

NAME: _____

Purpose

To use scale factors to solve for x in proportions

Math Words

proportion

Two equal ratios such as 8:6 and 4:3 form a proportion. We say 8 is to 6 as 4 is to 3.

$$8:6 = 4:3 \quad \frac{8}{6} = \frac{4}{3}$$

equation

You can solve a proportion equation to find an unknown part.

$$\frac{5 \text{ cans}}{7 \text{ days}} = \frac{15 \text{ cans}}{x \text{ days}}$$

scale down

To scale down 30 by a factor of 5, divide 30 by 5.

Starter Problem

Find the missing number to make the ratios equal.

$$3:x = 24:16$$

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Student Thinking



I rewrote the proportion in fraction form. The scale factor is 8, since 3 times 8 equals 24. Since x times 8 has to equal 16, x must equal 2. It checks since $\frac{3}{2} = \frac{24}{16}$.



$$\frac{3 \cdot 8}{x \cdot 8} = \frac{24}{16}$$

$$\begin{aligned} 3:x &= 24:16 \\ x &= 2 \end{aligned}$$



I know I need 8 times 3 to get 24, so I have to multiply by 8 on the bottom, too. 16 times 8 is 128, so x is 128.



$$\frac{3 \cdot 8}{x \cdot 8} = \frac{24}{16}$$

$$\begin{aligned} 3:x &= 24:16 \\ x &= 128 \end{aligned}$$

Things to Remember

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Our Turn

Find the value of x . Be prepared to discuss your method.

1. $20:14 = 30:x$ $x =$ _____

2. $35:x = 7:25$ $x =$ _____

3. $x:10 = 30:25$ $x =$ _____

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My Turn

Find the value of x . Be prepared to discuss your method.

1. $14:5 = 42:x$ $x =$ _____

2. $24:x = 16:6$ $x =$ _____

3. $x:7 = 5:14$ $x =$ _____

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Multiple Choice Mini LessonFill in the circle next to the answer you choose.

1. $x:5 = 12:30$

☐ 2☐ 6☐ 180☐ 72

2. $3:10 = x:15$

☐ 2☐ 4.5☐ 8☐ 15
_____

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Writing Task Mini Lesson

Explain how you know that x equals 5 in the following proportion.
You may make a diagram to help you explain.

$$15:12 = x:4$$



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