

Using Ratios in Measurement

- Lee Yah and Peter are measuring items in their classroom. Lee Yah wanted to give the length of each item in inches and Peter wanted to give the length in feet.



We have to measure each item only one time. Since I know there are 12 inches in 1 foot, we can figure out the missing measurements.

Peter and Lee Yah recorded their measurements in a table. Use what you know about the relationship between inches and feet to fill in the missing measurements.

Measuring in Feet and Inches

	Item Measured	Inches	Feet
	Length of a math book	12 inches	1 foot
A.	Height of a shelf		2 feet
B.	Length of a table		6 feet
C.	Width of a table	36 inches	
D.	Width of the door	30 inches	
E.	Height of the door		7 feet

2. Peter used what he knows about equivalent ratios to find the height of the shelf in inches.

$$\frac{12 \text{ inches}}{1 \text{ foot}} = \frac{24 \text{ inches}}{2 \text{ feet}}$$

x2

I looked at the relationship between the denominators. Two feet is twice, or double, one foot. That means I have to double the number of inches in the numerator.



Use Peter's strategy to complete the number sentences.

A.

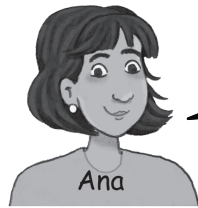
$$\frac{12 \text{ inches}}{1 \text{ foot}} = \frac{\square \text{ inches}}{4 \text{ feet}}$$

B.

$$\frac{1 \text{ foot}}{12 \text{ inches}} = \frac{\square \text{ feet}}{60 \text{ inches}}$$

- C.** Show or tell how you solved Question 2B.

3. Ana thought about another way to find the missing number in equivalent ratios.



I can see that when I know the number of feet, I can multiply by 12 to find the number of inches. If I know the number of inches, I can divide by 12 to find the number of feet.

$$\begin{array}{c} \times 12 \quad \leftarrow \\ \frac{2 \text{ feet}}{\boxed{} \text{ inches}} = \frac{\boxed{} \text{ feet}}{36 \text{ inches}} \quad \leftarrow \div 12 \end{array}$$

Use Ana's strategy to complete the number sentences.

A. $\frac{72 \text{ inches}}{6 \text{ feet}} = \frac{\boxed{} \text{ inches}}{8 \text{ feet}}$

B. $\frac{3 \text{ feet}}{36 \text{ inches}} = \frac{\boxed{} \text{ feet}}{120 \text{ inches}}$

4. Luis knows that 1 meter is equal to 100 centimeters. He started a table to show the relationship between centimeters and meters. Help Luis finish the table by filling in the missing values.

Centimeters to Meters

Centimeters	Meters
50 centimeters	.50 meter
65 centimeters	
	.80 meter
	1 meter
135 centimeters	
	1.75 meters
200 centimeters	

5. Complete each table.

A. Cups to Quarts

Cups	Quarts
2 cups	$\frac{1}{2}$ quart
	1 quart
6 cups	
	2 quarts
	$2\frac{1}{4}$ quarts
8 cups	

B. Feet to Yards

Feet	Yards
1 foot	$\frac{1}{3}$ yard
2 feet	
	1 yard
	$1\frac{1}{3}$ yards
6 feet	
	3 yards

C. Ounces to Pounds

Ounces	Pounds
4 ounces	$\frac{1}{4}$ pound
	$\frac{1}{2}$ pound
16 ounces	
	$1\frac{1}{2}$ pounds
28 ounces	
	2 pounds

D. Liters to Milliliters

Liters	Milliliters
.25 liter	250 milliliters
	750 milliliters
1 liter	
1.3 liters	
	1500 milliliters
	2000 milliliters

Use the *Problems of Scale* pages in the **Student Guide** for more practice with ratios.