

Homework #27 - Proportional Relationships using an Equation**Directions:** Show all work for each question.

1) The rate at which Nicole types is represented by the table below.

Time (min.) (x)	2	4	6	8
Words (y)	168	336	504	672

A) Is the relationship between the number of words Nicole types and the number of minutes it takes her to type those words proportional? Show all work and explain.

$$\frac{Y}{X} \quad \frac{168}{2} = \frac{84}{1} \quad \frac{336}{4} = \frac{84}{1} \quad \frac{504}{6} = \frac{84}{1} \quad \frac{672}{8} = \frac{84}{1}$$

Proportional b/c all unit rates are equal.

B) What is the constant of proportionality? 84 or $\frac{84}{1}$ C) Write an equation that shows the relationship in the table above. $y = 84x$

D) If Nicole is typing for 10 minutes, how many words did she type? Show all work.

$$x \quad y = 84x$$

$$y = 84(10)$$

$$y = 840 \text{ words}$$

E) If Nicole types 420 words, how many minutes did she type for? Show all work.

$$y \quad y = 84x$$

$$\frac{420}{84} = \frac{84x}{84}$$

$$x = 5 \text{ minutes}$$

2) The table below shows the cost of bananas at Stop-N-Shop.

# of Bananas (x)	2	5	10	15
Cost (\$) (y)	\$1.30	\$3.25	\$6.50	\$9.75

A) Is the cost of bananas proportional to the number of bananas purchased? Show work and explain.

$$\frac{y}{x} \quad \frac{\$1.30}{2} = \frac{\$0.65}{1} \quad \frac{\$3.25}{5} = \frac{\$0.65}{1} \quad \frac{\$6.50}{10} = \frac{\$0.65}{1}$$

$\frac{\$9.75}{15} = \frac{\$0.65}{1}$

Proportional b/c all unit rates are equal.

B) What is the constant of proportionality? 0.65 or $\frac{0.65}{1}$

C) What does the constant of proportionality mean in the context of the problem?
Each banana costs \$0.65

D) Write an equation that shows the relationship above. $y = 0.65x$

E) If you purchased 7 bananas, how much money did you spend? Show all work.

$$x \quad y = 0.65x$$

$$y = 0.65(7)$$

$$y = \$4.55$$

F) If you spent \$7.80, how many bananas did you purchase? Show all work.

$$y \quad y = 0.65x$$

$$7.80 = 0.65x$$

$$\frac{7.80}{0.65} = \frac{0.65x}{0.65}$$

$$x = 12 \text{ bananas}$$