

## MEASURE YOUR PENCIL

### Performance Standard (6A/7A).C

Measure the length of a pencil and record its length in (a.) centimeters and fractional parts of a decimeter and meter and (b.) inches and fractional parts of a foot and yard accordingly:

- *Mathematical knowledge:* Measure and convert to equivalent fractional parts correctly.
- *Strategic knowledge:* Use appropriate strategies to convert measurements to equivalent fractional parts.
- *Explanation:* Explain completely and clearly how conversions were made and why they are correct.

### Procedures

1. *In order to demonstrate knowledge and use of numbers and their representations in a broad range of theoretical and practical settings (6A) and measure and compare quantities using appropriate units, instruments, and methods (7A),* students should experience sufficient learning opportunities to develop the following:
  - Represent, order, label, and compare familiar fractions.
  - Recognize and generate equivalent forms of familiar fractions.
  - Explore and discuss uses of decimals.
  - Perform simple unit conversions within a system of measurement.
2. Provide each student a copy of the “Measure Your Pencil” recording sheet. Have students review and discuss the task to be completed and how the rubric will be used to evaluate their work.
3. Part A: Ask each student to draw the length of a pencil on the recording sheet. Students should record the length of the pencil in centimeters (to the nearest centimeter). Students should convert the cm length to a fractional and decimal part of a decimeter and a meter (e.g., a line of 4 cm = .4 dm = .04 m)
4. Part B: Ask each student to draw the length of a pencil on the recording sheet. This part may be done on another day. Students should record the length of the pencil in inches (to the nearest inch). Next students should convert the inch length to a fractional part of a foot and a yard. Ask students to explain (either orally or in writing) how they achieved each of the measurements and what they mean.
5. Evaluate each student’s work using the rubric as follows and use the guide on the rubric to determine the performance level:
  - 4 = All measurements and conversions were correct; all strategies were appropriate; all operations were clearly explained.
  - 3 = Measurements or conversions may include minor errors, but not both; most of the strategies and explanations were appropriate and correct.
  - 2 = Measurements or conversions may include minor errors; some of the strategies and explanations were appropriate and correct, but most were inadequate.
  - 1 = Measurements and/or conversions may include major errors; most of the strategies and explanations were missing and or inadequate.
  - 0 = Task not attempted.

### Examples of Student Work follow

### Time Requirements

- 30 minutes

### Resources

- One inch and one centimeter ruler for each student
- One pencil for each student
- Copies of “Measure Your Pencil” recording sheet
- Mathematics Rubric

NAME \_\_\_\_\_ DATE \_\_\_\_\_

## MEASURE YOUR PENCIL

**Directions:** Draw a line that is the exact length of your pencil. Then measure the length of that line in centimeters (to the nearest centimeter). How long is that in decimeters? How long is that in meters?

Example: A line may be 10cm. 1dm.  $\frac{1}{10}$ m.

The decimal conversion of this statement would be  $10 \text{ cm} = .1 \text{ meter}$

**Part A:** Draw your pencil line here.

My pencil is \_\_\_\_\_ cm. long. I know this because \_\_\_\_\_

\_\_\_\_\_

My pencil is \_\_\_\_\_ dm. long. I know this because \_\_\_\_\_

\_\_\_\_\_

My pencil is \_\_\_\_\_ m. long. I know this because \_\_\_\_\_

\_\_\_\_\_

Draw another line the exact length of your pencil. Measure that length in inches (to the nearest inch).

**Part B:** Draw your pencil line here.

My pencil is \_\_\_\_\_ in. long. I know this because \_\_\_\_\_

\_\_\_\_\_

My pencil is \_\_\_\_\_ ft. long. I know this because \_\_\_\_\_

\_\_\_\_\_

My pencil is \_\_\_\_\_ yd. long. I know this because \_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

Date 4-30-01

### Measure Your Pencil

**Part A:** On this paper, draw a line the exact length of your pencil. Then measure the length of that line in centimeters (to the nearest centimeter). How long is that in decimeters? How long is that in meters? If necessary, use fractions to convert to decimeters and meters.

Draw your pencil line here.

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My pencil is 18 cm long.

My pencil is 1.8 dm long.

My pencil is  $\frac{18}{100}$  m long.

**Part B:** Now, on this paper, draw another the exact length of your pencil. Measure that length in inches (to the nearest inch).

Draw your pencil line here.

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My pencil is 7 in long. I know this because I measured my pencil and it is 7 in. long.

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My pencil is  $\frac{7}{12}$  ft. long. I know this because a foot is 12 in and my pencil is 7 in.

My pencil is  $\frac{7}{36}$  yd. long. I know this because a yard is  
36 in and my pencil is 7  
is so my pencil is  $\frac{7}{36}$  of  
a yard.

Name \_\_\_\_\_

Date 5/1/01

### Measure Your Pencil

**Part A:** On this paper, draw a line the exact length of your pencil. Then measure the length of that line in centimeters (to the nearest centimeter). How long is that in decimeters? How long is that in meters? If necessary, use fractions to convert to decimeters and meters.

Draw your pencil line here.

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My pencil is 14 cm long.

My pencil is  $1\frac{4}{10}$  dm long.

My pencil is  $\frac{14}{100}$  m long.

**Part B:** Now, on this paper, draw another the exact length of your pencil. Measure that length in inches (to the nearest inch).

Draw your pencil line here.

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My pencil is 6 in long. I know this because When I measured the length of my pencil it was  $5\frac{1}{2}$  in. When you round things to a nearest in. a  $\frac{1}{2}$  in we rounded to 1 in. So  $5\frac{1}{2}$  in is rounded to 6 in.

My pencil is  $\frac{1}{2}$  or  $\frac{6}{12}$  ft. long. I know this because  $6 \times 2 = 12$ . So 6 is half of 12. My pencil is 6 in. So my pencil is  $\frac{1}{2}$  of a foot. My pencil is also

$\frac{6}{12}$  because there are 12 in. in a foot. My pencil is 6 in. So it is  $\frac{6}{12}$ .

My pencil is  $\frac{6}{36}$  or  $\frac{1}{6}$  yd. long. I know this because there are 36 in. in a yard and my pencil is 6 in. So it is  $\frac{6}{36}$  of a yard. It is also  $\frac{1}{6}$  because  $6 \times 6 = 36$  and my pencil is 6 in. So my pencil is  $\frac{1}{6}$  of a yard.