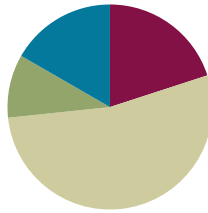# Lesson 2

Objective: Use iteration with one physical unit to measure.

Suggested Lesson Structure

■ Fluency Practice   (12 minutes)
■ Application Problems   (6 minutes)
■ Concept Development   (32 minutes)
■ Student Debrief   (10 minutes)

Total Time   **(60 minutes)**

Fluency Practice (12 minutes)

▪ Say Ten Counting **2.NBT.1**   (2 minutes)
▪ Say Ten Counting to the Next Ten **2.NBT.1**   (4 minutes)
▪ Make Ten to Add **2.OA.2**   (6 minutes)

Note: This fluency reviews skills taught in Module 1 and will reinforce using place value concepts to add.

Say Ten Counting (2 minutes)

T: Let's count the *say ten way*. When I say 52, you say 5 tens 2. Ready? 67.
S: 6 tens 7.
T: 98.
S: 9 tens 8.
T: 100.
S: 10 tens.
T: 113.
S: 11 tens 3.

Continue with possible sequence: 103, 123, 127, 137, 132, 142, 143, 163, 168, 188, 198, 200.

Say Ten Counting to the Next Ten (4 minutes)

T: Let's add to make the next ten the say ten way. I say 5 tens 2, you say 5 tens 2 + 8 = 6 tens. Ready? 6 tens 7.
S: 6 tens 7 + 3 = 7 tens.
T: 5 tens 1.
S: 5 tens 1 + 9 = 6 tens.

T: 7 tens 8.

S: 7 tens 8 + 2 = 8 tens.

Continue with possible sequence: 8 tens 4, 8 tens 5, 8 tens 9, 9 tens 6, 9 tens 3, and 9 tens 9.

Make Ten to Add (6 minutes)

T: Let's make 10 to add. If I say 9 + 2, you say 9 + 2 = 10 + 1. Ready? 9 + 3.

S: 9 + 3 = 10 + 2.

T: Answer?

S: 12.

T: 9 + 5.

S: 9 + 5 = 10 + 4.

T: Answer?

S: 14.

Continue with possible sequence: 9 + 7, 9 + 6, 9 + 8, 8 + 3, 8 + 5, 7 + 4, and 7 + 6.

T: On your personal board, write at least 3 other similar examples.

Application Problem (6 minutes)

Kaela is making 4 bracelets, and she wants them to be the same length. She found a jar of square Lego pieces that are all about the size of her thumbnail. How can she use these Lego pieces to measure the length of the bracelets? Draw a picture and use words to explain your thinking.

What could Kaela do if she only had one Lego piece?
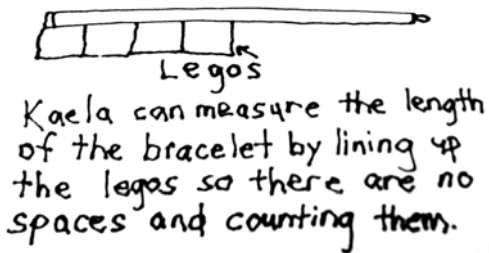
> **NOTES ON ROUNDING MEASUREMENTS:**
>
> When students are measuring with centimeter cubes, teach them to round up or down depending on the situation. If the length past the exact centimeter mark is half a centimeter, students will round up, if it is less, students will round down. Teach students to use words such as *about, approximately, exactly,* and *around* to describe their measurements.

Note: Today's problem reviews the concept of measuring using multiple copies of the same physical unit. The second question sets the stage for today's objective, using iteration with one physical unit to measure. Students can brainstorm their ideas with a partner and create a shared picture and written statement to illustrate their understanding. Then, students return to the carpet with their completed work and explain their reasoning orally.

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Concept Development (32 minutes)

Materials: (T/S) Baggie with 1 centimeter cube, 1 long paper clip, 3 linking cubes (joined), 1 crayon, dry erase marker, 1 post-it note, 1 index card, a pencil, and paper

T: (Call students to the carpet.) Yesterday we measured a pencil box together using many centimeter cubes. Today we will measure some other objects, but this time we will only use one centimeter cube.

T: Think back to the two different ways we measured the pencil boxes yesterday. Ask your partner, what was I doing wrong yesterday?

S: You left spaces between the cubes. → You were supposed to put the cubes right next to each other.

T: How could we measure with one cube? Turn to your neighbor and tell them what you think.

S: You could put the cube down and then put your finger down to show where it ends. → You could mark the end with a pencil.

T: (Teacher models measuring the paper clip with one centimeter cube using the *mark and move forward* technique. Use a document camera or an overhead for students to be able to see. If such technology is unavailable, use a thousands block base-ten cube to measure a line drawn on the board to show students the mark and move forward technique.)

T: Watch my measurement strategy. I make a mark where the cube ends. (Do so.) Then I move my cube forward so that the mark is right at the beginning of the cube. (Do so.) I mark where the cube ends again. Now talk to your partner about what I'll do next.

MP.6

S: Move the cube forward so the new mark is at the beginning of the cube!

T: What did you notice about how I measured with my centimeter cube?

S: You didn't leave any space between your pencil mark and the centimeter cube. → Your pencil line is very tiny. → You put the edge of the cube down right on the line.

T: What do you notice about the spaces I've made? Talk with your partner.

S: They're all the same length.

T: When I measured my paperclip the length was just a little less than 3 cm. I can say my paperclip is *about* 3 cm because it is very close. If the measurement is halfway or more to the next centimeter we round up. Otherwise we round down.

> **NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:**
>
> Get moving! Demonstrate the iteration strategy by calling a student forward to measure the chalkboard with his/her body, placing marks on either side of the student's shoulders and continuing to move forward along the length of the chalkboard.

T: Now it's your turn to measure. Open your bag and take out the paper clip and the centimeter cube.

T: Put the paper clip on your paper. Now put your centimeter cube down alongside the paper clip. Make sure your centimeter cube is exactly even with the start of your paper clip.

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MP.6

S: (Students begin measuring as the teacher walks them through the mark and move forward strategy.)

T: How many centimeters long is the paper clip? Thumbs up when you have your answer.

S: 4 centimeters!

T: Let's measure the crayon this time. Give me a thumbs-up when you know the length of the crayon. (Discuss answer with class.)

Next, have the students measure the linking cube stick. Send students to their seats to measure the remaining items in their bags. Keep students who need extra support on the carpet to guide them.

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

For Problem 5 on the Problem Set, clarify and make connections to important math concepts: repeating equal units, mark and move forward strategy.

Model written response starters, such as, "Elijah's answer will be incorrect, because …"

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 solve these problems using the RDW approach used for Application Problems.

Student Debrief (10 minutes)

Lesson Objective: Use iteration with one physical unit to measure.

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 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. You may choose to use any combination of the questions below to lead the discussion

- Compare your answers to Problems 1–3 with a partner? What did you do to measure accurately?

- What were your thoughts about Elijah's estimation in Problem 5? (Students share answers. Elicit and reinforce the repetition of equal units being necessary to measure.)

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- Turn and talk: Why do you think I called today's strategy for measuring the mark and move forward strategy?

- Which method for measuring do you think is better, easier, or quicker? Measuring with multiple cubes or measuring with just one cube? Why?

- During our lesson, we measured three linking cubes with centimeter cubes. Could we use a linking cube to measure instead of a centimeter cube? Let's measure the picture of Elijah's notebook with one linking cube. What do you notice?

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.
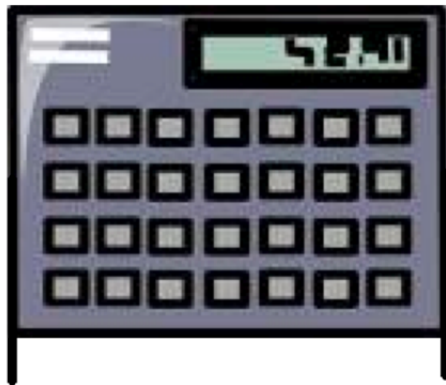
Name _____   Date _____

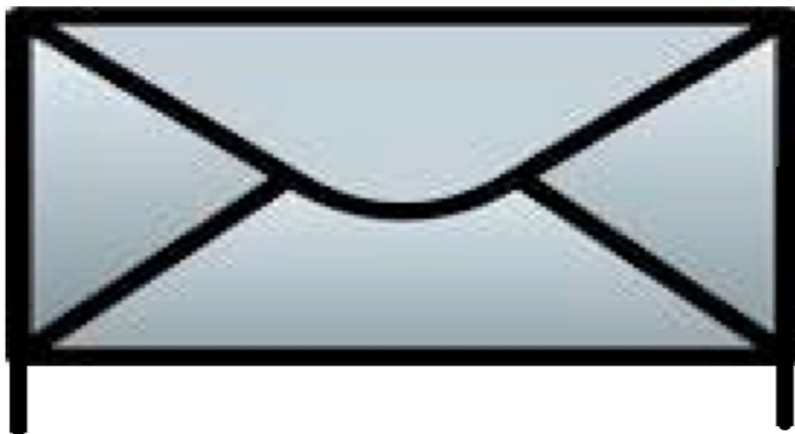Find the length of each object using one centimeter cube. Mark the endpoint of each centimeter cube as you measure.
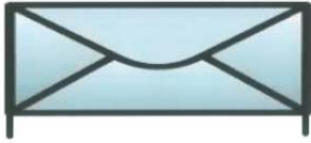
1. The picture of the eraser is about _____ centimeter cubes

2. The picture of the calculator is about _____ centimeter cubes long.

3. The length of the picture of the envelope is _____ centimeters.

4. Jayla measured her puppet's legs to be 23 centimeters long. The stomach was 7 centimeters long and the neck and head together were 10 centimeters long. What was the total length of the puppet?

5. Elijah begins measuring his math book with his centimeter cube. He marks off where each cube ends. After a few times, he decides this process is taking too long and starts to guess where the cube would end and then marks it.

1 2 3 4   5 6
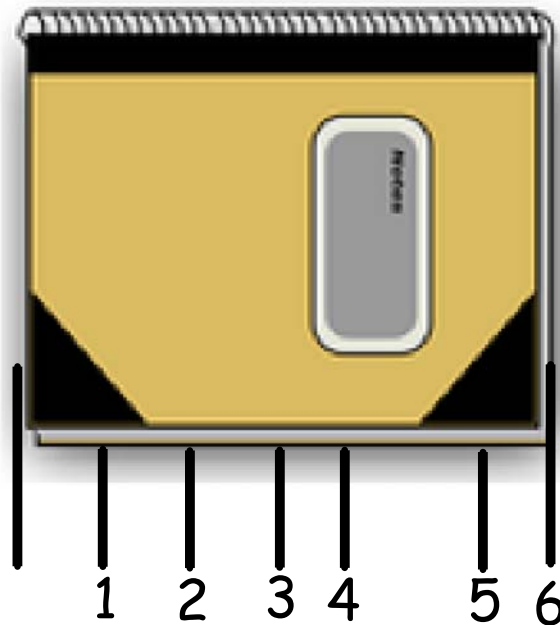
Explain why Elijah's answer will be incorrect.

_____

_____

_____
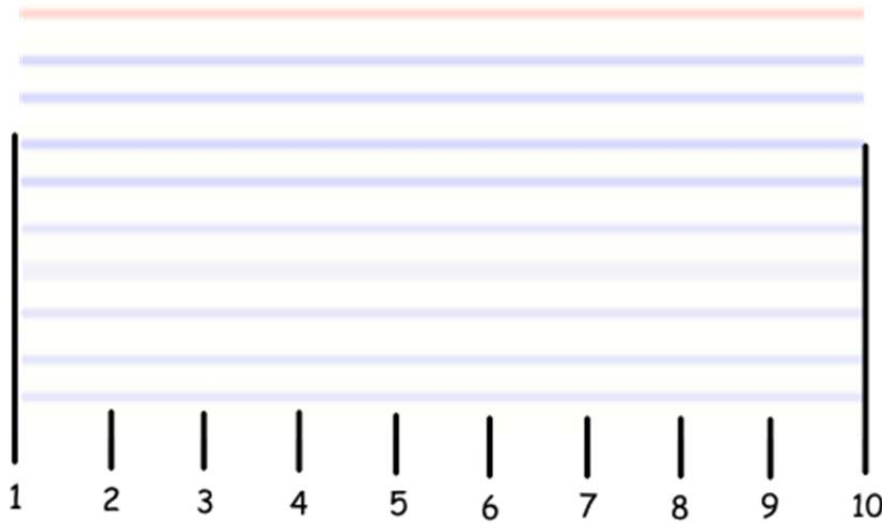
Name _____   Date _____

1. Matt measured his index card using a centimeter cube. He marked the endpoint of the cube as he measured. He thinks the index card is 10 centimeters long. The picture below illustrates Matt's thinking.

a. Is Matt's work correct? Explain why or why not.

    _____

    _____

    _____

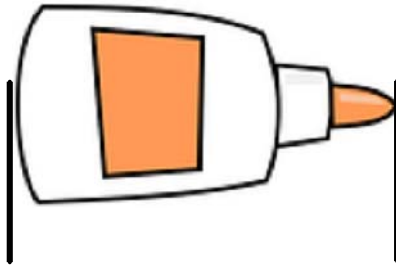b. If you were Matt's teacher what would you tell him?
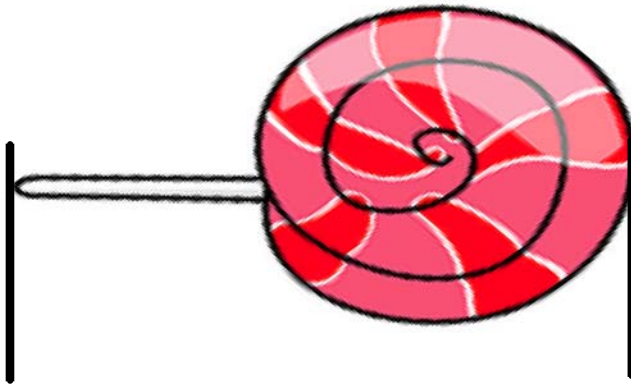
    _____

    _____

    _____

Name _____   Date _____

Use the centimeter cube on the next page to measure the length of each object.
Mark the endpoint of the cube as you measure.

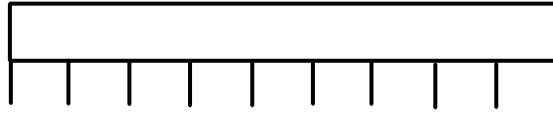1. The picture of the glue is about _____ centimeters long.

2. The picture of the lollypop is about _____ centimeters long.

3. The picture of the scissors is about _____ centimeters long.

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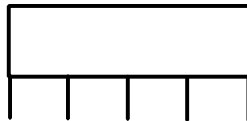
Red Ribbon

Blue Ribbon

Yellow Ribbon

a. How long is the red ribbon? _____ centimeters long.

b. How long is the blue ribbon? _____ centimeters long.

c. How long is the yellow ribbon? _____ centimeters long.

d. Which ribbon is the longest?   Red   Blue   Yellow

e. Which ribbon is the shortest?   Red   Blue   Yellow

f. The total length of all the ribbons is _____ centimeters.

Cut out this centimeter cube to measure the length of the glue, lollypop, and scissors.