

Name \_\_\_\_\_

## Customary Units of Length

**Essential Question** How can you use models to compare customary units of length?



Measurement and Data—4.MD.A.1  
Also 4.MD.A.2

**MATHEMATICAL PRACTICES**  
MP1, MP2, MP5

### Unlock the Problem

You can use a ruler to measure length. A ruler that is 1 foot long shows 12 inches in 1 foot. A ruler that is 3 feet long is called a yardstick. There are 3 feet in 1 yard.

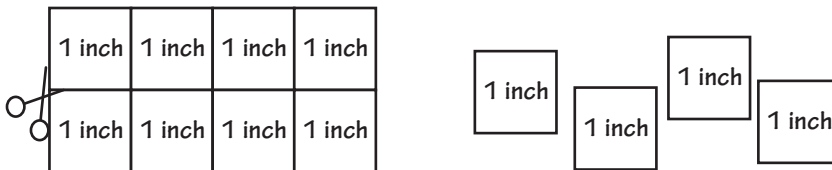


How does the size of a foot compare to the size of an inch?

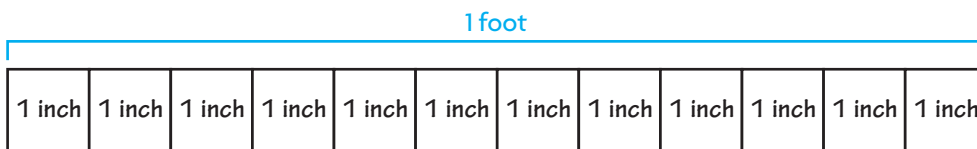
### Activity

**Materials** ■ 1-inch grid paper ■ scissors ■ tape

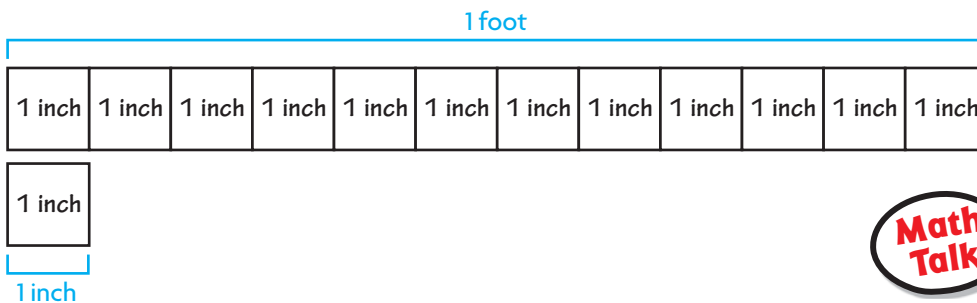
**STEP 1** Cut out the paper inch tiles. Label each tile 1 inch.



**STEP 2** Place 12 tiles end-to-end to build 1 foot. Tape the tiles together.



**STEP 3** Compare the size of 1 foot to the size of 1 inch.



**Think:** You need 12 inches to make 1 foot.



**MATHEMATICAL PRACTICES 2**

**Use Reasoning** Explain how you know the number of inches you need to make a yard.

So, 1 foot is \_\_\_\_\_ times as long as 1 inch.

**Example** Compare measures.

Emma has 4 feet of thread. She needs 50 inches of thread to make some bracelets. How can she determine if she has enough thread to make the bracelets?

Since 1 foot is 12 times as long as 1 inch, you can write feet as inches by multiplying the number of feet by 12.

**STEP 1** Make a table that relates feet and inches.

Feet	Inches
1	12
2	
3	
4	
5	

**Think:**

1 foot  $\times$  12 = 12 inches

2 feet  $\times$  12 = \_\_\_\_\_

3 feet  $\times$  \_\_\_\_\_ = \_\_\_\_\_

4 feet  $\times$  \_\_\_\_\_ = \_\_\_\_\_

5 feet  $\times$  \_\_\_\_\_ = \_\_\_\_\_



**STEP 2** Compare 4 feet and 50 inches.

4 feet



50 inches



**Think:** Write each measure in inches and compare using  $<$ ,  $>$ , or  $=$ .

\_\_\_\_\_ ○ \_\_\_\_\_

Emma has 4 feet of thread. She needs 50 inches of thread.

4 feet is \_\_\_\_\_ than 50 inches.

So, Emma \_\_\_\_\_ enough thread to make the bracelets.



**MATHEMATICAL PRACTICES 2**

**Represent a Problem**

Explain how making a table helped you solve the problem.

- What if Emma had 5 feet of thread? Would she have enough thread to make the bracelets? Explain.

\_\_\_\_\_

\_\_\_\_\_

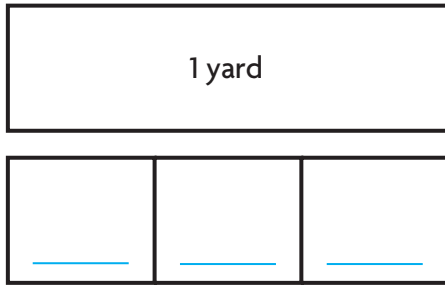
\_\_\_\_\_

Name \_\_\_\_\_

## Share and Show



1. Compare the size of a yard to the size of a foot.  
Use a model to help.



1 yard is \_\_\_\_\_ times as long as \_\_\_\_\_ foot.

### Customary Units of Length

1 foot (ft) = 12 inches (in.)

1 yard (yd) = 3 feet

1 yard (yd) = 36 inches

Complete.

2. 2 feet = \_\_\_\_\_ inches

3. 3 yards = \_\_\_\_\_ feet

4. 7 yards = \_\_\_\_\_ feet

## On Your Own

Complete.

5. 4 yards = \_\_\_\_\_ feet

6. 10 yards = \_\_\_\_\_ feet

7. 7 feet = \_\_\_\_\_ inches

**MATHEMATICAL PRACTICE 4** Use Symbols **Algebra** Compare using  $<$ ,  $>$ , or  $=$ .

8. 1 foot  13 inches

9. 2 yards  6 feet

10. 6 feet  60 inches

## Problem Solving • Applications



11. **THINK SMARTER** Joanna has 3 yards of fabric. She needs 100 inches of fabric to make curtains. Does she have enough fabric to make curtains? Explain. Make a table to help.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Yards	Inches
1	
2	
3	

12. **THINK SMARTER** Select the measures that are equal. Mark all that apply.

A 4 feet

C 36 feet

E 15 feet

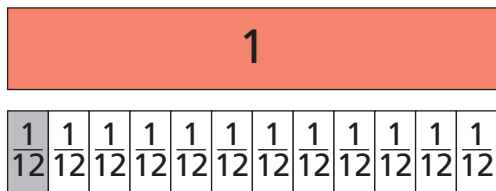
B 12 yards

D 480 inches

F 432 inches

13. **GO DEEPER** Jasmine and Luke used fraction strips to compare the size of a foot to the size of an inch using fractions. They drew models to show their answers. Whose answer makes sense? Whose answer is nonsense? Explain your reasoning.

### Jasmine's Work



1 inch is  $\frac{1}{12}$  of a foot.

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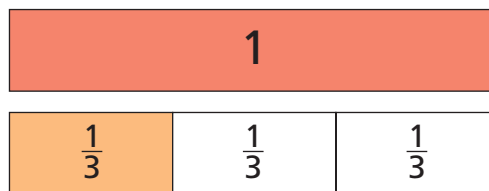


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### Luke's Work



1 inch is  $\frac{1}{3}$  of a foot.

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- a. **MATHEMATICAL PRACTICE 3 Apply** For the answer that is nonsense, write an answer that makes sense.

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- b. Look back at Luke's model. Which two units could you compare using his model? Explain.

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Name \_\_\_\_\_

## Customary Units of Length



**Common Core Standard—4.MD.A.1**  
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

### Complete.

1. 3 feet = 36 inches      Think: 1 foot = 12 inches,  
so 3 feet = 3 × 12 inches, or 36 inches
2. 2 yards = \_\_\_\_\_ feet      3. 8 feet = \_\_\_\_\_ inches      4. 7 yards = \_\_\_\_\_ feet
5. 4 feet = \_\_\_\_\_ inches      6. 15 yards = \_\_\_\_\_ feet      7. 10 feet = \_\_\_\_\_ inches

### Compare using <, >, or =.

8. 3 yards ○ 10 feet      9. 5 feet ○ 60 inches      10. 8 yards ○ 20 feet

## Problem Solving



11. Carla has two lengths of ribbon. One ribbon is 2 feet long. The other ribbon is 30 inches long. Which length of ribbon is longer? **Explain.**
12. A football player gained 2 yards on one play. On the next play, he gained 5 feet. Was his gain greater on the first play or the second play? **Explain.**

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13. **WRITE** *Math* Write a problem that can be solved by comparing feet and inches using a model. Include a solution. Explain why you are changing from a larger unit to a smaller unit.

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## Lesson Check (4.MD.A.1)

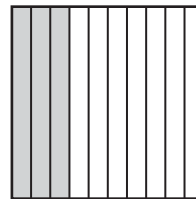
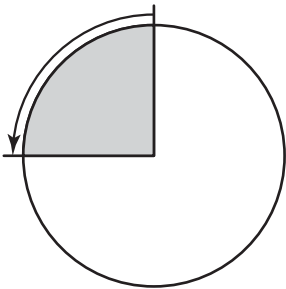
1. Marta has 14 feet of wire to use to make necklaces. She needs to know the length in inches so she can determine how many necklaces to make. How many inches of wire does Marta have?
2. Jarod bought 8 yards of ribbon. He needs 200 inches to use to make curtains. How many inches of ribbon does he have?

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## Spiral Review (4.NF.C.6, 4.MD.A.1, 4.MD.A.2, 4.MD.C.5a)

3. Describe the turn shown below. (Be sure to include both the size and direction of the turn in your answer.)
4. What decimal represents the shaded part of the model below?



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5. Three sisters shared \$3.60 equally. How much did each sister get?
6. Which is the best estimate for the width of your index finger?

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