

NAME: _____



Purpose

To set up proportion problems and use cross multiplication and other methods to solve them

Math Words

cross product

The cross products for the proportion $\frac{3}{5} = \frac{60}{100}$ are 3×100 and 5×60 .

cross-multiply

If you cross-multiply the numbers on the diagonals in the proportion $\frac{3}{5} = \frac{60}{100}$, the products are both 300.

Starter Problem.....

A survey at the mall found that 3 out of 5 teenagers plan to buy clothing at the upcoming sale. If there are 225 teenagers at the mall, how many would be expected to buy clothing at the sale? _____

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Student Thinking



Daniel

It's a proportion problem. So, 3 out of 5 teens equals what number out of 225? I cross-multiplied and divided to get x equals 135. It checks because $\frac{3}{5}$ times a scale factor of 45 is $\frac{135}{225}$. You would expect 135 teens to buy clothes.



$$\begin{array}{l} \frac{\text{buyers}}{\text{total}} = \frac{3}{5} = \frac{x}{225} \\ 3 \cdot 225 = 5 \cdot x \\ 675 = 5x \\ 135 = x \end{array}$$

$$\begin{array}{r} 135 \\ 5 \overline{) 675} \\ \underline{5} \\ 175 \\ \underline{15} \\ 250 \\ \underline{225} \\ 250 \\ \underline{225} \\ 250 \\ \underline{225} \\ 250 \end{array}$$



Janelle

I made a proportion and solved for x. I got 375 total.



$$\begin{array}{l} \frac{3}{5} = \frac{225}{x} \\ 5 \cdot 225 = 3 \cdot x \\ 1125 = 3x \\ 375 = x \end{array}$$

$$\begin{array}{r} 375 \\ 3 \overline{) 1125} \\ \underline{9} \\ 225 \\ \underline{21} \\ 15 \\ \underline{15} \\ 0 \end{array}$$

Things to Remember

- * _____
- * _____



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Our Turn

Set up and label a proportion, then solve it.

1. A survey at lunchtime found that 30 out of 50 students surveyed plan to eat their lunch in the school cafeteria next school year. If there are 1100 students in the school, how many probably plan to eat in the cafeteria?
2. The Reed family usually eats 5 boxes of cereal in 2 weeks. Since cereal is on sale, they want to buy enough for the next 60 days. How many boxes should they buy?
3. Kai received \$25 for working 4 hours. At that rate, how many hours must he work to earn \$155?

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My Turn

Set up and label a proportion, then solve it.

1. Carla's basketball statistics say she makes 13 shots for every 50 tries. She now has made 108 shots this season. How many tries would you expect she has made this season?
2. In the first week of July, a movie theater sold 5 student tickets for every 3 adult tickets. If the theater sold approximately 15,000 adult tickets, how many student tickets were sold?
3. A racecar traveled 17 miles in 4.0 minutes. At this rate, how long should it take the racecar to travel 44 miles?

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Multiple Choice Mini Lesson

Fill in the circle next to the proportion you choose.

1. A newspaper report states 7 out of 10 drivers say they listen to the radio while driving. If 210 drivers were asked, about how many would say they listen to the radio?

☐ $7:10 = 210:x$

☐ $10:210 = x:7$

☐ $10:7 = 210:x$

2. How long should a train take to travel 100 km if it travels 65 km in 40 minutes and stays at the same speed?

☐ $x:100 = 65:40$

☐ $x:100 = 40:65$

☐ $100:65 = 40:x$



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☐ $10:210 = x:7$

☐ $10:7 = 210:x$

2. How long should a train take to travel 100 km if it travels 65 km in 40 minutes and stays at the same speed?

☐ $x:100 = 65:40$

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☐ $100:65 = 40:x$

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Writing Task Mini Lesson

Explain how to write and solve a proportion to show that 214 is the correct solution to this problem:

There are 300 families with preschoolers in town. On a survey of 42 of these families, 30 report that their preschoolers read with a parent each day. Based on this survey, about how many of the 300 families have preschoolers reading with parents daily?



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