



Core Knowledge® MATHEMATICS

# Understanding Addition and Subtraction



Student Workbook



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# Understanding Addition and Subtraction

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## **Understanding Addition and Subtraction Student Workbook**

Core Knowledge Mathematics™



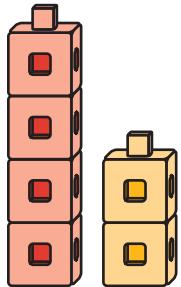
# Lesson 1: Count 2 Groups of Objects

- Let's find out how many objects there are in two groups.

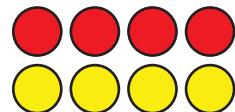
## Warm-up: Which One Doesn't Belong: Groups

Which one doesn't belong?

A



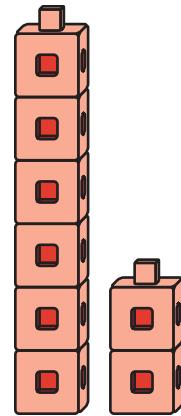
B



C



D





## 1.1: Put Together Pattern Blocks

How many pattern blocks do you have?

\_\_\_\_\_

-----

I have \_\_\_\_\_ pattern blocks.



## 1.2: Put Together Connecting Cubes

How many cubes do you and your partner have together?

\_\_\_\_\_

-----

We have \_\_\_\_\_ cubes.

\_\_\_\_\_

-----

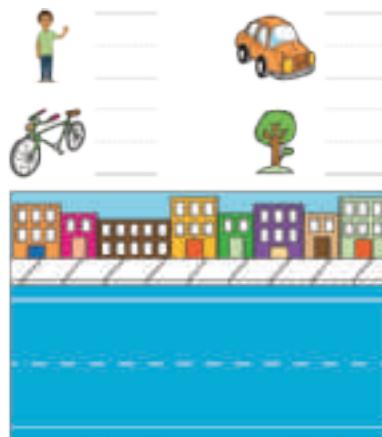
We have \_\_\_\_\_ cubes.



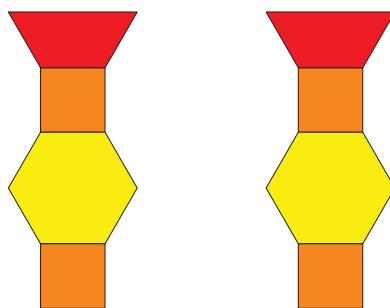
## 1.3: Centers: Choice Time

Choose a center.

Math Libs



Match Mine





## **Lesson 2: Count 2 Groups of Images**

- Let's find out how many things there are in two groups.



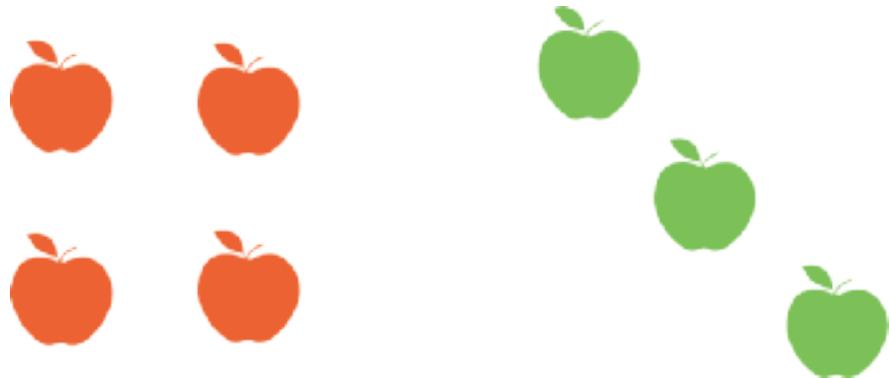
## 2.1: Put Together Dots on 5-Frames

There are \_\_\_\_\_ dots.



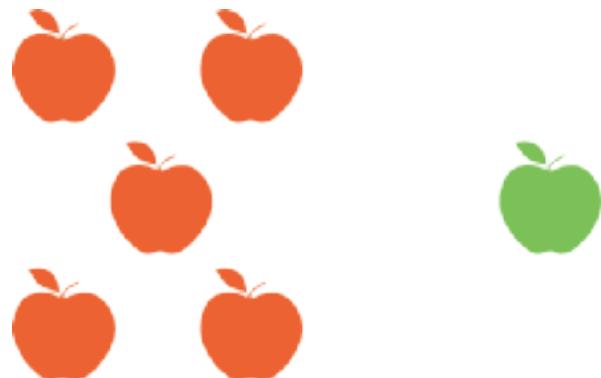
## 2.2: How Many Apples?

1.



There are \_\_\_\_\_ apples.

2.



There are \_\_\_\_\_ apples.



3.



\_\_\_\_\_

-----

There are \_\_\_\_\_ apples.

4.



\_\_\_\_\_

-----

There are \_\_\_\_\_ apples.



## 2.3: Introduce Roll and Add, Dots

How many dots?

---

---

1.

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---

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2.

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3.

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---

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4.

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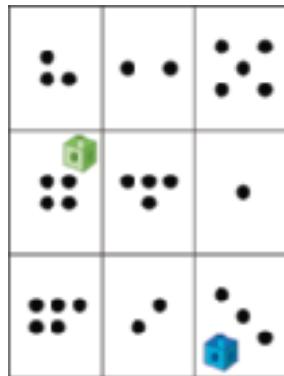
5.

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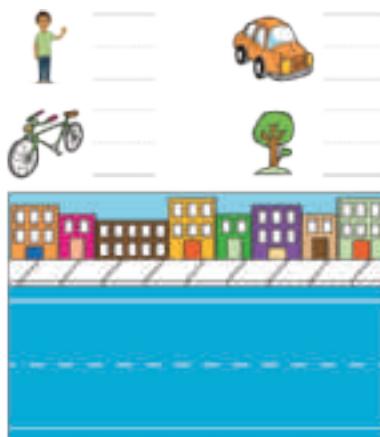


Choose a center.

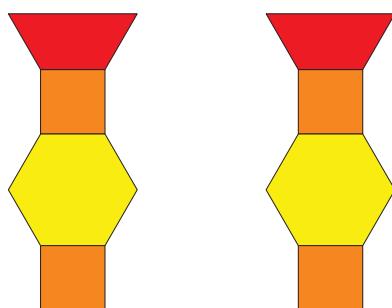
Roll and Add



Math Libs



Match Mine





## **Lesson 3: Count 2 Groups of Scattered Images**

- Let's find out how many things there are in two scattered groups.



### 3.1: Count Organized and Scattered Images

1.



---

---

There are \_\_\_\_\_ balls.

2.



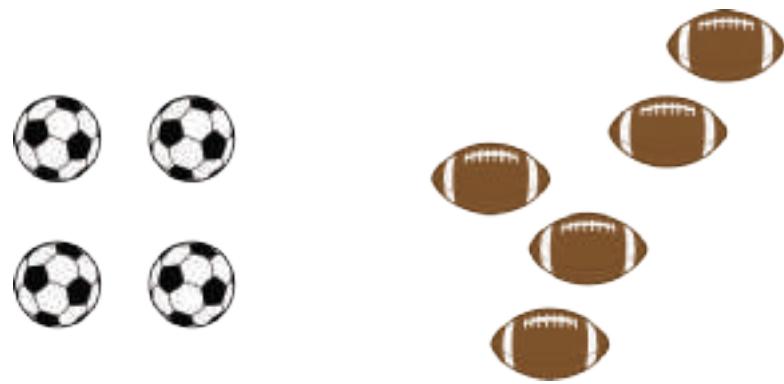
---

---

There are \_\_\_\_\_ balls.



3.



---

---

There are \_\_\_\_\_ balls.

4.



---

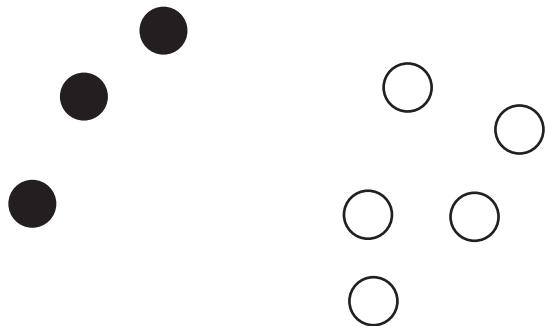
---

There are \_\_\_\_\_ balls.



### 3.2: Count Scattered Images

1.

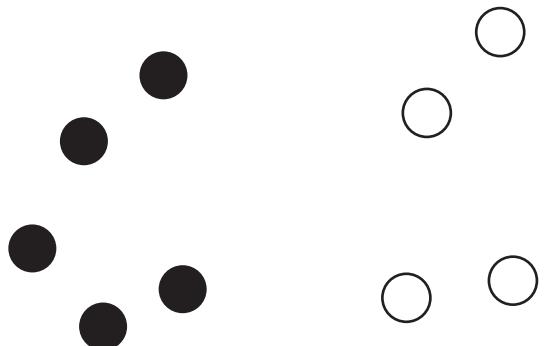


---

---

There are \_\_\_\_\_ circles.

2.



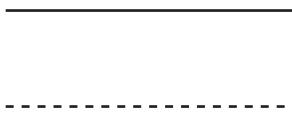
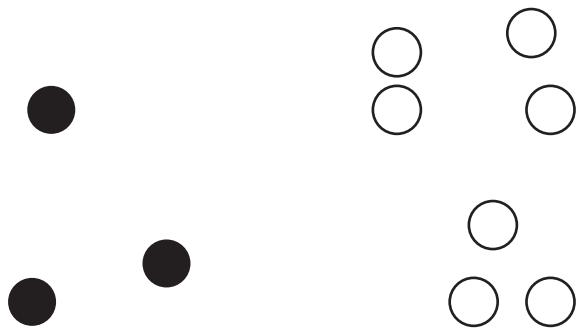
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---

There are \_\_\_\_\_ circles.

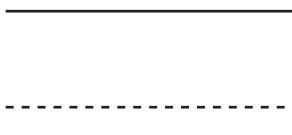
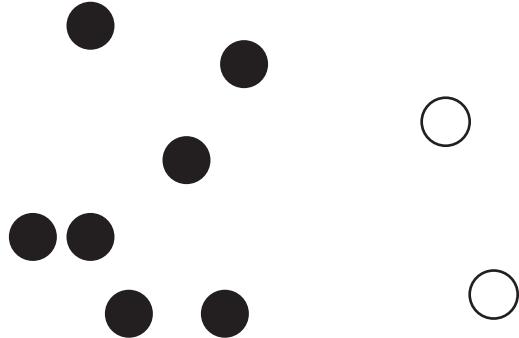


3.



There are \_\_\_\_\_ circles.

4.



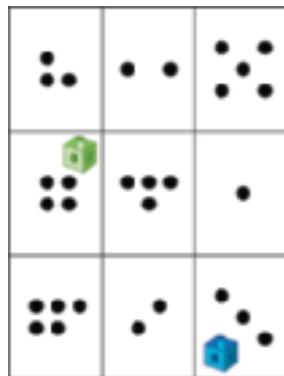
There are \_\_\_\_\_ circles.



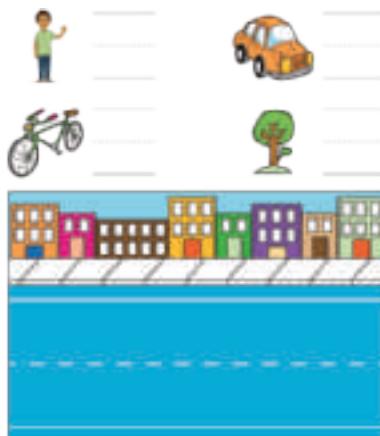
### 3.3: Centers: Choice Time

Choose a center.

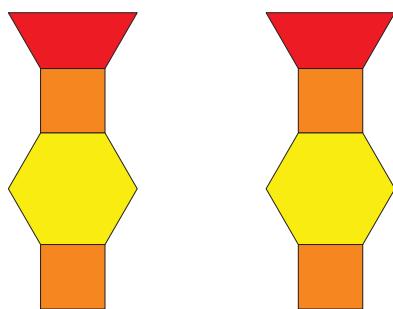
Roll and Add



Math Libs



Match Mine





## Lesson 4: Add with Objects

- Let's use counters to add.



## 4.1: Add Counters

1. Count out 2 counters.

Add 2 more counters.

---

---

There are \_\_\_\_\_ counters altogether.

2. Count out 5 counters.

Add 3 more counters.

---

---

There are \_\_\_\_\_ counters altogether.



3. Count out 2 counters.

Add 4 more counters.

\_\_\_\_\_

-----

There are \_\_\_\_\_ counters altogether.

4. Count out 6 counters.

Add 3 more counters.

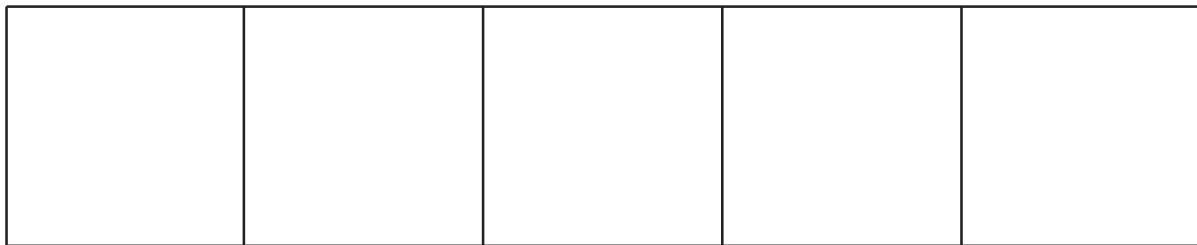
\_\_\_\_\_

-----

There are \_\_\_\_\_ counters altogether.



## 4.2: Introduce 5-Frames, Add



1.



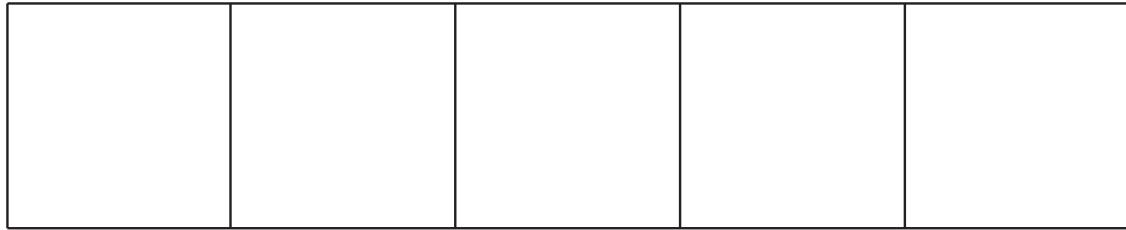
2.



3.







4.



5.



6.

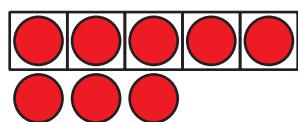




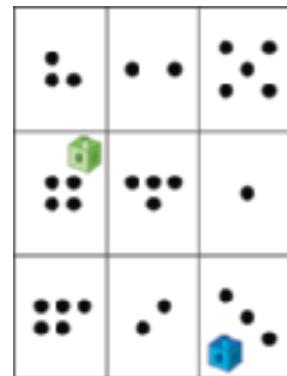
## 4.3: Centers: Choice Time

Choose a center.

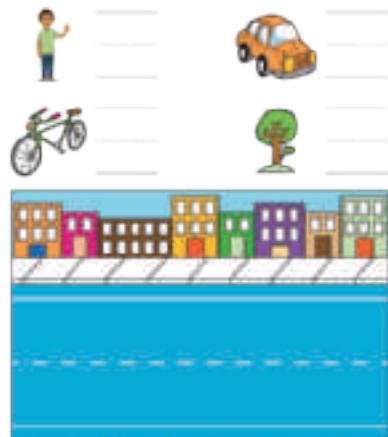
5-frames



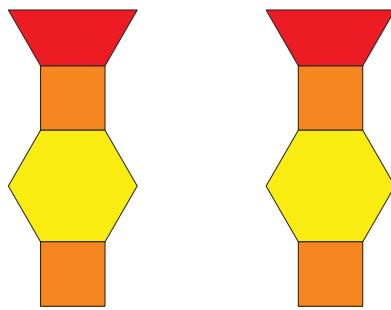
Roll and Add



Math Libs



Match Mine





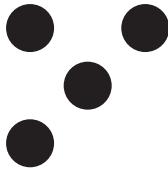
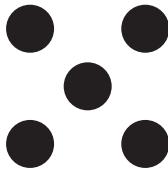
# Lesson 5: Subtract with Objects

- Let's use counters to subtract.

## Warm-up: How Many Do You See: Subtraction

How many do you see?

How do you see them?





## 5.1: Subtract Counters

1. Count out 8 counters.

Take away 3 counters.

\_\_\_\_\_

-----

There are \_\_\_\_\_ counters left.

2. Count out 10 counters.

Take away 6 counters.

\_\_\_\_\_

-----

There are \_\_\_\_\_ counters left.



3. Count out 7 counters.

Take away 1 counter.

\_\_\_\_\_

-----

There are \_\_\_\_\_ counters left.

4. Count out 9 counters.

Take away 3 counters.

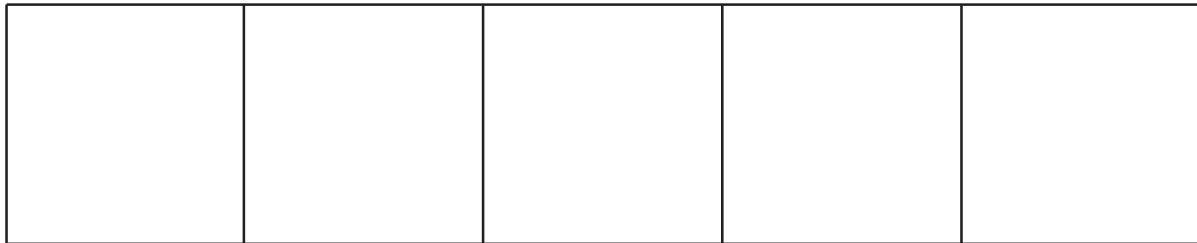
\_\_\_\_\_

-----

There are \_\_\_\_\_ counters left.



## 5.2: Introduce 5-Frames, Subtract



1.



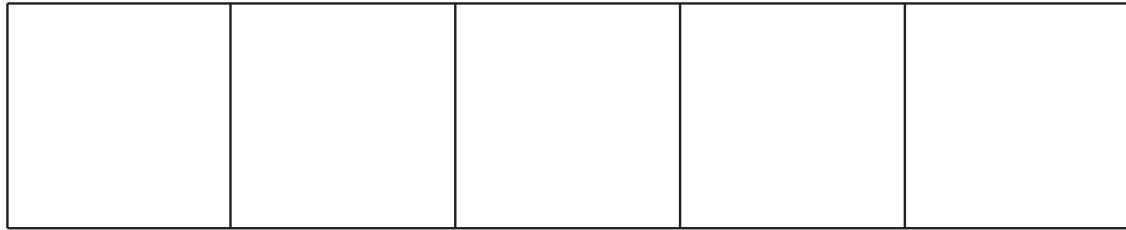
2.



3.







\_\_\_\_\_

-----

4.

\_\_\_\_\_

\_\_\_\_\_

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5.

\_\_\_\_\_

\_\_\_\_\_

-----

6.

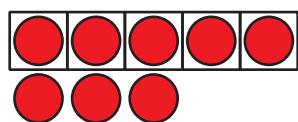
\_\_\_\_\_



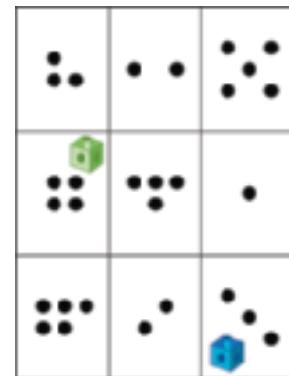
## 5.3: Centers: Choice Time

Choose a center.

5-frames



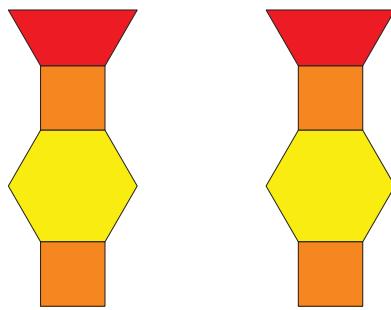
Roll and Add



Math Libs



Match Mine





## Section Summary

### Section Summary

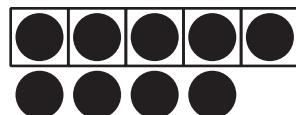
In this section, we counted two groups of things to figure out how many there are altogether.



3 yellow counters and 4 red counters is 7 counters.

3 and 4 is 7.

We added more things and found out how many there were altogether.



There were 5 counters on the 5-frame and we added 4 more counters.

5 and 4 is 9.

We subtracted, or took away, some things and figured out how many were left.



There were 5 counters on the 5-frame and we took away 2 of them.

5 take away 2 is 3.



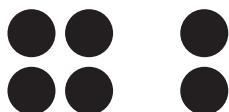
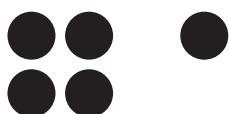
## Lesson 6: Tell and Act Out Stories

- Let's tell and act out stories.

### Warm-up: How Many Do You See: Add To

How many do you see?

How do you see them?





## 6.1: What is Happening?





## 6.2: Act Out a Story

1. There were 4 students jumping rope at recess.  
2 more students came out to play with them.

2. There were 6 students playing soccer at recess.  
3 of the students had to go inside.

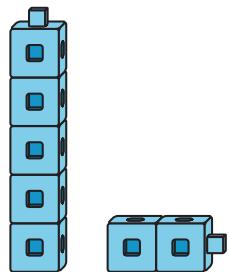




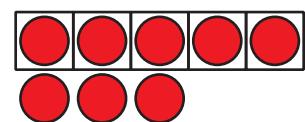
## 6.3: Introduce Subtraction Towers, Objects

Choose a center.

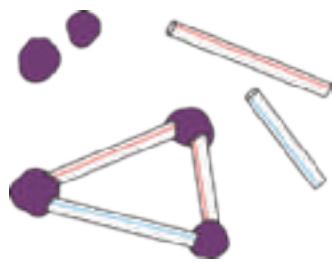
Subtraction Towers



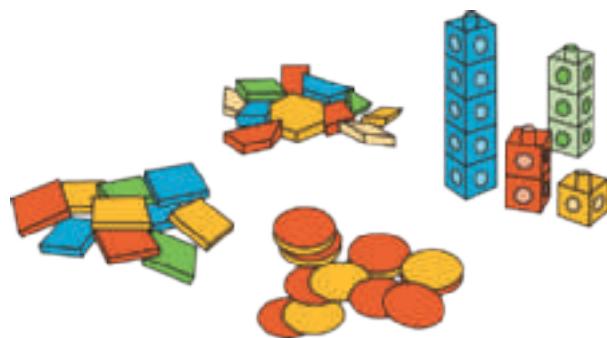
5-frames



Build Shapes



Counting Collections





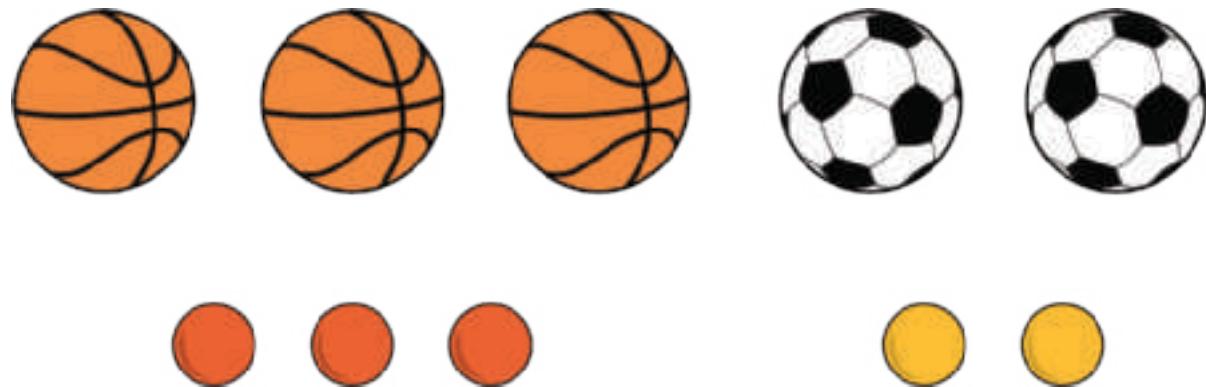
## Lesson 7: Use Objects to Represent Stories

- Let's use objects to show what is happening in the story.

### Warm-up: Notice and Wonder: Balls and Counters

What do you notice?

What do you wonder?





## 7.1: Playing on the Playground

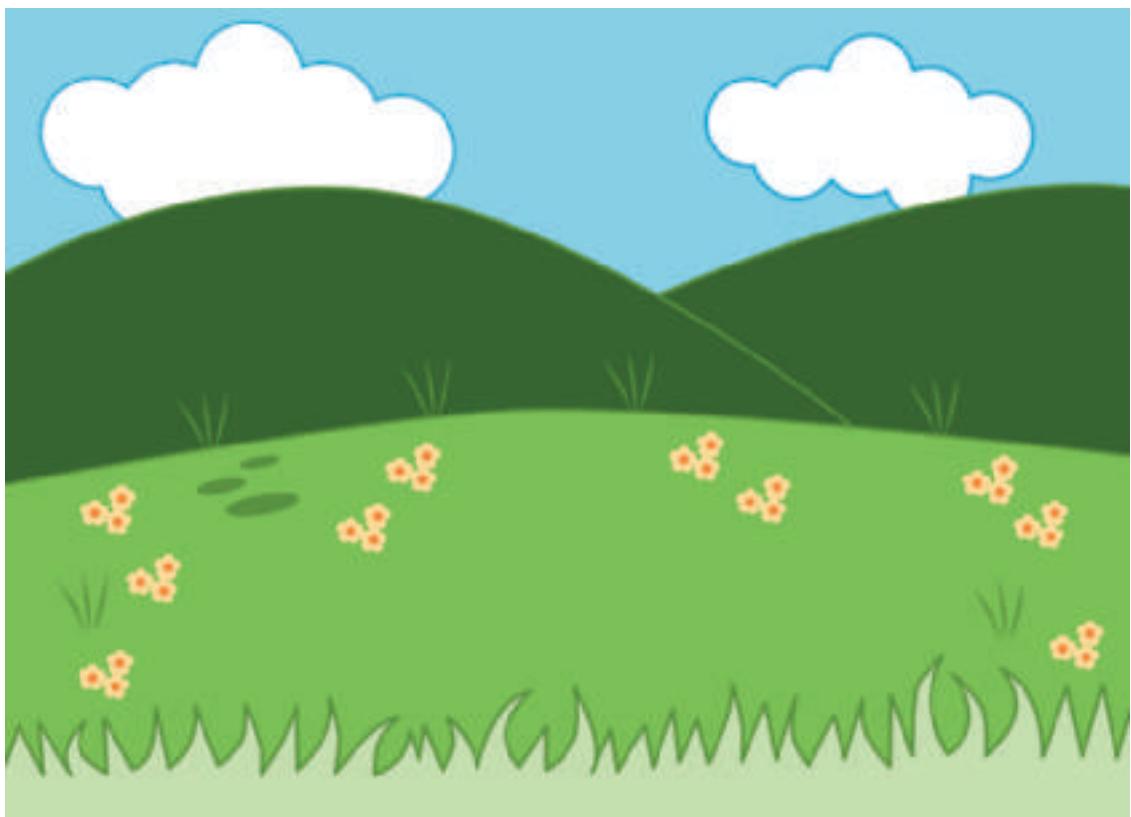
1. There were 5 students playing basketball at recess.  
2 of the students went inside to get some water.
2. There were 3 students playing on the swings at recess.  
1 more student came over to play on the swings.
3. There were 5 students playing tag at recess.  
4 of the students went inside.





## 7.2: Finish the Story

1. There were 7 kids playing tag on the field.



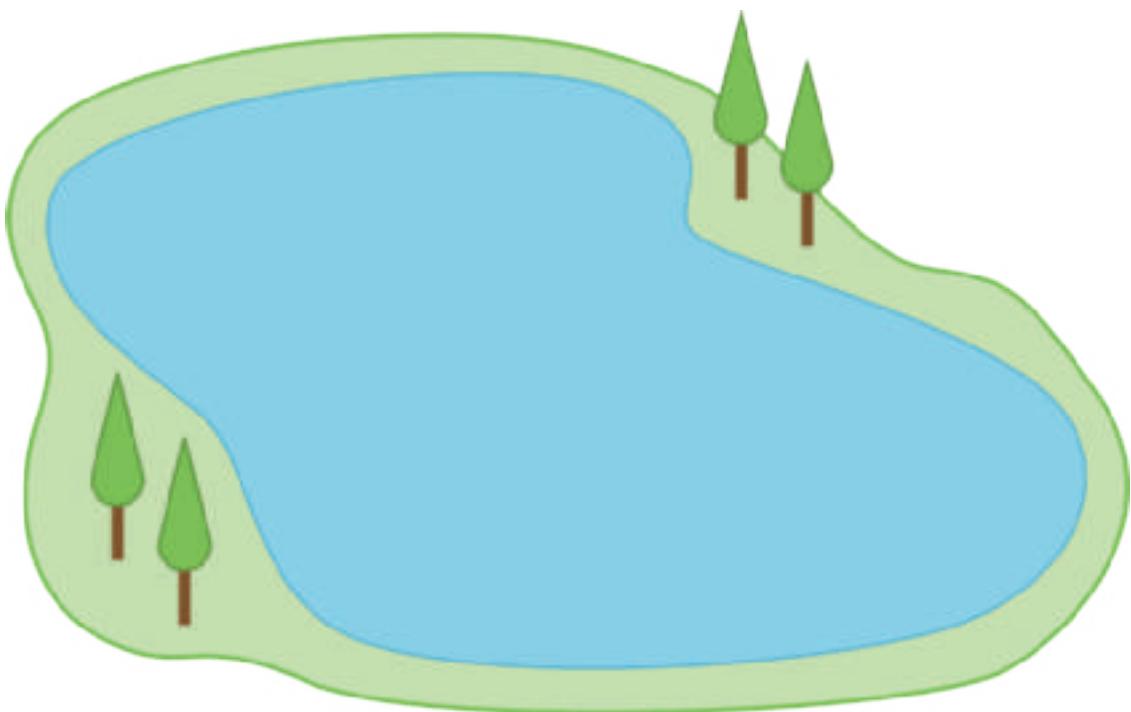


2. There were 2 kids eating at the picnic table.





3. There were 4 ducks swimming in the lake.





4. There were 5 kids playing hopscotch.





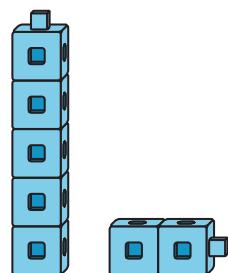
## 7.3: Introduce Math Stories, Act It Out

Choose a center.

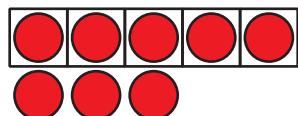
Math Stories



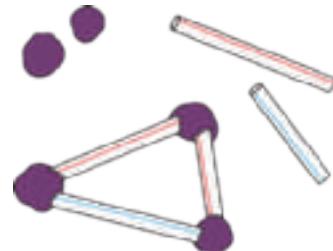
Subtraction Towers



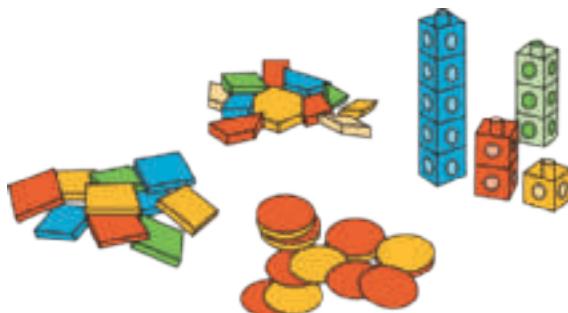
5-frames



Build Shapes



Counting Collections





# Lesson 8: Represent and Solve Story Problems

- Let's show what happens in a story problem and solve it.

## Warm-up: Act It Out: Birds in a Fountain

8 birds were splashing in the fountain.

3 of the birds flew away.

How can you act out this story?





## 8.1: Questionless Story Problems

1. 8 birds were splashing in the fountain.

3 of the birds flew away.

2. Priya planted 6 flowers in the neighborhood garden at the park.

Diego planted 3 more flowers in the garden.



## 8.2: From a Story to a Story Problem

Noah had 5 crayons.

Jada gave Noah 4 more crayons.

How many crayons does Noah have now?

---

---

---



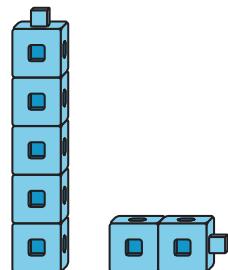
## 8.3: Centers: Choice Time

Choose a center.

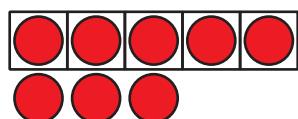
Math Stories



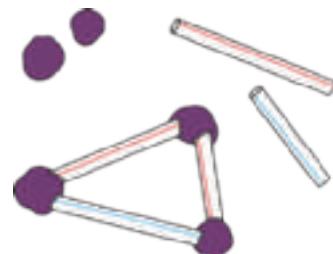
Subtraction Towers



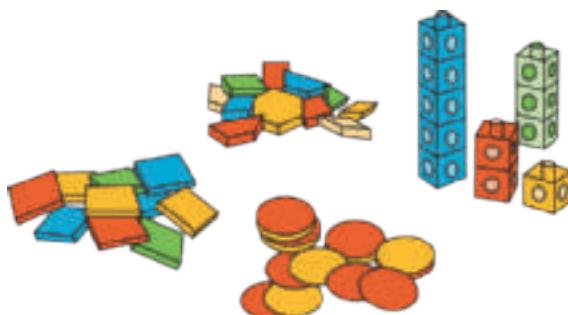
5-frames



Build Shapes



Counting Collections





## Lesson 9: Solve Story Problems

- Let's look at different ways to show what happened in a story problem.

### Warm-up: How Many Do You See: Finger Addition

How many fingers do you see?

How do you see them?









## 9.1: Markers at School

There were 4 markers at school.

Elena brought 3 more markers to school.

How many markers are at school now?

---

---

---



## 9.2: Balls at Recess





There were 5 balls on the playground.

Diego brought 5 of the balls inside.

How many balls are on the playground now?

---

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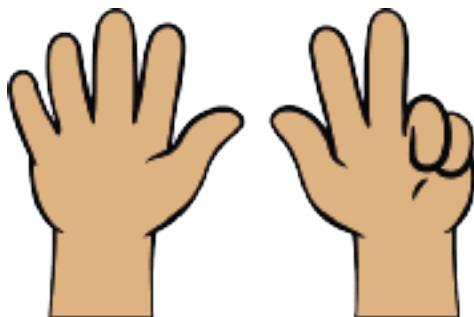
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### 9.3: Introduce Math Fingers, Add 2 Hands

Choose a center.

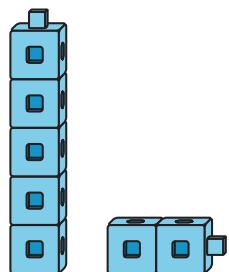
Math Fingers



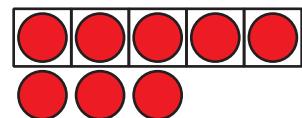
Math Stories



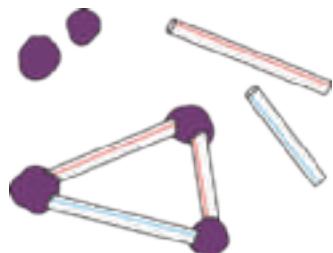
Subtraction Towers



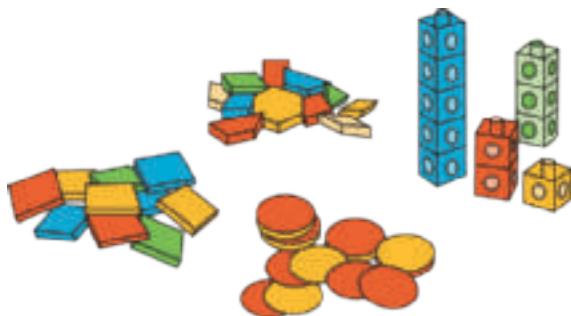
5-frames



Build Shapes



Counting Collections





## Lesson 10: Compare Drawings

- Let's figure out how drawings can show what is happening in a story problem.



## 10.1: Apple Slices for a Picnic





There were 3 apple slices at the picnic.

Tyler's dad brought 5 more apple slices to the picnic.

How many apples slices are there now?

---

---

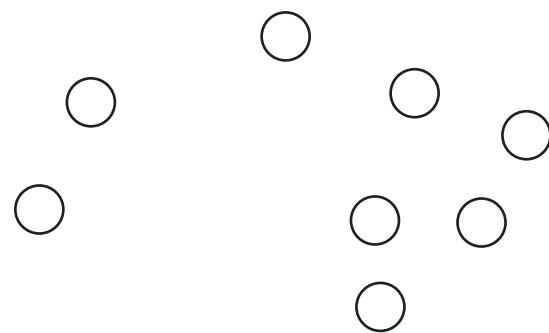
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## 10.2: Compare Drawings

Andre and Noah both drew pictures to show what happened in the story problem.

Andre



Noah

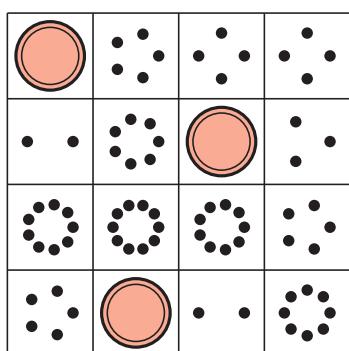




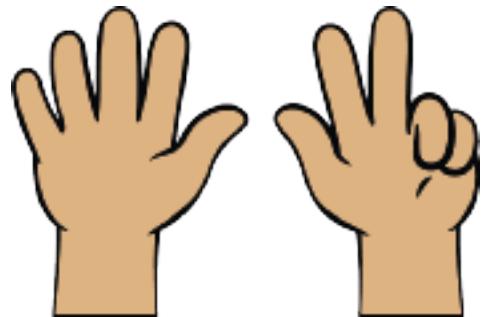
## 10.3: Introduce Bingo, Add and Cover

Choose a center.

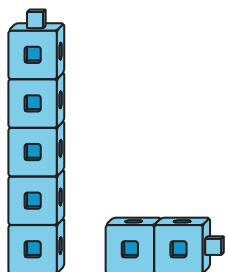
Bingo



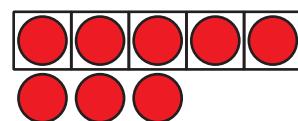
Math Fingers



Subtraction Towers



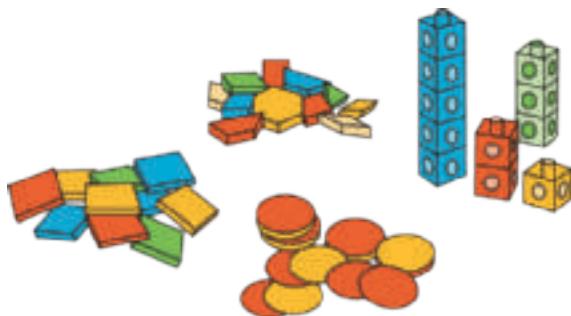
5-frames



Math Stories



Counting Collections





# Lesson 11: Drawings to Represent Story Problems

- Let's draw a picture to show what happens in a story problem.

## Warm-up: Which One Doesn't Belong: Butterflies

Which one doesn't belong?

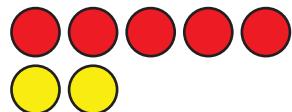
A



B



C



D





## 11.1: Draw a Picture





There were 7 kids playing soccer in the park.

3 of the kids left to go play on the swings.

How many kids are playing soccer in the park now?

---

---

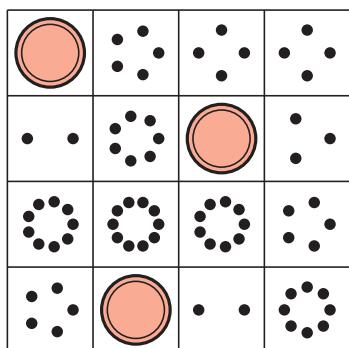
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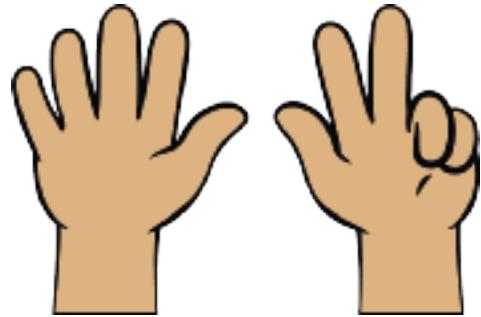
## 11.3: Centers: Choice Time

Choose a center.

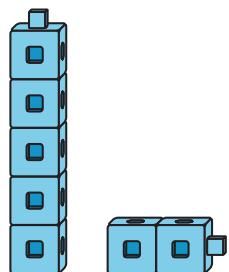
Bingo



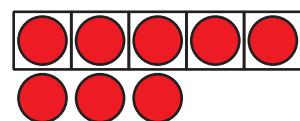
Math Fingers



Subtraction Towers



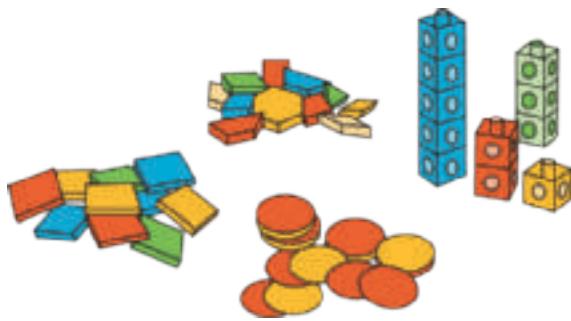
5-frames



Math Stories



Counting Collections





## Lesson 12: Compare Addition and Subtraction Story Problems

- Let's figure out what's the same and what's different about these story problems.



## 12.1: Ducks in the Pond





There were 5 ducks in the pond.

4 more ducks came to the pond to swim.

How many ducks are in the pond now?

---

---

---



## 12.2: Ducks Swim Ashore

There were 9 ducks swimming in the pond.

Then 4 of the ducks waddled onto the grass.

How many ducks are swimming in the pond now?

---

---

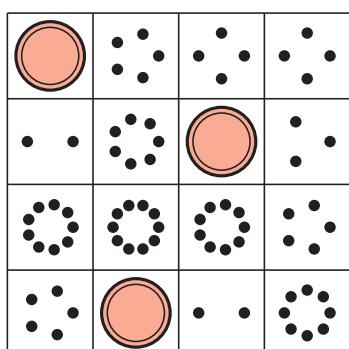
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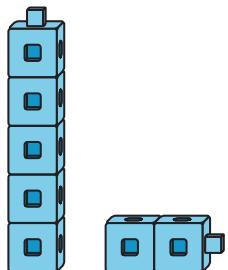
## 12.3: Centers: Choice Time

Choose a center.

Bingo



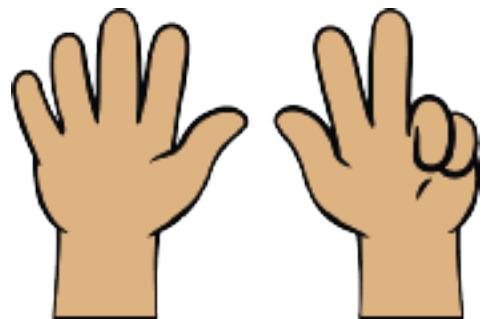
## Subtraction Towers



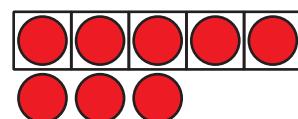
# Math Stories



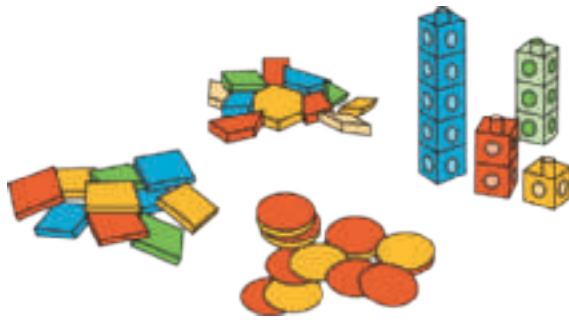
# Math Fingers



## 5-frames



## Counting Collections





## Section Summary

### Section Summary

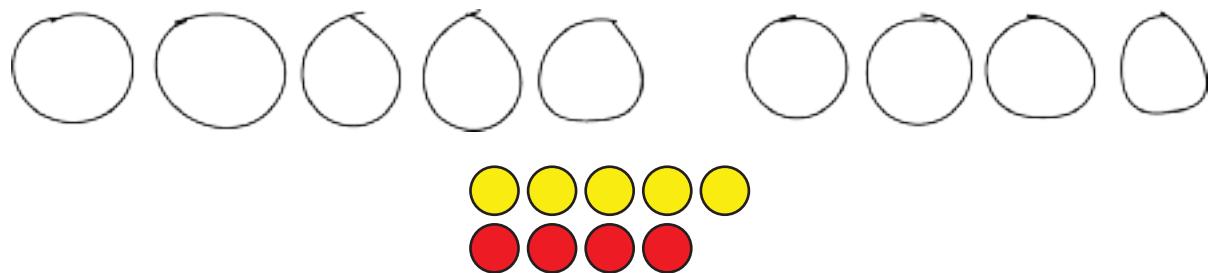
In this section, we learned about story problems. We acted out story problems and used objects and drawings to show what is happening and help us solve story problems.

Sometimes things were added in the story problems.

There were 5 ducks in the pond.

4 more ducks came to the pond to swim.

How many ducks are in the pond now?

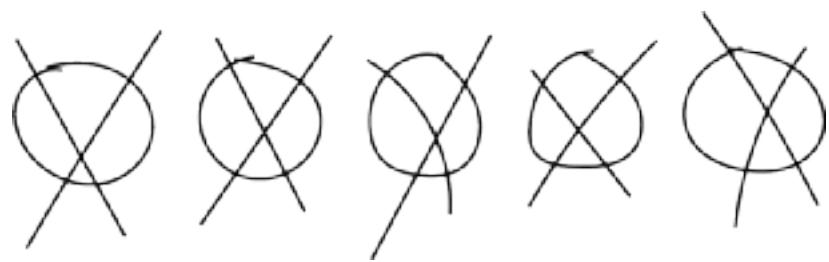


Sometimes things were subtracted, or taken away, in the story problems.

There were 5 balls on the playground.

Diego brought 5 of the balls inside.

How many balls are on the playground now?





# Lesson 13: Create Story Problems

- Let's think of our own story problems.



## 13.1: Create a Story Problem





## 13.2: Switch the Operation

---

---

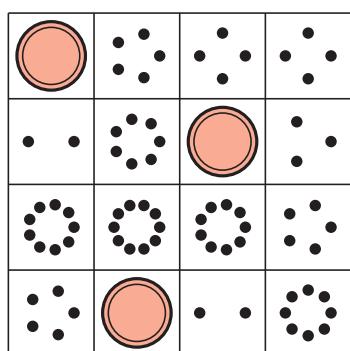
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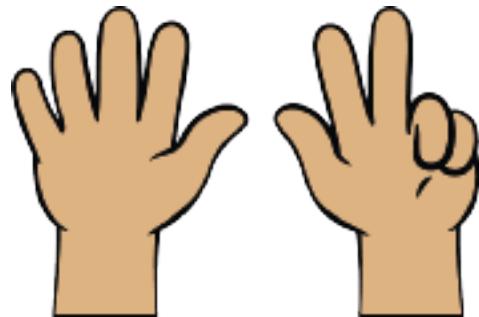
### 13.3: Revisit Math Stories, Act It Out

Choose a center.

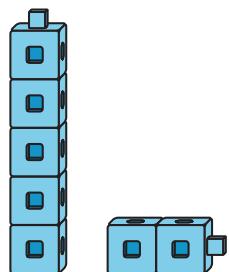
Bingo



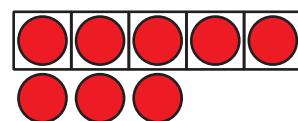
Math Fingers



Subtraction Towers



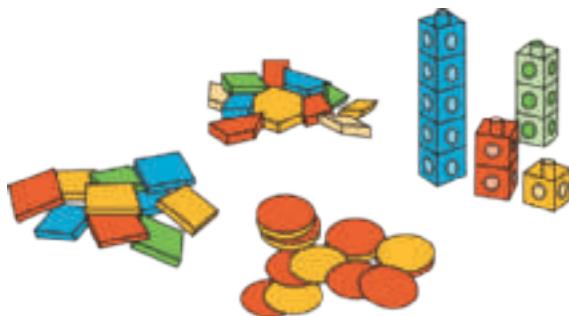
5-frames



Math Stories



Counting Collections





# Lesson 14: Expressions and Story Problems

- Let's figure out how expressions go with the story problems.



## 14.1: Expression for a Story Problem

There were 10 people riding bikes in the park.

Then 6 of the people stopped riding to have lunch.

How many people are riding bikes now?

---

---

---





## 14.2: Which Expression?

1. There were 2 rocks in Lin's jar.

At the park, Lin put 4 more rocks into her jar.

How many rocks are in Lin's jar now?

$3 + 3$

$6 - 2$

$2 + 4$

2. There were 8 kids playing hopscotch.

3 of the kids left to go jump rope.

How many kids are playing hopscotch now?

$8 + 3$

$3 - 3$

$8 - 3$





## 14.3: Centers: Choice Time

Choose a center.

Number Race



Math Stories





# Lesson 15: Expressions and Drawings

- Let's match expressions to drawings.

## Warm-up: Notice and Wonder: Shapes and Numbers

What do you notice?

What do you wonder?

$$\begin{array}{c} \bullet \\ | \\ + \\ \bullet \bullet \bullet \\ 3 \end{array}$$



## 15.1: Match Drawings to Expressions



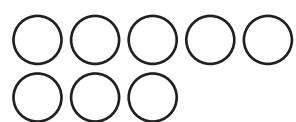
$$9 - 2$$



$$6 - 3$$



$$4 + 2$$



$$6 + 3$$



$$5 + 3$$



$$7 + 0$$



## 15.2: Create Expressions and Drawings

Fill in the missing expressions and drawings.

$4 + 3$



$4 - 0$

---

$\underline{\quad} - \underline{\quad}$



$5 + 3$

---



Fill in the missing expressions and drawings.

$8 - 2$

---

$\underline{\quad} + \underline{\quad}$



$1 + 6$

---

$\underline{\quad} - \underline{\quad}$

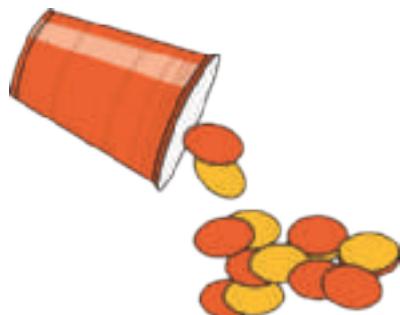




## 15.3: Introduce Shake and Spill, Represent

Choose a center.

Shake and Spill



Number Race



Math Stories





## Lesson 16: Find the Value of Expressions

- Let's find the value of expressions.

### Warm-up: What Do You Know About $3 + 2$ ?

What do you know about  $3 + 2$ ?



## 16.2: Find the Value of Expressions

$3 + 1$

---

---

---

$6 - 3$

---

---

---

$5 - 4$

---

---

---



$7 + 2$

---

---

---

$5 + 0$

---

---

---

$9 - 4$

---

---

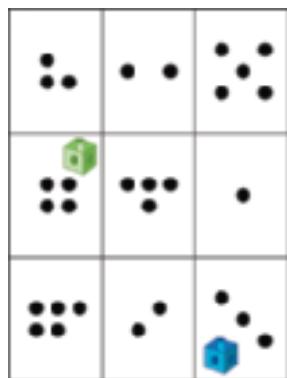
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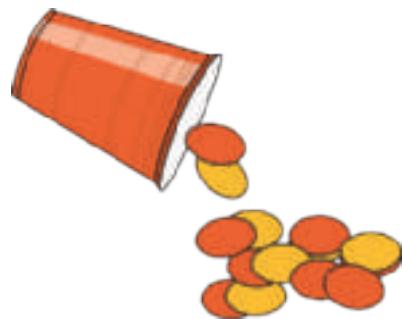
## 16.3: Centers: Choice Time

Choose a center.

Roll and Add



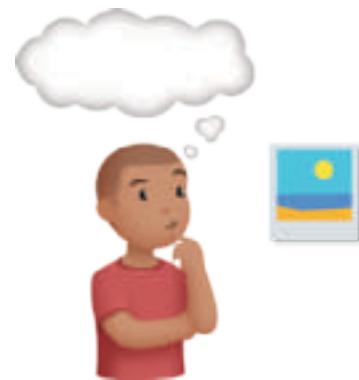
Shake and Spill



Number Race



Math Stories





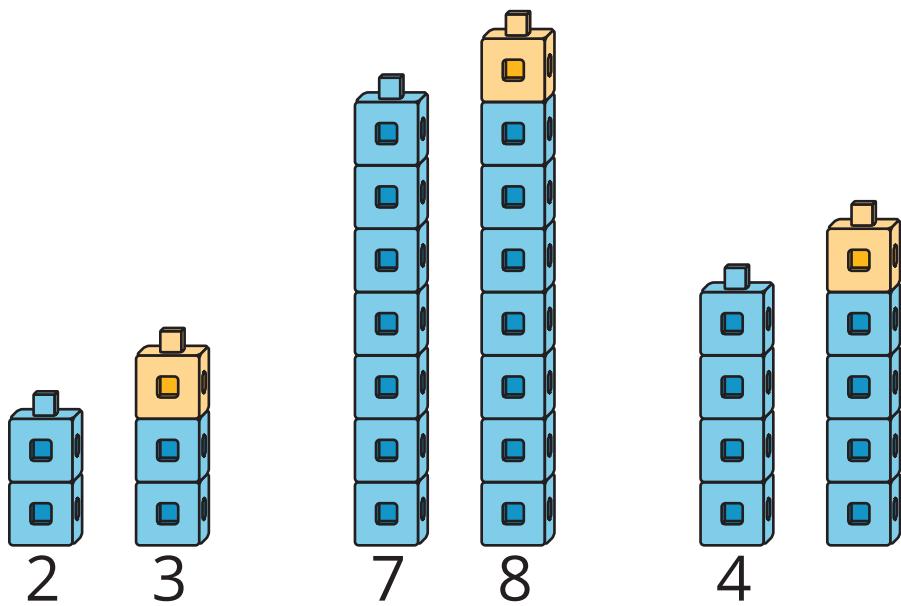
## Lesson 17: Add 0 and 1

- Let's see what happens when we add 0 or 1.

### Warm-up: Notice and Wonder: Add 1 More

What do you notice?

What do you wonder?





## 17.1: Add 0 and 1

$4 + \underline{\quad}$

---

---

---

$2 + \underline{\quad}$

---

---

---

$8 + \underline{\quad}$

---

---

---



$3 + \underline{\quad}$

---

---

---

$9 + \underline{\quad}$

---

---

---

$1 + \underline{\quad}$

---

---

---



## 17.2: Notice +0 and +1 Patterns

$4 + 0$

$4$



$2 + 0$

$2$



$8 + 0$

$8$



$3 + 1$

$4$



$9 + 1$

$10$



$1 + 1$

$2$





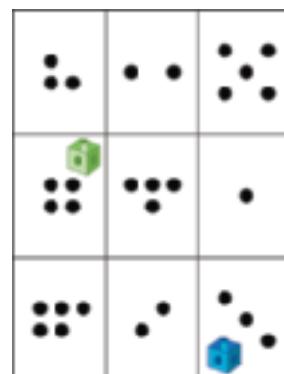
## 17.3: Introduce Find the Value of Expressions, Color the Total or Difference

Choose a center.

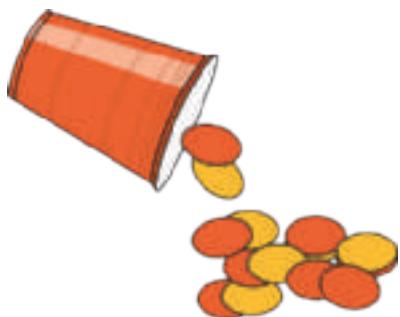
Find the Value of  
Expressions

$$\begin{array}{r} 3 \\ + 5 \\ \hline 7 \end{array} \quad \begin{array}{r} 7 \\ - 5 \\ \hline \end{array}$$

Roll and Add



Shake and Spill



Math Stories



Number Race





## Section Summary

### Section Summary

In this section, we used numbers and symbols to show when things are added and when things are subtracted, or taken away.

We matched expressions to story problems and drawings.

$$8 - 6$$

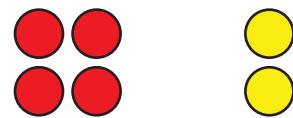
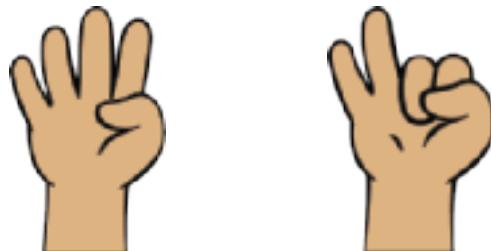


$$2 + 1$$



We used our fingers, objects, and drawings to find the value of expressions.

$$4 + 2$$





## Lesson 18: Tell Story Problems for Expressions

- Let's tell story problems to match expressions.



## 18.1: Tell a Story Problem to Match an Expression

A large, empty rectangular box with a thin gray border, designed for a student to write a story problem that matches a given mathematical expression.



## 18.2: Story Problem and Expression Gallery Walk

$$\underline{\quad} + \underline{\quad}$$

$$\underline{\quad} + \underline{\quad}$$

$$\underline{\quad} - \underline{\quad}$$

$$\underline{\quad} - \underline{\quad}$$

$$\underline{\quad} + \underline{\quad}$$

$$\underline{\quad} + \underline{\quad}$$

$$\underline{\quad} - \underline{\quad}$$

$$\underline{\quad} - \underline{\quad}$$

$$\underline{\quad} + \underline{\quad}$$

$$\underline{\quad} + \underline{\quad}$$

$$\underline{\quad} - \underline{\quad}$$

$$\underline{\quad} - \underline{\quad}$$



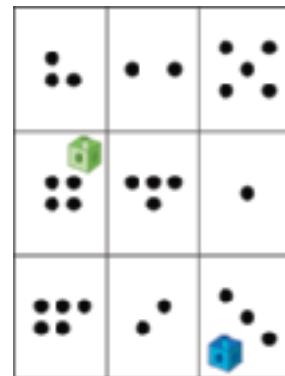
## 18.3: Centers: Choice Time

Choose a center.

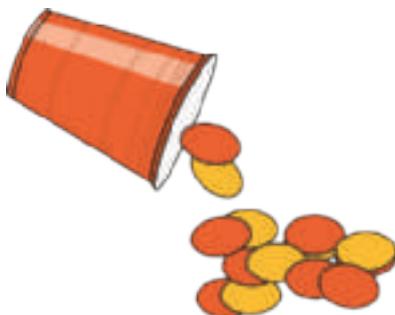
Find the Value of  
Expressions

$$3 + 5 = 8$$

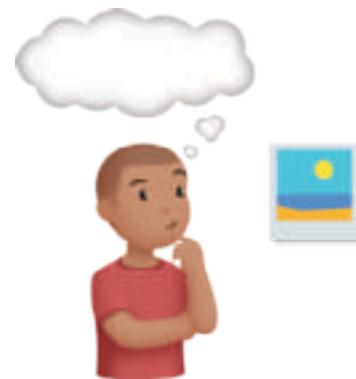
Roll and Add



Shake and Spill



Math Stories



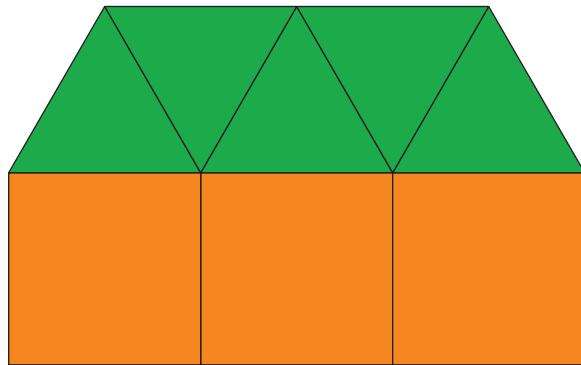
Number Race





## Section A: Practice Problems

1.



---

---

There are \_\_\_\_\_ squares.

---

---

There are \_\_\_\_\_ triangles.

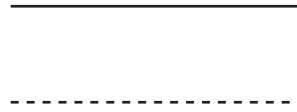
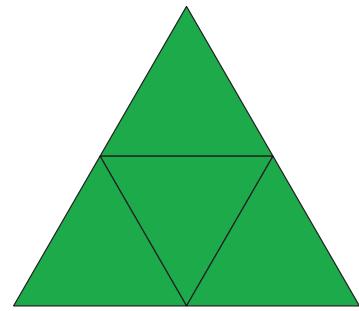
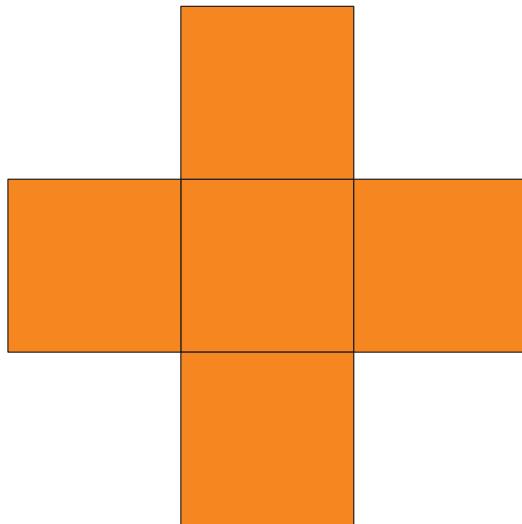
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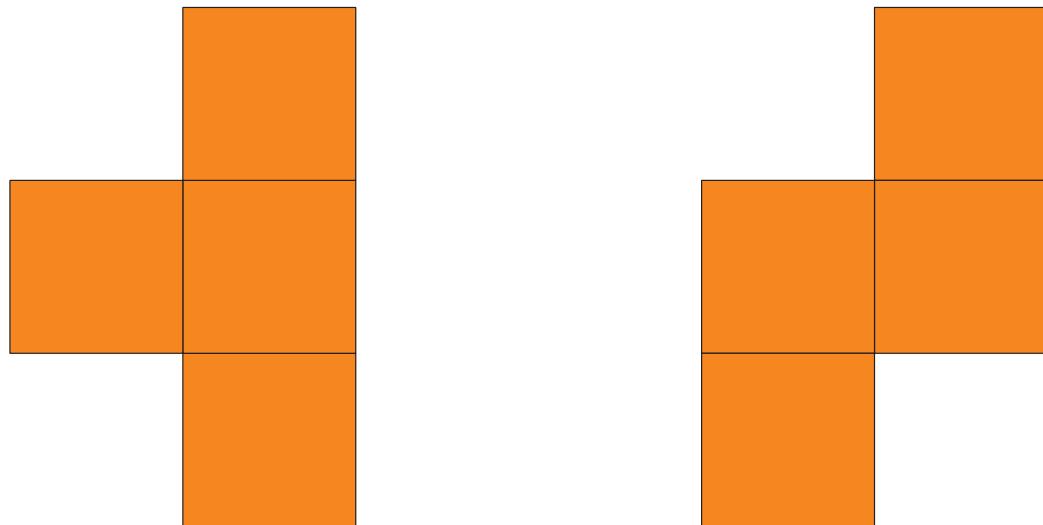
There are \_\_\_\_\_ shapes.

(From Unit 4, Lesson 2.)

2.



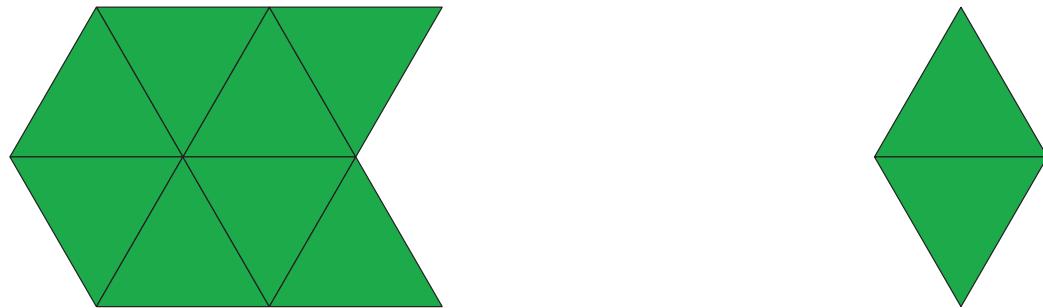
There are \_\_\_\_\_ shapes.



---

---

There are \_\_\_\_\_ squares.



---

---

There are \_\_\_\_\_ triangles.

(From Unit 4, Lesson 3.)

3. Count out 4 counters.

Add 1 more.

---

---

There are \_\_\_\_\_ counters.

Count out 6 counters.

Add 1 more.

---

---

There are \_\_\_\_\_ counters.

Count out 8 counters.

Add 1 more.

---

---

There are \_\_\_\_\_ counters.

(From Unit 4, Lesson 4.)

4. Count out 8 counters.

Take away 2 counters.

---

---

There are \_\_\_\_\_ counters.

Count out 6 counters.

Take away 2 counters.

\_\_\_\_\_

-----

There are \_\_\_\_\_ counters.

Count out 4 counters.

Take away 2 counters.

\_\_\_\_\_

-----

There are \_\_\_\_\_ counters.

(From Unit 4, Lesson 5.)

## 5. Exploration

Start with a full 5-frame.

Player 1 rolls a cube on the number mat and takes away or adds that number of counters while player 2 is not looking.

Then player 2 figures out what player 1 did.

Players take turns switching roles.

## 6. Exploration

Roll a cube onto a number mat.

Count out that number of counters.

Roll a cube again onto the number mat.

Count out that number of counters.

How many counters do you have in all?

## 7. Exploration

Pick a number from the list to put in the blank space.

2            7            6            3

Then try the problem you made.

Count out 8 counters.

Take away \_\_\_\_\_ counters.

How many counters are left?

After you try the problem you made, try it again with a different number in the blank space.

Do you think your answer will be the same or different?  
Explain.

## Section B: Practice Problems

1. Tell your partner a story using the picture.



(From Unit 4, Lesson 6.)

2. Show what happens in the story with counters.

There are 5 snails crawling in the grass.

Then 3 snails came to join them.

Then 2 of the snails crawled away.

(From Unit 4, Lesson 7.)

3. Jada has 5 connecting cubes.

Han gives Jada 2 more connecting cubes.

How many connecting cubes does Jada have now?

---

---

---

(From Unit 4, Lesson 8.)

4. There were 8 cars in the parking lot.

All 8 of the cars left after school.

How many cars are in the parking lot now?

---

---

---

(From Unit 4, Lesson 9.)

5. There were 9 crabs on the beach.

Then 5 of them scurried away into the ocean.

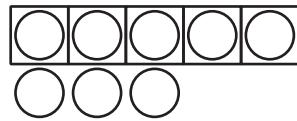
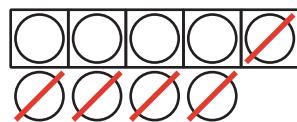
How many crabs are on the beach now?

---

---

---

Circle the representation that matches the story.



(From Unit 4, Lesson 10.)

6. There are 4 cups of milk on the table.

Jada puts 2 more cups of milk on the table.

How many cups are on the table altogether?

Make a drawing to show the story.

---

---

---

(From Unit 4, Lesson 11.)

7. There are 7 crows in the tree.

Then 3 more crows fly into the tree.

How many crows are in the tree altogether?

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

---

---

---

(From Unit 4, Lesson 12.)

## 8. Exploration

There are 6 dolphins swimming around the boat.

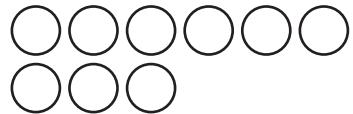
Complete the story in two different ways.

Solve your problems or share with a partner and solve your partner's problems.

## 9. Exploration

Tell a story problem that goes with each drawing.

a.



b.



## 10. Exploration

These three story problems are not finished yet.

Finish the story problems with your own questions.

Then solve the story problems you made.

a. Noah had 4 erasers.

Clare gave him 3 erasers.

b. Tyler had 3 pencils.

Tyler found 2 more pencils.

c. Elena had 6 markers.

She lost 1 of her markers.



## Section C: Practice Problems

1. There are 5 red apples in the bowl.  
Lin puts 3 green apples in the bowl.

How many apples are in the bowl?

---

---

---

Circle the expression that matches the story problem.

$5 + 3$

$5 - 3$

$8 - 5$

(From Unit 4, Lesson 14.)

2. Draw a line from each expression to the matching drawing.

$5 + 2$



$6 - 3$



$6 + 2$



$5 - 2$



(From Unit 4, Lesson 15.)

3. Find the value of each expression.

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

$3 + 5$

---

---

---

$7 - 1$

---

---

---

(From Unit 4, Lesson 16.)

4. Find the value of each expression.

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

$5 + 0$

---

---

---

$5 + 1$

---

---

---

$6 + 0$

---

---

---

$6 + 1$

---

---

---

(From Unit 4, Lesson 17.)

## 5. Exploration

Circle the expression that shows 8.

$1 + 6$

$5 + 3$

$6 + 3$

What other expressions can you find that show 8?

## 6. Exploration



Tell a story that this picture might represent.

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Core Knowledge **MATHEMATICS™**

# CKMath™

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