

LESSON 1-1

SOLVE PROBLEMS: ADD TO

LESSON OVERVIEW

FOCUS • COHERENCE • RIGOR

FOCUS

Domain 1.OA Operations and Algebraic Thinking

Content Standard 1.OA.A.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.

Objective Solve addition problems involving situations of adding one part to another part.

Essential Understanding Adding to is one interpretation of addition. Addition equations can be used to show add to addition situations.

Vocabulary add, sum, plus, equals, equation

Materials Connecting cubes (or Teaching Tool 7)

COHERENCE

This lesson focuses on solving addition situations involving adding to. This meaning of addition connects to students' previous work in Lesson 6-2 of Kindergarten in which they used objects and drawings to represent these types of addition problems (K.OA.A.1). Later in this topic, lessons will focus on solving different types of addition and subtraction situations.

RIGOR

This lesson emphasizes **conceptual understanding** and **application**. As students solve addition problems involving adding to situations, they deepen their understanding of the meaning of addition. This conceptual understanding of addition will help them as they solve addition problems involving other meanings of addition and as they solve addition problems with larger numbers.

ENGLISH LANGUAGE LEARNERS

Reading Use contextual support to develop vocabulary.

Use with the Visual Learning Bridge on Student's Edition, page 10.

Help students make a connection between the plus and equal signs (+ and =) and the vocabulary words *plus* and *equals*. Write an equation on the board and say it aloud. Ask students to repeat it after you. Ask: *Where is the plus sign? Where is the equal sign?*

Beginning Use connecting cubes to model an equation for students. Write the addition equation below the model, such as $5 + 2 = 7$. Say the equation aloud and emphasize the words *plus* and *equals*. Invite students to repeat the equation after you.

Intermediate Have students work together in pairs to write an equation that can be modeled with connecting cubes. Have one student write the equation while the other one reads it aloud. Then have them trade places and repeat the activity.

Advanced Students will draw a picture for an addition equation, and write the addition equation under the picture. Have them gather in small groups and read their equations aloud to the group.

Summarize How can you add one part to another part to find how many in all?

COHERENCE: Engage students by connecting prior knowledge to new ideas.

Students use connecting cubes to model an addition problem in which one part is added to another part, and then write the corresponding addition equation. The focus in this problem and in the rest of the lesson is on how the joining action in problems can be represented by addition equations.

Whole Class BEFORE

1. Pose the Solve-and-Share Problem

Provide each student with 5 red cubes (or 5 cubes of the same color) to model the problem.

Model with Math In this problem, students use cubes to model a problem in which one part is joined with another part.

2. Build Understanding

What should you do with the cubes? [Model the story problem.] *What are you asked to write?* [An addition equation to match the problem]

Small Group DURING

3. Ask Guiding Questions As Needed

How many cubes should you use? [A group of 2 cubes and 1 more cube] *How can you write the problem as an equation?* [Sample answer: $2 + 1 = 3$]

Whole Class AFTER

4. Share and Discuss Solutions

Start with students' solutions. Have them share how they found the total number of cubes. If needed, project Jamal's work to discuss how the cubes can be joined to find the sum.

5. Transition to the Visual Learning Bridge

You used cubes to model an add to problem and then wrote an addition equation for that problem. Later in this lesson, you will model add to problems by using pictures and will continue writing addition equations for those problems.

6. Extension for Early Finishers

Have each student tell a partner an add to story by using 5 cubes. Have the partner use connecting cubes to model the story and then write an addition equation for the story.

Name _____

Solve & Share

Jada has 2 . She adds on 1 more .

How many does she have now?

How can you show this story with cubes and an addition equation?

Lesson 1-1

Solve Problems: Add To

I can ...
solve word problems about adding to.

Content Standards 1.OA.A.1
Mathematical Practices MP.1, MP.2, MP.4, MP.6

See margin for sample student work.

_____ + _____ = _____

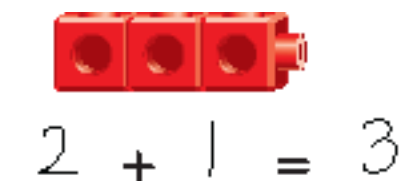
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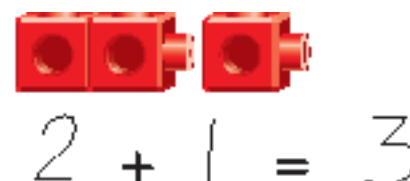
Analyze Student Work

Jamal's Work



Jamal uses 3 red cubes to show how many cubes Jada has now and writes a correct addition equation.

Marcia's Work



Marcia uses a group of 2 red cubes and 1 red cube to show how many cubes Jada has now and writes a correct addition equation. Ask Marcia to explain her work.

The *Visual Learning Bridge* connects students' thinking in Solve & Share to important math ideas in the lesson. Use the *Visual Learning Bridge* to make these ideas explicit.

How many cubes does Paul have at the beginning? [5]
How many cubes does Paul snap on to the cubes he had at the beginning? [2]
What are you asked to find? [How many cubes Paul has now]

Why are there 5 cubes on the left side of the part-part mat? [They are the cubes that Paul had at the beginning.] Why are there 2 cubes on the right side of the part-part mat? [They are the 2 more cubes that Paul snapped on.]

Reasoning How can you find out how many cubes Paul has now? [Sample answer: I can add the number of cubes that he snaps on to the number of cubes that he had at the beginning.]

What does the plus sign tell you to do? [Add] What numbers are you joining? [5 and 2] What is the sum? [7] How many cubes does Paul have now? [7]

Prevent Misconceptions

Some students may read the words *and* and *is* in an equation. Guide them to use the correct terminology, *plus* and *equals*, when reading equations.

Visual Learning Bridge

Paul has 5 cubes. He snaps on 2 more cubes. How many cubes does he have now?

You can show the problem on a part-part mat.

Add to find how many in all.

You can write an addition equation to match the problem.

$5 + 2 = 7$

I can add to a number to find the sum.

5 plus 2 equals 7. Paul now has 7 cubes.

Do You Understand? Show Me! You have 4 cubes. You snap on 3 more cubes. How can you find how many cubes you have now?

Sample answer: Write the number for the first group. Then add the second group to it to find the sum.

Guided Practice Write an addition equation to match each problem. Use the pictures to help you.

1. Warren has 3 cubes. He snaps on 3 more cubes. How many cubes does he have now?

$3 + 3 = 6$

2. Anna has 2 oranges. She buys 6 more oranges. How many oranges does Anna have now?

$2 + 6 = 8$

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Do You Understand? Show Me! Be Precise Make sure that students understand that they are starting with 4, the number of cubes in the first group, and adding on 3, the number of cubes in the second group. Ask students to write an addition equation to show how many cubes they would have now. [$4 + 3 = 7$]

Coherence In the Visual Learning Bridge, students learn that they can use pictures to solve addition problems involving adding to one part. This connects to their previous work in Topic 6 of Kindergarten where they represented addition by using objects and pictures.

Essential Question Ask the following Essential Question: *How can you use an addition equation to solve a problem about adding to one part?* [Sample answer: I start with the number for the first part, add to it the number for the second part, and then find the sum. I write the numbers, the plus sign, and the equal sign in my equation.]

Error Intervention: Item 2

If students cannot write an addition equation directly from the story or picture,
then have them act out the story using connecting cubes.

Reteaching Assign Reteaching Set A, p. 65.

✓ QUICK CHECK

Check mark indicates items for prescribing differentiation on the next page.
Items 3 and 9 are each worth 1 point. Item 8 is worth up to 3 points.

Items 3–4 Reasoning Some students may have trouble deciding where to put the numbers in the equation. Ask them to identify the numbers that they are joining, or adding.

Item 5 Make Sense and Persevere

Remind students that in this problem, the 6 ducks in the pond are one part, and the 2 ducks that join them are the other part. *Do you need to use the information that 4 bugs are in the grass in order to solve this problem? Explain.* [Sample answer: No, I do not need to use the information about the bugs because the question asks how many ducks are in the pond now, and it does not mention bugs.]

Name _____

Independent Practice Write an addition equation to match each problem. Use the pictures to help you.

✓ 3. 4 🐸 are in the garden.
4 more 🐸 join them.
How many 🐸 are there now?

$4 + 4 = 8$

4. 3 🐞 are on a leaf.
6 more 🐞 join them.
How many 🐞 are there now?

$3 + 6 = 9$

Draw a picture to solve the story problem.
Then write an addition equation.

5. **Higher Order Thinking** 6 🐸 are in the pond. 2 more 🐸 join them.
4 🐞 are in the grass. How many 🐸 are in the pond now?

Check students' drawings.

$6 + 2 = 8$

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Item 7 Model with Math Students can use connecting cubes and a part-part mat to model and solve the problem. *What are the parts in this problem?* [The 8 cats that are playing and the 1 cat that joins them] *How can you show them on the part-part mat?* [Sample answer: I can put 8 cubes on one side and 1 cube on the other side.] *How can you find how many cats are playing now?* [Combine the group of 8 cubes with the 1 cube.] *What equation will you write?* [8 + 1 = 9] *How many cats are playing now?* [9]

Item 9 5 balls are one part and 3 balls are the other part. What is the whole? [8] Which equation shows you both parts and how many in all? [5 + 3 = 8]

Math Practices and Problem Solving Solve each problem below.

6. **Vocabulary** There are 3 🐸.
4 more 🐸 join them.
How many 🐸 are there now?
Write an addition equation.

$3 + 4 = 7$

7. **MP.4 Model** 8 🐸 are playing.
1 more 🐸 joins them.
How many 🐸 are playing now?
Write an addition equation.

$8 + 1 = 9$

✓ 8. **Higher Order Thinking** Write an addition story about the birds.

Use pictures, numbers, or words.

Check students' work.

Students may write stories about $3 + 1 = 4$ birds or $1 + 3 = 4$ birds.

✓ 9. **Assessment** Lisa has 5 🏀.
She finds 3 more 🏀.
How many 🏀 does Lisa have now?
Which addition equation matches the story?

☐ A $5 + 1 = 6$
☐ B $5 + 2 = 7$
☒ C $5 + 3 = 8$
☐ D $5 + 4 = 9$

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Name _____



Homework & Practice 1-1

Solve Problems:
Add To

Another Look! You can use addition to solve some word problems.

5 🐭 play in the grass.

3 more 🐭 join them.

How many 🐭 are there now?

  $5 + 3 = 8$

7 🐸 are on a leaf.

2 more 🐸 join them.

How many 🐸 are there now?

 $7 + 2 = 9$

Use color tiles to find the total.

HOME ACTIVITY Gather 9 pennies. Tell your child this story: "6 pennies are in a jar. I put 3 more pennies in the jar. How many pennies are there now?" Have your child write and solve an equation to match the number story.



Write an addition equation to match each problem.
Use the pictures to help you.

1. 3 🐸 are in the pond.

3 more 🐸 join them.

How many 🐸 are there now?

 $3 + 3 = 6$

2. 2 🐸 are on a rock.

3 more 🐸 join them.

How many 🐸 are there now?

 $2 + 3 = 5$

Write an addition equation to solve each problem.

3. **MP.4 Model** 2 🐭 are sleeping.

4 more 🐭 join them.

How many 🐭 are there now?

$2 + 4 = 6$

4. **MP.4 Model** 5 🏈 are on the field. 5 more

🏈 roll on the field. How many 🏈 are on the field now?

$5 + 5 = 10$

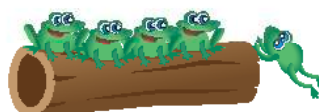
5. **Algebra** Read the story. Write the numbers missing from the equation.

3 🐭 are sleeping. 2 more 🐭 join them.

How many 🐭 are there now?

$3 + 2 = 5$

6. **Higher Order Thinking** Tell an addition story about the frogs. Then write an equation to show how many in all.



$4 + 1 = 5$ or $1 + 4 = 5$

Check students' stories.

7. **Assessment** Which equation describes the picture?



(A) $3 + 0 = 3$

(B) $2 + 2 = 4$

(C) $3 + 1 = 4$

(D) $3 + 2 = 5$

LESSON 1-2

SOLVE PROBLEMS: PUT TOGETHER

LESSON OVERVIEW

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FOCUS

Domain 1.OA Operations and Algebraic Thinking

Content Standard 1.OA.A.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.

Objective Solve addition problems involving situations of putting two parts together.

Essential Understanding Putting two parts together to make a whole is one interpretation of addition. Addition equations can be used to show situations in which two parts are put together.

Vocabulary parts, whole

Materials Connecting cubes (or Teaching Tool 7)

COHERENCE

This lesson focuses on solving problems in which two different parts are put together. This shows a different meaning of addition from Lesson 1-1 and connects to students' previous work in Lesson 6-3 of Kindergarten in which they solved these types of addition problems by using objects and drawings (K.OA.A.1). In Lesson 1-8 of this topic, students will continue to solve these types of problems as they combine putting together situations with taking apart situations.

RIGOR

This lesson emphasizes **conceptual understanding** and **application**. As students solve addition problems involving putting together situations, they deepen their conceptual understanding of the different meanings of addition. This understanding builds a strong foundation for students' future work with addition.

ENGLISH LANGUAGE LEARNERS

Speaking Speak using content area vocabulary in context.

Use with the Visual Learning Bridge on Student's Edition, page 16.

To monitor students' understanding of the terms *parts* and *whole*, model the concept by using connecting cubes of different colors. Work with students to count out 4 red connecting cubes and 2 blue connecting cubes. Line up the cubes with space between the two colors. Point to each group and say: *This is a part. The two parts together make up the whole.*

Beginning Display for students a group of 2 red connecting cubes and a group of 3 blue connecting cubes. Write $2 + 3 = 5$ below the cubes. Say: *Look at the cubes. What is a part? What is the whole?* Repeat the questions for the equation.

Intermediate Draw a simple picture of 2 red balls and 2 yellow balls. Ask students to write an equation for the balls and then identify the parts and the whole.

Advanced Have pairs of students work together. One partner says an addition equation. The other partner names the parts and the whole. Encourage them to use this sentence frame: *___ and ___ are the parts. ___ is the whole.*

Summarize What are the parts and the whole in an addition equation?

COHERENCE: Engage students by connecting prior knowledge to new ideas.

Students create their own way to represent an addition situation with numbers in this problem. This prepares them for the next part of the lesson where they learn how to write an addition equation to represent situations in which two parts are put together.

Whole Class BEFORE

1. Pose the Solve-and-Share Problem

Provide each student a bag with 5 cubes of one color and a bag with 5 cubes of another color.

Make Sense and Persevere In this problem, students check that their answers make sense by counting the total number of cubes that they picked and making sure that this is the sum of their cubes in both colors.

2. Build Understanding

What are you asked to do with the two bags of cubes? [Pick a handful of cubes out of each bag.] *What are you asked to show?* [Numbers for how many cubes I picked in all]

Small Group DURING

3. Ask Guiding Questions As Needed

How many cubes did you pick from each bag? [Sample answer: I picked 3 red cubes from one bag and 2 blue cubes from the other bag.] *How can you find the total number of cubes?* [Sample answer: I could count all of the red and blue cubes.]

Whole Class AFTER

4. Share and Discuss Solutions

Start with students' solutions. Have them share the different ways they showed their cubes. If needed, project Malia's work to discuss how she used numbers to show the total number of cubes she picked from both bags.

5. Transition to the Visual Learning Bridge

You used cubes to model a problem about putting two parts together and used numbers to show how many in all. Later in this lesson, you will learn to identify the parts and write an addition equation for these types of problems.

6. Extension for Early Finishers

If one bag has 3 red cubes and the other bag has no cubes, how many cubes are there in all? [3]

Name _____

Solve & Share

Your 2 bags each have connecting cubes of a different color. Pick out a handful of cubes from each bag.

How can you use numbers to show how many cubes you picked in all? Show your work.

Lesson 1-2

Solve Problems: Put Together

I can ...

solve word problems about putting together.

Content Standards 1.OA.A.1
Mathematical Practices MP.1, MP.2, MP.4, MP.6

See margin for sample student work.

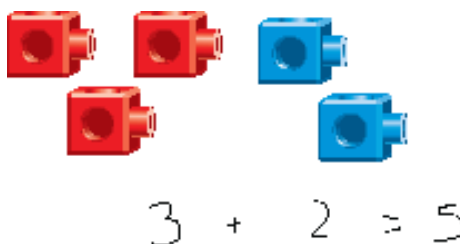
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Analyze Student Work

Malia's Work



Malia groups the cubes by color and writes an addition equation to show how many cubes of each color and the total number of cubes.

Patrick's Work



Patrick groups the cubes by color and uses numbers to count how many cubes in all. This is fine, but later in the lesson, show students who use counting to solve how they can write an equation to find the total number of objects.

The *Visual Learning Bridge* connects students' thinking in Solve & Share to important math ideas in the lesson. Use the *Visual Learning Bridge* to make these ideas explicit.

How many red cubes did Kenny pick? [4] How many blue cubes did Kenny pick? [2]

What color cubes are in each part? [The cubes in the first part are red; the cubes in the second part are blue.]

Reasoning When you add the two parts together, what do you find? [The whole] What number tells how many are in the red part? [4] The blue part? [2]

What number tells many cubes there are in all? [6] Have students read the equation aloud. How many cubes did Kenny pick in all? [6]

Prevent Misconceptions

Make sure students understand where each number should be placed. Remind them that the equal sign means *is the same as*. Students can check their work by saying, "4 + 2 is the same as 6."

Kenny picks 4 red cubes and 2 blue cubes.



The **parts** are 4 and 2.



4 2

Add the parts to find the **whole**.



4 + 2 =

I put the parts together when I add.

Write an addition equation to show the parts and the whole.

4 + 2 = 6

Kenny picks 6 cubes in all.

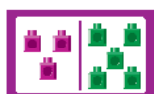
Do You Understand?

Show Me! You have 2 red cubes and 3 blue cubes. How can you find how many cubes you have in all?

Sample answer: Add the parts to find the whole.

Guided Practice Write the parts. Then write an addition equation to match each problem.

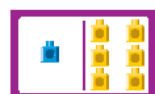
1. Cheryl has 3 purple cubes and 5 green cubes. How many cubes does she have in all?



3 + 5

3 + 5 = 8

2. Jenny sees 1 blue bug and 6 yellow bugs. How many bugs does Jenny see in all?



1 + 6

7 = 1 + 6

Visual Learning Bridge

Do You Understand? Show Me! Be Precise Review with students how to use addition to find the whole of two known parts. *What number tells how many cubes are in the red part?* [2] *The blue part?* [3] *How can you find how many cubes you have in all?* [Sample answer: I can put the two parts together to find the whole.] *What equation could you write?* [2 + 3 = 5] *How many cubes do you have in all?* [5]

Essential Question Ask the following Essential Question: *How can you use an equation to solve a problem about putting two parts together?* [Sample answer: I start with the numbers for the parts, and then I add to find the whole. I write the numbers, the plus sign, and the equal sign in my equation.]

Error Intervention: Item 2

If students have difficulty writing an equation, **then** have them describe what they see, for example, *I see 1 blue cube. I see 6 yellow cubes.*

Reteaching Assign Reteaching Set B, p. 65.

✓ QUICK CHECK

Check mark indicates items for prescribing differentiation on the next page.
Items 3 and 8 are worth 1 point. Item 7 is worth up to 3 points.

Items 3–4 Model with Math If students are still struggling with identifying the parts, ask them to look at each part-part mat and say the parts aloud. Then ask them to read the equations aloud.

Item 5 Remind students to gather information from the word problem. *How many brown rocks are in one part?* [2] *How many red rocks are in the other part?* [7] *Do you need to use the information about the 3 shells? Explain.* [Sample answer: No, I do not need to use the information about the shells because the question asks how many rocks Marco found in all. It does not mention shells.]

Item 6 Make Sense and Persevere

What symbols do you use in an addition equation? [Plus sign (+) and equal sign (=)] *What two numbers will you use in order to find the sum?* [2 and 5]

Item 8 Remind students that in this problem, 4 green apples are one part and 5 red apples are the other part. Tell them to think about the whole, the number of apples that Tim picked in all.




Name _____

Independent Practice Write the parts. Then write an addition equation to match each problem.

✓ 3. The pet store has 3  and 4 . How many pets does the store have in all?




$$\begin{array}{r} 3 + 4 \\ 3 + 4 = 7 \end{array}$$

4. The box holds 3  and 3 . How many balls are in the box?




$$\begin{array}{r} 3 + 3 \\ 3 + 3 = 6 \end{array}$$

5. **Higher Order Thinking** Marco finds 2 brown , 7 red , and 3 . How many  did Marco find in all?

Draw a picture to solve.
Then write an addition equation.

Check students' drawings.

$$2 + 7 = 9$$

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Math Practices and Problem Solving Solve each problem below.

6. Ⓢ **MP.1 Make Sense** Jen finds 2 . Then she finds 5 more . How many  did Jen find?

Draw a picture to show that you know what the story means. Then write an addition equation.

Check students' drawings.

$$2 + 5 = 7$$

✓ 7. **Higher Order Thinking** Draw a picture to show an addition story about red worms and brown worms. Write an equation to tell how many worms there are in all.

Check students' work.

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

✓ 8. Ⓢ **Assessment** Tim picks 4  and 5 . How many apples did he pick? Which addition equation matches this story?

Ⓐ $9 + 4 = 13$
 Ⓑ $4 + 5 = 9$
 Ⓒ $3 + 6 = 9$
 Ⓓ $4 + 4 = 8$

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Name _____



Another Look! Use the parts to write an addition equation.



I have 2 red counters and 3 yellow counters. These are the parts. I have 5 counters in all.



$$\begin{array}{r} 2 + 3 \\ 2 + 3 = 5 \end{array}$$

Greg has 3 red and 5 yellow. How many counters does he have in all?



$$\begin{array}{r} 3 + 5 \\ 3 + 5 = 8 \end{array}$$

Homework & Practice 1-2

Solve Problems: Put Together

HOME ACTIVITY Give your child 2 groups of small objects to count (e.g., one group of 3 buttons and one group of 4 buttons of a different color). Together, find the total number of objects and say the corresponding addition equation (e.g., "3 plus 4 equals 7."). Repeat the activity several times with different groupings.



Write the parts. Then write an addition equation to match each problem.

1. Stephanie has 4 red and 2 yellow. How many counters does she have in all?



$$\begin{array}{r} 4 + 2 \\ 4 + 2 = 6 \end{array}$$

2. Glen has 4 red and 4 yellow. How many counters does he have in all?



$$\begin{array}{r} 4 + 4 \\ 4 + 4 = 8 \end{array}$$

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Write an addition equation for each story.

3. **MP.4 Model** Ian picks 3 apples. Then he picks 5 more apples. How many apples did Ian pick in all?

$$3 + 5 = 8$$

4. **MP.4 Model** Sara has 2 rocks. Jake has 4 rocks. How many rocks do they have in all?

$$2 + 4 = 6$$

5. **Higher Order Thinking** Circle 2 groups of fruit. Write an addition equation to tell how many pieces of fruit there are in your 2 groups.



Sample answer is given.

$$5 + 2 = 7$$

6. **Assessment** Which addition equation matches the picture?



- Ⓐ $4 + 4 = 8$
Ⓑ $4 + 5 = 9$
Ⓒ $2 + 7 = 9$
Ⓓ $4 + 6 = 10$

20 twenty

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Topic 1 | Lesson 2

LESSON 1-4

SOLVE PROBLEMS: TAKE FROM

LESSON OVERVIEW

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Domain 1.OA Operations and Algebraic Thinking

Content Standard 1.OA.A.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.

Objective Solve subtraction problems involving taking from a group.

Essential Understanding Taking away one part from a whole is one interpretation of subtraction. Subtraction equations can be used to show subtraction situations in which one part is taken from the whole.

Vocabulary difference, subtract, minus

Materials Connecting cubes (or Teaching Tool 7)

COHERENCE

This lesson focuses on solving problems in which one part is taken away from the whole. This meaning of subtraction connects to students' previous work in Lesson 7-3 of Kindergarten where they used objects and drawings to represent these types of subtraction problems (K.OA.A.1). Later in this topic, students will connect this understanding of subtraction to other interpretations of subtraction as they solve problems involving comparing situations in Lessons 1-5 and 1-6.

RIGOR

This lesson emphasizes **conceptual understanding** and **application**. In Lesson 1-1, students added one part to another part to find the whole. In this lesson, they do the opposite by removing one part from the whole to find the remaining part. This conceptual understanding of how addition and subtraction are related will continue to be developed later in this topic and in Topics 2, 3, and 4.

ENGLISH LANGUAGE LEARNERS

Reading Use visual support to develop vocabulary.

Use with the Visual Learning Bridge on Student's Edition, p. 28.

Help students make a connection between the *minus* sign ($-$), the *equal* signs ($=$), and the words *minus* and *equals*. Also help students to identify the number that is the difference in an equation with the vocabulary word *difference*. Write a subtraction equation on the board and say it aloud. Ask students to repeat it after you. Ask: *Where is the minus sign? Where is the equal sign? What is the difference?*

Beginning Use connecting cubes to model a subtraction equation for students. Write the equation below the model, such as $5 - 2 = 3$. Say the equation aloud and emphasize the words *minus* and *equals*. Then say: *3 is the difference*. Invite students to repeat the equation and the sentence after you.

Intermediate Have students work together in pairs to write a subtraction equation together that can be modeled with connecting cubes. Have one student write the equation while the other one reads it aloud and completes the sentence: *_____ is the difference.*

Then have them trade places and repeat the activity.

Advanced Students will draw a picture for a subtraction equation, and write the equation under the picture. Have them gather in small groups and read their equations aloud to the group and identify the difference in the equation.

Summarize How can you take one part away from the whole to find the difference?

COHERENCE: Engage students by connecting prior knowledge to new ideas.

Students solve a take from, result unknown subtraction problem using cubes to show the action. This prepares them for the next part of the lesson where they solve more take from problems, representing the part being taken away in a part-part-whole diagram.

Whole Class **BEFORE****1. Pose the Solve-and-Share Problem**

Provide each student with 8 connecting cubes.

Model with Math In this problem, students use cubes to model the mathematical relationship between parts and wholes in a subtraction situation.

2. Build Understanding

What does the story problem ask you to do? [Find the number of ducks left in the pond.] *What are you asked to write?* [A subtraction equation to match the story problem]

Small Group **DURING****3. Ask Guiding Questions As Needed**

How many connecting cubes do you need to model the problem? [6] *What would be the whole in your subtraction equation?* [6]

Whole Class **AFTER****4. Share and Discuss Solutions**

Start with students' solutions. If needed, project Victor's work to discuss strategies for finding the missing part.

5. Transition to the Visual Learning Bridge

You used cubes to model a problem about taking a part from the whole. Later in this lesson, you will model subtraction problems by using pictures and will continue to write subtraction equations for those problems.

6. Extension for Early Finishers

Have students use connecting cubes to model a new story about taking parts from the whole. *There are 7 ducks in the pond. 3 ducks fly away. Then 1 more duck flies away. How many ducks are left in the pond?* [3]

Name _____

Solve & Share 6 ducks swim in a pond. 2 ducks fly away. How can you use connecting cubes to show how many ducks are left? What subtraction equation can you write?

Lesson 1-4
Solve Problems: Take From

I can ...
solve word problems that involve taking from a group.

Content Standards 1.OA.A.1
Mathematical Practices MP.2, MP.4, MP.5

See margin for sample student work.

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Analyze Student Work

Victor's Work



Victor shows 4 cubes in the pond and 2 cubes outside of the pond. The subtraction equation matches the story problem.

Yesenia's Work



Yesenia shows 4 cubes in the pond and 2 cubes outside of the pond. The subtraction equation does not match the story problem. The missing part (the number of ducks left in the pond) should be 4, not 2.

The *Visual Learning Bridge* connects students' thinking in Solve & Share to important math ideas in the lesson. Use the *Visual Learning Bridge* to make these ideas explicit.

Have students read the story. *Which number is the whole?* [7] *Which number is one part?* [3] *What does that number tell us?* [Three of the ducks leave the pond.]

Use Appropriate Tools Strategically *How do the cubes show the story?* [They show the 7 ducks that were in the pond.] *What do you need to do to find how many ducks are still in the pond?* [Take away 3 cubes from the 7 and count the rest.]

How many of the 7 ducks flew away? [3] *That is the part that was taken from 7. So the part you do not know is how many ducks stayed in the pond. What is the difference?* [4]

How do you read the subtraction equation? [7 minus 3 equals 4.] *What number do you write as the answer to the story's question?* [4] *Why?* [7 ducks minus 3 ducks equals 4 ducks. When 3 ducks fly away, 4 ducks are still left in the pond.]

Visual Learning Bridge

7 ducks are in a pond. 3 ducks fly away. How many are still in the pond?

You can use cubes to model the problem.

3 is the part that you take from 7.

You can **subtract** to solve the problem.

$7 - 3 = 4$

7 minus 3 equals 4. There are 4 ducks still in the pond.

7 is the whole. So, 4 is the **difference**.

Do You Understand? Show Me! There are 6 bees in a yard. 2 bees fly away. How could you use connecting cubes to find the difference in this subtraction story?

Sample answer: I could use cubes to show the whole and the part that is taken away.

Guided Practice Complete the model. Then write a subtraction equation.

1. Dan has 6 pens. He gives 2 pens away. How many pens does Dan have left?

$6 - 2 = 4$

2. 7 students play. 1 student leaves. How many students are still playing?

$7 - 1 = 6$

28 twenty-eight © Pearson Education, Inc. Topic 1 Lesson 4

Do You Understand? Show Me! Reasoning Students should be able to identify the whole or the part. *Is the difference in a subtraction story the whole or a part?* [A part]



Ask the following Essential Question: *How can you use a subtraction equation to show a situation in which one part is taken from the whole?* [Sample answer: I start with the number for the whole, and then subtract the number for the part that I know. The difference is the other part. I write the numbers, the minus sign, and the equal sign in my equation.]

Error Intervention: Item 2

If students have difficulty determining how many students are still playing,

then have them model the whole with 7 connecting cubes and physically separate the cubes to show how many are left when 1 cube is taken away, or when 1 student leaves.

Reteaching Assign Reteaching Set D, p. 66.

✓ QUICK CHECK

Check mark indicates items for prescribing differentiation on the next page.
Items 3 and 10 are worth 1 point each. Item 9 is worth up to 3 points.

Items 3–5 Model with Math Encourage students to use connecting cubes to show the subtraction equations and to check their work by adding the two parts that make up the whole.

Item 6 Ask students about the whole and the parts in this story. *What is the whole?* [The 8 students in the reading group] *Do you know the number for either of the parts that make up the whole? Explain.* [Sample answer: No, I just know that some of the students leave.] *Do you have enough information to solve this problem? Explain.* [Sample answer: Since I do not know the number of students that leave the group or the number of students that are still in the group, I do not have enough information to solve the problem.]

Name _____

Independent Practice Complete each model. Then write a subtraction equation.

✓ 3. 8 frogs sit on a log. 4 frogs jump away. How many frogs are still on the log?

$8 - 4 = 4$

4. 9 cats play. 6 cats run away. How many cats are still playing?

$9 - 6 = 3$

5. 7 bugs on a leaf. 2 bugs crawl away. How many bugs are still on the leaf?

$7 - 2 = 5$

6. **Higher Order Thinking** 8 students are in a reading group. Some of the students leave. How many students are still in the group? Do you have enough information to solve this problem? Explain.

Check students' explanations; There is not enough information provided to solve the problem.

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Items 7–8 Use Appropriate Tools

Strategically Remind students that they can use connecting cubes to act out each story by starting with the number of cubes for the whole, taking away the number of cubes for the part that they know, and then identifying the missing part, or the difference.

Item 10 Point out the words *fly away*. Explain to students that this means the group of 6 birds were separated from or taken from the group of 8 birds. *Which number is the whole?* [8] *What is the part you know?* [6] *How can you choose which subtraction equation matches the story?* [Sample answer: Since I know that 8 is the whole and 6 is the part that is taken away, I will find the equation that starts with $8 - 6$.]

Math Practices and Problem Solving Write an equation to match each problem. Use cubes or part-part-whole mats to solve.

7. **MP.5 Use Tools** Lin has 9 stamps. She gives 4 stamps to Tom. How many stamps does Lin have now?

$9 - 4 = 5$

8. **MP.5 Use Tools** Gloria has 8 flowers. She gives 5 flowers to her mother. How many flowers does Gloria have now?

$8 - 5 = 3$

✓ 9. **Higher Order Thinking** Find the missing number. Then write a subtraction story to match the equation.

$7 - 2 = 5$

Check students' stories.

✓ 10. **Assessment** 8 birds are in a tree. 6 birds fly away. How many birds are still in the tree?

Which subtraction equation matches the story?

(A) $8 - 2 = 6$

(B) $8 - 7 = 1$

(C) $7 - 2 = 5$

(D) $8 - 6 = 2$

30 thirty Topic 1 | Lesson 4

Name _____



**Homework
& Practice 1-4**
Solve Problems:
Take From

Another Look! You can write a subtraction equation to match a number story.

6 cats are on a fence.

3 cats jump off. How many cats are still on the fence?



$$6 - 3 = 3$$

5 cats are on a fence.

2 cats jump off. How many cats are still on the fence?



$$5 - 2 = 3$$

HOME ACTIVITY Place 8 small objects, such as buttons, on the table. Take away several of the buttons. Ask your child to tell a subtraction story. Then have your child write a subtraction equation to match the story, such as $8 - 2 = 6$. Have your child count the buttons that are left to check if his or her answer is correct.



Write a subtraction equation to match each problem.

1. 9 apples are on a table.
7 apples roll off. How many apples are still on the table?



$$9 - 7 = 2$$

2. 10 crayons are in a box.
7 crayons fall out.
How many crayons are still in the box?



$$10 - 7 = 3$$

Write a subtraction equation to match each number story.

3. **MP.2 Reasoning** 6 bees are on a flower. 4 bees fly away. How many bees are still on the flower?



$$6 - 4 = 2$$

4. **MP.2 Reasoning** 8 ducks are in the pond. 4 ducks get out. How many ducks are still in the pond?



$$8 - 4 = 4$$

5. **Higher Order Thinking** Find the missing number. Then write a subtraction story to match the equation.

$$7 - 3 = \underline{4}$$

Check students' work.

6. **Assessment** Jonah has 10 pebbles. He gives 2 pebbles to his sister. How many pebbles does Jonah have now?

Which subtraction equation matches the story?

- ☐ A $9 - 4 = 5$
☐ B $10 - 3 = 7$
☐ C $8 - 1 = 7$
☐ D $10 - 2 = 8$

LESSON 1-5

SOLVE PROBLEMS: COMPARE SITUATIONS

LESSON OVERVIEW

FOCUS • COHERENCE • RIGOR

FOCUS

Domain 1.OA Operations and Algebraic Thinking

Content Standard 1.OA.A.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.

Objective Solve subtraction problems that involve comparing to find how many more objects are in one group than another group.

Essential Understanding Comparing two groups to find how many more objects are in one group than another group is one interpretation of subtraction. Subtraction equations can be used to show situations in which two quantities are compared.

Vocabulary more

Materials Connecting cubes (or Teaching Tool 7)

COHERENCE

This lesson focuses on solving subtraction problems involving comparison situations. Students find how many more objects are in one group than another group. This meaning of subtraction will be revisited in Lesson 1-6 when students solve comparison problems in order to find how many fewer objects are in one group than another.

RIGOR

This lesson emphasizes **conceptual understanding** and **application**. As students solve subtraction problems involving comparison situations, they expand their conceptual understanding of subtraction. As students write subtraction equations for various types of subtraction problems, they deepen their understanding of how concrete and pictorial models translate into symbolic representations.

ENGLISH LANGUAGE LEARNERS

Reading Develop basic sight vocabulary.

Use with Solve & Share on Student's Edition, p. 33.

As you read aloud the story, point to the words *How many more?* in the speech balloon. Say: *We see these words a lot in subtraction stories.* Ask students to point to the word *how* with you and say the word aloud. Point out examples throughout the lesson that show the word *how*. Ask students to read the word along with you.

Beginning Write the word *how* on an index card. Hold up the word and say it aloud as students repeat it after you. Write the sentence *How many cars?* on an index card. Ask students to point to the word *How* in the sentence.

Intermediate Show students the words *how*, *many*, and *more* on separate index cards. Place the cards in random order. Say one of the words aloud. Ask students to identify the card that has the word you said written on it.

Advanced Ask students to go through the lesson and find the word *how*. Ask them to say the word aloud each time they identify it.

Summarize How can you use the word *how* in a subtraction story problem?

COHERENCE: Engage students by connecting prior knowledge to new ideas.

Students compare two groups in a story problem. This prepares them for the next part of the lesson where they learn how to use information from a story problem to write a subtraction equation and solve the problem.

Whole Class BEFORE

1. Pose the Solve-and-Share Problem

Provide each student 5 connecting cubes of one color and 5 connecting cubes of another color.

Use Appropriate Tools Strategically

Students model the story problem using connecting cubes.

2. Build Understanding

What does the story problem ask you to do?

[Tell if Lori saw more red or blue cars, and then tell how many more.] *What tools do you have to solve the problem?* [Connecting cubes]

Small Group DURING

3. Ask Guiding Questions As Needed

How many red and blue cars did Lori see? [5 red cars and 3 blue cars] *How many cubes should you use to model the story?* [5 cubes of one color and 3 cubes of another color]

Whole Class AFTER

4. Share and Discuss Solutions

Start with students' solutions. Have them share the strategies they used to solve the problem. If needed, project Charles's work to discuss how to compare the red and blue sets of cars.

5. Transition to the Visual Learning Bridge

You used subtraction to compare two quantities by finding out how much more one quantity is than the other. Later in this lesson, you will learn how you can write a subtraction equation to compare two quantities.

6. Extension for Early Finishers

Invite students to compare the number of things in the classroom, such as erasers and markers or doors and windows. Encourage discussion.

Name _____

Solve & Share

Lori sees 5 red cars and 3 blue cars. Did she see more red cars or blue cars? How many more? How can you tell?

Lesson 1-5

Solve Problems: Compare Situations

I can ...

solve word problems that involve comparing.

Content Standards 1.OA.A.1
Mathematical Practices MP.2, MP.4, MP.5

See margin for sample student work.

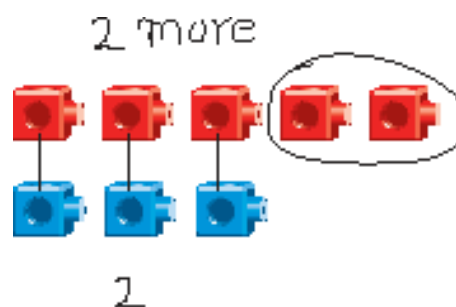
Topic 1 | Lesson 5

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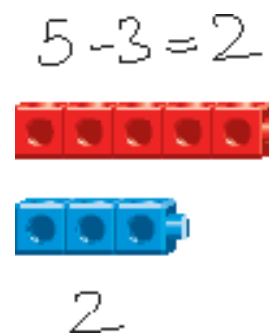
Analyze Student Work

Charles's Work



Charles says that Lori saw 2 more red cars than blue cars because 2 red cubes do not have partners that are blue cubes.

Mariyah's Work



Mariyah says that she used subtraction to find the answer; $5 - 3 = 2$. There are 2 more red cars than blue cars.

The *Visual Learning Bridge* connects students' thinking in Solve & Share to important math ideas in the lesson. Use the *Visual Learning Bridge* to make these ideas explicit.

Reasoning How could you find out how many more blue hats than orange hats there are? [I could use cubes; pretend that blue cubes are blue hats and orange cubes are orange hats.]

What do the blue cubes stand for? [Blue hats] What do the orange cubes stand for? [Orange hats] How many more blue hats are there than orange hats? [3]

Reasoning Look at the subtraction equation. What does the 5 stand for? [5 blue hats] What does the 2 stand for? [2 orange hats] What does the 3 stand for? [The difference; how many more blue hats than orange hats]

Visual Learning Bridge

5 cats have blue hats.
2 cats have orange hats.
How many more blue hats are there than orange hats?

You can use cubes to compare.

You can write a subtraction equation to compare.

$$5 - 2 = 3$$

There are 3 more blue hats than orange hats.

Do You Understand? Show Me! If you have 2 groups of objects, how can you tell which group has more?

Sample answer: I can use cubes to show both groups and then compare them.

Guided Practice Use cubes to write a subtraction equation. Then write how many more.

1. Peggy draws 6 frogs. Mike draws 3 frogs. How many more frogs does Peggy draw than Mike?

6 - 3 = 3 3 more frogs

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Do You Understand? Show Me! Model with Math Ask students to build a tower of 3 connecting cubes of one color and a tower of 5 connecting cubes of another color. *How can you tell which tower has more cubes?* [Sample answer: I can compare the heights of the two towers. The taller tower has more cubes.]

Error Intervention: Item 1

If students have difficulty finding how many more frogs Peggy draws, **then** have students circle pairs of frogs in the first and second rows.

Reteaching Assign Reteaching Set E, p. 67.



Ask the following Essential Question: *How can you write a subtraction equation to compare two sets of objects?*

[Sample answer: First I write the number for the group of objects that has more. Then I subtract the number of objects in the group that has less. The difference tells how many more objects are in the larger group.]

✓ QUICK CHECK

Check mark indicates items for prescribing differentiation on the next page.
Items 3 and 9 are each worth 1 point. Item 8 is worth up to 3 points.

Items 2–3 Use Appropriate Tools

Strategically Suggest that students who need help can use connecting cubes to show the story and compare the two groups.

Items 4–5 Tell students to look at each picture and think about a comparing story to help them find the missing numbers in the equations.

Coherence In Kindergarten, students compared numbers by both counting and matching strategies (K.CC.C.6). Items 2–5 connect and expand on that thinking by using matching strategies (pictorially) and counting strategies (recording numbers and representing the comparison with a subtraction equation).

Item 6 Point out to students that in this story, they are not comparing groups but are using subtraction in a take from situation. *How many fish are in the tank at the start?* [4] *How many fish are sold?* [2] *How could you draw a picture to find out how many fish are still in the tank?* [Sample answer: I could draw 4 fish, cross out 2 fish for the ones that were sold, and then count the remaining fish to find how many are still in the tank.]

Item 9 Use Appropriate Tools

Strategically Encourage students to draw a picture or to use connecting cubes to compare the two colors of cats.

Name _____

Independent Practice Draw cubes to show the subtraction. Then write an equation to match the story. Tell how many.

2. Sue has 3 dogs. Julio has 1 dog. How many more dogs does Sue have?



 $3 - 1 = 2$
 2 more dogs

3. Tony counts 7 mice. He counts 5 more mice than Marie. How many mice does Marie count?



 $7 - 5 = 2$
 2 mice

Higher Order Thinking How many more blue birds than yellow birds? Use the picture to find the missing number for each problem.

4. 

 $4 - 3 = 1$

5. 

 $6 - 5 = 1$

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Math Practices and Problem Solving Solve each problem below.

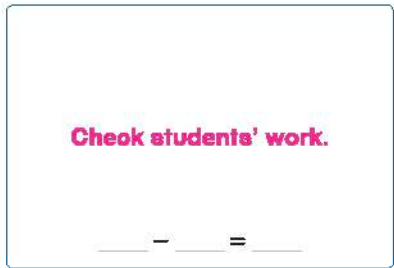
6. **Number Sense** 4 fish are in a tank. 2 fish are sold. How many fish are still in the tank? Write an equation to match the story. Then tell how many.

$4 - 2 = 2$
 2 fish

7. **MP.4 Model** Luis sees 5 green frogs. He sees 1 blue frog. How many more green frogs does Luis see than blue frogs? Write an equation to match the story. Tell how many more.

$5 - 1 = 4$
 4 more green frogs

8. **Higher Order Thinking** Draw some yellow flowers. Draw more red flowers than yellow flowers. Write a subtraction equation that tells how many more red flowers than yellow flowers there are.


 Check students' work.
 $\underline{\quad} - \underline{\quad} = \underline{\quad}$

9. **Assessment** Bill counts 6 gray cats and 4 white cats. How many more gray cats than white cats did Bill count?

☐ A 2
☐ B 4
☐ C 6
☐ D 10

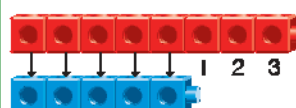

 You can draw a picture to help.

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Name _____



Another Look! Match the red cubes with the blue cubes.
Then count how many more.



How many red cubes? 8

How many blue cubes? 5

How many more red cubes? 3

$$8 - 5 = 3$$

Homework & Practice 1-5

Solve Problems:
Compare Situations

HOME ACTIVITY Give your child 5 blue buttons and 2 green buttons. Ask: Are there more blue or green buttons? Have your child tell how many more blue buttons than green buttons he or she has. Repeat with up to 10 blue buttons and 10 green buttons.



Write how many red cubes and blue cubes. Then tell how many more. Write a subtraction equation to match.



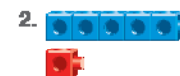
4 red cubes

2 blue cubes

Which color has more cubes? red

How many more? 2

$$4 - 2 = 2$$



5 blue cubes

1 red cube

Which color has more cubes? blue

How many more? 4

$$5 - 1 = 4$$

Solve each problem below.

3. **Number Sense** Sam plays with 5 dogs. 3 dogs go home. How many dogs are still playing with Sam?

Write an equation to match the story.
Then tell how many.

$$5 - 3 = 2$$

2 dogs

4. **MP.4 Model** David has 6 tickets. Mimi has 2 tickets. How many more tickets does David have than Mimi? Draw cubes to show the subtraction. Then write an equation to match the story. Tell how many more.



Sample drawing shown.

$$6 - 2 = 4$$

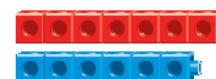
4 more tickets

5. **Higher Order Thinking** Draw some red cubes. Draw more blue cubes than red cubes. Write a subtraction equation that shows how many more blue cubes than red cubes you drew.

Check students' work.

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

6. **Assessment** Lucy has 6 apples. Julie has 7 apples. How many more apples does Julie have than Lucy?



0
(A)

1
(B)

6
(C)

7
(D)

LESSON 1-7

PRACTICE SOLVING PROBLEMS: ADD TO

LESSON OVERVIEW

FOCUS • COHERENCE • RIGOR

FOCUS

Domain 1.OA Operations and Algebraic Thinking

Content Standard 1.OA.A.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.

Objective Solve addition problems by finding a missing addend.

Essential Understanding Adding to is one interpretation of addition. Addition equations can be used to show add to addition situations.

Vocabulary addend

Materials Connecting cubes (or Teaching Tool 7)

COHERENCE

In Lesson 1-1, students solved addition problems in which one part is added to another part. Students were given the two parts and found the whole. In this lesson, students deepen their understanding of addition as they solve problems involving missing addends. They are given the whole and one part, and they find the other part.

RIGOR

This lesson emphasizes **conceptual understanding** and **application**. In this lesson, students solve addition problems involving missing addends as well as addition problems in which they are given both parts and must find the whole. By solving both types of problems, students deepen their understanding of the operation of addition and develop flexibility in their problem-solving skills.

ENGLISH LANGUAGE LEARNERS

Reading Use reading supports (pretaught vocabulary) for comprehending written material.

Use before the lesson to reinforce pretaught vocabulary and concepts.

Display the addition equation $4 + 1 = 5$ on an index card. Point to each addend and symbol as you say it aloud. *4 plus 1 equals 5.* Then focus on the 5 in the equation. Say: *5 is the sum. The sum is the whole. Add the parts to find the sum.*

Beginning Write another equation on an index card, such as $3 + 4 = 7$. Ask students to point to the sum. Reinforce that the sum can be the answer in an addition problem.

Intermediate Have students write their own addition equation. Ask them to show it to a partner in the same proficiency level. Have the partner read the addition equation aloud and identify the sum.

Advanced Ask students to choose an addition equation in the lesson and read

it aloud. Ask them to identify the sum and tell what the sum is. They may use sentence frames such as: The sum of ____ and ____ is _____. A sum is _____.

Summarize How can a model help you find the sum in an addition equation?

COHERENCE: Engage students by connecting prior knowledge to new ideas.

Students model a joining problem with connecting cubes and write the corresponding equation. The focus in this problem and later in this lesson is on finding the missing part or addend (a number that is being added) when students know one part and the sum.

Whole Class BEFORE

1. Pose the Solve-and-Share Problem

Provide students with 10 cubes to model the problem.

Model with Math Students use cubes to model a math story about train cars. Then they write an addition equation for the problem.

2. Build Understanding

What are you asked to find? [How many train cars joined the first 5 train cars on the track]

What tools do you have to find how many train cars joined the first 5 train cars? [Connecting cubes to model the problem and paper and pencil to write the equation]

Small Group DURING

3. Ask Guiding Questions As Needed

What information do you know? [5 train cars are on the track. After some train cars join them, there are 9 train cars on the track.] *What information do you need?* [The number of train cars that joined the first 5 train cars]

Whole Class AFTER

4. Share and Discuss Solutions

Start with students' solutions. If needed, project Rosi's work to discuss how she found the unknown number of train cars.

5. Transition to the Visual Learning Bridge

In this problem, you used connecting cubes and an equation to solve a joining problem where you knew one part and the sum. Later in this lesson, you will learn to use a bar diagram to model these types of problems and will write equations to solve them.

6. Extension for Early Finishers

What would your model look like if there were 6 train cars on the track, some joined them, and now there are 10 train cars on the track? [Sample answer: I would have a group of 6 cubes and a group of 4 cubes.]

Name _____

Solve & Share

5 train cars are on the track. Some more train cars join them. Now there are 9 train cars. How many train cars joined the first 5 train cars on the track? Use connecting cubes to model this story. Write an addition equation.

Lesson 1-7

Practice Solving Problems: Add to

I can ...
use addition or subtraction to help find a missing addend.

Content Standards 1.OA.A.1 Mathematical Practices MP.1, MP.4

See margin for sample student work.

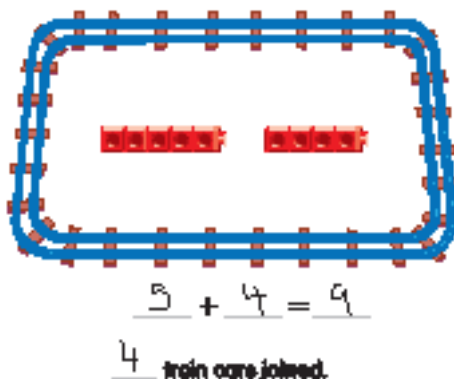
_____ + _____ = _____

_____ train cars joined.

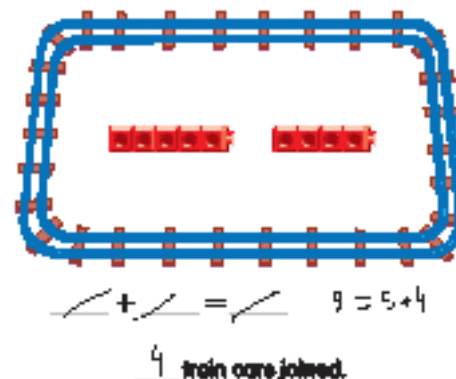
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Analyze Student Work

Rosi's Work



Evan's Work



Rosi explained that she used 5 cubes to represent the 5 cars on the track. She then had to "think addition" to figure out how many train cars joined the first 5 train cars to make 9 train cars in all. Rosi added 4 cubes and correctly completed the addition equation.

Evan started with 9 cubes. Then he put the first 5 cubes in a separate group. Next, Evan counted the number of train cars in the other group to determine how many train cars joined the first 4 train cars.

The *Visual Learning Bridge* connects students' thinking in Solve & Share to important math ideas in the lesson. Use the *Visual Learning Bridge* to make these ideas explicit.

What information do you know in this problem? [A station has 7 train cars and some more train cars roll into the station. Now the station has 9 train cars.] *What information do you need to find out?* [The number of train cars that roll into the station]

How many train cars are in the first group? [7] *How many train cars join them?* [This information is not provided.] *How many train cars are in the train station after more roll in?* [9]

Make Sense and Persevere How can you use the mat to show the 7 train cars already at the station? [Show 7 cubes on one side of the mat.] *What belongs on the other side of the mat?* [The part we do not know or the missing addend; the number of train cars that roll in]

What addition equation can you write to show the problem? [$7 + 2 = 9$ or $9 = 7 + 2$] *What numbers in the equation are the addends?* [7 and 2] *What number in the equations is the sum?* [9]

Visual Learning Bridge

A station has 7 train cars. Some more train cars roll into the station. Now there are 9 train cars. How many rolled in?

7 plus what is 9?

Use cubes and a model to help find the missing **addend**.

You can write an addition equation to match the story.

$7 + 2 = 9$

addends sum

2 more train cars rolled in.

Do You Understand? Show Me! How do you solve an addition problem if you know only one part and the sum?

Sample answer: You can start with the part you know and then count on until you get to the sum.

Guided Practice Complete the model and the equation. Then tell how many.

1. Bobby has 4 fish. He buys some more fish. Now Bobby has 7 fish. How many fish did Bobby buy?

$4 + \underline{\quad} = 7$

3 fish

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Topic 1 | Lesson 7

Do You Understand? Show Me! Model with Math

Explain that students can solve different kinds of addition problems by using connecting cubes and a part-part-whole mat. Have students model how to solve the following problem: *Together Dale and Sri read 8 books. Sri read 5 books. How many books did Dale read? What is the whole?* [8] *What part do we know?* [Sri read 5 books.] *What is the unknown part?* [The number of books Dale read] Have students solve the problem using the cubes.

Error Intervention: Item 1

If students are not making a connection between the word problem and the known part and sum, **then** have them use a part-part-whole mat to draw a line from each section of the word problem to the corresponding section of the mat.

Reteaching Assign Reteaching Set F, p. 67.



Ask the following Essential Question: *How can you use an addition equation to find a missing part of a whole?*

[Sample answer: I start with the number that I know, write a question mark for the missing part, and then write the sum. To find the missing part, I add on to the first part until I reach the sum.]

✓ QUICK CHECK

Check mark indicates items for prescribing differentiation on the next page.
Items 2 and 8 are each worth 1 point. Item 7 is worth up to 3 points.

Items 2–3 If students are still unclear about how to solve these problems, have them look at each frame and say the parts aloud. Then ask them to read the addition equation aloud.

Item 4 **Make Sense and Persevere**

Remind students how to use addition to find a missing part. *What do you need to do to solve this problem?* [Draw a picture and write an addition equation about the number of shoes.] *What part and whole do you know that you will write?* [$2 + ? = 6$] *What did you find as a result?* [$2 + 4 = 6$] *How many shoes are on the mat?* [4]

Item 5 **Model with Math** Students may need to use a part-part-whole mat and cubes to model the story. *Which number is the whole?* [10] *How will you show this on the mat?* [By writing 10 in the box at the top] *Which number is the part that you know?* [4] *How will you show this on the mat?* [By putting 4 cubes in one of the sections] *What is the missing part?* [The number of bones that Gabe's dog buried on Friday] *How will you find the missing part using the mat?* [Sample answer: I will put cubes on the other section of the mat until there are 10 cubes in all on the mat.] *So, how many bones did Gabe's dog bury on Friday?* [6]

Item 7 Remind students that there is more than one possible answer for a problem in which both of the addends are unknown. After students complete the problem, ask volunteers to share different answers. Have the rest of the class check to determine if each answer given is correct.




Name _____

Independent Practice Complete the model. Then write an equation to match. Tell how many.

✓ 2. Mary has 4 stickers. Pat gives her some more stickers. Now Mary has 8 stickers. How many stickers did Pat give to Mary?

8

🍌

🍌

🍌

🍌

🍌

🍌

$$\begin{array}{r} 4 + 4 = 8 \\ 4 \text{ stickers} \end{array}$$

3. Billy reads 4 pages on Monday. He reads some more pages on Tuesday. He reads 10 pages in all. How many pages did Billy read on Tuesday?

10

📖

📖

📖

📖

📖

📖

$$\begin{array}{r} 4 + 6 = 10 \\ 6 \text{ pages} \end{array}$$

4. **Higher Order Thinking** Megan has 6 shoes in all. Some shoes are on the mat. 2 shoes are in the box. How many shoes are on the mat?

Draw a picture to solve. Then write an equation to match. Tell how many.

Check students' drawings.

$$\begin{array}{r} 2 + 4 = 6 \\ 4 \text{ shoes on the mat} \end{array}$$

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Math Practices and Problem Solving Solve each problem.

5. 🕒 **MP.4 Model** Gabe's dog buries 4 bones on Monday. It buries some more bones on Friday. It buries 10 bones in all. How many bones did Gabe's dog bury on Friday? Write an equation to match the story. Then tell how many.

$$\begin{array}{r} 4 + 6 = 10 \\ 6 \text{ bones} \end{array}$$

6. 🕒 **MP.4 Model** Natalia has 3 pretzels and 7 crackers. How many snacks does she have in all? Write an equation to match the story. Then tell how many.

$$\begin{array}{r} 3 + 7 = 10 \\ 10 \text{ snacks} \end{array}$$

✓ 7. **Higher Order Thinking** 5 hamsters are in a cage. Some are brown and some are black. How many hamsters of each color could be in the cage? Draw a picture and write an equation to match the story.

Sample equation given.

$$5 = 2 + 3$$

✓ 8. 🕒 **Assessment** 4 puppies are playing at the park. Then some more puppies join them. Now there are 7 playing at the park. How many puppies joined the first 4?

Which equation matches the story?

☐ $9 = 4 + 5$
☐ $7 = 6 + 1$
☒ $7 = 4 + 3$
☐ $10 = 7 + 3$

7

🐶

🐶

🐶

🐶

🐶

?

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Topic 1 | Lesson 7

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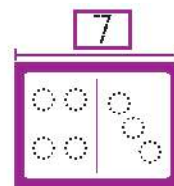
Name _____



Homework & Practice 1-7
Practice Solving Problems: Add to

Another Look! You can use a model to solve an addition story and to write an equation.

Jim has 4 golf balls. He finds some more golf balls in his bag. Now Jim has 7. How many golf balls did Jim find in his bag?



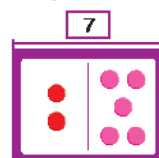
$$4 + 3 = 7$$

3 golf balls



Complete the model. Then write an equation to match. Tell how many.

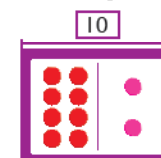
1. 2 cats are playing. Some more cats come to play. Now there are 7 cats playing. How many cats came to play with the first 2 cats?



$$2 + 5 = 7$$

5 cats

2. 8 friends are eating lunch. Some more friends join them. Now there are 10 friends eating. How many more friends came to lunch?



$$8 + 2 = 10$$

2 friends

Solve each problem.

3. **MP.4 Model** Linda has 4 lemons. She buys 4 more lemons. How many lemons does Linda have now? Write an equation to match the story. Then tell how many.



$$4 + 4 = 8$$

4 lemons

4. **MP.4 Model** Tia puts 5 berries in a basket. Brad adds some more berries to the basket. Now there are 9 berries in the basket. How many berries did Brad add? Write an equation to match the story. Then tell how many.



$$5 + 4 = 9$$

4 berries

5. **Higher Order Thinking** Complete the equation. Then write an addition story to match the equation.

$$8 + 2 = 10$$

Check students' stories.

6. **Assessment** Rashida has 7 coins. Gary gives her some more. Now Rashida has 10 coins. How many coins did Gary give Rashida?

(A) 2

(B) 3

(C) 4

(D) 5

LESSON 1-8

SOLVE PROBLEMS: PUT TOGETHER/TAKE APART

LESSON OVERVIEW

FOCUS • COHERENCE • RIGOR

FOCUS

Domain 1.OA Operations and Algebraic Thinking

Content Standard 1.OA.D.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 $8 + ? = 11$, $5 = \square - 3$, $6 + 6 = \square$.* Also **1.OA.A.1**

Objective Solve problems involving putting together or taking apart.

Essential Understanding Finding a missing part of a whole is an interpretation of both addition and subtraction. Addition or subtraction equations can be used to show situations involving a missing part.

Materials Connecting cubes (or Teaching Tool 7)

COHERENCE

This lesson focuses on solving problems involving a missing part by having students write an addition or subtraction equation. This lesson links back to Lesson 1-2, where students used addition to join two parts; Lesson 1-4, where students used subtraction to take away one part from the whole; and Lesson 1-7, where students solved problems by finding a missing addend.

RIGOR

This lesson emphasizes **conceptual understanding** and **application**. As students use addition or subtraction to solve problems, they strengthen their conceptual understanding of the relationship between these two operations. Students also develop their problem-solving skills as they learn that there is more than one possible strategy that can be used to solve problems.

ENGLISH LANGUAGE LEARNERS

Reading Use support from peers/teachers to enhance/confirm understanding.

Use with the Visual Learning Bridge on Student's Edition, p. 52.

Students may need help understanding math stories that include missing information. Practice reading math stories with students and identifying what is being asked. Provide support by pointing to clue words, rephrasing questions, and asking pointed questions.

Beginning Work through the Visual Learning Bridge problem by drawing a picture for students. Point to the problem in the first box as you read: *There are 8 cats and dogs.* Count the 8 cats and dogs in the picture along with students.

Intermediate Read the first sentence of the problem: *There are 8 cats and dogs on the dance floor.* Point to each word as you read with the students. Ask students to work with partners to draw what the sentence tells.

Advanced Focus on the bar model in the second box of the Visual Learning Bridge. Point to the 8 in the box. Ask: *How many cats and dogs are there?* [8] Read the problem with the students. *What are 5 dogs doing?* [Dancing]

Summarize When reading a math story, how can you find the missing part?

COHERENCE: Engage students by connecting prior knowledge to new ideas.

Students use connecting cubes to represent the story problem. This prepares them for the next part of the lesson where they find the missing part in a story problem and write an addition or subtraction equation.

Whole Class BEFORE

1. Pose the Solve-and-Share Problem

Provide each student 10 connecting cubes.

Use Appropriate Tools Strategically In this problem, students use cubes to create a representation of the story problem.

2. Build Understanding

What does the problem ask you to find? [The number of big pebbles that Sophie saw] *What tools do you have to help you solve the problem?* [Connecting cubes]

Small Group DURING

3. Ask Guiding Questions As Needed

How many small pebbles did Sophie see by the lake? [5] *How many pebbles did Sophie see in all?* [7]

Whole Class AFTER

4. Share and Discuss Solutions

Start with students' solutions. If needed, project and discuss Jesus's work to discuss strategies for finding the missing part.

5. Transition to the Visual Learning Bridge

You used cubes to represent a problem with a missing part. Later in this lesson, you will complete a model and write an addition or subtraction equation to solve a problem with a missing part.

6. Extension for Early Finishers

Give students the following riddle. *I am a part. If you put me with 2, the whole is 8. Who am I?* [6] Have students make up similar riddles with 8 as the whole.

Name _____

Solve and Share

Sophie sees 5 small pebbles by the lake. She also sees some big pebbles. She sees a total of 7 pebbles. How many big pebbles did Sophie see? Show how you know.

Lesson 1-8

Solve Problems: Put Together/Take Apart

I can ...
solve word problems that involve putting together or taking apart.

Content Standards 1.OA.D.8, 1.OA.A.1
Mathematical Practices MP.1, MP.3, MP.4, MP.5

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Analyze Student Work

Jesus's Work

$$7 - 5 = 2$$



2

Libby's Work



6 7

$$5 + 2 = 7$$

Jesus explains that he used subtraction to solve the problem. He knew Sophie had 7 pebbles in all. So, there could not be more than 7 pebbles. Sophie sees 5 small pebbles by the lake, so $7 - 5 = 2$. Sophie sees 2 big pebbles.

Libby explains that she used addition to solve the problem. Since she knew that Sophie had 7 pebbles in all, she found the missing addend in the addition equation, $5 + ? = 7$. She counted on to find that the missing addend is 2. Sophie sees 2 big pebbles.

The *Visual Learning Bridge* connects students' thinking in Solve & Share to important math ideas in the lesson. Use the *Visual Learning Bridge* to make these ideas explicit.

Make Sense and Persevere Have students read the story. Which number is the whole? [8] Which number is one part? [5] What is the missing part we want to find? [The number of cats]

Prevent Misconceptions Make sure students understand the different sections of the bar model. The number at the top is the whole and the two sections below are for the parts.

How do you read the subtraction equation? [Eight minus five equals three.] How many cats are dancing? [3]

Construct Arguments How can you add to find the number of cats that are dancing? [Sample answer: Start at the number of dogs and then count on until you reach the total number of cats and dogs. How many times you count is the number of cats.] Do you get the same answer whether you add or subtract? [Sample answer: Yes, because the addition and subtraction equations have the same whole and the same parts.]

8 cats and dogs are on the dance floor. 5 dogs are dancing. How many cats are dancing?

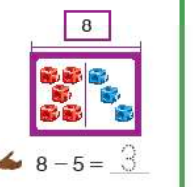


Think about the whole and the part you know from the story.



There are 5 dogs dancing.

Subtract to find the missing part.



$8 - 5 = 3$

You can also add to find the missing part.

$5 + 3 = 8$



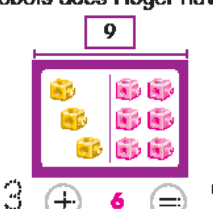
3 cats are dancing.

Do You Understand? Show Me! If you know the whole and one of the parts, how can you find the missing part?

Sample answer: Subtract the part you know from the whole or count on to find the missing part.

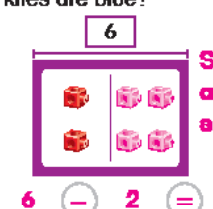
Guided Practice Complete the model. Then write an addition or subtraction equation.

1. Nick and Roger have 9 robots in all. Nick has 3 robots. How many robots does Roger have?



$3 + 6 = 9$

2. Gail has 6 kites. Some are red and some are blue. If 2 kites are red, how many kites are blue?



Sample answer shown.

$6 - 2 = 4$

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Visual Learning Bridge

Do You Understand? Show Me! Model with Math

Have students use connecting cubes and a bar model to show the example presented in the Visual Learning Bridge at the top of the page. Then ask students to explain how they found the missing part.

If students are not making a connection between the word problem and the sections of the bar model, then have them draw a line from each section of the word problem to the corresponding section of the bar model.



Ask the following Essential Question: *How can you use a model to find the missing part in a problem and write an addition or subtraction equation for that problem?*

[Sample answer: I can use a bar model. I write the number for the whole at the top, and put cubes in one of the sections to show the part that I know. Then I count on from the part that I know to the whole. How many numbers I count is the missing part. I write an equation by writing the whole, an equal sign, and then the two parts with an addition sign between them.]

Error Intervention: Item 2

Reteaching Assign Reteaching Set G, p. 68.

✓ QUICK CHECK

Check mark indicates items for prescribing differentiation on the next page.
Item 4 and 9 are each worth 1 point. Item 8 is worth up to 3 points.

Item 4 Explain to students that this word problem presents the known part first, unlike Item 3 and the Guided Practice exercises, which present the whole first.

Item 5 Model with Math If students have trouble deciding what to draw first, ask them to draw the known part first.




Name _____

Independent Practice Complete the model. Then write an equation. Tell how many.

3. Jill walks 9 blocks. She walks 5 of the blocks with a friend. How many blocks did Jill walk by herself?

9



$5 + 4 = 9$
 4 blocks

4. Rita has 3 yellow balloons. The rest of her balloons are pink. She has 7 balloons in all. How many pink balloons does Rita have?

7



$7 - 3 = 4$
 4 pink balloons

5. **Higher Order Thinking** Henry has 8 shells in all. 3 shells are big. The rest are small. How many small shells does Henry have?

Draw a picture to solve. Then write an equation. Tell how many.

Sample answer shown.
Check students' drawings.

$8 - 3 = 5$
 5 small shells

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Item 6 Make Sense and Persevere

Read the problem aloud. Ask students to explain what number they are supposed to find. Have students show the problem on a bar model with connecting cubes.

Item 9 Remind students to look for important words. *What do the words in all tell you?* [They tell you that 7 is all of the fish, or the whole.]

Math Practices and Problem Solving Solve each problem. Draw a picture to help.

6. **MP.1 Make Sense** Joe buys 2 red fish and some blue fish. He buys 9 fish in all. How many blue fish did Joe buy?

Check students' drawings.

7 blue fish

7. **MP.1 Make Sense** Rachel has 8 nickels. She gives 4 nickels away. How many nickels does Rachel have left?

Check students' drawings.

4 nickels

8. **Higher Order Thinking** Nina has 8 stuffed animals. Some are bears and some are tigers. Draw a picture to show how many of each animal Nina could have. Then write the numbers.

Check students' drawings.
The numbers should add to 8.

_____ bears and _____ tigers

9. **Assessment** Liz and Mary have 7 fish in all. Liz has 2 fish. Which equation can you use to find how many fish Mary has?

☐ A $9 - 2 = 7$

☐ B $6 - 1 = 5$

☒ C $7 - 2 = 5$

☐ D $8 - 7 = 1$

The equation should match the number story.



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Name _____



Homework & Practice 1-8

Solve Problems:
Put Together/
Take Apart

Another Look! The dog has 8 spots on its back. 6 spots are brown. The rest are black. How many spots are black?



$$\begin{array}{r} 8 - 6 = 2 \\ \text{spots} \quad \text{brown} \quad \text{black} \\ \text{in all} \quad \text{spots} \quad \text{spots} \end{array}$$

There are 8 spots in all. Subtract or count on from 6 to find the number of black spots.

$$\begin{array}{r} 6 + 2 = 8 \\ \text{brown} \quad \text{black} \quad \text{spots} \\ \text{spots} \quad \text{spots} \quad \text{in all} \end{array}$$



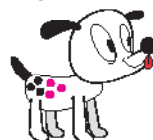
HOME ACTIVITY Place 6 to 9 small objects in a paper cup. Have your child pour some of the objects onto the table. Ask, "How many are still in the cup?" Have your child subtract the number of objects on the table from the number he or she started with. Then have your child count the objects that are left to check if his or her answer is correct.



Each dog has black and brown spots. Draw the missing brown spots. Write an equation to model the problem.

Sample answers shown.

1. 6 spots in all



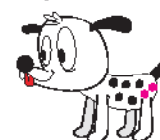
$$6 - 3 = 3$$

2. 9 spots in all



$$4 + 5 = 9$$

3. 7 spots in all



$$7 - 5 = 2$$

Topic 1 | Lesson 8

Digital Resources: Personalized

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Solve each problem below.

4. **MP.4 Model** Juan has 9 shirts. 6 of his shirts are white. The rest are **NOT** white.

Draw a picture and write an equation to show how many of Juan's shirts are **NOT** white.

Check students' drawings.

$$9 - 6 = 3$$

5. **Higher Order Thinking** Draw pictures to show how many there are of each fruit. Then write the numbers to complete the chart.

	Drawings	Bananas	Oranges
Amy has 8 in all.	Check students' drawings.	4	4
Joe has 6 in all.	Check students' drawings.	4	2

6. **Assessment** Pedro and Deb have 9 baseball cards in all. Deb has 1 baseball card. How many baseball cards does Pedro have?

Which equation matches the story?

- A** $9 - 1 = 8$ **B** $8 - 1 = 7$ **C** $8 - 7 = 1$ **D** $7 - 1 = 6$

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Topic 1 | Lesson 8

CONSTRUCT ARGUMENTS

LESSON OVERVIEW

FOCUS • COHERENCE • RIGOR

FOCUS

Content Standard 1.OA.A.1

Objective Construct math arguments in order to solve addition and subtraction problems.

Essential Understanding Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.

COHERENCE

Students have used this Mathematical Practice in Kindergarten. This lesson is an opportunity to stop and focus on the thinking habits good problem solvers rely on when they *construct arguments*. Although the content used in this lesson was developed in this topic, instruction should focus on the use and management of MP.3, as students apply content that they know.

RIGOR

This lesson emphasizes **application**. Rigorous mathematics instruction calls for the selection, use, and management of multiple mathematical practices. All of the problems in this lesson elicit the use of multiple mathematical practices. Any mathematical practices that come into play in the work on this lesson should be made explicit. However, the classroom conversation should focus on the meaning and use of the thinking habits shown on the Solve & Share task for MP.3.

ENGLISH LANGUAGE LEARNERS

Reading Use contextual supports to enhance/confirm understanding.

Use with *Solve & Share on Student's Edition*, p. 57.

Beginning Reread Thinking Habit Question 1. Ask: *What numbers do we use to solve?* Students will respond by pointing. Write "+", "-", and "." Ask: *What symbols do we use to solve?* Students will respond by pointing. Ask students to generate an equation to solve the problem. [Sample answers: $5 + 3 = 8$ or $8 - 5 = 3$] Reread

Question 2. Ask: *Do others understand your equation?* Students will respond with thumbs up/down.

Intermediate Reread Thinking Habit Question 1 with students. Write "+", "-", and "." Ask students to tell their partners the numbers and symbols to use to solve the problem. Instruct students to work with partners to generate equations. Reread Question 2 with students. Ask them to share their equations with other partner groups to see if their equations are clear.

Advanced Divide the class into 3 groups. Instruct Group A to use pictures, Group B to use numbers, and Group C to use words to solve the problem. Group A will explain to the other groups how the problem was solved using pictures. Continue the process with Groups B and C. After each group presents its work, instruct students to answer the Thinking Habits questions.

Summarize How do *Thinking Habits* help you to solve problems?

COHERENCE: Engage students by connecting prior knowledge to new ideas.

Students use pictures, numbers, or words to construct an argument related to a word problem. This prepares them for later in the lesson where they learn and use the elements of constructing a good math argument.

Whole Class BEFORE

1. Pose the Solve-and-Share Problem

Construct Arguments In this problem, students construct a math argument using addition to explain whether or not two combined quantities are enough to be equal to a third quantity.

2. Build Understanding

What are you asked to do? [Explain if Mia has enough tickets using pictures, numbers, or words.]
What operation could you use to find out? [Addition]

Small Group DURING

3. Ask Guiding Questions As Needed

How many movie tickets does Mia need? [8]
How many movie tickets does Mia have? [5]
How many more movie tickets does Mia buy? [3]

Whole Class AFTER

4. Share and Discuss Solutions

Start with students' solutions. If needed, project Rita's work to discuss how she made a math argument to determine whether or not Mia has enough movie tickets now.

5. Transition to the Visual Learning Bridge

You solved a problem by making a math argument to determine if two combined quantities were enough to equal a third quantity. Later in this lesson, you will continue to make math arguments using addition and subtraction in order to solve problems.

6. Extension for Early Finishers

If Mia had bought only 2 more tickets, would she have enough tickets now? Make a math argument to explain. [Sample answer: No; if she had 5 tickets and bought 2 more, she would have $5 + 2$, or 7 tickets in all. Since she needs 8 tickets, she would not have enough.]

Name _____

Solve & Share

Mia needs 8 movie tickets. She has 5 movie tickets. She buys 3 more. Does she have enough tickets now? Explain how you know with pictures, numbers, or words.

Math Practices and Problem Solving

Lesson 1-9

Construct Arguments

I can ...

construct math arguments using addition and subtraction.

Mathematical Practices

MP.8 Also MP.1, MP.2

Content Standards 1.OA.A.1

Thinking Habits

How can I use math to explain my work?

Is my explanation clear?

See margin for sample student work.

Topic 1 | Lesson 9

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Analyze Student Work

Rita's Work

$5 + 3 = 8$ tickets
She needs 8 tickets.
She has 8 tickets now.
She has enough tickets.

Rita uses numbers and words to make a math argument. She writes an addition equation to find that Mia has 8 tickets now and determines that she has enough tickets.

Renee's Work

5, 6, 7, 8
8 tickets now

Renee uses pictures, numbers, and words to make a math argument. She determines that Mia has 8 tickets now, but does not state whether Mia has enough tickets.

The *Visual Learning Bridge* connects students' thinking in Solve & Share to important math ideas in the lesson. Use the *Visual Learning Bridge* to make these ideas explicit.

Look at the problem. What do you need to do? [Sample answer: I need to make a math argument to show whether or not $6 - 2$ has the same value as $1 + 3$.] *What does it mean if $6 - 2$ has the same value as $1 + 3$?* [Sample answer: It means that they are equal; I will get the same number after I find $1 + 3$ and $6 - 2$.] *What can you use to make your math argument?* [Pictures, numbers, or words]

Construct Arguments *Look at the picture at the left. How does it show $6 - 2$?* [Sample answer: It shows 6 circles. Then it shows 2 of the circles crossed out since 2 is being subtracted. There are 4 circles left.] *Look at the picture on the right. How does it show $1 + 3$?* [Sample answer: It shows a group with 1 square and a second group with 3 squares. When the two groups of squares are combined, there are 4 squares in all.] *Why is $6 - 2$ equal to $3 + 1$?* [Sample answer: Because the pictures show that they are both equal to 4]

What is $6 - 2$ equal to? [4] *What is $1 + 3$ equal to?* [4] *Why do $6 - 2$ and $1 + 3$ have the same value?* [Sample answer: Because they are both equal to 4]

Visual Learning Bridge

Does $6 - 2$ have the same value as $1 + 3$?
Make a math argument using pictures, numbers, or words to explain.

How can I use math to show my thinking?

I can use pictures and numbers to make an argument.

I can use words and numbers to make an argument.

$6 - 2 = 4$
 $1 + 3 = 4$

$6 - 2$ equals 4 and $1 + 3$ equals 4.
 $6 - 2$ equals $1 + 3$.
So, they have the same value.

Do You Understand? Show Me! How are the two different math arguments alike and different?
Sample answer: Both show that $6 - 2$ and $1 + 3$ equal 4. One argument uses pictures and numbers. The other uses words and numbers.

Guided Practice Use pictures, numbers, or words to make an argument.

1. Marlen draws 6 tiles. 4 are red and the rest are green. How many green tiles did Marlen draw? Explain how you know.

$\square \square \square \square \square \square$ $\square \square$

Sample answer: Marlen drew 2 green tiles. The total is 6 tiles. 4 red tiles is one part. 2 green tiles is the other part.

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Topic 1 | Lesson 9

Do You Understand? Show Me! Make Sense and Persevere Have students look at the two math arguments in the Visual Learning Bridge. *What is one way that they are alike?* [They both show that $6 - 2$ and $1 + 3$ equal 4.] *What is one way that they are different?* [One argument uses pictures and the other uses words.] Discuss how you can make math arguments in different ways.

Coherence In the Visual Learning Bridge, students construct a math argument to determine if an addition expression and a subtraction expression have the same value. Students previously constructed math arguments in Kindergarten. This lesson also connects to the previous lessons in the topic as students construct math arguments about problems involving situations of adding to, taking from, putting together, taking apart, and comparing.



Ask the following Essential Question: *How can you solve problems by making a math argument using addition and subtraction?* [Sample answer: I can add or subtract numbers in the problem to decide whether or not numbers and expressions have the same value.]

Error Intervention: Item 1

If students have difficulty making a math argument, then have them color 4 of the tiles green and count the remaining tiles to determine how many of the tiles are red.

Reteaching Assign Reteaching Set H, p. 68.

✓ QUICK CHECK

Check mark indicates items for prescribing differentiation on the next page. Items 2 and 3 are each worth 1 point. The Performance Assessment on page 60 is worth 3 points.

Construct Arguments Listen and look for these behaviors as evidence that students are exhibiting proficiency with MP.3.

- provides complete and clear explanations of one's thinking and work
- decides if other students' explanations make sense; clarifies or improves other students' arguments
- uses counterexamples when appropriate

Item 3 Reasoning Remind students that this is a comparison problem. If they draw a picture to make a math argument, they should draw each group of pencils, line them up in a one-to-one manner, and then count the pencils in the larger group that do not have a match in the smaller group. *How many more pencils are in the larger group than the smaller group?* [5] *So, how many fewer pencils are in the smaller group than the larger group?* [5]

Item 5 Construct Arguments If students have difficulty getting started, have them look at the table. *How many cups did Alex sell on Friday?* [3] *On Saturday?* [5] *How could you make a math argument by drawing a picture?* [Sample answer: I could draw the cups in each group, line them up one-to-one, and then count the number of cups in the larger group without a partner in the smaller group.]

Item 6 Make Sense and Persevere Remind students to use the table to determine that Alex sold 2 cups on Sunday. *What operation would you use to find how many cups Alex sold on Monday? Explain.* [Sample answer: I would use addition since the number of cups he sold on Monday is 4 more than the number of cups he sold on Sunday.] *What addition equation could you write to find how many cups Alex sold on Monday?* [$2 + 4 = 6$]




Name _____

Independent Practice Use pictures, numbers, or words to make an argument.

Sample answers are shown.

✓ **2.** Jan has 7 pennies. She wants to buy a toy car for 3 pennies and a toy plane for 5 pennies. How many more pennies does Jan need? Explain.



3 + 5 = 8, so Jan needs 8 pennies. She has 7 pennies, so she needs 1 more penny.

✓ **3.** Lidia has 7 pencils. Jon has 2 pencils. Who has fewer pencils? How many fewer? Explain.



7 - 2 = 5

Jon has 5 fewer pencils than Lidia because 2 is 5 fewer than 7.

4. Higher Order Thinking Max has 3 apples. He buys 2 more apples. He wants to keep 1 apple for himself and give 1 apple to each of his 5 friends.



3 + 2 = 5 apples



1 + 5 = 6 people

Max will not have enough apples.

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Math Practices and Problem Solving

Performance Assessment

✓ **Lemonade Stand** Alex opens a lemonade stand.

The table shows how many cups he sold on certain days. Use this information to solve the problems below.

Cups Sold			
Friday	Saturday	Sunday	Monday
3	5	2	6

5. MP.3 Explain How many fewer cups did Alex sell on Friday than on Saturday? Use pictures, words, or numbers to make an argument.

2 fewer; Sample answer: I can subtract to compare. On Saturday Alex sold 5 cups. On Friday he sold 3 cups. $5 - 3 = 2$. So, Alex sold 2 fewer cups on Friday than on Saturday.

6. MP.1 Make Sense On Monday, Alex sells 4 more cups than he sold on Sunday. How many cups did Alex sell on Monday? Fill in the table. Explain how you know you are right.

6 cups; Sample answer: Alex sold 2 cups on Sunday. To find 4 more than 2, I add 2 and 4. Alex sold 6 cups on Monday.

2 + 4 = 6

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Name _____



Homework & Practice 1-9

Construct Arguments

Another Look! Bill has 3 bananas. He buys 3 more. He wants to keep 1 banana for himself and give bananas to 5 of his friends. Will Bill have enough bananas? Explain.



$$3 + 3 = 6 \text{ bananas}$$



$$1 + 5 = 6 \text{ people}$$

The picture and equations show that Bill will have enough bananas.



HOME ACTIVITY Tell your child the following story: "Jack has 2 marbles. He buys 1 more. He wants to keep 1 marble and give marbles to 3 of his friends. Will he have enough marbles?" Have your child use pictures, numbers, and his or her own words to explain whether or not Jack has enough marbles.



Use pictures, numbers, or words to make an argument.

1. Tim has 7 toy cars. He buys 2 more. He wants to keep 1 toy car for himself and give 1 to each of his 8 friends. Will Tim have enough toy cars? Explain.



$$7 + 2 = 9$$



$$1 + 8 = 9$$

Tim will have enough cars.

Performance Assessment

Walking Weekend Jada plans to walk a total of 8 miles in three days.

The table shows how many miles Jada walked on Friday and Saturday. How many miles does Jada need to walk on Sunday to reach her goal?

Miles Walked		
Friday	Saturday	Sunday
3	2	3



2. **MP.2 Reasoning** What do the numbers in the table mean? How can they help you solve the problem?

Sample answer: The numbers in the table tell how many miles Jada walked on Friday and Saturday. I can add them together to find how many miles Jada has walked before Sunday. That will help me find how close she is to her goal.

3. **MP.3 Explain** How many miles does Jada need to walk on Sunday to reach her goal? Complete the table above. Explain how you found your answer. Use pictures, words, or numbers for your argument.

3 miles; Sample answer: I know that Jada walked a total of 5 miles before Sunday. I can subtract that number from 8 to find the difference. $8 - 5 = 3$. Jada needs to walk 3 miles to meet her goal.