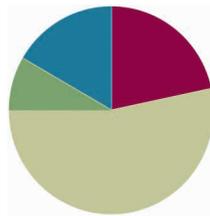


## Lesson 6

**Objective:** Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving *compare with difference unknown* word problems.

### Suggested Lesson Structure

■ Fluency Practice	(13 minutes)
■ Application Problem	(5 minutes)
■ Concept Development	(32 minutes)
■ Student Debrief	(10 minutes)
<b>Total Time</b>	<b>(60 minutes)</b>



### Fluency Practice (13 minutes)

- Addition with Cards **1.3D, 1.3E, 1.3F, 1.5G** (7 minutes)
- Speed Writing by Twos **1.3D** (3 minutes)
- Cold Call: Number Sentence Swap **1.3D** (3 minutes)

### Addition with Cards (7 minutes)

Materials: (S) Numeral cards 0–10 (Lesson 2 Fluency Template 2), counters (if needed)

Note: This review fluency activity strengthens students' abilities to add within and across ten.

Students sit in partnerships. Students shuffle or mix their numeral cards. Each partner places her deck of cards face down. Each partner flips over two cards and adds her cards together. The partner with the greater total keeps the cards played by both players that round. For example Player A draws 4 and 5 and gives the total 9. Player B draws 9 and 4 and gives the total, 13. Since  $9 < 13$ , Player B keeps the cards. If the sums are equal, the cards are set aside, and the winner of the next round keeps the cards from both rounds. At the end of the game, the players will each be left with 1 card. They each flip their last card over and the player with the highest card says the sum and collects the cards. Students continue to play as time allows.

### Speed Writing by Twos (3 minutes)

Materials: (T) Timer (S) Personal white board

Note: This fluency activity provides students practice with writing numbers while reinforcing adding 2.

Time students as they count by twos on their personal white boards from 0 to 40 as fast as they can. Students stand and hold up their boards when they get to 40. To add excitement to the game, give the class a point each time a student gets to 40, and see how many points the class can earn in two minutes. Record the points, and compare the score with the last time students completed the Speed Writing by Twos fluency activity. Keep a record of points scored each time this fluency activity is done to help students recognize and celebrate improvement.

### Cold Call: Number Sentence Swap (3 minutes)

Note: This fluency activity reviews the grade level standard of understanding subtraction as an unknown addend problem and prepares students for *compare with difference unknown* problem types in this lesson.

In Cold Call, the teacher asks a question, pauses to provide think time, and then randomly calls on a student or group of students to answer. This game helps motivate all students to mentally solve the problem so they are ready if they are chosen to answer.

T:  $4 +$  what number  $= 5$ ? (Pause.) Kira?

S: (Only Kira answers.) 1.

T: Good. So,  $14 +$  what number  $= 15$ ? (Pause to provide think time.) Marcus?

S: (Only Marcus answers.) 1.

Continue with the following suggested sequence:  $5 + \square = 7$ ,  $15 + \square = 17$ ,  $4 + \square = 8$ , and  $14 + \square = 18$ .

### Application Problem (5 minutes)

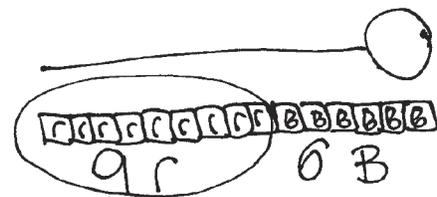
Julia's lollipop is 15 centimeters long. She measured the lollipop with 9 red centimeter cubes and some blue centimeter cubes. How many blue centimeter cubes did she use? Remember to use the RDW process.

Note: This problem enables students to continue working with *take apart with difference unknown* problem types within the context of measurement. During the Student Debrief, students compare the length of Julia's lollipop with another item from the lesson to determine how much longer the lollipop is compared to the other item.



#### NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

When playing games where students are randomly called on to answer, adjust wait time for certain students. Some students may also benefit from hearing the question ahead of time so that they feel prepared when put on the spot in front of their peers.



$$9 + \boxed{6} = 15$$

She used 6  
blue cubes.

## Concept Development (32 minutes)

**Materials:** (T) Projector, unsharpened pencil (19 cm), new crayon (9 cm), small paper clip (3 cm), dry erase marker (12 cm), jumbo craft stick (15 cm), new colored pencil (17 cm), centimeter cubes  
(S) Bag with centimeter cubes, bag with various classroom objects (Lesson 4), personal white board

Gather students in the meeting area.

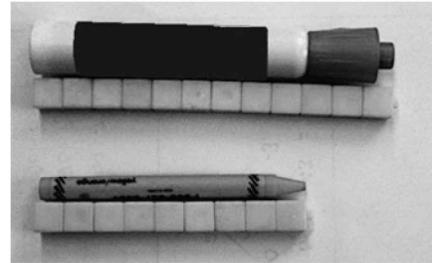
- T: (Project dry erase marker, crayon, and new colored pencil in a disorganized way.) Without measuring, can you order these three objects from shortest to longest?
- S: It's hard to tell which is longer or shorter. → They seem too similar. We couldn't tell for sure. → Let's straighten them out and line up the endpoints. → We should use our centimeter cubes to be sure.
- T: (Align the endpoints of each object.) Now can you order the objects from shortest to longest? Share your thoughts with your partner.
- S: (Discuss.) The objects from shortest to longest are the crayon, the dry erase marker, and the colored pencil.
- T: (Order the objects as stated by students.) Yes. That's correct!
- T: What can we do to describe their lengths more precisely? How can we tell how long each item is?
- S: We can measure them!
- T: Take the dry erase marker, crayon, and colored pencil out of your bag, and let's measure each item using centimeter cubes. On your personal white board, write down the length of each item.
- S: (Measure the items and record their lengths.)
- T: What is the length of each item?
- S: (Share the measurements. Record the length next to each object.)
- T: (Touch each object while describing its length.) The colored pencil, which is 17 centimeters, is longer than the dry erase marker, which is 12 centimeters. The dry erase marker is longer than the crayon, which is only 9 centimeters. What can you say about the colored pencil compared to the crayon?
- S: The colored pencil is longer than the crayon!
- T: Look at the measurements next to each object in order from shortest to longest. What do you notice? Talk with your partner. (Circulate and listen.)
- S: (Discuss.) The numbers get larger. → The measurements are larger.



### NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

When students turn and talk with a partner, they are hearing different ways their peers are thinking about measurement. Hearing others talk about measurement more than once helps English language learners understand and acquire language around this topic.

- T: Let's compare the number of cubes we used to measure the marker with the number of cubes we used to measure the crayon. (Align the two objects' endpoints. Use centimeter cubes to show their length, as shown on the next page.) Remind me, which object is longer?
- S: The marker.
- T: How many centimeter cubes did you use to measure the marker?
- S: 12 cubes.
- T: How many centimeter cubes did you use to measure the crayon?
- S: 9 cubes.
- T: How many more cubes did you need to use to measure the marker compared to the crayon? If you need to, put your rows of cubes right next to each other so you can see the extra cubes you used more easily.
- S: (Adjust rows of cubes as necessary to compare.) Three more centimeter cubes.
- T: How did you know? Talk with your partner about your thinking. Think about the number sentence that would match what you did.
- S: I lined them up and counted on the extras. Niiine, 10, 11, 12. That's 3 more cubes. → I thought, "9 plus the mystery number gives me 12." Then from 9, I counted on to get to 12. → I took away 9 from 12 and got 3.
- T: (Elicit and write a number sentence corresponding to each student response.) You are right! Let's try some more.



Repeat the process with a new pencil, a paper clip, and a craft stick. After comparing the length of two rows of cubes for two of the objects and identifying the difference, encourage students to write the number sentences and the statement on their personal white boards.

Note: Comparing centimeter cubes is a natural opportunity to concretely experience the *compare with difference unknown* problem type. Lesson 9 is dedicated to focusing attention on this objective. Make note of the particular challenges students may be facing, and use these specific examples to help shape the Concept Development work during Lesson 9.

### Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students should solve these problems using the RDW approach used for Application Problems.

Name Maria Date \_\_\_\_\_

1. Order the bugs from longest to shortest by writing the bug names on the lines. Use centimeter cubes to check your answer. Write the length of each bug in the space to the right of the pictures.

The bugs from longest to shortest are:

caterpillar      fly      bee

Fly	Caterpillar	Bee
		
<u>5</u> centimeters	<u>7</u> centimeters	<u>4</u> centimeters

2. Order the objects below from shortest to longest using the numbers 1, 2, and 3. Use your centimeter cubes to check your answers, and then complete the sentences for d, e, f, and g.

a. The noise maker: 3

b. The balloon: 1

c. The present: 2





d. The present is about 5 centimeters long.

e. The noise maker is about 8 centimeters long.

f. The balloon is about 4 centimeters long.

g. The noise maker is about 3 centimeters longer than the present.

## Student Debrief (10 minutes)

**Lesson Objective:** Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving *compare with difference unknown* word problems.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

Any combination of the questions below may be used to lead the discussion.

- What did we do to figure out precisely how much longer or shorter one object was than another today?
- Can you think of a time when it would be helpful or important to say that something is longer by an exact amount rather than just saying it is longer or shorter?
- Turn and talk to your partner about how you solved Problem 3. How are your strategies similar and/or different?
- How was solving Problem 5 different from solving Problems 3 and 4? Explain your thinking.
- Look at your Application Problem. How much longer is Julia’s lollipop than the new crayon? Talk with a partner to discuss how you know.

Note: Be sure to send the bag of cubes home for students to complete their homework.

## Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help with assessing students’ understanding of the concepts that were presented in today’s lesson and planning more effectively for future lessons. The questions may be read aloud to the students.

Use your centimeter cubes to model each length and answer the question. Write a statement for your answer.

3. Peter’s toy T. rex is 11 centimeters tall, and his toy Velociraptor is 6 centimeters tall. How much taller is the T. rex than the Velociraptor?

T-Rex is 5 centimeters taller.

4. Miguel’s pencil rolled 17 centimeters, and Sonya’s pencil rolled 9 centimeters. How much less did Sonya’s pencil roll than Miguel’s?

Sonya’s pencil rolled 8 centimeters less.

5. Tania makes a cube tower that is 3 centimeters taller than Vince’s tower. If Vince’s tower is 9 centimeters tall, how tall is Tania’s tower?

Tania’s tower is 12 centimeters.

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Order the bugs from longest to shortest by writing the bug names on the lines. Use centimeter cubes to check your answer. Write the length of each bug in the space to the right of the pictures.

The bugs from longest to shortest are

\_\_\_\_\_

Fly



\_\_\_\_\_ centimeters

Caterpillar



\_\_\_\_\_ centimeters

Bee



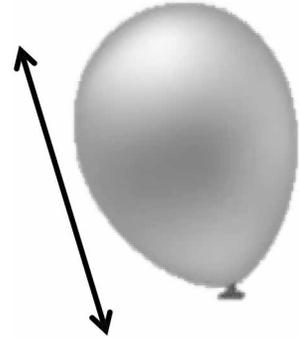
\_\_\_\_\_ centimeters

2. Order the objects below from shortest to longest using the numbers 1, 2, and 3. Use your centimeter cubes to check your answers, and then complete the sentences for problems d, e, f, and g.

a. The noise maker: \_\_\_\_\_



b. The balloon: \_\_\_\_\_

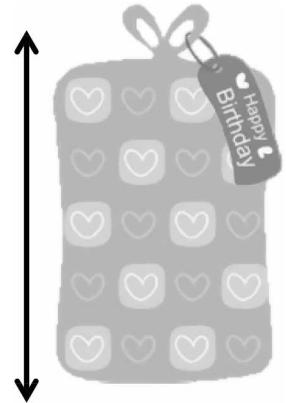


c. The present: \_\_\_\_\_

d. The present is about \_\_\_\_\_ centimeters long.

e. The noise maker is about \_\_\_\_\_ centimeters long.

f. The balloon is about \_\_\_\_\_ centimeters long.



g. The noise maker is about \_\_\_\_\_ centimeters longer than the present.

Use your centimeter cubes to model each length, and answer the question. Write a statement for your answer.

3. Peter's toy T. rex is 11 centimeters tall, and his toy Velociraptor is 6 centimeters tall. How much taller is the T. rex than the Velociraptor?

4. Miguel's pencil rolled 17 centimeters, and Sonya's pencil rolled 9 centimeters. How much less did Sonya's pencil roll than Miguel's?

5. Tania makes a cube tower that is 3 centimeters taller than Vince's tower. If Vince's tower is 9 centimeters tall, how tall is Tania's tower?



Name \_\_\_\_\_

Date \_\_\_\_\_

Read the measurements of the tool pictures.

The wrench is 8 centimeters long.



The screwdriver is 12 centimeters long.



The hammer is 9 centimeters long.



1. Order the pictures of the tools from shortest to longest.

\_\_\_\_\_

2. How much longer is the screwdriver than the wrench?

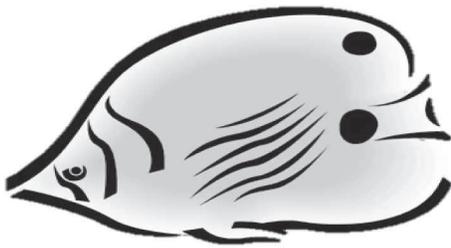
The screwdriver is \_\_\_\_\_ centimeters longer than the wrench.

Name \_\_\_\_\_

Date \_\_\_\_\_

- Natasha's teacher wants her to put the fish in order from longest to shortest. Measure each fish with the centimeter cubes that your teacher gave you.

A



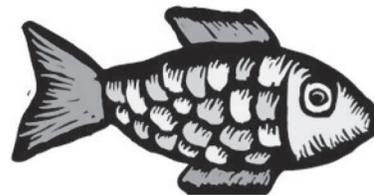
\_\_\_\_\_ centimeters

B



\_\_\_\_\_ centimeters

D



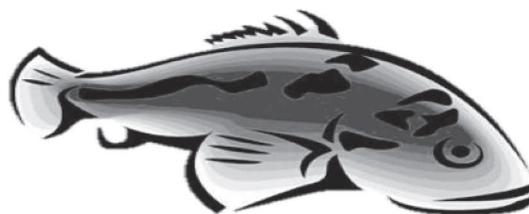
\_\_\_\_\_ centimeters

C



\_\_\_\_\_ centimeters

E



- Order fish A, B, and C from longest to shortest. \_\_\_\_\_ centimeters

\_\_\_\_\_

3. Use all of the fish measurements to complete the sentences.
- Fish A is longer than Fish \_\_\_\_\_ and shorter than Fish \_\_\_\_\_.
  - Fish C is shorter than Fish \_\_\_\_\_ and longer than Fish \_\_\_\_\_.
  - Fish \_\_\_\_\_ is the shortest fish.
  - If Natasha gets a new fish that is shorter than Fish A, list the fish that the new fish is also shorter than.

Use your centimeter cubes to model each length, and answer the question.

4. Henry gets a new pencil that is 19 centimeters long. He sharpens the pencil several times. If the pencil is now 9 centimeters long, how much shorter is the pencil now than when it was new?
5. Malik and Jared each found a stick at the park. Malik found a stick that was 11 centimeters long. Jared found a stick that was 17 centimeters long. How much longer was Jared's stick?