

continue measuring the remaining distance with another string or ruler until they reach the classroom window or teacher's table.

- Increase the accuracy of students' estimates by having them estimate and measure more distances. E.g. the length from the whiteboard to the door.

Independent practice (For Print-based Program):

Task 3 requires students to estimate and measure the lengths of objects in meters.

Task 4 requires students to estimate length in meters. They are expected to provide reasonable guesses based on their knowledge of everyday objects and animals.

For answers, go to CW Manual p. 116.

❖ Blended Learning Program ❖

From PR1ME Mathematics Interactive Edition:

Practice 1 (CB p. 80)

Assign the tasks to students as classwork for summative assessment. Use the corresponding lesson notes to identify the objectives of each task and address remediation needs.

Lesson 2: Length in Centimeters

Duration: 5 h

❖ Blended Learning Program ❖

From PR1ME Mathematics Interactive Edition:

Let's Learn (CB pp. 81–82)

Go through the teaching examples with students for concept development. Use the detailed lesson plan given in the corresponding lesson notes to carry out the teaching.

Learn

Measuring length in centimeters (CWB pp. 57–58)

Learning Outcomes:

- Understand that a meter is greater than a centimeter
- Estimate and measure length in centimeters
- Compare the lengths of objects in centimeters

Materials:

- 1 copy of Think About It Worksheet (WS4.2) per group
- 15-centimeter ruler
- Meter ruler
- A5-sized notepad

(a)

Stage: Concrete Experience

Begin by introducing the 15-centimeter ruler and showing the contrast between a meter and a centimeter. Students will understand that we use different units of length to measure length and distance depending on their magnitude. This activity will also develop students' ability to choose appropriate units of length to measure length as they will now have a benchmark for 1 centimeter. This will in turn enable them to estimate length in centimeters.

- Hold up the notepad. Place the meter ruler along its breadth. Students should be able to state that the breadth of the notepad is less than a meter. Highlight to students that the breadth of the notepad is much less than a meter. Lead them to see that we need another unit of length to measure the breadth of the notepad.
- Hold up the 15-centimeter ruler and tell students that we can use it instead. Have students look at their 15-centimeter ruler. Point out that this ruler measures length in centimeters. Highlight how long 1 centimeter is and tell students that we use centimeters to measure shorter objects.
- Have students place their finger on the zero mark and count on as they move from one number to another until they reach the 15-centimeter mark. Lead them to conclude that the ruler can measure length up to 15 centimeters.
- Place the notepad above the ruler. Show students that the breadth of the notepad is about as long as the ruler. So, it has a breadth of about 15 centimeters.

Stages: Pictorial Representation and Abstract Representation

Follow up by showing students how the length of objects can be measured and compared using the 15-centimeter ruler, as well as writing measurement statements in centimeters. The objects are placed parallel to the ruler; this presents students with the correct way of using a ruler to measure objects. The dotted lines at the start and end of each object also help students to trace the respective readings on the ruler. Students will also be able to see that by placing the objects along the zero mark, they can easily identify the longest and shortest object.

- Highlight to students that centimeter is another unit of length. Write 'centimeter' on the board. Tell students that we write centimeter as 'cm'.
- Refer students to the zero mark of the ruler on CWB p. 57. Bring to students' attention that the objects are placed at the zero mark. Highlight that it is incorrect to measure objects from the edge of the ruler.
- Have students look at the clothespin first. Lead them to see that the clothespin ends at the 8-cm mark. Lead students to conclude that

- the clothespin is 8 centimeters long. Write the measurement statement on the board.
- Next, have students look at the matchstick. They should be able to see that it ends at the 5-cm mark. Lead students to conclude that the matchstick is 5 centimeters long. Write the measurement statement on the board.
- Lastly, have students look at the teaspoon. They should be able to see that it ends at the 13-cm mark. Lead students to conclude that the teaspoon is 13 centimeters long. Write the measurement statement on the board.
- Guide students to compare the lengths of the clothespin and the teaspoon. Students should be able to state that the teaspoon is longer than the clothespin. Highlight that we can subtract the length of the clothespin from the length of the teaspoon to find the difference in length. Students should know that $13 - 8 = 5$. Conclude that the clothespin is 5 centimeters shorter than the teaspoon.
- Have students find the difference in length between the matchstick and the teaspoon. Have them identify the shorter object, then subtract to find the difference in length. $13 - 5 = 8$. Students should be able to conclude that the teaspoon is 8 centimeters longer than the matchstick.
- Guide students to order the objects according to their length, beginning with the longest object. Students should be able to state that the teaspoon is the longest object, followed by the clothespin and finally the matchstick.
- Encourage students to check the reasonableness of their answers by visually comparing the lengths of the three objects.

(b)

Stages: Pictorial Representation and Abstract Representation

This example builds upon the skills taught in the previous example. Students learn that when objects are placed at different points along the ruler, they cannot simply read the reading at the end of an object to find its length.

- Refer students to the picture on CWB p. 58. Have them find the length of the bookmark. Students should be able to state that the length of the bookmark is 15 centimeters. Write the measurement statement on the board.
- Highlight that the coin pouch and the luggage tag are not placed at the zero mark. Therefore, we cannot read the reading at the end of each object to find its length.
- Have students look at the coin pouch first. Lead them to see that the coin pouch is placed at the 3-cm mark. Have students put their finger on the 3-cm mark and count on from 1 till they reach the 10-cm mark. Lead them to see that the coin pouch is 7 centimeters long.
- Highlight that the other way to find the length of the coin pouch is to subtract the reading at

the start of the coin pouch from the reading at the end of the coin pouch. Lead students to see that since $10 - 3 = 7$, the length of the coin pouch is 7 centimeters. Write the measurement statement on the board.

- Next, have students find the length of the luggage tag. They should subtract 2 from 13 to get 11 centimeters. Write the measurement statement on the board.
- Have students find the difference in length between the luggage tag and the coin pouch. Students should subtract the length of the coin pouch from the length of the luggage tag. $11 - 7 = 4$. Conclude that the luggage tag is 4 centimeters longer than the coin pouch.
- Then, have students find the difference in length between the bookmark and the luggage tag. $15 - 11 = 4$. Students should be able to conclude that the bookmark is 4 centimeters longer than the luggage tag.
- Guide students to order the objects according to their length, beginning with the shortest object. Students should be able to state that the coin pouch is the shortest object, followed by the luggage tag and finally the bookmark.

❖ Blended Learning Program ❖

From PR1ME Mathematics Interactive Edition:

Let's Do (CB p. 83)

Assign the tasks to students as classwork for formative assessment. Use the corresponding lesson notes to identify the objectives of each task and address remediation needs.

Exercise 2 (PB pp. 59–61)

Assign the tasks to students as classwork for further formative assessment. Use the corresponding lesson notes to identify the objectives of each task and address remediation needs.

From PR1ME Mathematics Coursework Book:

Coursework Book Practice 2 (CWB pp. 59–61)

Assign all tasks to students as homework. Use the following notes to identify the skills needed for each task and address remediation needs.

Practice 2 (CWB pp. 59–61)

Class practice (For Print-based Program):

Task 1 requires students to first estimate the lengths of common objects in centimeters. Then, they have to measure the length with their rulers.

Task 2 requires students to read the rulers shown to find the lengths of objects in centimeters.

Remediation

Task 1: Reteach measuring the lengths of objects in centimeters using a ruler.

Task 2(a): Highlight to students that since the stamp is placed at the zero mark, we can look at the reading at the end of the stamp to find its length. Lead students to see that since the reading at the end of the stamp is 3 centimeters, the stamp is 3 centimeters long.

Task 2(b): Students may read the length of the bow incorrectly as 8 centimeters. Cut out strips of paper 6 centimeters long and distribute one strip to each student. Have them place the strip at the zero mark of their rulers and find the length of the strip. Then, have them place the strip at the 2-cm mark. Lead them to see that the reading at the end of the strip is now 8 centimeters, but the length of the strip remains unchanged at 6 centimeters. Have them move the strip backwards to the 1-cm mark, then the zero mark. Lead them to see that when we do this, we are subtracting 2 centimeters from 8 centimeters. Conclude that the length of the bow is 6 centimeters.

Task 2(c): Guide students to see that since the stamp is 3 centimeters long and the bow is 6 centimeters long, $6 - 3 = 3$. The bow is 3 centimeters longer than the stamp.

Teaching tips

Task 1

- Remind students to measure the objects from the zero mark, not from the edge of the ruler.

Task 2

- Remind students to always check if the object is placed at the zero mark before they take the reading at the end of the object as its length.

Independent practice (For Print-based Program):

Task 3 requires students to read the ruler shown to measure and compare the lengths of objects in centimeters. All objects are placed at the zero mark. Students are required to arrange the objects in order according to their lengths.

Task 4 requires students to read the ruler shown to measure and compare the lengths of objects in centimeters. Some objects are not placed at the zero mark. Students are required to arrange the objects in order according to their lengths.

For answers, go to CW Manual p. 116.

Think About It

❖ Blended Learning Program ❖

From PR1ME Mathematics Interactive Edition:

Think About It (CB p. 84)

Assign the task to students as classwork. Have them complete the task in groups. Facilitate discussions using the corresponding lesson notes.

Have students get into groups. Distribute a copy of Think About It Worksheet (WS4.2) to each group. Have them discuss the question presented. Ask a student from each group to present their answers before proceeding with the questions below.

- What are Sam and Yen trying to find? (*The length of the pencil*)
- Is the pencil placed at the zero mark of the ruler? (*No*)
- Is it correct to say that the reading at the end of the pencil is the length of the pencil? (*No*)
- Why? (*The length between the edge of the ruler and the zero mark is not included in the measurement*)
- What is the reading at the end of the pencil? (*10 centimeters*)
- Is the pencil longer than or shorter than 10 centimeters? (*Longer*)

Conclude that Yen is correct. If necessary, use concrete examples to show students how placing an object before the zero mark will lead to an error in the measurement of the length of the object.

❖ Blended Learning Program ❖

From PR1ME Mathematics Interactive Edition:

Let's Learn (CB p. 84)

Go through the teaching examples with students for concept development. Use the detailed lesson plan given in the corresponding lesson notes to carry out the teaching.

Learn

Choosing units of measure (CWB p. 62)

Learning Outcome:

- Choose an appropriate unit of measure when measuring lengths and distances

Materials:

- 1 copy of Think About It Worksheet (WS4.3) per group
- 15-centimeter ruler
- 2 meter rulers

Stage: Concrete Experience

Start off by introducing the units of measure used to measure various everyday objects. Through this, students will learn to identify appropriate units of length to measure an object based on how long or tall the object is. They will associate meters with longer or taller objects, and centimeters with shorter objects.

- Hold up a pencil box. Place it along a meter ruler as though measuring its length. Highlight that the pencil box is less than a meter long and so, we measure it with a centimeter ruler.
- Have students measure the length of their pencil box using their 15-centimeter ruler.
- Point to the classroom door. Place a meter ruler along its frame. Lead students to see that the

height of the door is more than a meter, so we measure it with meter rulers. Measure the height of the door using two meter rulers.

Stages: Pictorial Representation and Abstract Representation

Follow up by introducing the length or height of objects on CWB p. 62. This provides students with a wider pool of objects that they can use as a visual gauge to compare other objects against. It aids them in choosing appropriate units of length to measure other objects.

- Refer students to the picture of the school bus on CWB p. 62. Guide them to see that since the bus is longer than a meter, we measure its length in meters.
- Next, refer students to the picture of the alarm clock. Guide them to see that since the height of the alarm clock is much less than a meter, we measure its length in centimeters.
- Repeat the same procedure for the painting and the lamppost.

❖ Blended Learning Program ❖

From PR1ME Mathematics Interactive Edition:
Let's Do (CB p. 85)

Assign the tasks to students as classwork for formative assessment. Use the corresponding lesson notes to identify the objectives of each task and address remediation needs.

Exercise 3 (PB p. 62)

Assign the tasks to students as classwork for further formative assessment. Use the corresponding lesson notes to identify the objectives of each task and address remediation needs.

From PR1ME Mathematics Coursework Book:

Coursework Book Practice 3 (CWB p. 63)

Assign all tasks to students as homework. Use the following notes to identify the skills needed for each task and address remediation needs.

Practice 3 (CWB p. 63)

Class practice (For Print-based Program):

Task 1 requires students to choose an appropriate unit of measure to measure the lengths of objects.

Remediation

Task 1(a): Have students visualize 14 centimeters and 14 meters. Get them to choose the measurement that is reasonable for a truck.

Task 1(b): Have students visualize 20 centimeters and 20 meters. Get them to choose the measurement that is reasonable for a vase.

Task 1(c): Have students visualize 108 centimeters and 108 meters. Get them to choose the measurement that is reasonable for a Ferris wheel.

Teaching tips

Task 1

- Highlight to students the importance of checking the reasonableness of their answers. Show them the meter ruler and 15-centimeter ruler once again to show the contrast between the two units of lengths.

Independent practice (For Print-based Program):

Task 2 requires students to choose an appropriate unit of measure to measure the lengths of objects.

For answers, go to CW Manual p. 116.

Think About It

❖ Blended Learning Program ❖

From PR1ME Mathematics Interactive Edition:

Think About It (CB p. 85)

Assign the task to students as classwork. Have them complete the task in groups. Facilitate discussions using the corresponding lesson notes.

Have students get into groups. Distribute a copy of Think About It Worksheet (WS4.3) to each group. Have them discuss the question presented. Ask a student from each group to present their answers before proceeding with the questions below.

- Is the eraser placed at the zero mark? (No)
- What is the reading at the start of the eraser? (11 centimeters)
- What is the reading at the end of the eraser? (15 centimeters)
- What is the length of the eraser? (4 centimeters)

Conclude that Yen is correct. Reiterate that we can measure the length of an object even when it is not placed at the zero mark.

❖ Blended Learning Program ❖

From PR1ME Mathematics Interactive Edition:

Let's Learn (CB pp. 85–87)

Go through the teaching examples with students for concept development. Use the detailed lesson plan given in the corresponding lesson notes to carry out the teaching.