race

Check It Off

Five in a Row: Addition and Subtraction



Find the Pair

Addressing CA CCSSM 1.MD.4; building on K.CC.4; building towards 1.MD.4; practicing MP6 and MP7

Sort and Count Shape Cards

Let's sort shapes and show how many.

Warm-up

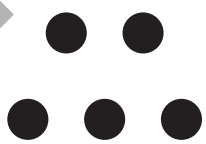
Which Three Go Together: Show Quantities

Which 3 go together?

A

B

C



D

Activity 2

Show Your Sort

1. Show how you sorted the shape cards.
   Be sure that someone else who looks at your paper can see how many shapes are in each category.

2. Complete the sentences:

   a. The first category has _____ shapes.

   b. The second category has _____ shapes.

   c. The third category has _____ shapes.

   d. There are _____ shapes in all.

Unit 1, Lesson 9

Addressing CA CCSSM 1.MD.4 and 1.OA.5; practicing MP3

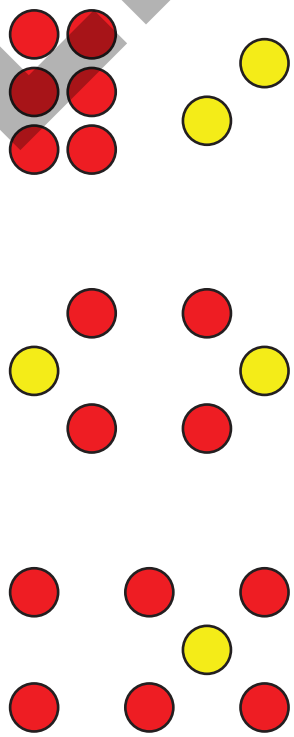
Which is Your Favorite?

Let's collect, organize, and show data.

Warm-up

How Many Do You See: Dots and More Dots

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



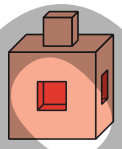
Activity 1

A Class Survey

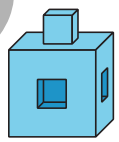
Which is your favorite _____?

Sec B

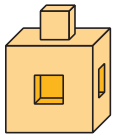
If you chose _____, take a red cube.



If you chose _____, take a blue cube.



If you chose _____, take a yellow cube.



Activity 2

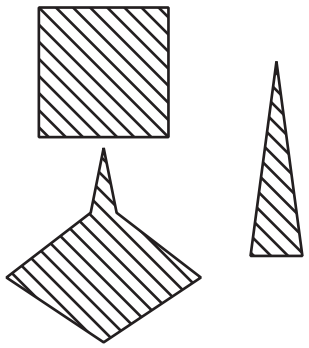
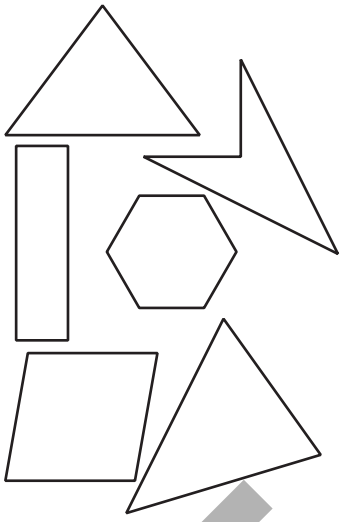
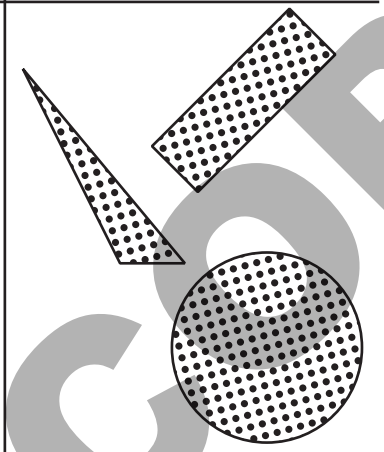
Show Our Class Data

Show the survey data about our class's favorite

_____.

Section B Summary

We sorted objects and shapes into **categories**.

lines	solid	dots
		

We showed our **data** on paper in different ways.

lines	solid	dots
□ □ □	□ □ □ □ □ □	□ □ □

lines	solid	dots
|||	||||| |	|||

lines	solid	dots
3	6	3

Addressing CA CCSSM 1.OA.4 and 1.OA.6;
building on K.CC.1; building towards 1.NBT.2; practicing MP7

Center Day 2

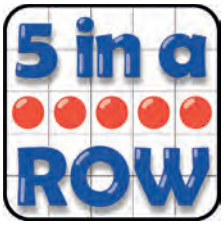
Let's add and subtract.

Activity 2

Centers: Choice Time

Choose a center.

Five in a Row: Addition and Subtraction



Check It Off

What's Behind My Back?

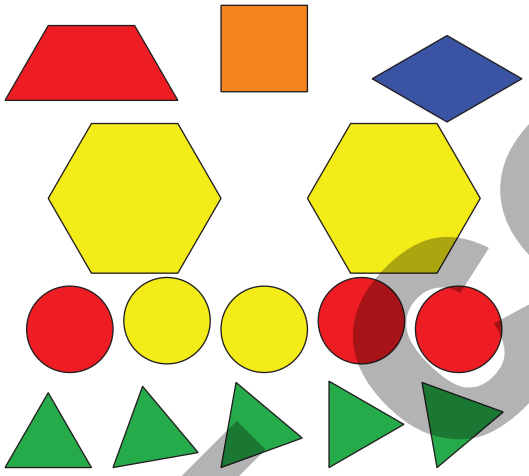
Find the Pair

Practice Problems

5 Problems

1 from Unit 1, Lesson 7

Here are some objects.



a. What are 2 categories you can use to sort these objects?

b. What are 2 different categories you can use to sort these objects?

2 from Unit 1, Lesson 8

Here are some objects.

a. Show how you could sort the balls into 3 categories.

b. How many balls are in each category?

category 1: _____

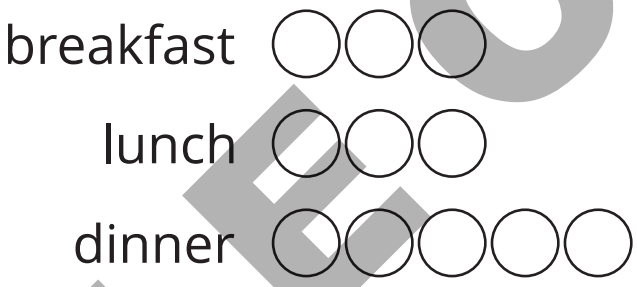
category 2: _____

category 3: _____

3 from Unit 1, Lesson 9

How are these representations the same? How are they different?

breakfast	lunch	dinner
||	|||	||||



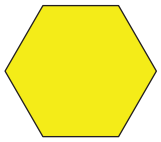
4 Exploration

Gather data from the classroom or home.
Sort your data into categories.
Show how you sorted the data on paper.

5 Exploration

There are 15 pattern blocks in a bag.
There are squares, triangles, and hexagons.
The chart shows how many squares are in the bag.

Pattern Blocks in Bag

 squares	 triangles	 hexagons
7	?	?

How many triangles could be in the bag?

How many hexagons could be in the bag?

Find as many solutions as you can.

Addressing CA CCSSM 1.MD.4; building towards 1.MD.4; practicing MP2 and MP6

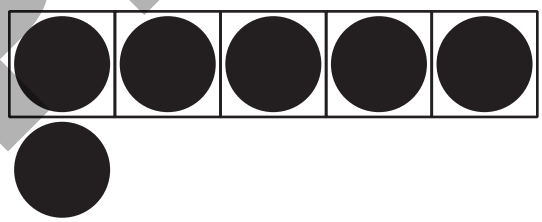
Class Pet Surveys

Let's see what the data tells us.

Warm-up

Notice and Wonder: Tally Marks

What do you notice?
What do you wonder?



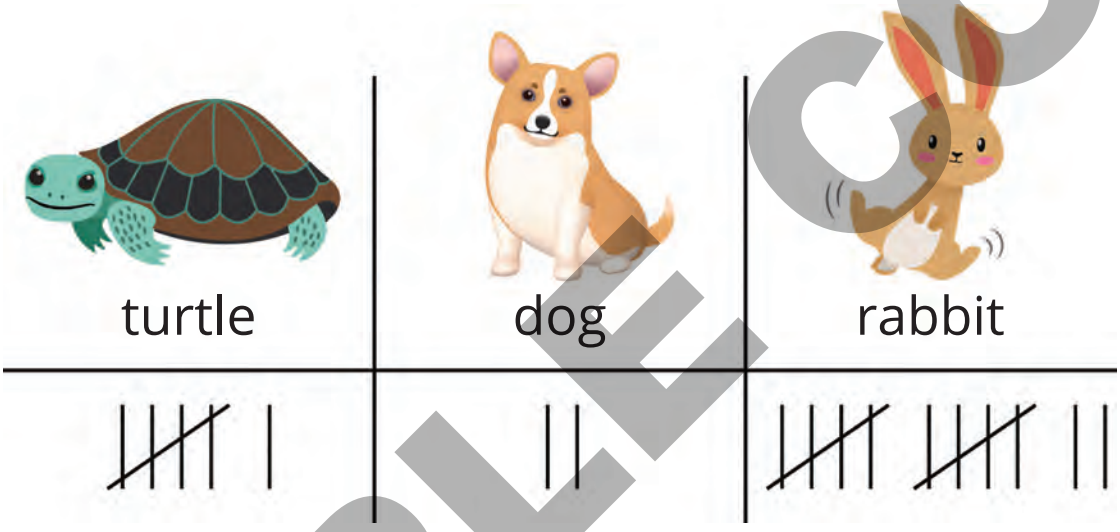
Activity 1

Jada's Class Pet Survey

Jada takes a survey in her class.

She asks, "Which animal would make the best class pet?"

Jada shows the responses.



Decide whether each statement is true or false.

Be ready to explain why.

1. There are 12 votes for rabbit.

True or False

2. There are 18 votes in all.

True or False

3. 14 students voted for turtle or rabbit.

True or False

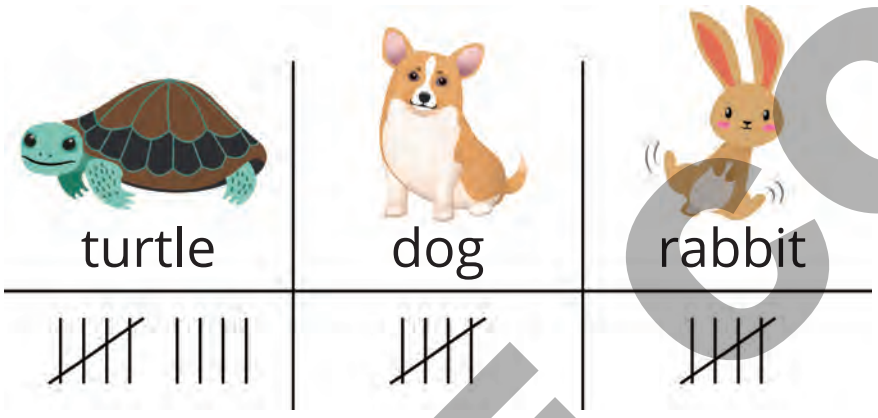
4. 8 students voted for dog or turtle.

True or False

Activity 2

Interpret Data about Class Pets

Tyler asks the same survey question in his class.
He shows their responses.



Write 3 things that you learned about Tyler's survey data from the representation.

1.

2.

3.

Activity 3

Centers: Choice Time

Choose a center.

What's Behind My Back?

Check It Off

Five in a Row: Addition and Subtraction

Find the Pair

Unit 1, Lesson 12

Addressing CA CCSSM 1.MD.4; building on K.CC.1; building towards 1.NBT.1; practicing MP2 and MP5

How Many?

Let's answer questions about data.

Activity 1

Data Represented with Tally Marks

Our Favorite _____

category 1	category 2	category 3

1. How many students chose category 1? _____
2. How many students chose category 2? _____
3. How many students chose category 3? _____
4. How many students chose category 1 or category 2? _____
5. How many students took this survey? _____

Activity 2

Data Represented with Numbers

Our Favorite _____

category 1	category 2	category 3

1. How many students chose category 1? _____
2. How many students chose category 2? _____
3. How many students chose category 3? _____
4. How many students chose category 1 or category 2? _____
5. How many students took this survey? _____

Unit 1, Lesson 13

Addressing CA CCSSM 1.MD.4 and 1.OA.5-6; practicing MP6

Questions about Data

Let's ask and answer questions about data.

Warm-up

Sec C

Number Talk: Plus or Minus 1 or 2

Find the value of each expression mentally.

- 7 + 1
- 7 + 2
- 9 – 1
- 9 – 2

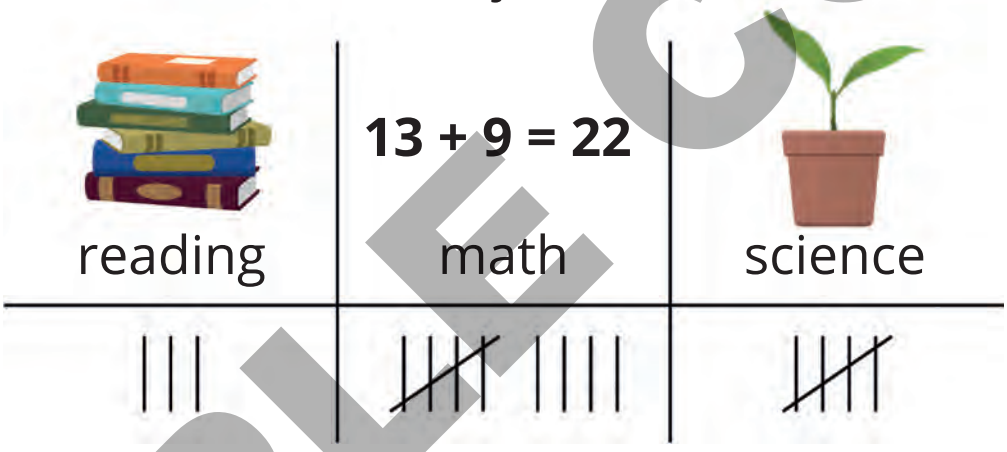
Activity 1

Can You Answer It?

Elena asks her classmates, “Which school subject is your favorite?”

She shows their responses.

Favorite Subject in School



Han wrote questions about Elena's data.

Decide whether each question can be answered using the data representation.

Be ready to explain why.

1. How many students said math is their favorite subject?

Yes or No

2. How many students said writing is their favorite subject?

Yes or No

3. Who said they like reading best?

Yes or No

4. How many students chose reading or science?

Yes or No

Activity 2

Ask Questions

Our Favorite _____

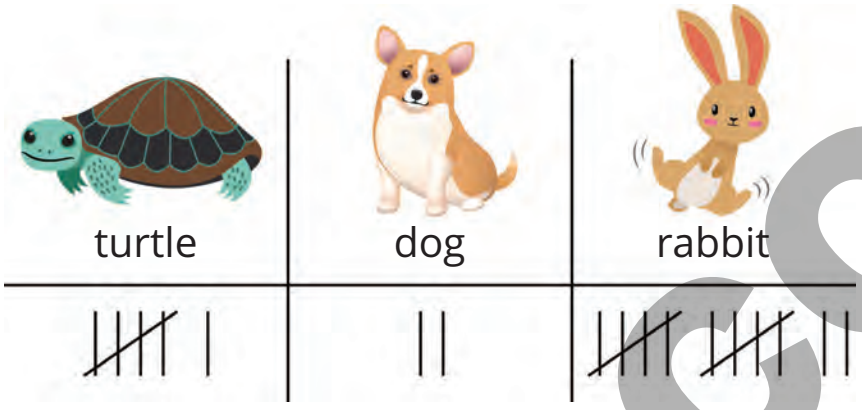
category 1	category 2	category 3

Section C Summary

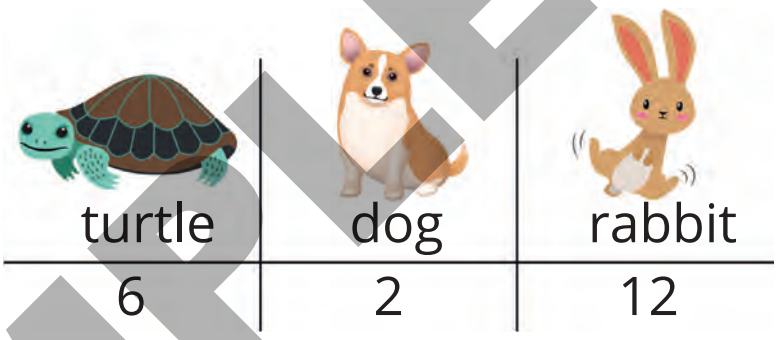
We collected data in a survey.

We showed the data in different ways.

We can show data using tally marks.



We can show data using numbers.



We asked and answered questions about data.

- How many students want a turtle as a class pet? (6)
- How many students want a dog or a rabbit as a class pet? (14)
- How many students took the survey? (20)

Addressing CA CCSSM 1.MD.4 and 1.OA.5-6; practicing MP1 and MP2

Center Day 3

Let's work with data and practice adding and subtracting.

Warm-up

Number Talk: Plus or Minus 2

Find the value of each expression mentally.

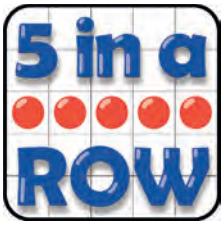
- 4 + 2
- 7 – 2
- 9 – 2
- 8 + 2

Activity 2

Centers: Choice Time

Choose a center.

Five in a Row: Addition and Subtraction



Check It Off

Find the Pair

What's Behind My Back?

Number Race

Unit 1, Lesson 15

Addressing CA CCSSM 1.MD.4; building towards 1.MD.4; practicing MP4

Free-Time Activities

Let's find out what our class would like to do with free time.

Warm-up

Notice and Wonder: Play Time

What do you notice?
What do you wonder?

Activity 1

Collect Survey Data

Let's take a class survey.

Which activity do you like to do during free time?

_____

_____

_____

Collect and record 10 responses.

Practice Problems

7 Problems

1 from Unit 1, Lesson 11

Jada shows how she sorted some shapes.

 square	 triangle	 circle
𝍸	𝍸	𝍸 I

Jada makes statements about how she sorted.
Decide whether each statement is true or false.

a. There are 6 triangles.

True or False

b. There are 15 shapes in all.

True or False

c. 8 of the shapes are squares or triangles.

True or False

2 from Unit 1, Lesson 11

A class is asked about their favorite birds at the zoo.

Their responses are shown here.

Birds at the Zoo

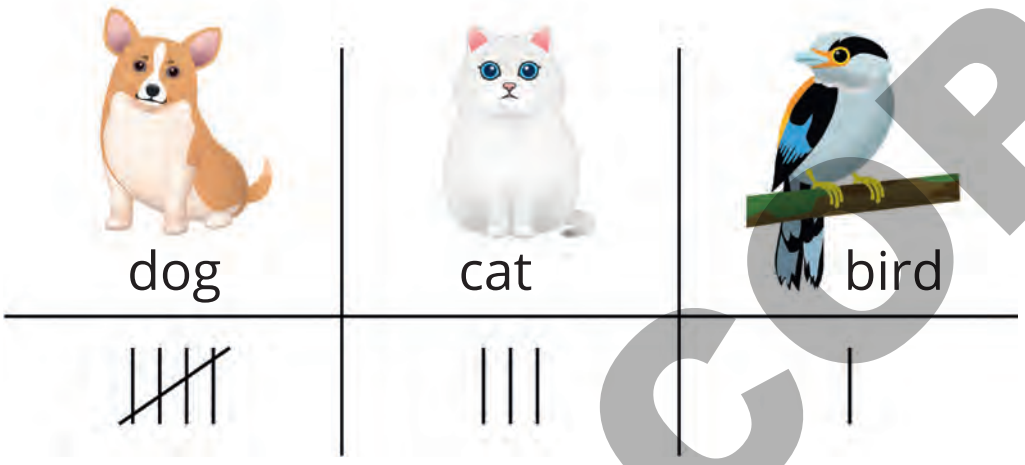
		
ostrich	penguin	eagle
4	11	5

Write 3 true statements about what the data shows.

3 from Unit 1, Lesson 12

Use the data to answer the questions.

Favorite Pet



a. How many students chose dogs? _____

b. How many students chose birds? _____

c. How many students chose dogs or cats? _____

d. How many students chose cats or birds? _____

e. How many students took the survey? _____

4 from Unit 1, Lesson 12

Use the data to answer the questions.

Favorite Snack

		
apple	yogurt	nuts
8	3	6

a. How many students chose yogurt? _____

b. How many students chose apple? _____

c. How many students chose apple or nuts? _____

d. How many students chose apple or yogurt? _____

e. How many students took the survey? _____

5 from Unit 1, Lesson 13

Crayons are sorted into categories based on color.

 red	 blue	 yellow
		

What are 2 questions that you can answer using this data?

6 Exploration

Use the data to answer the question.

Seashells Found on the Shore

Noah	Tyler	Elena
6	7	19

The answer to a question about this data is 13.

What could the question be?

7 Exploration

a. Gather data at home or school and make a display of the data.

b. Ask a question that can be answered by using your display.

c. Trade displays and questions with a partner and answer your partner's question.

GRADE 1

UNIT

Addition and Subtraction Story Problems

Content Connections

In this unit you will solve addition and subtraction story problems. You will make connections by:

- **Reasoning with Data** while collecting, representing, organizing and answering questions about two or more categories of information.
- **Exploring Changing Quantities** while solving addition and subtraction problems with the use of manipulatives and expressions.

- **Taking Wholes Apart, Putting Parts Together** when you investigate the use of whole numbers to solve addition and subtraction problems.

Addressing the Standards

As you work your way through **Unit 2 Addition and Subtraction Story Problems,** 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 2, 3, 9, 11, 15, 20
MP2 Reason abstractly and quantitatively.	Lesson 2, 6, 10, 13, 15,16, 17, 19, 21, 22
MP3 Construct viable arguments and critique the reasoning of others.	Lesson 5, 14
MP4 Model with mathematics.	Lesson 1, 23
MP5 Use appropriate tools strategically.	Lesson 1
MP6 Attend to precision.	Lesson 3, 7, 8, 16, 18, 19

Mathematical Practices	Where You Use these MPs
MP7 Look for and make use of structure.	Lesson 4, 12, 17, 18, 23
MP8 Look for and express regularity in repeated reasoning.	

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
• Make Sense of Data • Equal Expressions	**1.OA.1** Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	Lesson 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, and 23

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Make Sense of Data • Equal Expressions • Reasoning about Equality	**1.OA.3** Apply properties of operations as strategies to add and subtract.3 *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)*	Lesson 9
• Equal Expressions	**1.OA.4** Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.*	Lesson 17, 18, 20, and 22
• Measuring with Objects	**1.OA.5** Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	Lesson 2, 4, 9, 12, 13, 14, 18

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Equal Expressions • Reasoning about Equality	**1.OA.6** Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).	Lesson 4, 6, 7, 8, 9, 10, 12, 16, and 21
• Equal Expressions • Reasoning about Equality	**1.OA.7** Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.*	Lesson 4, 5, 18, 19, and 21

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Equal Expressions	**1.OA.8** Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations* $8 + ? = 11$, $5 = \square - 3$, $6 + 6 = \square$.	Lesson 4, 17, 21, and 22
• Make Sense of Data • Tens and Ones	**1.NBT.1** Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	Lesson 8 and 20

Big Ideas You Are Studying	California Content Standards	Lessons Where You Learn This
• Make Sense of Data	**1.MD.4** Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relation-ship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	Lesson 13

Unit 2, Lesson 1

Addressing CA CCSSM 1.OA.1; building towards 1.OA.1; practicing MP4 and MP5

Represent Story Problems

Let's make sense of story problems.

Warm-up

Notice and Wonder: A Library

What do you notice?
What do you wonder?

Activity 1

Act Out Stories

1. Some children listen to a story.
   Then some more children join the group.
   What do you notice?
   What do you wonder?

2. 6 children listen to a story.
   Then 4 more children join the group.
   How many children listen to the story now?

3. Some children are at the library.
   Then some of the children go home.
   What do you notice?
   What do you wonder?

4. 8 children are at the library.
   Then 2 of the children go home.
   How many children are at the library now?

Activity 2

Represent Stories

1. 5 books are on a shelf.
   Clare puts 2 more books on the shelf.
   How many books are on the shelf now?

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

2. 5 books are on the table.
   2 of the books fall on the floor.
   How many books are still on the table?

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

Addressing CA CCSSM 1.OA.1 and 1.OA.5;
building towards 1.OA.1; practicing MP1 and MP2

Solve Story Problems

Let's solve story problems and share different ways to add and subtract.

Warm-up

Act It Out: Computers at the Library

5 people work on the computers.
3 more people come to the computers.
How can you act out this story?

Activity 1

Solve a Story Problem

6 people come to story time.
3 more people join the group.
How many people are at story time now?

Activity 2

How Did You Solve It?

1. 9 books are on a cart.
   The librarian takes 2 of the books.
   How many books are still on the cart?

   Show your thinking using drawings, numbers, or words.

2. 7 children work on an art project.
   2 children join them.
   How many children work on the art project now?

   Show your thinking using drawings, numbers, or words.

Unit 2, Lesson 3

Addressing CA CCSSM 1.OA.1; building towards 1.OA.1; practicing MP1 and MP6

A Change Is Coming

Let's solve a new kind of story problem.

Warm-up

Notice and Wonder: Kiran's Books

What do you notice?
What do you wonder?

Kiran has some books.
His friend gives him some more books.

Activity 1

Kiran's Books

Kiran has 6 books.
His friend gives him some more books.
Now Kiran has 8 books.
How many books did Kiran get from his friend?

Show your thinking using drawings, numbers, or words.

Activity 2

Compare the Problems

1. Mai has 5 books about space.
   She checks out 4 more.
   How many books about space does Mai have?

   Show your thinking using drawings, numbers, or words.

2. Mai has 5 books about space.
   She checks out some more.
   Now she has 9 books about space.
   How many books did Mai check out?

   Show your thinking using drawings, numbers, or words.

Addressing CA CCSSM 1.OA.1, 1.OA.5-6, and 1.OA.7-8; building towards 1.OA.7-8; practicing MP7

A Change Unknown

Let's solve story problems and compare ways to find an unknown addend.

Warm-up

Number Talk: Adding a Few More

Find the value of each expression mentally.

- 5 + 1
- 5 + 2
- 6 + 2
- 7 + 3

Activity 1

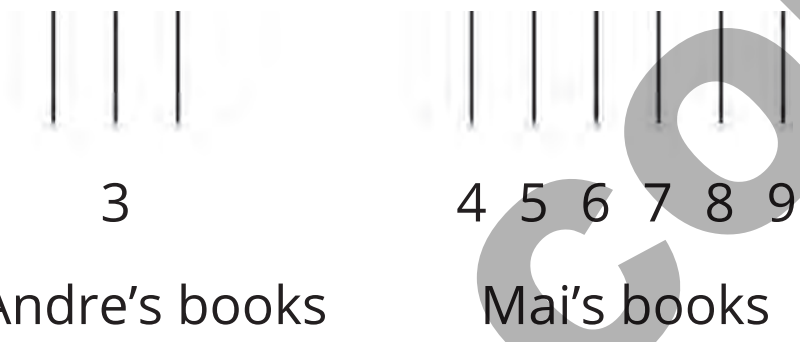
Andre's Books

1. Andre checks out some books from the library.
   Mai gives him more books.
   Now Andre has 9 books.

   What do you notice?
   What do you wonder?

2. Andre checks out 3 books from the library.
   Mai gives him some more books.
   Now Andre has 9 books.
   How many books did Mai give him?

   Lin made this drawing.



   How does Lin's drawing show how many books Mai gave Andre?

Activity 2

Practice Making Equations True

Find the number that makes each equation true.

1. $4 + 2 = \square$

2. $\square = 3 + 1$

3. $5 + \square = 7$

4. $6 + \square = 8$

5. $10 = 5 + \square$

6. $5 + 4 = \square$

7. $4 + \square = 7$

8. $6 + \square = 9$

9. $8 = 4 + \square$

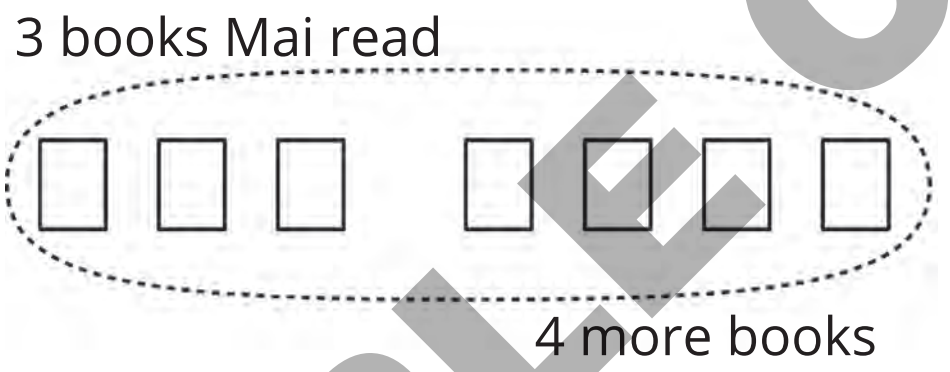
10. $7 + \square = 10$

Section A Summary

We solved story problems.
We represented the problems with objects, drawings, and words.

- We solved story problems with addition.

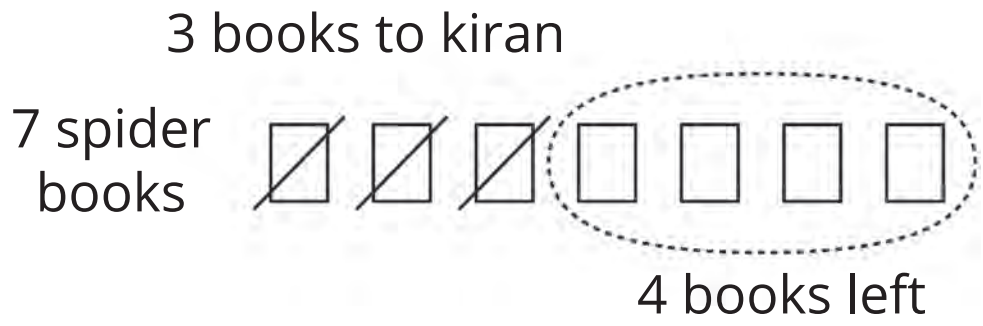
Mai reads 3 books about dogs.
Then she reads 4 more books.
How many books does Mai read all together?



$3 + 4 = \boxed{7}$

- We solved story problems with subtraction.

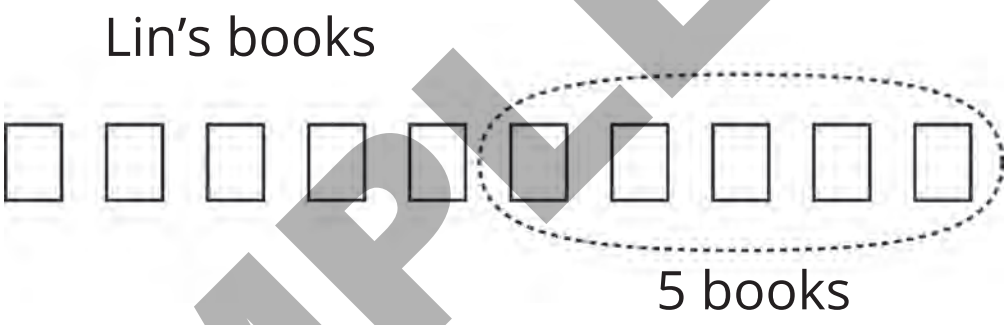
Tyler has 7 books about spiders.
He gives 3 to Kiran to read.
How many books does Tyler have left?



$7 - 3 = \boxed{4}$

- We solved story problems where the change was unknown.

Lin has 5 books.
Her teacher gives her some more books.
Now Lin has 10 books.
How many books did the teacher give her?



$5 + \boxed{5} = 10$

- We learned that the equal sign, =, means "the same amount as" and "equals."

Addressing CA CCSSM 1.OA.1 and 1.OA.7; practicing MP3

Center Day 1

Let's play games to practice adding and subtracting.

Warm-up

True or False: Equations with 10

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

- $10 = 10$

- $4 + 6 = 10$

- $2 + 7 = 10$

Activity 2

Centers: Choice Time

Choose a center.

Sort and Display

Math Stories

Find the Pair

Practice Problems

8 Problems

1 Pre-unit

2 plants are in the classroom.
The teacher brings 3 more plants.
How many plants are in the classroom now?

Show your thinking using drawings, numbers, or words.

2 Pre-unit

4 cars are on the street.
Some cars are red, and some are blue.
How many of each color car could be on the street?

Show your thinking using drawings, numbers, or words.

3 Pre-unit

Find the number that makes each equation true.

a. $7 + \square = 10$

b. $4 + \square = 10$

c. $\square + 2 = 10$

4 from Unit 2, Lesson 2

7 books are on the shelf.
Mai takes 2 of the books off.
How many books are on the shelf now?

Show your thinking using drawings, numbers, or words.

5 from Unit 2, Lesson 3

7 children are in the pool.
Then some more children jump in.
Now there are 10 children in the pool.
How many children jumped in?

Show your thinking using drawings, numbers, or words.

6 from Unit 2, Lesson 4

3 students are on the playground.
Some more students come.
Now there are 8 students on the playground.
How many students came to the playground?

Show your thinking using drawings, numbers, or words.

7 Exploration

a. Write an addition or subtraction story problem about something you did this week.

b. Trade your problem with a partner. Solve your partner's problem.

Choose one of the equations.

a. $5 + \square = 8$

b. $8 - 3 = \square$

c. $3 + \square = 8$

d. $5 + 3 = \square$

Write a story problem that the equation matches.

Trade problems with a partner. Decide which equation matches your partner's story.

Addressing CA CCSSM 1.OA.1 and 1.OA.6; building towards 1.OA.3; practicing MP2

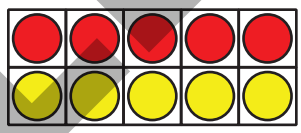
Problems about Pets

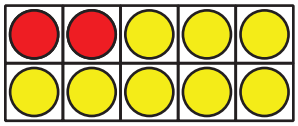
Let's compare different ways to solve problems.

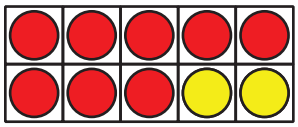
Warm-up

How Many Do You See: Two-color Counters

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







Activity 1

Three Reads: Kiran's Fish

Kiran has some fish in his fish tank.
He has 4 red fish and 5 blue fish.
How many fish does he have in all?

Show your thinking using drawings, numbers, or words.

Activity 2

Tyler's and Clare's Pets

Tyler and Clare want to know how many pets they have together.

Tyler has 2 turtles.

Clare has 4 dogs.

Tyler writes $2 + 4$.

Clare writes $4 + 2$.

Who do you agree with?

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

Addressing CA CCSSM 1.OA.1 and 1.OA.6; building towards 1.OA.3; practicing MP6

One Part Red, One Part Yellow

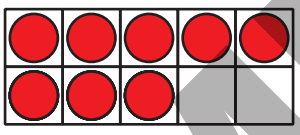
Let's think about breaking numbers apart and putting them back together.

Warm-up

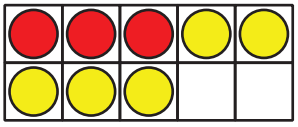
Which Three Go Together: Two-Color Counters

Which 3 go together?

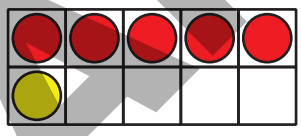
A



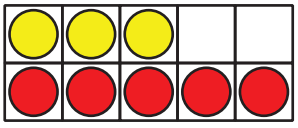
B



C



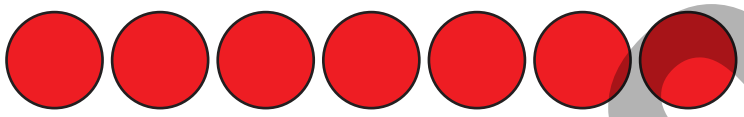
D



Activity 2

Shake and Spill Story Problems

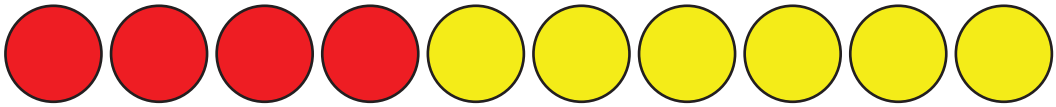
1. Elena plays *Shake and Spill.*
   She has 7 counters.



   What are some ways to show some red and some yellow?

   Show your thinking using drawings, numbers, or words.

2. Tyler plays *Shake and Spill.*
   He spills these counters:



   Write 2 expressions to show his counters.

3. Show other combinations of red and yellow counters that Tyler could spill.
   Show your thinking using drawings, numbers, or words.

If you have time, solve the following problems:

1. What are all the combinations Elena could have?

   How do you know?

2. What are all the combinations Tyler could have?

   How do you know?

Addressing CA CCSSM 1.NBT.1, 1.OA.1, and 1.OA.6; building towards 1.OA.8; practicing MP6

One Part Red, How Many Yellow?

Let's solve a new kind of story problem.

Activity 2

Shake and Spill—Cover Problems

1. There are 7 counters total.
   How many counters are under the cup?

2. There are 9 counters total.
   How many counters are under the cup?

3. There are 6 counters outside the cup.
   Some of the counters are under the cup.
   There are 10 counters total.
   How many counters are under the cup?

4. There are 3 counters outside the cup.
   Some of the counters are under the cup.
   There are 8 counters total.
   How many counters are under the cup?

Unit 2, Lesson 9

Addressing CA CCSSM 1.OA.1, 1.OA.3, and 1.OA.5-6; building towards 1.OA.4; practicing MP1

What is the Unknown?

Let's solve story problems and compare strategies.

Sec B

Warm-up

Number Talk: Addition and Subtraction Expressions

Find the value of each expression mentally.

- 4 + 6
- 6 + 4
- 10 – 6
- 10 – 4

Activity 1

Represent and Solve Story Problems

1. Han has 5 pet lizards.
   He has 3 pet snakes.
   How many pets does he have?

Show your thinking using drawings, numbers, or words.

2. Han has 8 pets.
   5 of his pets are lizards.
   The rest of his pets are snakes.
   How many snakes does Han have?

   Show your thinking using drawings, numbers, or words.

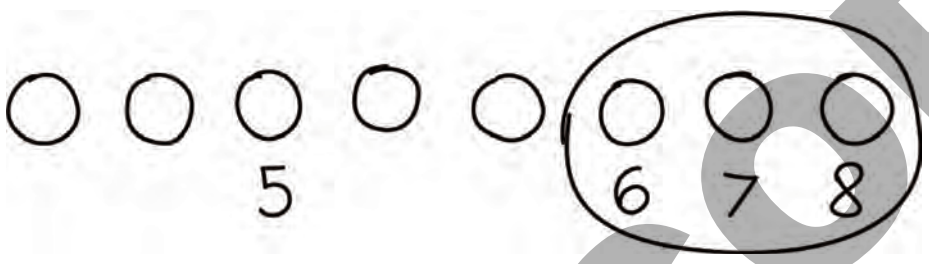
3. Han wants to have 8 pets.
   He wants some lizards and some snakes.
   How many of each pet could Han get?

   Show your thinking using drawings, numbers, or words.

Activity 2

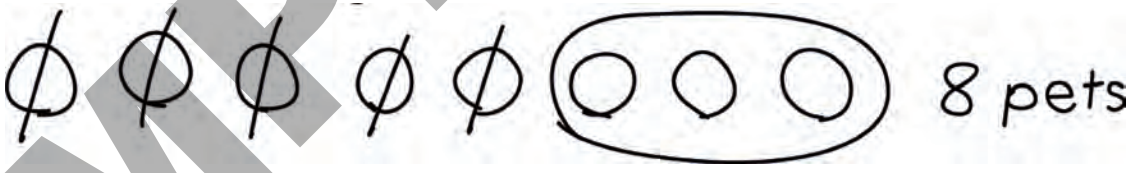
Can You Do It That Way?

1. Diego made this drawing.



How does Diego's drawing match the story?

2. Jada made this drawing.



What do you notice? What do you wonder?

Diego says this drawing can't work because it shows taking away.

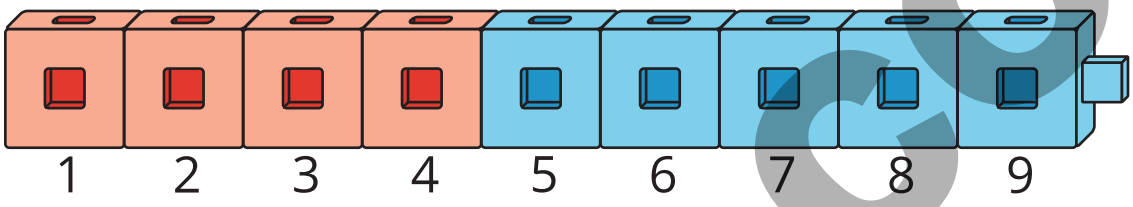
Work with your partner to explain how the drawing does show a way to solve the problem.

Section B Summary

We learned how to solve story problems.D

- We solved story problems where the total was unknown.

  Kiran has some fish in his fish tank.
  He has 4 red fish and 5 blue fish.
  How many fish does he have in all?



$4 + 5 = \boxed{9}$

- We solved story problems where both parts were unknown.

  Tyler plays *Shake and Spill.*
  He plays with 10 counters.

Show some different combinations of red and yellow counters that Tyler could spill.

$$\boxed{4} + \boxed{6} = 10$$

$$\boxed{6} + \boxed{4} = 10$$

$$\boxed{5} + \boxed{5} = 10$$

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

- We solved problems where one part was unknown.

  6 counters are outside the cup.
  Some of the counters are under the cup.
  There are 10 counters total.
  How many counters are under the cup?

  We can count on from 6 to 10.

$$6 + \boxed{4} = 10$$

- We learned that numbers can be added in any order.

  $4 + 6$ is the same as $6 + 4$.

Addressing CA CCSSM 1.OA.6; practicing MP2 and MP6

Center Day 2

Let's play games to practice adding and subtracting.

Warm-up

Number Talk: Subtraction Methods

Find the value of each expression mentally.

- 7 – 2
- 8 – 2
- 7 – 5
- 8 – 6

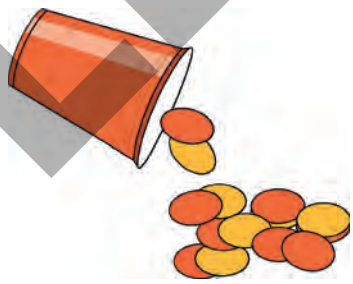
Activity 2

Centers: Choice Time

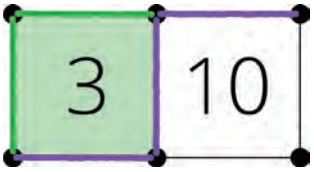
Choose a center.

Math Stories

Shake and Spill



Capture Squares



Practice Problems

7 Problems

1 from Unit 2, Lesson 6

A vase has red and pink flowers.
3 flowers are red, and 6 are pink.
How many flowers are in the vase?

Show your thinking using drawings, numbers, or words.

2 from Unit 2, Lesson 7

Han plays *Shake and Spill.*
He uses 8 counters.

Show Han's counters 4 different ways.

red counters	yellow counters	expression

3 from Unit 2, Lesson 8

The table shows the number of counters for *Shake and Spill.*

Fill in the unknown numbers.

total	red	yellow
10	5	
10	7	
8	1	
8	3	
9	6	

4 from Unit 2, Lesson 9

a. 9 beads are on a bracelet.
2 of them are pink, and the rest are green.
How many green beads are on the bracelet?

Show your thinking using drawings, numbers, or words.

b. 9 beads are on a bracelet.
Some are pink, and the rest are green.
How many of each color bead could there be?

Show your thinking using drawings, numbers, or words.

Han spills some counters on his desk.

He records the number of red and yellow counters.

The table shows some of Han's results.

a. Fill in the unknown numbers.

b. Are there some empty spots you could fill in more than one way?

   Show your thinking using drawings, numbers, or words.

red	yellow	total
5		10
	2	9
3	4	
		8
5		
	3	
		10

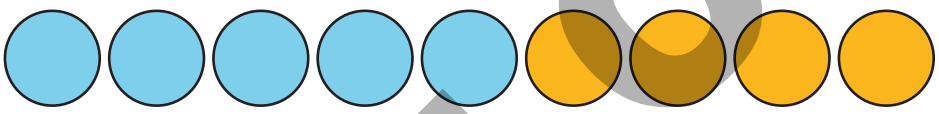
6 Exploration

Roll 2 number cubes. Find the total.

Show your partner one of the number cubes. Tell the total.

Your partner figures out the number on the hidden cube.

7 Exploration



a. Write a story with a question that could go with the picture.

b. Write an equation that matches your story.

Addressing CA CCSSM 1.OA.1; building on K.CC.4 and K.CC.6; building towards 1.OA.1; practicing 1.OA.1

Are There Enough?

Let's figure out if there are enough.

Warm-up

Act It Out: Art Project

Mai passes out crayons for an art project.
There are 8 students waiting for crayons.
Mai has 7 packs of crayons.

How can you act out this story?

Activity 1

Are There Enough?

1. There are 9 markers in a bin.
   There are 4 caps for the markers.
   Are there enough caps for the markers?

   Show your thinking using drawings, numbers, or words.

2. There are 9 students at the table.
   There are 8 pencils.
   Are there enough pencils for every student?

   Show your thinking using drawings, numbers, or words.

3. There are 6 students.
   There are 8 chairs.
   Are there enough chairs for every student?

   Show your thinking using drawings, numbers, or words.

Activity 2

More or Fewer?

1. 1 more or 1 fewer?

2. 1 more or 1 fewer?

3. 1 more or 1 fewer?

4. 1 more or 1 fewer?

5. How many more or how many fewer?

6. How many more or how many fewer?

7. How many more or how many fewer?

8. How many more or how many fewer?

Addressing CA CCSSM 1.OA.1 and 1.OA.5-6; practicing MP7

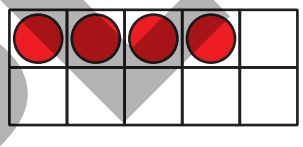
How Many More? How Many Fewer?

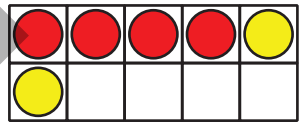
Let's find the difference between quantities.

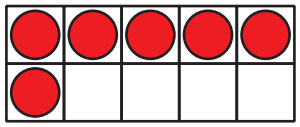
Warm-up

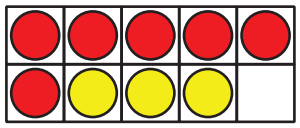
How Many Do You See: 10-frames

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









Activity 1

Get Out Your Dry Erase Boards

There are 9 dry erase boards.
There are 6 markers.
Are there more dry erase boards or more markers?
How many more?

Show your thinking using drawings, numbers, or words.

Activity 2

Compare Problems

1. There are 7 folders.
   There are 9 pens.
   Are there fewer folders or pens?
   How many fewer?

   Show your thinking using drawings, numbers, or words.

2. There are 5 pencils.
   There are 8 markers.
   Are there more pencils or markers?
   How many more?

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

Unit 2, Lesson 13

Addressing CA CCSSM 1.MD.4, 1.OA.1, and 1.OA.5; practicing MP2

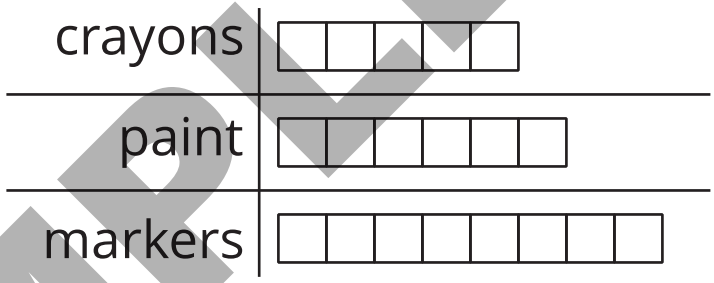
Compare Data

Let's compare data.

Warm-up

Notice and Wonder: More and Fewer

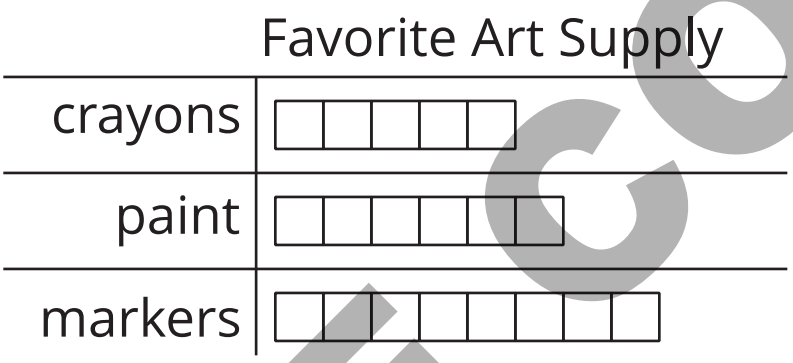
What do you notice?
What do you wonder?



Activity 1

Compare Data (Part 1)

A group of students is asked, “Which is your favorite art supply?”
Their responses are shown in this chart.



1. More students voted for crayons than markers.

True or False

2. Fewer students voted for crayons than paint.

True or False

3. 1 more student voted for paint than crayons.

True or False

Show your thinking using drawings, numbers, or words.

4. 1 fewer student voted for paint than markers.

True or False

Show your thinking using drawings, numbers, or words.

5. 3 more students voted for markers than crayons.

True or False

Show your thinking using drawings, numbers, or words.

If you have time: Change the false statements to make them true.

Activity 2

Compare Data (Part 2)

Another group of students is asked, “Which is your favorite art supply?” Their responses are shown in this chart.

Favorite Art Supply		
crayons	paint	markers
10	8	7

1. How many more students voted for crayons than paint?

   Show your thinking using drawings, numbers, or words.

2. How many fewer students voted for markers than paint?

   Show your thinking using drawings, numbers, or words.

3. How many more students voted for crayons than markers?

   Show your thinking using drawings, numbers, or words.

Addressing CA CCSSM 1.OA.1 and 1.OA.5;
building towards 1.OA.5-6 and 1.OA.7; practicing MP3

Compare with Addition or Subtraction

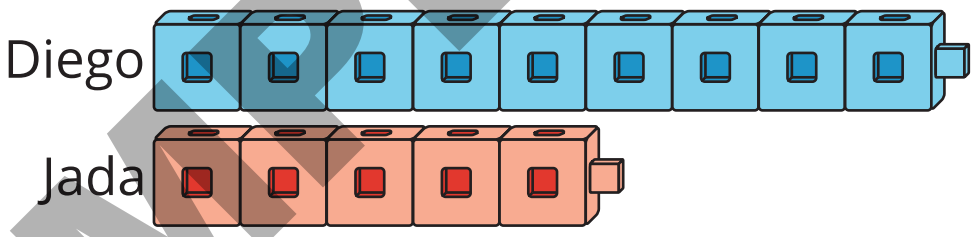
Let's show different ways to solve story problems.

Activity 1

Cube Towers

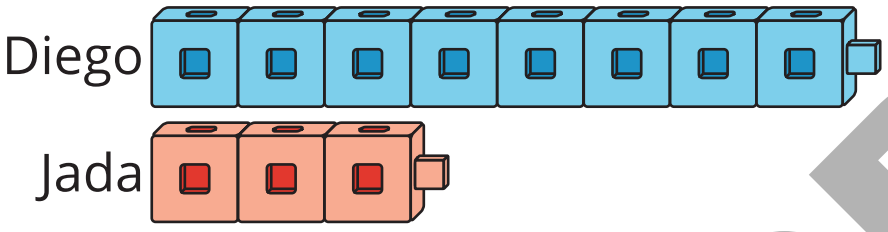
1. How many more cubes does Diego have?

   Show your thinking using drawings, numbers, or words.



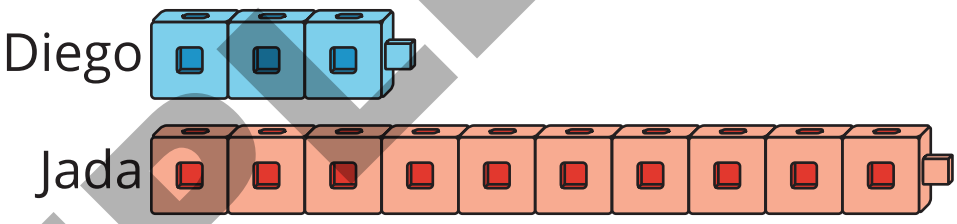
2. How many more cubes does Diego have?

   Show your thinking using drawings, numbers, or words.



3. How many fewer cubes does Diego have?

   Show your thinking using drawings, numbers, or words.



Activity 2

Cube Tower Problems

Work with your partner to solve each problem.
One partner should try Lin's way.
One partner should try Kiran's way.

Show your thinking using drawings, numbers, or words.

1. Lin makes a tower with 3 cubes.
   Kiran makes a tower with 9 cubes.
   How many more cubes are in Kiran's tower?

   Lin's Way

   Think: "How many more cubes can I add to 3 cubes to get 9?"

   Kiran's Way

   Think: "How many are left if I take away 3 cubes from 9?"

2. Lin's tower has 7 cubes.
   Kiran's tower has 3 cubes.
   How many more cubes are in Lin's tower?

3. Lin's tower has 2 cubes.
   Kiran's tower has 9 cubes.
   How many fewer cubes are in Lin's tower?

Unit 2, Lesson 15

Addressing CA CCSSM 1.OA.1; building towards 1.OA.6; practicing MP1 and MP2

Different Types of Story Problems

Let's solve different types of story problems.

Warm-up

Which Three Go Together: Equations

Which 3 go together?

A

$5 = 3 + \square$

B

$4 + 1 = \square$

C

$3 + 2 = 5$

D

$5 - 3 = \square$

Activity 1

What Questions Can We Ask?

What math questions can you ask about this image?

Activity 2

Different Types of Problems

1. Priya has 10 pattern blocks.
   7 are triangles.
   The rest are squares.
   How many pattern blocks are squares?

   Show your thinking using drawings, numbers, or words.

2. Elena has 4 pattern blocks.
   Tyler has 6 pattern blocks.
   How many fewer pattern blocks does Elena have than Tyler?

   Show your thinking using drawings, numbers, or words.

3. 3 students work at a table.
   Then some more students join.
   Now there are 8 students at the table.
   How many students join the group?

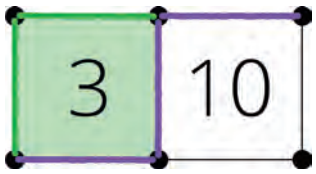
   Show your thinking using drawings, numbers, or words.

Activity 3

Centers: Choice Time

Choose a center.

Capture Squares



Shake and Spill

What's Behind My Back?

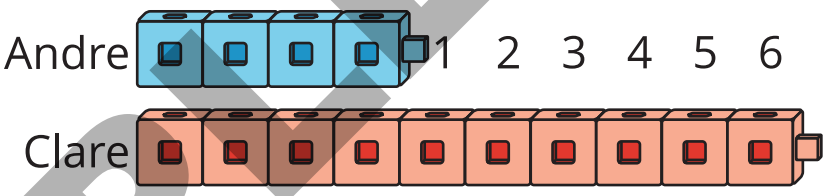
Section C Summary

- We solved "are there enough?" problems. We decided which amounts were "more" or "fewer."

- We solved story problems about "how many more?" and "how many fewer?"

  Andre has 4 cubes.
  Clare has 10 cubes.
  How many fewer cubes does Andre have than Clare?

- We learned the difference between a bigger amount and a smaller amount is the answer to "how many more?" or "how many fewer?"



Andre has the smaller amount.
Clare has the bigger amount.
The difference is 6 cubes.

- We learned that these problems can be solved with addition or subtraction.

$4 + \boxed{6} = 10$ or $10 - 4 = \boxed{6}$

Addressing CA CCSSM 1.OA.6; practicing MP2 and MP6

Center Day 3

Let's play games to practice adding and subtracting.

Warm-up

Number Talk: Subtraction

Find the value of each expression mentally.

- 9 – 7
- 9 – 2
- 8 – 6
- 8 – 2

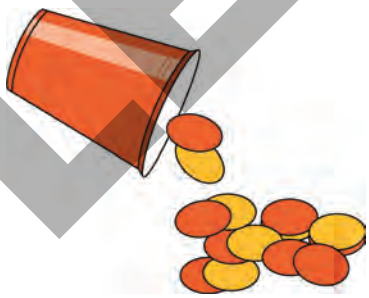
Activity 2

Centers: Choice Time

Choose a center.

Math Stories

Shake and Spill



What's Behind My Back?

Practice Problems

7 Problems

1 from Unit 2, Lesson 11

There are 7 dogs.
There are 5 toys.
Are there enough toys for each dog?

Show your thinking using drawings, numbers, or words.

2 from Unit 2, Lesson 12

There are 10 bats in the cave.
There are 8 bats flying outside.
Are there fewer bats in the cave or flying outside?
How many fewer?

Show your thinking with drawings, numbers, or words.

3 from Unit 2, Lesson 13

Here are the colors of some hot air balloons that Tyler sees at a show.

yellow	orange	blue
8	3	6

a. How many more blue balloons does Tyler see than orange balloons?

Show your thinking using drawings, numbers, or words.

b. How many fewer blue balloons does Tyler see than yellow balloons?

Show your thinking using drawings, numbers, or words.

4 from Unit 2, Lesson 14

Jada's tower has 8 cubes.
Mai's tower has 2 cubes.
Show 2 ways to find how many more cubes Jada has.

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

5 from Unit 2, Lesson 15

7 hedgehogs are underground.
4 hedgehogs are on the grass.
How many fewer hedgehogs are on the grass?

Show your thinking using drawings, numbers, or words.

6 Exploration

8 stuffed animals are on the bed.
3 stuffed animals are on the floor.
Your teacher asks a question about this story problem.
The answer to the question is 5.
What could the question be?

Find 2 sets of objects at home or at school. Write a story comparing them.

Solve your problem. Write an equation that matches the story.

Addressing CA CCSSM 1.OA.1, 1.OA.4, and 1.OA.8; building towards 1.OA.4; practicing MP2 and MP7

Equations with Unknowns

Let's make sense of equations with empty boxes.

Warm-up

Notice and Wonder: Equations with an Unknown

What do you notice?

What do you wonder?

$4 + \square = 10$

Activity 2

Which Equation?

9 students play bingo.
3 students use blue chips to cover their boards.
The other students use yellow chips.
How many students use yellow chips?

Explain how each equation matches the story problem.
Show your thinking using drawings, numbers, or words.

1. Clare writes $3 + \square = 9$.

2. Jada writes $9 - 3 = \square$.

Addressing CA CCSSM 1.OA.1, 1.OA.4, 1.OA.5, and 1.OA.7; practicing MP6 and MP7

Addition and Subtraction Equations

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

Warm-up

True or False: Equal Sign

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

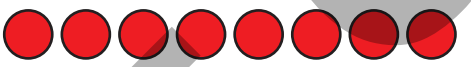
- $7 + 3 = 10$
- $10 = 7 + 3$
- $10 = 3 + 6$

Activity 1

Is It Addition or Subtraction?

There are 8 glue sticks and 3 scissors at the art station. How many fewer scissors are there than glue sticks?

Mai creates a picture.

glue sticks 

scissors 

She can see the difference is 5.
She's not sure which equation best matches the problem.

$8 - 3 = \square$ $3 + \square = 8$

Help her decide.
Show your thinking using drawings, numbers, or words.

Addressing CA CCSSM 1.OA.1 and 1.OA.7; building towards 1.OA.4 and 1.OA.6; practicing MP2 and MP6

How Do the Stories Compare?

Let's think about how stories are alike and different.

Warm-up

Which Three Go Together: More Equations

Which 3 go together?

A

$4 + 6 = 10$

B

$10 - 4 = 6$

C

$2 + 2 + 2 = 6$

D

$6 = 2 + 4$

Activity 1

Write Equations

1. 6 students play with chalk.
   3 more students come to play.
   How many students play now?

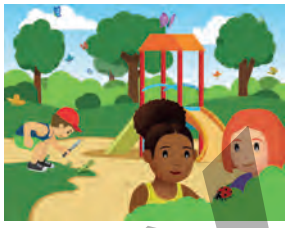
   Equation: _____

2. Some students play with chalk.
   7 students draw pictures.
   2 students write their names.
   How many students play with chalk altogether?

   Equation: _____

3. How are these story problems alike? How are they different?

4. 9 students look for bugs.
   6 students leave to play something different.
   How many students look for bugs now?



   Equation: _____

5. 9 students look for bugs.
   5 students look in the grass.
   The rest look in the trees.
   How many students look in the trees?

   Equation: _____

6. How are these story problems alike? How are they different?

Activity 2

Outdoor Games

Show your thinking using drawings, numbers, or words.

Equation: _____

Addressing CA CCSSM 1.NBT.1, 1.OA.1, and 1.OA.4; practicing MP1

Story Problems and Equations

Let's represent and solve different story problems.

Activity 1

Lotería

1. 10 picture cards are called.
   7 of the pictures are on Mai's board.
   How many of the pictures are *not* on Mai's board?

   Show your thinking using drawings, numbers, or words.

Equation: _____

Equation: _____

2. Lin has 10 beans to play with.
   2 of her beans fall on the floor.
   How many beans does Lin have to play with now?

   Show your thinking using drawings, numbers, or words.

   Equation: _____

   Equation: _____

3. Noah covers 4 pictures on his board.
   His brother covers 10 pictures.
   How many fewer pictures does Noah have covered than his brother?

   Show your thinking using drawings, numbers, or words.

   Equation: _____

   Equation: _____

Activity 2

What's Your Question?

1. Clare covers 3 pictures on her board.
   She covers some more.
   Now she has 9 pictures covered.
   What is a question you can ask about the story?

   _____

   _____

   Solve your story problem.
   Show your thinking using drawings, numbers, or words.

2. Diego has 2 red beans on his board.
   Noah has 9 beans on his board.

   What is a question you can ask about the story?

   _____

   _____

   Solve your story problem.
   Show your thinking using drawings, numbers, or words.

Addressing CA CCSSM 1.OA.1, 1.OA.6, and 1.OA.7-8; practicing MP2

Make Sense of Equations

Let's write equations and find the number that makes an equation true.

Warm-up

Number Talk: Make 10

Find the unknown value mentally.

- $6 + 4 = \square$
- $6 + \square = 10$
- $10 = 4 + \square$
- $10 = \square + \square$

Section D Summary

- We learned more about equations that show an unknown total or unknown addend.
  We matched equations to story problems.
  We also wrote equations to match story problems.

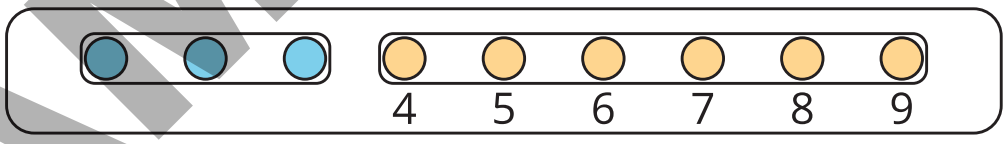
  Lin has 5 bingo chips on her board.
  She also has some chips on the table.
  All together she has 9 bingo chips.
  How many chips does Lin have on the table?

  $9 - 5 = \square$
  and
  $5 + \square = 9$

- We thought about how addition and subtraction are related. We used both to solve a story problem.

  9 students play bingo.
  3 students use blue chips to cover their boards.
  The other students use yellow chips.
  How many students use yellow chips?

  Clare writes $3 + \square = 9$.
  Jada writes $9 - 3 = \square$.



9 students playing bingo

Addressing CA CCSSM 1.OA.1, 1.OA.4, and 1.OA.8; practicing MP2

Center Day 4

Let's play games to practice adding and subtracting.

Warm-up

Number Talk: Unknown Values

Find the unknown value mentally.

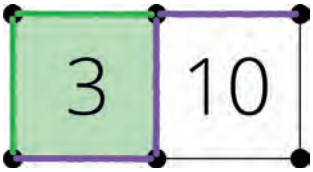
- $4 + \square = 5$
- $5 - 4 = \square$
- $8 - 6 = \square$
- $6 + \square = 8$

Activity 2

Centers: Choice Time

Choose a center.

Capture Squares



Math Stories

What's Behind My Back?

Addressing CA CCSSM 1.OA.1; building towards 1.OA.1 and 1.OA.8; practicing MP4 and MP7

Story Problem Information

Let's think about the information we need to solve story problems.

Warm-up

Notice and Wonder: Equations

What do you notice?

What do you wonder?

$4 + 5 = 9$

$4 + \square = 9$

$\square + \square = 9$

Practice Problems

7 Problems

1 from Unit 2, Lesson 17

6 apples are in the basket.
Tyler adds some more apples to the basket.
Now there are 8 apples in the basket.
How many apples did Tyler add to the basket?

Select **2** equations that match the story.

A. $6 + \square = 8$
B. $6 + 8 = \square$
C. $8 - 6 = \square$
D. $14 - 8 = \square$

Sec D

2 from Unit 2, Lesson 18

7 candles are on the cake.
10 candles are in the box.
How many fewer candles are on the cake than in the box?

Circle the **2** equations that match the story.

$10 + 7 = \square$
$10 - 7 = \square$
$7 + \square = 10$
$7 - 10 = \square$

3 from Unit 2, Lesson 19

7 cars are in the parking lot.
Then 5 of the cars drive away.
How many cars are in the parking lot now?
Show your thinking using drawings, numbers, or words.

Write an equation to match the story problem.

4 from Unit 2, Lesson 20

9 chickens are in the yard.
Some of the chickens run away.
Now there are 5 chickens in the yard.
How many chickens ran away?

Write 2 equations that match the story problem.

5 from Unit 2, Lesson 21

Jada plays *Shake and Spill.*
She uses 8 counters.

Show Jada's counters 4 different ways.

red counters	yellow counters	equation

6 Exploration

9 books are on Han's desk.
5 books are on Mai's desk.
Then Han puts 2 of his books on Mai's desk.
The answer to the question is 7.
What could the question be?

Write and solve your own story problem about something at your home.

Share your story with a partner. Solve your partner's problem.

Glossary

- category
  A label that tells how objects in a group are alike.

- 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

- difference
  The result when a number is subtracted from another.

  Example:
  $4 - 1 = 3$
  The difference is 3.

- sum
  The total when 2 or more numbers are added.

  Example:
  $3 + 1 = 4$
  The sum is 4.

- survey
  A way to collect data by asking people the same questions.

Attributions

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.

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 publicdomainvectors.org. Public Domain. publicdomainvectors.org. https://publicdomainvectors.org/en/free-clipart/Vector-image-of-basketball-ball/5686.html, https://publicdomainvectors.org/en/free-clipart/Tenis-ball-image/49483.html, https://publicdomainvectors.org/en/free-clipart/Vector-graphics-of-shiny-soccer-ball/14708.html.

By Michelle_Raponi. Pixabay. Pixabay. https://pixabay.com/photos/playground-school-children-playing-1160377/.

By pixychic. Pixabay. Pixabay. https://pixabay.com/photos/children-s-library-reading-children-1008229/.

By 200degrees. Pixabay. Pixabay. https://pixabay.com/vectors/book-rack-shelf-furniture-design-2943383/.

By klimkin. Pixabay. Pixabay. https://pixabay.com/photos/computer-monitor-lamp-library-901857/.

By Shengpan. Pixabay. Pixabay. https://pixabay.com/photos/library-read-modern-reading-room-684403/.

By Abdus Sattar Sazib. Pixabay. Pixabay. https://pixabay.com/images/download/oriental-garden-lizard-5352327_1920.jpg?attachment&modal.

Citations

Unit 2: Addition and Subtraction Story Problems

Lesson Grade1.2.D20

Hispanic Heritage Month Games. (2016, September 18) *Spanish Playground.* Retrieved from https://www .spanishplayground.net/hispanic-heritage-month-games/

Lesson Grade1.2.D20

How to Play Lotería. (2019, May 20) *wikiHow.* Retrieved from https://www.wikihow.com/Play- Loteria

Lesson Grade1.2.D20

Lotería. *Wikipedia, The Free Encyclopedia.* Retrieved from https://en.wikipedia.org/wiki/ Loter%C3%ADa

Notes

Notes

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

1.G: Grade 1 - Geometry

Reason with shapes and their attributes.

1.G.1

Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

1.G.2

Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. Students do not need to learn formal names such as “right rectangular prism.”

1.G.3

Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves,*

fourths, and *quarters*, and use the phrases *half of, fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

1.MD: Grade 1 - Measurement and Data

Measure lengths indirectly and by iterating length units.

1.MD.1

Order three objects by length; compare the lengths of two objects indirectly by using a third object.

1.MD.2

Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.

Tell and write time.

1.MD.3

Tell and write time in hours and half-hours using analog and digital clocks.

Represent and interpret data.

1.MD.4

Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

1.NBT: Grade 1 - Number and Operations in Base Ten

Extend the counting sequence.

1.NBT.1

Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Understand place value.

1.NBT.2

Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

1.NBT.2a

10 can be thought of as a bundle of ten ones--called a "ten."

1.NBT.2b

The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

1.NBT.2c

The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

1.NBT.3

Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

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

1.NBT.4

Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

1.NBT.5

Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

1.NBT.6

Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.

1.OA: Grade 1 - Operations and Algebraic Thinking

Represent and solve problems involving addition and subtraction.

1.OA.1

Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. See Glossary, Table 1.

1.OA.2

Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Understand and apply properties of operations and the relationship between addition and subtraction.

1.OA.3

Apply properties of operations as strategies to add and subtract. Students need not use formal terms for these properties. Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 + 12$. (Associative property of addition.)

1.OA.4

Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.

Add and subtract within 20.

1.OA.5

Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

1.OA.6

Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$ one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).

Work with addition and subtraction equations.

1.OA.7

Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.

1.OA.8

Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = \square - 3$, $6 + 6 = \square$.

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.