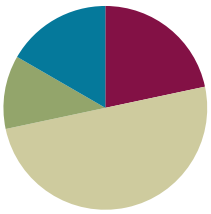
Lesson 4

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

Suggested Lesson Structure

Fluency Practice	(13 minutes)
Application Problem	(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)
- Sprint: Related Facts **2.OA.2** (9 minutes)

Related Facts on a Ruler (4 minutes)

Materials: (S) 30 cm ruler created in Lesson 3

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

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: What is the number sentence?
S: 11 – 3 = 8.
T: Give a number sentence to show 8 less than 11.
S: 11 – 8 = 3.

Continue with the following possible sequence: 9, 2, 11; 4, 9, 13; 8, 5, 13; and 9, 6, 15.

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

To provide support for the quick pace of one-minute Sprints:

- Consider giving students who do not excel under pressure the chance to practice the Sprint at home the night before it is administered.
- Guide personal goal setting within a time frame (e.g., to 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.

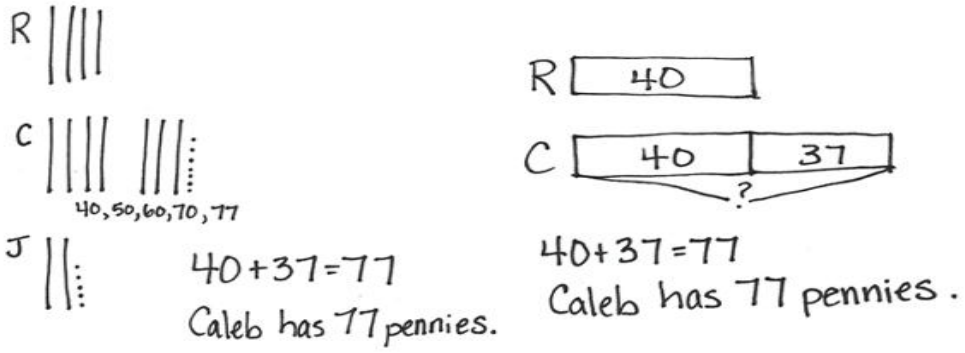
Sprint: Related Facts (9 minutes)

Materials: (S) Related Facts Sprint

Note: The Sprint helps students use related facts as a tool to build mastery of sums and differences within 20.

Application Problem (7 minutes)

Caleb has 37 more pennies than Richard. Richard has 40 pennies. Joe has 25 pennies. How many pennies does Caleb have?



Note: This problem has the added complexity of extraneous information, Joe's pennies. Ask, "Do I need to draw Joe's pennies?" Depending on the needs of students, this can be omitted in order to focus on the *compare with bigger unknown* problem where *more than* is used to compare two quantities, and addition is used to solve.

Concept Development (30 minutes)

Materials: (T) Meter stick, meter tape (S) Centimeter ruler made in Lesson 3, textbook; meter stick, meter tape per pair

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: (Measure the carpet with centimeter ruler.)

MP.5

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, naming them as you place them, to measure their length in centimeters?

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

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

T: How many centimeters are in 1 **meter**?
S: It is 100 centimeters. → It's just a little longer than 3 centimeter rulers.
T: This is another measurement unit called a meter. When we are measuring things that are more than 100 centimeters, we can measure in meters.
T: We use a meter stick exactly the same way we use a ruler.
T: (Call on a volunteer to measure the length of the rug with a meter stick.)
T: I notice that the rug is not exactly 4 meters long. It's more than 4 meters but less than 5 meters. Is it closer to 4 or 5 meters?
S: 4 meters.
T: So, we can say it's about 4 meters long. (Record 4 m on the board.)
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 height of our books to see how high the shelf should be. Turn to your neighbor and estimate the height of your science book.

MP.5

S: (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 to 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 should solve these problems using the RDW approach used for Application Problems.

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.

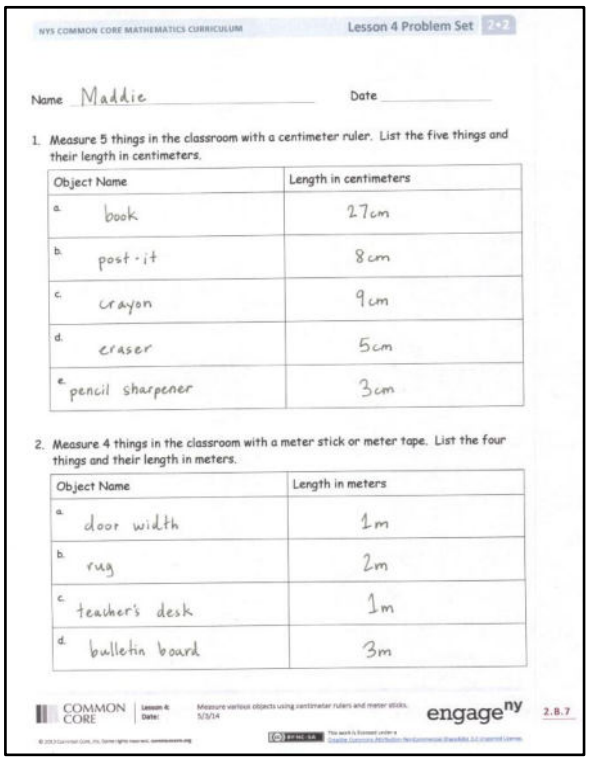
Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set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

Any combination of the questions below may be used 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 did we learn today? (Chart student responses. Prompt students to list vocabulary from the lesson such as *measure, measurement, length, height, length unit, measuring tool, meter tape,* ***meter,*** and ***meter stick***.)

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.



NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 4 Problem Set 2•2

Name Maddie Date

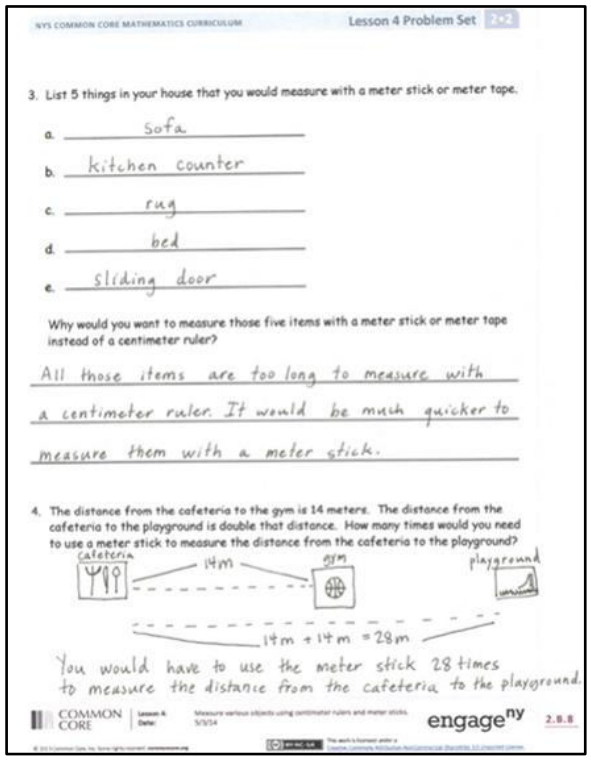
1. Measure 5 things in the classroom with a centimeter ruler. List the five things and their length in centimeters.

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

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	1m
b. rug	2m
c. teacher's desk	1m
d. bulletin board	3m

COMMON CORE Lesson 4: Measure various objects using centimeter rulers and meter sticks. 5/3/14 engage^ny 2.B.7



NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 4 Problem Set 2•2

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

a. Sofa
b. kitchen counter
c. rug
d. bed
e. sliding door

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

All those items are too long to measure with a centimeter ruler. It would be much quicker to measure them with a meter stick.

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

You would have to use the meter stick 28 times to measure the distance from the cafeteria to the playground.

COMMON CORE Lesson 4: Measure various objects using centimeter rulers and meter sticks. 5/3/14 engage^ny 2.B.8

A

Number Correct: _____

Related Facts

1.	8 + 3 =	
2.	3 + 8 =	
3.	11 – 3 =	
4.	11 – 8 =	
5.	7 + 4 =	
6.	4 + 7 =	
7.	11 – 4 =	
8.	11 – 7 =	
9.	9 + 3 =	
10.	3 + 9 =	
11.	12 – 3 =	
12.	12 – 9 =	
13.	8 + 5 =	
14.	5 + 8 =	
15.	13 – 5 =	
16.	13 – 8 =	
17.	7 + 5 =	
18.	5 + 7 =	
19.	12 – 5 =	
20.	12 – 7 =	
21.	9 + 6 =	
22.	6 + 9 =	

23.	15 – 6 =	
24.	15 – 9 =	
25.	8 + 7 =	
26.	7 + 8 =	
27.	15 – 7 =	
28.	15 – 8 =	
29.	9 + 4 =	
30.	4 + 9 =	
31.	13 – 4 =	
32.	13 – 9 =	
33.	8 + 6 =	
34.	6 + 8 =	
35.	14 – 6 =	
36.	14 – 8 =	
37.	7 + 6 =	
38.	6 + 7 =	
39.	13 – 6 =	
40.	13 – 7 =	
41.	9 + 7 =	
42.	7 + 9 =	
43.	16 – 7 =	
44.	16 – 9 =	

B

Number Correct: _____

Improvement: _____

Related Facts

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

Name _____ Date _____

1. Measure five 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 four 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 five things in your house that you would measure with a meter stick or meter tape.

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

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

   a. Length of a train cm or m

   b. Length of an envelope cm or m

   c. Length of a house cm or m

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

_____

_____

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_____

Name _____ Date _____

1. Circle cm (centimeter) or m (meter) to show which unit 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 _____.

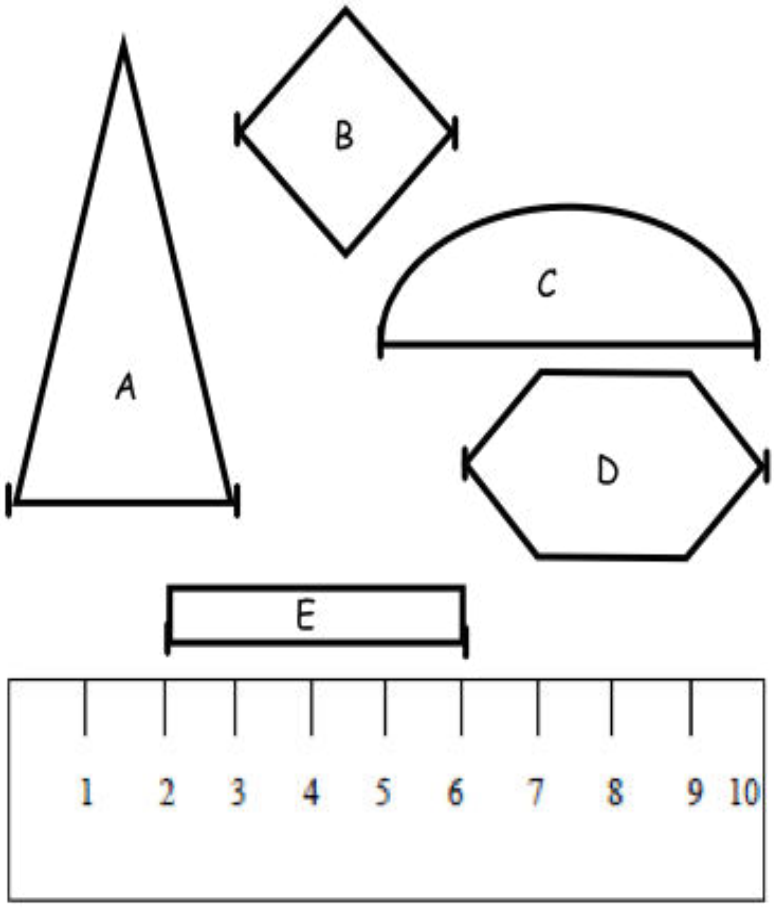
   b. The height of a house is 8 _____.

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



a. Triangle A is _____ cm long. Rhombus B is _____ cm long.

Semicircle 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 from how you would find the length if you used a centimeter cube.

_____

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