

Algebra – Ch. 4 – Test Review

(Proportions)

Name Key hr

Find the unit rate.

1. A package of beef costs \$6.69 for 3 lbs.
What is the cost per pound?

$$\frac{\$6.69}{3 \text{ lbs}} = \boxed{\frac{\$2.23}{1 \text{ lb}}}$$

2. A 48 oz bottle of apple juice costs \$1.56.
What is the cost per ounce?

$$\frac{\$1.56}{48 \text{ oz}} = \boxed{\frac{\$0.0325}{1 \text{ oz}} = \frac{3.25 \text{¢}}{1 \text{ oz}}}$$

Find each conversion.

3. 120 cm = 1.2 m

$$\frac{120 \text{ cm}}{x \text{ m}} \times \frac{100 \text{ cm}}{1 \text{ m}}$$

$$\frac{100x}{100} = \frac{120}{100}$$

$$x = 1.2 \text{ m}$$

4. 180 min = 10,800 sec

$$\frac{180 \text{ min}}{x \text{ sec}} \times \frac{60 \text{ sec}}{1 \text{ min}}$$

$$\frac{1x}{1} = \frac{10800}{1}$$

$$x = 10,800 \text{ sec}$$

Solve each proportion.

5. $\frac{x}{14} = \frac{24}{35}$

$$\frac{35x}{35} = \frac{336}{35}$$

$$x = 9.6$$

6. $\frac{324}{3x} = \frac{12}{0.5}$

$$\frac{360x}{36} = \frac{162}{36}$$

$$x = 4.5$$

7. $\frac{-3}{y+7} = \frac{12}{4}$

$$\begin{array}{r} 12(y+7) = -12 \\ 12y + 84 = -12 \\ -84 \quad -84 \\ \hline 12y = -96 \\ \frac{12y}{12} = \frac{-96}{12} \\ y = -8 \end{array}$$

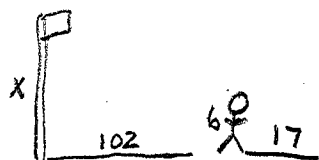
8. $\frac{4m-3}{11} = \frac{2m+5}{5}$

$$\begin{array}{r} 5(4m-3) = 11(2m+5) \\ 20m-15 = 22m+55 \\ -22m \quad -22m \\ \hline -2m-15 = 55 \\ +15 \quad +15 \\ \hline -2m = 70 \\ \frac{-2m}{-2} = \frac{70}{-2} \\ m = -35 \end{array}$$

$$m = -35$$

Solve each situation below.

9. A flagpole casts a shadow that is 102 feet long.
A 6 foot tall man casts a shadow that is 17 feet long.
How tall is the flagpole?



$$\frac{x \text{ ft}}{6 \text{ ft}} = \frac{102 \text{ ft}}{17 \text{ ft}}$$

$$\frac{17x}{17} = \frac{612}{17}$$

$$x = 36 \text{ ft}$$

10. The scale on a map is 1 in : 15 miles. The distance between two cities is 25 miles. Find the distance between the two cities on the map.

$$\frac{1 \text{ in}}{15 \text{ mi}} = \frac{x \text{ in}}{25 \text{ mi}}$$

$$\frac{15x}{15} = \frac{25}{15}$$

$$x = 1.6 \text{ in}$$

11. At Pick and Save, there are 50 bottles of ketchup for every 21 bottles of mustard. If you count 600 bottles of ketchup, how many bottles of mustard are there?

$$\frac{50 \text{ k}}{21 \text{ m}} \times \frac{600 \text{ k}}{x \text{ m}}$$

$$\frac{50x}{50} = \frac{12600}{50}$$

$$x = 252 \text{ bottles of mustard}$$

13. What is 10% of 94?

$$x = .10 \cdot 94$$

$$x = 9.4$$

or

$$\frac{x}{94} \times \frac{10}{100}$$

$$\frac{100x}{100} = \frac{940}{100}$$

$$x = 9.4$$

12. 55% of what number is 13.2?

$$\frac{.55 \cdot x}{.55} = \frac{13.2}{.55}$$

$$x = 24$$

or

$$\frac{13.2}{x} \times \frac{55}{100}$$

$$\frac{55x}{55} = \frac{1320}{55}$$

$$x = 24$$

14. What percent of 20 is 31?

$$\frac{x \cdot 20}{20} = \frac{31}{20}$$

$$x = 1.55$$

$$x = 155\%$$

or

$$\frac{31}{20} \times \frac{x}{100}$$

$$\frac{20x}{20} = \frac{3100}{20}$$

$$x = 155\%$$

15. What percent of 54 is 28?

$$\frac{x \cdot 54}{54} = \frac{28}{54}$$

$$x = .519$$

$$x = 51.9\%$$

$$\frac{28}{54} \times \frac{x}{100}$$

$$\frac{54x}{54} = \frac{2800}{54}$$

$$x = 51.9\%$$

16. Theresa worked 18 hours at a day care center as a volunteer. If this is 60% of her school's requirement for community service, how many hours of community service does her school require?

$$\% \text{ of whole} = \frac{\text{part}}{\text{whole}}$$

$$60\% \text{ of } x = 18$$

$$\frac{.6 \cdot x}{.6} = \frac{18}{.6}$$

$$x = 30 \text{ hrs}$$

or

$$\frac{\text{part}}{\text{whole}} = \frac{\%}{100}$$

$$\frac{18}{x} \times \frac{60}{100}$$

$$\frac{60x}{60} = \frac{1800}{60}$$

$$x = 30 \text{ hrs}$$

Find the percent of change for each situation below. Describe the change as an increase or decrease.

17. As a young boy goes from 50 lbs to 75 lbs.

$$\frac{75-50}{50} = \frac{25}{50} = .5$$

big-small
original

50% increase

18. \$4.95 to \$3.87

$$\frac{4.95-3.87}{4.95} = \frac{1.08}{4.95} = .218$$

21.8% decrease