

Grade 4 Mathematics

Measurement: Lesson 1

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 (\Rightarrow) by them.

Purpose of Lesson 1:

- In this lesson, the tutor and the students will
 - ✓ select the best unit to measure length,
 - ✓ choose the appropriate tool to measure length,
 - ✓ read linear measurements accurately to the nearest centimeter or 1/2 inch,
 - ✓ estimate length, and
 - ✓ solve problems involving length.

Materials/Equipment Needed:

- Rulers or measuring tapes or use the ruler from the Reference Sheet
- Copies of Student Sheets 36 and 37
- A quarter, a dime, and paper clips
- Ruler from the Reference Sheet 38 (Optional)

Preparations before Beginning Lesson 1:

- Gather rulers and measuring tapes, 1 quarter, 1 dime, and a few paper clips.
- Run off 1 copy of Student Sheets 36 and 37 for each student.
- Run off 1 copy of the Reference Sheet 38 for each of the students. Cut the ruler out on each sheet. (Optional)

Lesson 1: Measurement

Say:

In this lesson we will work on length. What are some times that you might need to measure length? (to find their height, how far from home to school, the distance around the playground, etc.) **What kind of tools do you use to measure length?** (rulers, measuring tapes, yardsticks) **What units do you use to measure length?** (See the next part.)

⇒ As they tell you the units they can think of, make a list. Divide the units into English/customary units and metric units. There are others, but these are the ones to emphasize.

Customary

mile, foot, inch, yards

Metric

meters, centimeters, millimeters
kilometers

Say:

Let's put the units in order from smallest to largest in each system. Give them time to think about this answer. Listed below is the correct order. Write the units and the symbols. It is acceptable now **not** to use periods, except for inch.

Customary

inch (in.)

foot (ft)

yard (yd)

mile (mi)

Metric

millimeter (mm)

centimeter (cm)

meter (m)

kilometer (km)

Say:

Note: We will start with the customary system and do the two systems separately. **About how big is an inch?** (It is about the diameter (across) of a quarter or about the length of a paper clip.) **About how big is a foot?** (It is about the size of a man's shoe.) **About how big is a yard?** (It is about the width of a doorway.) The following questions will ask students to think about the units that are the better ones to use to measure length. Sometimes there will be more than 1 right answer. **What unit would you use to measure the following?**

A. The distance from Shreveport to Baton Rouge (miles)

B. The height of the door in your mathematics classroom (feet or yards)

C. The length of your mathematics classroom (feet or yards)

D. The length of a football field (yards or feet)

- E. The circumference of the Superdome** (yards)
- F. The length of a new piece of chalk** (inch)
- G. The thickness of a dime** (All of the customary units are too big, so you would have to measure in parts of an inch.)

Say:

Let's estimate the lengths of different objects in the room. Choose an item to measure. Which unit do you think would be best to use to measure? How many units long is it? (It would be wise if you measured some items first so you would have a feel for the lengths.) Have 2 students measure the same item. See whether the measurements are close. If the measurements are way apart, go over the proper way to use a ruler or measuring tape. Many students start at 1, not 0. Use the ruler on the Reference Sheet, or other rulers, and have the students practice measuring to the nearest inch and half-inch.

⇒ Give Student Sheet 36 to the students. Allow them to work the problems independently, but come back to discuss the answers. It is so important for the students to discuss these problems.

Answers:

- | | | | |
|--------------|-------------|-----------------|------|
| 1) 2½ inches | 2) 3 inches | 3) D | 4) B |
| 5) less | 6) less | 7) inch or foot | |
| 8) mile | 9) foot | 10) inch | |

Say:

We will now look at the metric system. About how big is a millimeter? (It is about the thickness of a dime.) **About how big is a centimeter?** (A thumbtack is about a centimeter wide or it is about the width of your little finger.) **About how big is a meter?** (It is about the same as a yard, the width of a doorway or the length of a baseball bat.) **About how big is a kilometer?** (A kilometer is similar to a mile.) The following questions will have students think about the units that are the better ones to use to measure length. Sometimes there will be more than 1 right answer. **What unit would you use to measure the following?**

- A. The distance from Shreveport to Baton Rouge** (kilometers)
- B. The height of the door in your mathematics classroom** (meters)
- C. The length of your mathematics classroom** (meters)
- D. The length of a football field** (meters)

- E. The circumference of the Superdome (meters)**
- F. The length of a new piece of chalk (cm)**
- G. The thickness of a dime (mm)**

Say:

Let's estimate the lengths of different objects in the room. Choose an object to measure. Which unit do you think would be the best unit to use to measure? How many units long is the object? (It would be wise if you measured some items first so you would have a feel for the lengths.)

⇒ Give Student Sheet 37.

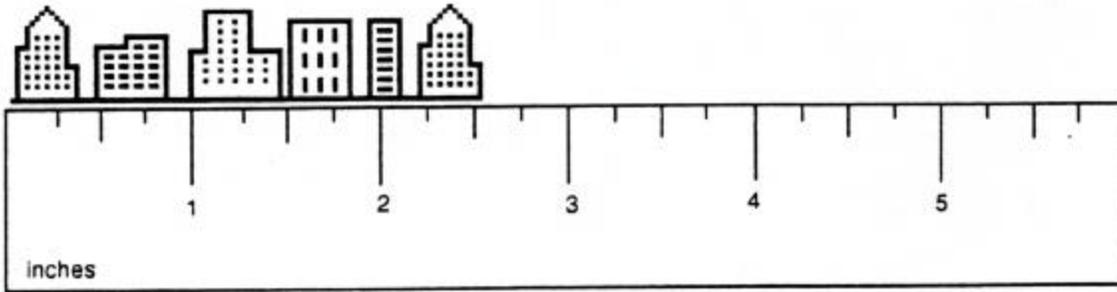
Answers:

- 1) 5cm
- 2) 2cm
- 3) C
- 4) C
- 5) more
- 6) more
- 7) millimeters
- 8) kilometers
- 9) meters
- 10) centimeters

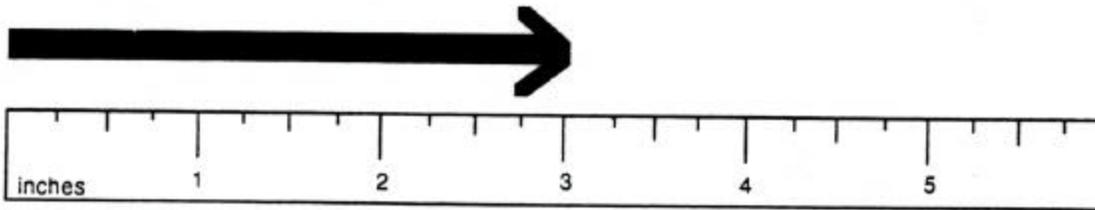
⇒ Have one student summarize today's lesson.

Student Sheet 36 (Measurement: Lesson 1)

1. Use the ruler to answer the question. What is the length of the toy town to the nearest half-inch?



2. Use the ruler to answer the question. What is the length of the arrow to the nearest half-inch?



For problems 3 and 4, choose the best answer.

3. About how many inches long is the segment?
•————•
A. 4 inches
B. 3 inches
C. 2 inches
D. 1 inch
4. The length of a kitchen is about 15 _____.
A. inches
B. feet
C. yards
D. miles

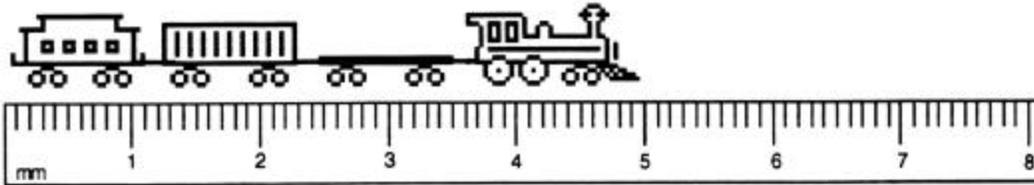
5. Is the length of a pencil more or less than a foot? _____
6. Is the length of your science book more or less than a yard? _____

In 7–10, choose the best unit to measure each object.

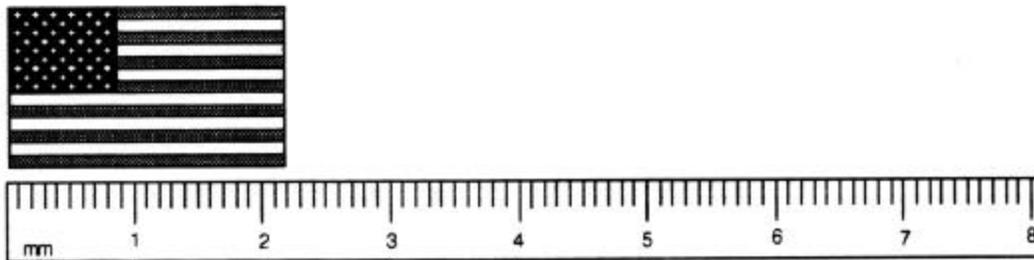
7. The length of Michael Jordan's shoe _____
8. The distance from Lafayette to Opelousas _____
9. The height of Kareem Abdul Jabar _____
10. The distance from your wrist to your elbow _____

Student Sheet 37 (Measurement: Lesson 1)

1. Use the ruler to answer the question. What is the length of the toy train to the nearest centimeter? _____



2. Use the ruler to answer the question. What is the length of the picture of the flag to the nearest centimeter? _____



For problems 3 and 4, choose the best answer.

3. The height of a door is about 2 _____.
- A. millimeters
B. centimeters
C. meters
D. kilometers
4. The length of a baseball bat is about 1 _____.
- A. millimeter
B. centimeter
C. meter
D. kilometer

5. Is the length of a celery stalk more or less than a centimeter? _____

6. Is the height of a classroom door more or less than a meter? _____

In 7–10, choose the best unit to measure each object.

7. Madonna's ring size _____
8. The distance from Monroe to Ruston _____
9. The length of a football field _____
10. The distance from your elbow to your shoulder _____

Student Sheet 38 (Measurement: Lesson 1)
Reference Sheet

1 foot = 12 inches

1 yard = 3 feet

1 pound = 16 ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 kilogram = 1,000 grams

1 meter = 100 centimeters

1 kilometer = 1,000 meters

1 liter = 1,000 milliliters

Rectangle



Area = $l \times w$

Perimeter = $2(l + w)$

