# Grade 4 Mathematics
# Measurement: Lesson 5

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students, will have an arrow symbol (⌡) by them.

*Purpose of Lesson 5:*

- In this lesson, the tutor and the students will
  - ✓ use the Mathematics Reference Sheet to work problems.

*Equipment/Materials Needed:*

- Copies of Mathematics Reference Sheet (Student Sheet 74)
- Copies of Student Sheet 75
- Paper and pencils
- Calculators

*Preparations before beginning Lesson 5:*

- Run one copy of the Reference Sheet (Student Sheet 74) and one copy of Student Sheet 75 for each student.
- Have at least one calculator per group available.
- Have paper and pencils available.

***Lesson 5: Measurement***

⌋ Give the Mathematics Reference Sheet (Student Sheet 74) to the students.

Say:

**What kinds of things are on this sheet?** (measurements, a rectangle, two formulas, and a ruler)

Say:

**Let's start with the ruler. The ruler actually has two rulers on it, one with inches and one with centimeters. Let's look at the centimeter part of the ruler first.** Ask questions such as these: **How many centimeters are shown?** (22) **Where is 0 located on the ruler?** (at the beginning of the ruler) **What are the marks between the centimeters called?** (millimeters) Ask them to point to 8 cm, 16 cm, and 22 cm. Then you should point to some measurements on the ruler and ask the students to tell you to which centimeter each measurement is closest.

⌋ Give Student Sheet 75 problems 1 – 3 to the students. Have the students use the centimeter ruler to measure the length of the segments to the nearest centimeter.

Answers:

1) 6 cm 2) 5 cm 3) 3 cm

Say:

**Let's now look at the inch part of the ruler**. Ask questions such as these. **How many inches are shown?** (9 inches) **Where is 0 located on the ruler?** (at the beginning of the ruler) **What do the marks between 0 and 1 represent?** (The first mark represents ¼ inch. The second mark represents ½ inch. The third mark represents ¾ inch.) **What measurements do the marks between 3 and 4 represent?** (3¼, 3½, and 3¾.) Do not accept the answers ¼, ½, and ¾. They need to say the whole numbers as well.

⌋ Have the students complete problems 1 – 3 on Student Sheet 75, this time measuring segments 1 – 3 to the nearest inch, ½ inch, or ¼ inch

Answers:

1) 3 inches; 2½ inches 2) 2 inches; 2 inches 3) 1 inch; 1¼ inches

⌋ Move to the measurements (conversion tables) of the reference sheet.

Say:

**Let's look at the measurements. What do you notice?** (Answers will vary, but these are possible responses. There are 6 measurements involving the English system or customary system and 4 measurements involving the metric system. The measurements are written as true mathematical sentences: one side is equal to the other side. All of the measurements on the left involve 1 unit, etc.) **The measurements are on the reference sheet so that you don't have to memorize them, but you still need to know how to use the measurements. Look at 1 pint = 2 cups. How many cups are in 4 pints? Let's make a list.**

1 pint = 2 cups
2 pints = 4 cups
3 pints = 6 cups
4 pints = 8 cups

**So in 4 cups, there are 8 pints. You could also think, to get from 1 pint to 4 pints, multiply by 4. So multiply 2 cups by 4 to get 8 cups.**

Say:

**How many quarts are in 6 gallons? Let's make a table this time. You know that there are 4 quarts in 1 gallon.**

| Gallons | Quarts |
|---|---|
| 1 | 4 |
| 2 | 8 |
| 3 | 12 |
| 4 | 16 |
| 5 | 20 |
| 6 | 24 |

**To get from 1 gallon to 6 gallons, you can multiply by 6, so you can multiply 4 quarts times 6 to get 24 quarts. (Some may see that at 3 gallons, they could double the amount to 6 gallons, so they could double 12 quarts to get 24 quarts.**

Say:

**How many meters in 500 centimeters? You could make a list.**

1 meter = 100 centimeters
2 meters = 200 centimeters
3 meters = 300 centimeters
4 meters = 400 centimeters
5 meters = 500 centimeters

**To get from 100 centimeters to 500 centimeters, you multiply by 5; so multiply 1 meter times 5 to get 5 meters.**

Say:

**How many feet in 48 inches? Make a table this time.**

| Feet | Inches |
|---|---|
| 1 | 12 |
| 2 | 24 |
| 3 | 36 |
| 4 | 48 |

**To get from 12 inches to 48 inches, multiply by 4; so multiply 1 foot by 4 to get 4 feet.**

Note: Students at this age forget whether they should multiply or divide in order to convert from one measurement to another. Making a table or a list eliminates this problem.

⎫ Give problems 4 – 8 of Student Sheet 75. Encourage the students to make a list or a table.

Answers:

4. 5000 meters 5. 4 pints 6. 80 ounces
7. 48 inches 8. 2000 millimeters

⎫ Move to the formulas on the reference sheet.

Say:

**You said that the figure here is a rectangle. What do *l* and *w* stand for?** (*l* = length and *w* = width**) You use the formula, *A = l ´ w* when you want to find out how much space a rectangle covers. When you buy carpeting, you need to find the area of the room. You use the formula for perimeter, *P* = 2(*l* + *w*), when you want to find the distance around a rectangle. You would use perimeter if you wanted to decide how much fencing to put around a garden.**

⎫ Give problems 9 – 12 on Student Sheet 75.

Answers:

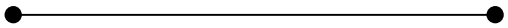
9. area; 108 sq. m 10. perimeter; 86 yards
11. area; 120 sq. ft 12. perimeter; 300 cm

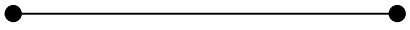
⎫ Have one student summarize today's lesson. Students need to learn how useful the reference sheet can be when they are taking the LEAP test.

## Student Sheet 74 (Measurement: Lesson 5)

**Student Sheet 75 (Measurement: Lesson 5)**

**Use the ruler to measure each segment to the nearest centimeter, to the nearest inch, and to the nearest one-half inch.**

1. 

2. 

3. 

**Make a list or table to help you with the following problems.**

4. Mary ran in a 5-kilometer race. How many meters did she run?

5. Lynn buys orange juice in two-quart containers. How many pints are in each container?

6. A bag of cat litter weighs 5 pounds. How many ounces are in each bag?

7. Ronlynn is 4 feet tall. How tall is she in inches?

8. Soft drinks are sold in 2-liter bottles. How many milliliters are in each bottle?

**Are you finding area or perimeter in the following problems? Use the correct formula to find the answers to the questions.**

9. The Warren's need to replace their pool cover. The pool is 18 m. long and 6 m. wide. How large of a pool cover will they need to buy?

10. A basketball court is about 28 yards long and 15 yards wide. Kyle runs once around the court every morning. How far does he run?

11. Arnie wants to help Ms. Ono wallpaper the back room of the classroom. It is 15 feet wide and 8 feet tall. How much wallpaper will they need?

12. Arnie is also going to help Ms Ono put a border around the bulletin board. It measures 60 cm by 90 cm. How much border paper is needed?