

ESTIMATING LENGTHS AND MEASUREMENTS

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Subject

Mathematics

Prepared By

[Instructor Name]

Grade Level

3

Overview

This lesson plan covers teaching content for;

1. Understanding the concept of length
2. Measuring the length of various objects
3. Estimating lengths in meters and centimeters
4. Comparing estimates
5. Converting from one metric unit to another.

Objectives

Students should be able to:

1. Make estimates of lengths in meters and centimeters
2. Estimate distances in kilometers
3. Convert from one unit of measurement to another.
4. Compare estimates with actual measurements

Guided Practice

Day 2/ Lesson 2: 15 Mins

1. Let different pupils measure different objects in the classroom, for example the desk and the

Activity Starter/Instruction

1. Pupils don't know how to use a ruler, tape measure or meter stick to measure.
2. Ensure they know that they must start measuring from the 0 mark.
3. Point out to them that in most cases they should not measure from the edge of the ruler, tape measure or meter stick.
4. (check tape measures as some have a metal fitting at the ends to protect the measuring tape and because of this the tape does start at 0 from the very edge.)
5. Ensure that you do a lot of practical work with meter sticks and tape measures.
6. Ask the students, what are the metric units of measuring length? (kilometer, meter, centimeter, millimeter)
7. Let them visualize how big a millimeter is? (Repeat for the other units, students can give examples of objects that are about each unit, e.g. a millimeter is the width of an

Teacher Guide

Day 1/ Lesson 1: 15 Mins

1. Start the work in this unit by talking about
2. different ways of measuring.
3. Explain that in much of the world today the metric system is the generally accepted way of measuring. Introduce the millimeter, the centimeter and the meter.
4. Discuss which unit would be most suitable for measuring a) the length of one's little finger, b) the length of the corridor, c) the width of a textbook and d) the length of a matchstick.
5. Explain how to measure using a standard unit of measurement, for example a centimeter. Show your pupils the importance of starting at 0 on the ruler, tape measure or meter stick.
6. It is important that pupils know how to estimate length. Give them the opportunity to estimate the lengths of different objects in the classroom. Make sure that pupils do not

Materials Required

- White Board
- Blank sheets
- Rulers with mm and cm measurement
- Meter stick or tape rule
- Pencils
- Meter long strips of paper.

Additional Resources

- https://www.helpingwithmath.com/by_subject/word
- <http://www.cpalms.org/Public/PreviewResourceLesson>
- <https://www.engageny.org/sites/default/files/resource/module.pdf>
- https://za.pearson.com/content/dam/region-growth/africa/TeacherResourceMaterial/9781447978411_ngr
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Additional Notes

length of the classroom using non-standard units of measurement.	eyelash, a centimeter is the width of your index finger)	confuse the measurements in centimeters with those in meters.
2. Provide your pupils with a piece of string or wool as a non-standard unit of length.	Guided Practice	Guided Practice
3. Discuss the necessity of having standardized units of length.	Day 3/ Lesson 3: 30 Mins	Day 4/ Lesson 4: 15 Mins
4. Ask your pupils to work in pairs for this activity.	1.If pupils find it difficult to convert lengths given in mixed units then encourage these pupils to take a multi-step approach to these conversions and to write their reasoning down.	1.Direct students to count by 50 cm in the following sequence, letting them know with gestures when to change direction in counting: 50 cm, 100 cm, 150 cm, 200 cm, 250 cm, 300cm, 250 cm, 200 cm, 150 cm, 100 cm, 50 cm, 50 cm, 1 m, 150 cm, 2 m, 250 cm, 3 m, 250 cm, 2 m, 150 cm, 1 m, 50 cm. □ 50 cm, 1 m, 1 m 50 cm, 2 m, 2 m 50 cm, 3 m, 2 m 50 cm, 2 m, 1 m 50 cm, 1 m, 50 cm.
5. In advance, cut meter long strips of paper, one strip for each pair.	2.For example, to convert 1 m and 57 cm to cm, they could reason: 1 m = 100 cm, so 100 cm + 57 cm = 157 cm.	2.Note: Reviewing this fluency learned above will help students work towards mastery of adding and subtracting meters and centimeters.
6. Ask your pupils to measure their strip of paper in centimeters. This requires careful measuring, using their rulers.	3.The teacher continues by reviewing the metric units of length and how much of each unit is equal to another unit.	3.Teacher writes 540 cm + 320 cm = ____
7. Ask them how many centimeters make up one meter. Lead them to arrive at the answer of 100 cm, which equals one meter.	4.Students will be given about 5 min. to independently write the units	4.The students say 540 cm in meters and centimeters, this gives 5m 40 cm. The teacher in turn writes 5 m 40 cm below 540 cm.
8. You will have to remediate if pairs have not measured accurately.	5.The teacher will then ask students to share what they've written, and he/she will record this information on the board.	5.The students say 320 centimeters in meters and centimeters, this gives: 3m 20cm. The teacher then Writes 3 m 20 cm below 320 cm.
9. Point out that 1 meter = 100 cm and 100 cm can be written as 1 meter.	6.The teacher and students will then work together to put the units in size order (smallest to largest or largest to smallest), and will discuss how one unit relates to another.	6.Add the meters: 5 meters + 3 meters= 8meters. The teacher writes 5 m 40 cm + 3 m 20 cm = ____.
10. Paste a strip of paper that measures exactly one meter on the board. Then	7.The teacher therefore writes: 10 millimeter(mm) = 1 centimeter(cm) 100 cm = 1 meter(m) 1000 meter = 1 kilometer (km) From this, we can infer that 1 meter = 100 x 10mm=1000mm 1 km = 1000 x100cm = 100000 1 km = 100000 x 10mm = 1000000mm	7.Add the centimeters. 40 cm + 20 cm = 60 cm.
		8.Therefore, 8 m 60 cm is the sum on the line. Say the addition sentence in centimeters. So, 540 centimeters + 320 centimeters = 860 cm.

<p>ask them to describe 1 cm compared to 1 m.</p> <p>11. It is important to discuss the differences in the units so that your pupils are able to form a very clear impression of the different units of length. This will help to avoid confusion between meters and centimeters.</p>	<p>8.They will discuss how a centimeter is 10 times larger than a millimeter, and a millimeter is 1/10 the size of a centimeter. They will also discuss how a meter is 100 times larger than a centimeter, and that a centimeter is 1/100 of a meter (discuss centi- as meaning 100).</p> <p>9.Then, they will discuss how a kilometer is 1000 times larger than a meter, and that a meter is 1/1000 of a kilometer (discuss kilo- means 1000).</p>	
<p>Assessment Activity</p>	<p>Assessment Activity</p> <p>1. Find the equivalent measures.</p> <p>a. 1 km = _____ m</p> <p>b. 4 km = _____ m</p> <p>c. 7 km = _____ m</p> <p>d. _____ km = 18,000 m</p> <p>e. 1 m = _____ cm</p> <p>f. 3 m = _____ cm</p> <p>g. 80 m = _____ cm</p> <p>h. _____ m = 12,000 cm</p>	<p>Assessment Activity</p> <p>Find the equivalent measures.</p> <p>a. 3 km 312 m = _____ m</p> <p>b. 13 km 27 m = _____ m</p> <p>c. 915 km 8 m = _____ m</p> <p>d. 3 m 56 cm = _____ cm</p> <p>e. 14 m 8 cm = _____ cm</p> <p>f. 120 m 46 cm = _____ cm</p>
<p>Summary</p>	<p>Review and Closing</p> <p>Explain to students that not only does metric units enable pupils to write one unit of measurement as another one, it will also further develop the concept of equivalence</p>	<p>Review and Closing</p> <p>1. Pupils often forget to write down the unit of measurement required in the answer.</p> <p>2. Point out to the pupils that this is necessary so that they do not forget with which units they are working.</p> <p>3. Point out too, that this distinguishes working with measurements and working with ordinary numbers</p>