

Get out your homework and have it ready to check. ~~Start checking your answers with answer key below.~~ We will take the Target Check after checking the homework! Quiz on Wednesday!

Classwork - Writing and Solving Proportions

Warm Up: Write and solve a proportion.

Hank can run two miles in 10.5 minutes. How many minutes will it take him to run five miles at this pace?

$$\frac{2 \text{ miles}}{10.5 \text{ minutes}} = \frac{5 \text{ miles}}{x}$$

$$2 \cdot x = 52.5$$
$$\div 2$$

$$x = 26.25 \text{ minutes}$$

1) Solve the following proportions using cross multiplication. SHOW WORK. Make sure to label your final answer.

A) $\frac{410 \text{ km}}{4 \text{ hours}} = \frac{x}{6 \text{ hours}}$

$$2460 = 4 \cdot x$$
$$\div 4$$

$$x = 615 \text{ km}$$

B) $\frac{\$6}{10 \text{ oz}} = \frac{\$22.50}{y}$

$$\frac{225}{6} = \frac{6 \cdot y}{6}$$

$$y = 37.50 \text{ oz}$$

C) $\frac{\$60.75}{3 \text{ hours}} = \frac{z}{11 \text{ hours}}$

$$\frac{668.25}{3} = \frac{3 \cdot z}{3}$$

$$z = \$222.75$$

D) $\frac{5 \text{ wins}}{2 \text{ losses}} = \frac{w}{22 \text{ losses}}$

$$\frac{110}{2} = \frac{2 \cdot w}{2}$$

$$w = 55 \text{ wins}$$

E) $\frac{3 \text{ girls}}{7 \text{ total people}} = \frac{39 \text{ girls}}{p}$

$$\frac{273}{3} = \frac{3 \cdot p}{3}$$

$$p = 91 \text{ people}$$

F) $\frac{18.7 \text{ meters}}{2 \text{ seconds}} = \frac{x}{10.4 \text{ seconds}}$

$$\frac{194.48}{2} = \frac{2 \cdot x}{2}$$

$$x = 97.24 \text{ meters}$$

2) When solving proportions, all the labels need to be the same for both. Rewrite the ratios below so they use the same units (example: both ratios have seconds or minutes, etc.) Then use cross multiplication to solve the proportion for the variable.

A) $\frac{60 \text{ feet}}{20 \text{ seconds}} = \frac{x}{2 \text{ minutes}}$

$$\frac{60 \text{ ft}}{20 \text{ s}} = \frac{x}{120 \text{ s}}$$

$2 \text{ min} = 120 \text{ seconds}$

$$\frac{7200}{20} = \frac{20x}{20}$$

$$x = 360 \text{ feet}$$

B) $\frac{\$3.60}{1 \text{ dozen eggs}} = \frac{x}{36 \text{ eggs}}$

$$\frac{\$3.60}{1 \text{ dozen eggs}} = \frac{x}{3 \text{ dozen eggs}}$$

$36 \text{ eggs} = 3 \text{ dozen}$

$$\frac{10.8}{1} = \frac{x}{1}$$

$$x = \$10.80$$

3) Dre's boss pays him \$18 for washing 4 cars. How much will Dre earn for washing 7 cars?

$$\frac{\$18}{4 \text{ cars}} = \frac{x}{7 \text{ cars}}$$

$$\frac{126}{4} = \frac{4x}{4}$$

$$x = \$31.50$$

4) Walker reads 5 books over 2 months. If he continues to read at this pace, how many books will he read in 12 months?

$$\frac{5 \text{ books}}{2 \text{ months}} = \frac{b}{12 \text{ months}}$$

$$\frac{60}{2} = \frac{2b}{2}$$

$$b = 30 \text{ books}$$

5) Andy paid \$12 for 4 baseball packs of baseball cards. How many packs of cards can he buy for \$21?

$$\frac{\$12}{4 \text{ packs}} = \frac{\$21}{p}$$

$$\frac{12p}{12} = \frac{84}{12}$$

~~p = 7~~ $p = 7 \text{ packs}$

6) Charlie earns $\frac{1}{2}$ a dollar for every candy bar he sells. How much will he earn if he sells 16 candy bars?

$$\frac{1}{2} \text{ dollar} = \$0.50$$

$$\frac{\$0.50}{1 \text{ bar}} = \frac{m}{16 \text{ bars}}$$

$$\frac{8}{1} = \frac{1m}{1}$$

$m = \$8$

Solve the following proportions using cross multiplication or using what you know about proportions. SHOW WORK.

1) $\frac{4}{10} = \frac{32}{x}$

$4x = 320$
 $\div 4$
 $x = 80$

2) $\frac{2}{7} = \frac{5}{x}$

$35 = 2x$
 $\div 2$
 $17.5 = x$

3) $\frac{4}{5} = \frac{11}{x}$

$4 \cdot x = 55$
 $\div 4$
 $x = 13.75$

4) $\frac{6}{20} = \frac{x}{30}$

$180 = 20 \cdot x$
 $\div 20$
 $9 = x$

5) $\frac{24}{18} = \frac{6}{x}$

6) $\frac{32.5}{25} = \frac{97.5}{x}$

7) $\frac{16}{120} = \frac{x}{15}$

8) $\frac{39}{9} = \frac{26}{x}$

9) Decide if the following table and graph is proportional.

If it's easier for you to work with tables, and you are not given a table → MAKE A TABLE

A)

Hours (h)	Money (m)
3	25.50
8	68
10	85
13	110.50

$$\frac{25.50}{3} = 8.5 \text{ } ^B)$$

$$\frac{68}{8} = 8.5$$

$$\frac{85}{10} = 8.5$$

$$\frac{110.50}{13} = 8.5$$

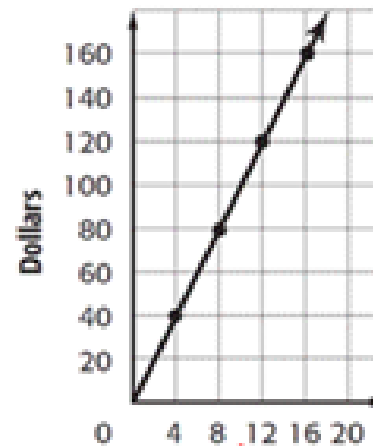
Proportional

Not Proportional

Constant of Proportionality:

$$\frac{\$8.50}{1 \text{ hour}}$$

Serena's Earnings



It's a straight line that goes through the origin.

Proportional

Not Proportional

Constant of Proportionality:

$$\frac{\$40}{4 \text{ h}} = \$10/1 \text{ hour}$$

For each word problem, write a proportion (equal ratios) and then solve to find the answer. Be sure to set it up the correct way and show all work.

Example: $\frac{10 \text{ yard}}{2 \text{ minutes}} = \frac{x}{7 \text{ minutes}}$ $x = 35 \text{ yards}$

10) At a recent party, it cost \$9.50 for refreshments for 10 guests. At this rate, how much would it cost to have refreshments for 80 guests?

11) Because of slumping sales, a small company had to lay off some of its employees. The ratio of total employees laid off to total employees is 1 to 5. Find the total number of employees if 22 are laid off.

13) A class's ratio of boys to girls is 6 to 4. If there are 25 students in the entire class, how many girls are there?
 (1st hint: make a ratio of girls to total students) ~~(2nd hint: make a ratio of boys to total students)~~

$$\frac{6 \text{ boys}}{4 \text{ girls}} \rightarrow \frac{4 \text{ girls}}{10 \text{ students}} = \frac{g}{25 \text{ students}}$$

$$100 = 10 \cdot g$$

$$\div 10$$

$$g = 10 \text{ girls}$$

14) A recipe calls for 2 ½ cups of flour to make 2 dozen cookies. How many cups of flour would be required to bake 15 dozen cookies?

15) At PetSmart there are 4 dogs for every cat that is available for adoption. If there are 16 dogs at PetSmart, how many total dogs and cats are up for adoption?

$$\frac{4 \text{ dogs}}{1 \text{ cat}}$$

$$\frac{4 \text{ dogs}}{5 \text{ total dogs and cats}} = \frac{16 \text{ dogs}}{x \text{ total}}$$

$$80 = 5 \cdot x$$

$$\div 5$$

$$20 \text{ total} = x$$