

Get out the 2 worksheets that were homework and start checking your answers with the key below. Target Check on Monday!

Classwork - Writing and Solving Proportions

$$E) \frac{4 \text{ meters}}{5 \text{ seconds}} = \frac{x}{55 \text{ seconds}}$$

$$220 = 5 \cdot x$$

$$\div 5 \quad \div 5$$

$$x = 44 \text{ meters}$$

$$H) \frac{2 \text{ miles}}{x} = \frac{7 \text{ miles}}{21 \text{ hours}}$$

$$42 = 7 \cdot x$$

$$\div 7$$

$$x = 6 \text{ hours}$$

$$F) \frac{4 \text{ eggs}}{10 \text{ cups}} = \frac{x}{25 \text{ cups}}$$

$$100 = 10 \cdot x$$

$$\div 10 \quad \div 10$$

$$x = 10 \text{ eggs}$$

$$I) \frac{30 \text{ yards}}{2 \text{ minutes}} = \frac{126 \text{ yard}}{x}$$

$$252 = 30 \cdot x$$

$$\div 30$$

$$x = 8.4 \text{ minutes}$$

$$G) \frac{18 \text{ boys}}{x} = \frac{2 \text{ boys}}{3 \text{ girls}}$$

$$54 = 2 \cdot x$$

$$\div 2$$

$$x = 27 \text{ girls}$$

$$J) \frac{6 \text{ boys}}{11 \text{ students}} = \frac{x}{88 \text{ students}}$$

$$528 = 11 \cdot x$$

$$\div 11$$

$$x = 48 \text{ boys}$$

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

A) $\frac{235 \text{ miles}}{5 \text{ hours}} = \frac{x}{4 \text{ hours}}$

$$\frac{940}{5} = \frac{5x}{5} \quad x = 188 \text{ mi}$$

B) $\frac{16 \text{ cats}}{12 \text{ dogs}} = \frac{12 \text{ cats}}{y}$

$$\frac{144}{16} = \frac{16y}{16} \quad y = 9 \text{ dogs}$$

C) $\frac{\$30}{4 \text{ hours}} = \frac{z}{7 \text{ hours}}$

$$\frac{210}{4} = \frac{4z}{4} \quad z = \$52.50$$

D) $\frac{\$3.30}{4 \text{ packs}} = \frac{a}{10 \text{ packs}}$

$$a = \$8.25$$

E) $\frac{12 \text{ boys}}{20 \text{ total people}} = \frac{18 \text{ boys}}{b}$

$$b = 30 \text{ total people}$$

F) $\frac{4.5 \text{ meters}}{6 \text{ seconds}} = \frac{x}{8 \text{ seconds}}$

$$x = 6 \text{ meters}$$

Writing Proportions

The following problems deal with rates and proportions. In order to be successful on them, you need to:

- A) Identify the full rate (comparison of 2 numbers) being described in the problem
- B) What additional information you have → write this in the appropriate place of a new rate
- C) What information you are missing → write an "x" in that place to show we don't know the number
- D) Use what you know about equal rates to find what you can multiply or divide by to connect the rates together.

Example:

Hailey earns \$35 for 5 hours of work. How much would she earn for working 7 hours?

Rate described in problem

What do we know about missing rate?

$$\frac{\$35}{5 \text{ hours}} = \frac{x}{7 \text{ hours}}$$

$$5 \cdot x = 245$$
$$\div 5$$
$$x = \$49$$

3) Erica ~~spent~~ spent \$6 on 4 postcard. How much would 10 postcards cost?

Rate described in problem

What do we know about missing rate?

$$\frac{\$6}{4 \text{ postcards}} = \frac{x}{10 \text{ postcards}}$$

$$60 = 4 \cdot x$$
$$\div 4$$
$$x = \$15$$

4) Brandon's birthday party will cost \$20 if he invites 10 guests. How many guests can there be, at most, if Brandon can afford to spend a total of \$24 on his birthday party? Assume the relationship is directly proportional.

Rate described in problem

$$\frac{\$20}{10 \text{ guests}}$$

What do we know about missing rate?

$$= \frac{\$24}{g}$$

$$240 = 20 \cdot g$$

$$\div 20$$

$$12 \text{ guests} = g$$

1) Follow the directions in the box and fill in the missing information.

A) $\frac{\$60}{3 \text{ weeks}} = \frac{\$100}{5 \text{ weeks}}$
 $300 = 300$

For A and B, I want you to multiply the numbers that are diagonal to one another. This is called cross multiplying OR finding the cross product.

B) $\frac{\$100}{5 \text{ weeks}} = \frac{\$160}{8 \text{ weeks}}$
 =

When you cross-multiply the numbers in a proportion, what should be true about the products?

They should be equal

Find a Missing Value using Cross-Product and Cross Multiplication

Example on how to solve for a variable

- A) Look at the proportion and decide what you are going to multiply
(circle the numbers diagonally if that helps)

$$\frac{3}{x} = \frac{12}{16}$$



- B) Multiply the numbers/variables diagonal to one another

$$12 \cdot x = 3 \cdot 16$$

- C) Simplify the equation

$$12 \cdot x = 48$$

- D) To undo multiplication \rightarrow Divide

$$\frac{48}{12} = 4$$

- E) Do a Quick Check you answer by cross multiplying

If $x = 4 \rightarrow \frac{3}{4} = \frac{12}{16}$ If I cross multiply



Does $12 \cdot 4 = 3 \cdot 16$

$48 = 48$ YES

2) Solve the following proportions using cross multiplication. SHOW WORK

A) $\frac{2}{6} = \frac{4}{x}$

$2 \cdot x = 24$
 $\div 2$
 $x = 12$

B) $\frac{3}{x} = \frac{12}{16}$

$12 \cdot x = 48$
 $\div 12$
 $x = 4$

C) $\frac{2}{x} = \frac{7}{21}$

$42 = 7 \cdot x$
 $\div 7$
 $6 = x$

$$D) \frac{6}{9} = \frac{2}{x}$$

$$E) \frac{4}{5} = \frac{x}{55}$$

$$F) \frac{4}{10} = \frac{x}{25}$$

3) Can you create **2 equal ratios (a proportion)** for the problem below? **SHOW WORK** on whether or not they are equal by multiplying or dividing sideways or vertically.

FITNESS Jessica can do 60 jumping-jacks in 2 minutes. Juanita can do 150 jumping-jacks in 5 minutes. Are these rates proportional? Explain your reasoning.

SURVEY One school survey showed that 3 out of 5 students own a pet. Another survey showed that 6 out of 11 students own a pet. Are these results proportional? Explain your reasoning.

4) Jackson baked 15 cookies with 3 scoops of flour. How many scoops of flour does Jackson need in order to bake 50 cookies? Assume the relationship is directly proportional.

$$\frac{15 \text{ cookies}}{3 \text{ scoops}} = \frac{50 \text{ cookies}}{x}$$

$$150 = 15 \cdot x$$
$$\div 15$$

$$10 \text{ scoops} = x$$

5) Cory is buying seeds to plant a garden. If she buys 2 packs, she will have 40 seeds. How many packs would she need to buy to have 180 seeds?

$$\frac{40 \text{ seeds}}{2 \text{ packs}} = \frac{180 \text{ seeds}}{p}$$

$$40 \cdot p = 360$$
$$\div 40$$

$$p = 9 \text{ packs}$$

6) Max can type $\frac{1}{3}$ of a page in 2 minutes. How many pages can he type in 6 minutes?

7) 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.

$$\frac{8 \text{ yards}}{5 \text{ seconds}} = \frac{72 \text{ feet}}{x}$$

$$\frac{72 \text{ ft}}{3} = 24 \text{ yards}$$

$$\frac{8 \text{ yd}}{5 \text{ seconds}} = \frac{24 \text{ yd}}{x}$$

$$\frac{120}{5} = 8x$$
$$15 = x$$