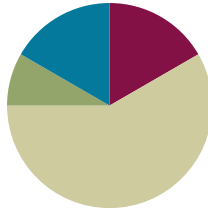# Lesson 8

Objective: Understand the need to use the same units when comparing measurements with others.

Suggested Lesson Structure

■ Fluency Practice   (10 minutes)

■ Application Problem   (5 minutes)

■ Concept Development   (35 minutes)

■ Student Debrief   (10 minutes)

Total Time   **(60 minutes)**

Fluency Practice (10 minutes)

- Speed Writing **1.OA.5**   (3 minutes)
- Race and Roll Addition **1.OA.6**   (4 minutes)
- Cold Call: Addition and Subtraction Within 20 **1.OA.6**   (3 minutes)

Speed Writing (3 minutes)

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

Note: Throughout the first two modules, students have been counting by ones, twos, fives, and tens, as well as the Say Ten way.

Review of these counting patterns prepares students for Module 4 by strengthening their understanding of place value and their ability to add and subtract. Many students are familiar with skip-counting. Though skip-counting by twos, fives, and tens is not a Grade 1 standard, the teacher can incorporate these counting patterns, if appropriate.

Choose a counting pattern with which students need more practice. Students count on their boards by the chosen pattern for one minute. Tell them to erase their boards but to remember how high they counted. Then, give them another minute to try to count even higher.

> **NOTES ON MULTIPLE MEANS OF REPRESENTATION:**
>
> If there are students who are unable to count by the chosen pattern without numerical visual cues at this point in the year, use a tool such as a number line or a hundreds chart. Students can color the pattern on the number line or hundreds chart so that they have a visual representation as they count on their own.

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Race and Roll Addition (4 minutes)

Materials: (S) 1 die per pair

Note: This fluency activity reviews the grade level standard of adding within 20.

Partners start at 0. Partners take turns rolling a die and then saying a number sentence by adding the number rolled to the total. (For example, Partner A rolls 6 and says, "0 + 6 = 6." Partner B rolls 3 and says, "6 + 3 = 9.") They continue rapidly rolling and saying number sentences until they get to 20, without going over. (For example, if partners are at 18 and roll 5, they take turns rolling until one of them rolls 2 or 1 two times.) Partners stand when they reach 20.

Cold Call: Addition and Subtraction Within 20 (3 minutes)

Note: This review fluency activity addresses the Grade 1 standard of adding and subtracting within 20 and practices including units when adding length.

For directions on how to play Cold Call, refer to Lesson 6.

- T: 4 centimeters + 2 centimeters is…? (Pause to provide think time.) Only students with pets answer. Ready?
- S: (Only students with pets answer.) 6 centimeters.
- T: 14 centimeters + 2 centimeters is…? (Pause to provide think time.) Only students without pets answer. Ready?
- S: (Only students with no pets answer.) 16 centimeters.

Continue playing, practicing addition and subtraction within 20. As always, scaffold instruction by beginning with easy problems and slowly increasing the complexity.

Application Problem (5 minutes)

I have 2 crayons. Each crayon is 9 centimeter cubes long. I also have a paintbrush. The paintbrush is the same length as 2 crayons. How many centimeter cubes long is the paintbrush? Use centimeter cubes to solve the problem. Then, draw a picture, and write a number sentence and a statement to answer the question.
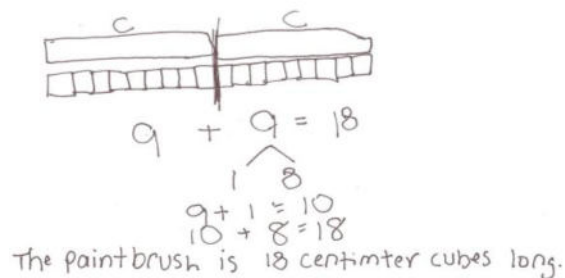
Note: Students continue to use concrete materials to consider problem situations. Continue to encourage students to build each part of the story, using the cubes to think through what they know and to identify what they do not yet know. During the Student Debrief, students demonstrate their strategies for solving the problem. The example above shows one way in which students may solve this Application Problem. Some students may simply align the cubes and solve without drawing.

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Concept Development (35 minutes)

Materials: (T) Chart with measuring rules (Lesson 7) (S) 1 lunch bag of 2 new crayons, 10 linking cubes, and 10 centimeter cubes per pair

Gather students in the meeting area in a semicircle.

T: We have measured with many different tools so far. Who can name the different tools we have used to measure?

S: String. → Strip of paper (or pipe cleaners). → Centimeter cubes. → Centimeter ruler. → Small paper clips. → Large paper clips.

Review the rules for measuring properly using the chart created in Lesson 7.

T: (Distribute a lunch bag with materials listed above to each pair of students.) Take the materials out of your bag. You and your partner are going to measure the new crayons with the other materials in your bag. Don't forget about the rules for proper measuring!

T: The new crayon is how many cubes long? (Note: Do not tell students which cubes to use.)

S: Mine was 9 cubes long. → Mine was 3 cubes long.

T: That's interesting. These crayons are brand new, and they came from the same box, which means they should be the same size. (Match up the crayons.) And they are! Why are we getting different measurements?

Ask students if they measured properly by going over each rule, repeating the last rule twice to ensure that no one mixed the cubes to measure.

T: Why do we have different measurements? Talk with your partner.

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S: We were measuring with different cubes. We didn't mix them up, but I measured with smaller cubes, the centimeter cubes. My partner measured with bigger cubes, the linking cubes. → We didn't do anything wrong. We measured correctly. It's just that our answers are different because we each used a different size cube to measure.

T: Great thinking! Even though you measured properly, it sounds like we need to add a rule for *sharing and communicating* about our measurements. When someone says, "My crayon is 3 cubes long," and another person says, "No! It's 9 cubes long," this can become a frustrating conversation because they are both right! So, how can we help these two students?

S: They have to say, "My crayon is 3 *linking* cubes long," or "My crayon is 9 *centimeter* cubes long." → We have to say what type of tool we used to measure!

T: Yes! We need to be precise when we communicate about which length unit we used to measure. Practice measuring more items and communicating their measurements precisely on your Problem Set.

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Highlight vocabulary that could be unfamiliar for English language learners. Vocabulary in this lesson that might be highlighted is *sharing* and *communicating*. Provide some examples of how students share and communicate outside of math so they can make the connection.

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Give each student, or pair of students, *one* set of the following measuring tools:

- 20 small paper clips
- 20 large paper clips
- 20 toothpicks
- 20 centimeter cubes

Ask students to measure the classroom objects with their assigned measuring tools. Remind students to write the word *about* if their measurement is not exactly a certain length unit long. Circulate and ask students about their measurements, encouraging them to use the length unit label as they share. (Note: The use of the word *about* was first introduced in Lesson 4. Remind students that if they are going to use this word, the appropriate way to use it is, for example, "My pretzel rod is about 18 centimeter cubes long.")

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.

For the Problem Set and Homework, each student gets *one* of the following: bag of 20 small paper clips, bag of 20 large paper clips, bag of 20 toothpicks, or bag of 20 centimeter cubes. Be sure to have each student take the bag home to complete the Homework assignment.

Student Debrief (10 minutes)

Lesson Objective: Understand the need to use the same units when comparing measurements with others.

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 who used the same length unit before going over answers as a class. 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.

- Compare your measurements to your partner's (a student who used a different tool). How are your answers different?
- Why do we need a label, or a length unit, along with a number when we are writing our measurements? Why can't we use the number only?

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- How can it be true that when Student A says the glue stick is X paper clips long and Student B says it is Y centimeter cubes long, they are both correct?

- Student A says she used 9 centimeter cubes to measure the crayon. Student B says she used 3 small paper clips to measure the crayon. Why do you think she needed so many more centimeter cubes to measure the crayon compared to using the small paper clips?

- Pick three objects from your sheet. Name your items in order from shortest to longest. Name your items in order from longest to shortest.

- Would the order change if you were using a different measuring tool to measure length? Why or why not?

- Display an example of the Problem Set for Lesson 7. Look at the caterpillar on each page. How do our measurements on each page relate to today's lesson?

- Look at your Application Problem. How much longer is the paintbrush compared to one crayon? Why is it important that you included the label *centimeters* or *centimeter cubes* after the number in your statement?

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.

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Name _____   Date _____

Circle the length unit you will use to measure. Use the same length unit for all objects.

Small Paper Clips   Large Paper Clips

Toothpicks   Centimeter Cubes

Measure each object listed on the chart, and record the measurement. Add the names of other objects in the classroom, and record their measurements.

Classroom Object	Measurement
a. glue stick	
b. dry erase marker	
c. unsharpened pencil	
d. personal white board	
e.	
f.	
g.	

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Name _____   Date _____

Circle the length unit you will use to measure. Use the same length unit for all objects.

Small Paper Clips   Large Paper Clips

Toothpicks   Centimeter Cubes

Choose two objects in your desk that you would like to measure. Measure each object, and record the measurement.

Classroom Object	Measurement
a.	
b.	

Name _____   Date _____

Circle the length unit you will use to measure. Use the same length unit for all objects.

Small Paper Clips   Large Paper Clips

Toothpicks   Centimeter Cubes

1. Measure each object listed on the chart, and record the measurement. Add the names of other objects in your house, and record their measurements.

Home Object	Measurement
a. fork	
b. picture frame	
c. pan	
d. shoe	

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Home Object	Measurement
e. stuffed animal	
f.	
g.	

Did you remember to add the name of the length unit after the number? Yes   No

2. Pick 3 items from the chart. List your items from longest to shortest:

a. _____

b. _____

c. _____

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              measurements with others.

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