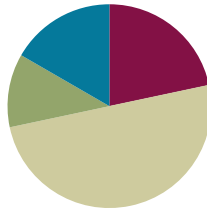


Lesson 4

Objective: Measure various objects using centimeter rulers and meter sticks.

Suggested Lesson Structure

■ Fluency Practice	(13 minutes)
■ Application Problems	(7 minutes)
■ Concept Development	(30 minutes)
■ Student Debrief	(10 minutes)
Total Time	(60 minutes)



Fluency Practice (13 minutes)

- Related Facts on a Ruler **2.OA.2** (4 minutes)
- Related Facts **2.OA.2** (9 minutes)

Note: This fluency utilizes the ruler made in Lesson 3 to fluently review related facts.

Related Facts on a Ruler (4 minutes)

- T: Put your finger on 3 on the ruler you made yesterday. Raise your hand when you know 8 more than 3. Ready?
- S: 11.
- T: Give a number sentence starting with 3 that shows 8 more.
- S: $3 + 8 = 11$.
- T: Give a number sentence to show 3 more than 8.
- S: $8 + 3 = 11$.
- T: Put your finger on 11. Raise your hand when you know 3 less than 11.
- S: 8.
- T: Number sentence?
- S: $11 - 3 = 8$.
- T: Give a number sentence to show 8 less than 11.
- S: $11 - 8 = 3$.



NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Provide support:

- Sprints are only 1 minute, but for students who don't excel under pressure, you may give them the chance to practice the sprint at home the night before it is administered.
- Guide personal goal-setting within a time frame (e.g., finish more problems correctly on the second sprint). Have students ask, "How did I improve?"
- Allow the class to finish Sprint A after the minute has ended to help prepare for Sprint B.

Continue with possible sequence: 9, 2, 11; 4, 9, 13; 8, 5, 13; 7, 5, 12; 9, 6, 15.

Sprint: Related Facts (9 minutes)

Materials: (S) Related Facts Sprint

Application Problem (7 minutes)

Cameron wants to draw a canoe that is 16 centimeters long. He has 16 centimeter cubes, a centimeter ruler, and 16 paperclips of various sizes in his desk. Which measurement tool would you recommend for Cameron? Why? Write a sentence to explain your thinking.

I would tell Cameron to use a cm. ruler because it's the easiest and quickest to use. Plus you can't use things that are different sizes.

What if Cameron was asked to paint a much larger, life-size canoe as scenery for the school play? Is there any other way he could measure it? (Students share responses orally.)

Note: Today's problem asks students to synthesize their understanding of choosing an appropriate measurement tool, one that is accurate and efficient. Since students are being asked to write, assign them partners such that each partnership has a strong writer who is comfortable with language and vocabulary. Students then share their responses in small groups. Highlight one or two exemplary responses after small group sharing. The second portion of the problem sets the stage for the introduction of meter sticks and meter tape as another measurement tool

Concept Development (30 minutes)

Materials: (S) Centimeter rulers made in Lesson 3, meter sticks, meter tape, one text book per student

- T: Let's redecorate the room. I want to measure the carpet to see how long our new one should be.
- T: Can someone bring his ruler up from yesterday to measure the carpet?
- S: (Measures the carpet with centimeter ruler.)
- T: That took a very long time! Maybe we should have used this! (Hold up the meter stick.)
- T: Look at these tools I have! (Lay a meter stick and meter tape on the ground.) Can I have two volunteers lay some rulers down on top of the **meter stick** and the meter tape to measure their length in centimeters?
- MP.5** T: How many centimeters are in one **meter**?
- S: It is 100 cm. → It's just a little longer than 3 centimeter rulers.
- T: This is another unit of measure called a meter. When we are measuring things that are more than 100 cm we can measure in meters.
- T: We use a meter stick exactly the same way we use a ruler.



**NOTES ON
MULTIPLE MEANS
OF ENGAGEMENT:**

Assign students a *measurement discovery buddy* to clarify directions and/or processes. Buddies compare answers to check their work.

MP.5

- T: (Call on a volunteer to measure the rug with a meter stick.)
- T: I notice that the rug is 4 meters and some more. When a measurement does not reach an exact measurement we have to round up or down to whichever number is closer.
- T: Since the rug is just a little more than 4 meters we can say it is *about* 4 meters long.
- T: We use the meter tape in exactly the same way. When would the meter tape be an appropriate measuring tool?
- S: When I am measuring my head. → When I am measuring something round. → When I am measuring something that is not straight.
- T: I want to build a bookshelf for our science books. Let's use the centimeter rulers we made yesterday to measure the length of our books to see how high the shelf should be. Turn to your neighbor and estimate the length of your science book. (Students estimate.)
- T: Measure your science book from top to bottom. How high should my shelf be?
- S: (Share answers.)
- T: Now we need to see how long the shelf should be to hold all the books. (Call students up table by table to stack their books in one pile.)
- T: Which is the best tool to measure our stack of books?
- S: The meter stick or the meter tape!
- T: (Call on a student volunteer to measure the stack of books.)
- T: The bookshelf will need to be 20 cm high and 92 cm long. Work with your partner and use your measurement tools to measure spaces around the room. Where will the bookshelf fit?
- S: (Work in pairs to find a place for the bookshelf.)
- T: (Call students back together and share places the bookshelf could go.)
- T: Now you will have some time to continue planning for our redecoration. Measure objects around the room using an appropriate measuring tool. Record your measurements as you go. (Present Problem Set.)

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.

Name Zach Date April 2, 2013

1. Measure 5 things in the classroom with a centimeter ruler. List the five things and their length in centimeters.

Object Name	Length in centimeters
a. Book	27 cm
b. post-it	8 cm
c. crayon	9 cm
d. eraser	5 cm
e. pencil sharpener	3 cm

2. Measure 4 things in the classroom with a meter stick or meter tape. List the four things and their length in meters.

Object Name	Length in meters
a. door width	1 m
b. rug	2 m
c. teachers desk	1 m
d. Bookcase	2 m

Student Debrief (10 minutes)

Lesson Objective: Measure various objects using centimeter rulers and meter sticks.

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.

Share with your partner: Which things did you measure in centimeters? Why? Which things did you measure in meters? Why?

- Did you or your partner disagree on any of the measurement tools you selected? Defend your choice.
- How do the size and shape of what we measure tell us which tool is most appropriate?
- What new (or significant) math vocabulary have we learned? (Chart student responses. Prompt students to list vocabulary from the lesson such as measure, measurement, length, height, length unit, measuring tool, meter tape, **meter**, **meter stick**, etc.)

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.

3. List 5 things in your house that you would measure with a meter stick or meter tape.

1. rug
2. table
3. stove
4. bed
5. door

Why would you want to measure those five items with a meter stick or meter tape instead of a centimeter ruler?

They are big. It would take too long to measure with centimeters

4. The distance from the cafeteria to the gym is 14 meters. The distance from the cafeteria to the playground is double the distance. How many times would you need to use a meter stick to measure the distance from the cafeteria to the playground?

$$14 + 14 = 28$$

A

Correct _____

Add or subtract.

1	$8 + 3 =$		23	$15 - 6 =$	
2	$3 + 8 =$		24	$15 - 9 =$	
3	$11 - 3 =$		25	$8 + 7 =$	
4	$11 - 8 =$		26	$7 + 8 =$	
5	$7 + 4 =$		27	$15 - 7 =$	
6	$4 + 7 =$		28	$15 - 8 =$	
7	$11 - 4 =$		29	$9 + 4 =$	
8	$11 - 7 =$		30	$4 + 9 =$	
9	$9 + 3 =$		31	$13 - 4 =$	
10	$3 + 9 =$		32	$13 - 9 =$	
11	$12 - 3 =$		33	$8 + 6 =$	
12	$12 - 9 =$		34	$6 + 8 =$	
13	$8 + 5 =$		35	$14 - 6 =$	
14	$5 + 8 =$		36	$14 - 8 =$	
15	$13 - 5 =$		37	$7 + 6 =$	
16	$13 - 8 =$		38	$6 + 7 =$	
17	$7 + 5 =$		39	$13 - 6 =$	
18	$5 + 7 =$		40	$13 - 7 =$	
19	$12 - 5 =$		41	$9 + 7 =$	
20	$12 - 7 =$		42	$7 + 9 =$	
21	$9 + 6 =$		43	$16 - 7 =$	
22	$6 + 9 =$		44	$16 - 9 =$	

© Bill Davidson

B Improvement _____ # Correct _____

Add or subtract.

1	$9 + 2 =$		23	$15 - 7 =$	
2	$2 + 9 =$		24	$15 - 8 =$	
3	$11 - 2 =$		25	$9 + 6 =$	
4	$11 - 9 =$		26	$6 + 9 =$	
5	$6 + 5 =$		27	$15 - 6 =$	
6	$5 + 6 =$		28	$15 - 9 =$	
7	$11 - 5 =$		29	$7 + 5 =$	
8	$11 - 6 =$		30	$5 + 7 =$	
9	$8 + 4 =$		31	$12 - 5 =$	
10	$4 + 8 =$		32	$12 - 7 =$	
11	$12 - 4 =$		33	$9 + 5 =$	
12	$12 - 8 =$		34	$5 + 9 =$	
13	$7 + 6 =$		35	$14 - 5 =$	
14	$6 + 7 =$		36	$14 - 9 =$	
15	$13 - 6 =$		37	$8 + 6 =$	
16	$13 - 7 =$		38	$6 + 8 =$	
17	$9 + 3 =$		39	$14 - 6 =$	
18	$3 + 9 =$		40	$14 - 8 =$	
19	$12 - 3 =$		41	$9 + 8 =$	
20	$12 - 9 =$		42	$8 + 9 =$	
21	$8 + 7 =$		43	$17 - 8 =$	
22	$7 + 8 =$		44	$17 - 9 =$	

© Bill Davidson

Name _____

Date _____

1. Measure 5 things in the classroom with a centimeter ruler. List the five things and their length in centimeters.

Object Name	Length in centimeters
a.	
b.	
c.	
d.	
e.	

2. Measure 4 things in the classroom with a meter stick or meter tape. List the four things and their length in meters.

Object Name	Length in meters
a.	
b.	
c.	
d.	

3. List 5 things in your house that you would measure with a meter stick or meter tape.

1. _____

2. _____

3. _____

4. _____

5. _____

Why would you want to measure those five items with a meter stick or meter tape instead of a centimeter ruler?

4. The distance from the cafeteria to the gym is 14 meters. The distance from the cafeteria to the playground is double the distance. How many times would you need to use a meter stick to measure the distance from the cafeteria to the playground?

Name _____

Date _____

1. Circle centimeter or meter to show which measurement you would use to measure the length of each object.

Length of a train cm or m

Length of an envelope cm or m

Length of a house cm or m

2. Would it take more meters or more centimeters to measure the length of playground? Explain your answer.

Name _____

Date _____

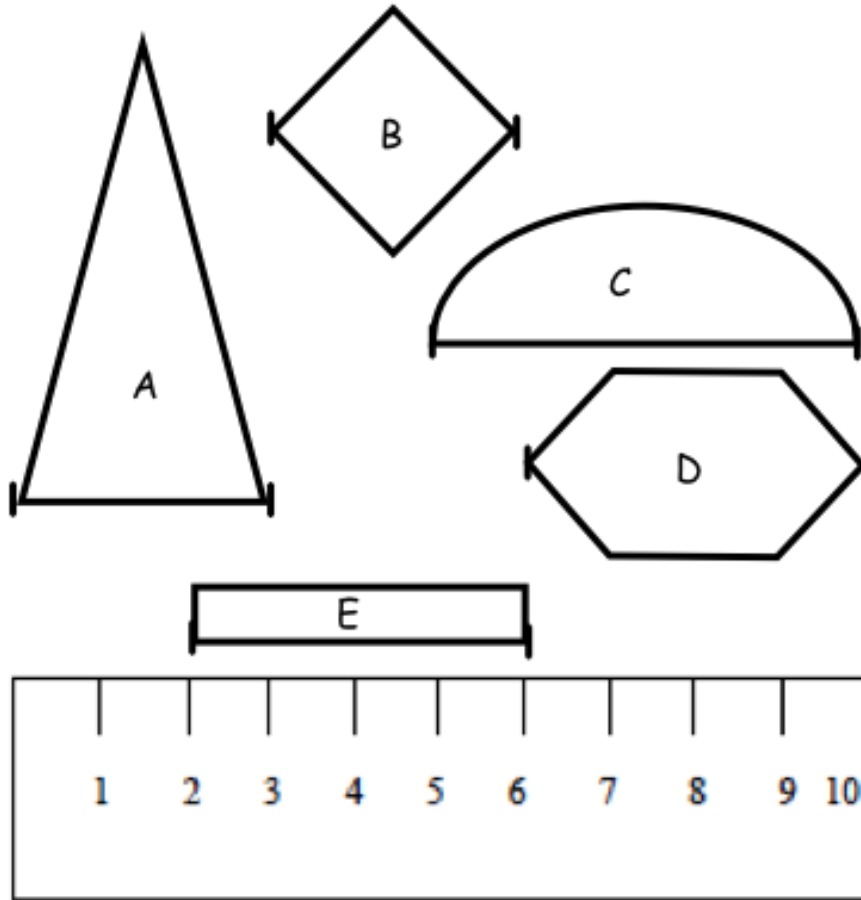
1. Circle cm (centimeter) or m (meter) to show which measurement you would use to measure the length of each object.

- a. Length of a marker cm or m
- b. Length of a school bus cm or m
- c. Length of a laptop computer cm or m
- d. Length of a highlighter marker cm or m
- e. Length of a football field cm or m
- f. Length of a parking lot cm or m
- g. Length of a cell phone cm or m
- h. Length of a lamp cm or m
- i. Length of a supermarket cm or m
- j. Length of a playground cm or m

2. Fill in the blanks with **cm** or **m**.

- a. The length of a swimming pool is 25 _____.
- b. The height of a house is 8 _____.
- c. Karen is 6 _____ shorter than her sister.
- d. Eric ran 65 _____ down the street.
- e. The length of a pencil box is 3 _____ longer than a pencil.

3. Use a centimeter ruler to find the length (from one hash mark to the next) of each object.



- a. Triangle A is ____ cm long. Square B is ____ cm long.
 Semi-circle C is ____ cm long. Hexagon D is ____ cm long.
 Rectangle E is ____ cm long.

b. Explain how the strategy to find the length of each shape above is different than how you would find the length if you used a centimeter cube.
