

Lesson 20: Comparison Shopping—Unit Price and Related Measurement Conversions

Classwork

An activity will be completed in order to gain confidence in comparing rates on tables, graphs, and equations.

Example 1: Notes from Exit Ticket

Take notes from the discussion in the space provided below.

Notes: Kiara: 5 math facts/second

Giovanni: $\frac{20}{5} = 4$ math facts/second

Ebony: $\frac{12}{2} = 6$ math facts/second.

Ebony wins the argument because when comparing unit rates, Ebony completes math facts at the fastest rate.

Exploratory Challenge

- a. Mallory is on a budget and wants to determine which cereal is a better buy. A 10-ounce box of cereal costs \$2.79, and a 13-ounce box of the same cereal costs \$3.99.

- i. Which box of cereal should Mallory buy?

$$\frac{\$ 2.79}{10\text{oz}} = 0.279 \downarrow \\ 0.28/\text{oz.}$$

$$\frac{\$ 3.99}{13\text{oz}} = 0.306 \downarrow \\ 0.31/\text{oz.}$$

The 10 oz box of cereal is better buy because it is 3¢ cheaper.

- ii. What is the difference between the two unit prices?

$$\begin{array}{r} 0.31 \\ - 0.28 \\ \hline 0.03 \end{array}$$

means subtract.

3¢ difference.

- b. Vivian wants to buy a watermelon. Kingston's Market has 10-pound watermelons for \$3.90, but the Farmer's Market has 12-pound watermelons for \$4.44.

i. Which market has the best price for watermelon?

$$\frac{\$3.90}{10\text{lb}} = 0.39/\text{lb.}$$

$$\frac{\$4.44}{12\text{lb}} = 0.37/\text{lb.}$$

The 12lb watermelon is 2¢ cheaper.

ii. What is the difference between the two unit prices?

$$\begin{array}{r} 0.39 \\ -0.37 \\ \hline 0.02 \end{array} = 2\text{¢}$$

- c. Mitch needs to purchase soft drinks for a staff party. He is trying to figure out if it is cheaper to buy the 12-pack of soda or the 20-pack of soda. The 12-pack of soda costs \$3.99, and the 20-pack of soda costs \$5.48.

i. Which pack should Mitch choose?

$$\frac{\$3.99}{12\text{ pack}} = 0.332 \downarrow \\ 0.33/\text{can}$$

$$\frac{\$5.48}{20\text{ pack}} = 0.299 \downarrow \\ 0.30/\text{can}$$

The 20 pack of Soda is 3¢ Cheaper.

ii. What is the difference in cost between single cans of soda from each of the two packs?

$$\begin{array}{r} 0.33 \\ -0.30 \\ \hline 0.03 \end{array} \quad 3\text{¢}$$

- d. Mr. Steiner needs to purchase 60 AA batteries. A nearby store sells a 20-pack of AA batteries for \$12.49 and a 12-pack of the same batteries for \$7.20.

i. Would it be less expensive for Mr. Steiner to purchase the batteries in 20-packs or 12-packs?

$$\frac{\$12.49}{20\text{ pack}} = 0.62/\text{battery}$$

$$\frac{\$7.20}{12\text{ pack}} = 0.60/\text{battery.}$$

The 12 pack is 2¢ cheaper.

ii. What is the difference between the costs of one battery from each pack?

$$\begin{array}{r} 0.62 \\ -0.60 \\ \hline 0.02 \end{array} \quad 2\text{¢}$$

- e. The table below shows the amount of calories Mike burns as he runs.

Number of Miles Ran	3	6	9	12
Number of Calories Burned	360	720	1,080	1,440

Fill in the missing part of the table.

$$\frac{360}{3} = 120$$

$$\frac{720}{6} = 120$$

$$\frac{1440}{12} = 120$$

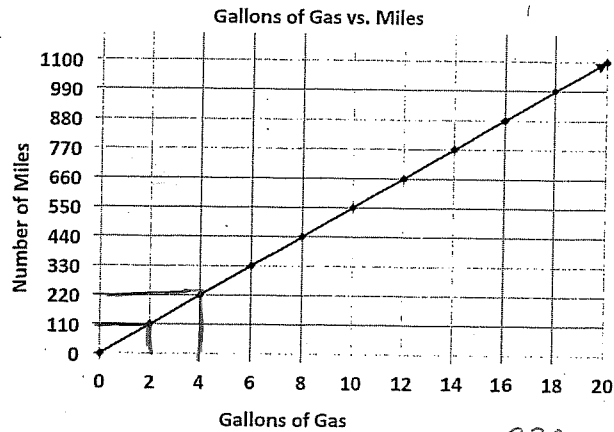
$$120(9) = 1,080$$

- f. Emilio wants to buy a new motorcycle. He wants to compare the gas efficiency for each motorcycle before he makes a purchase. The dealerships presented the data below.

Sports Motorcycle:

Number of Gallons of Gas	5	10	15	20
Number of Miles	287.5	575	862.5	1,150

Leisure Motorcycle:



of miles / # of gal. = $\frac{287.5}{5} = 57.5 / \text{gal.}$
 $\frac{575}{10} = 57.5 / \text{gal.}$

of miles / gal. of gas = $\frac{110}{2} = 55$ $\frac{220}{4} = 55$

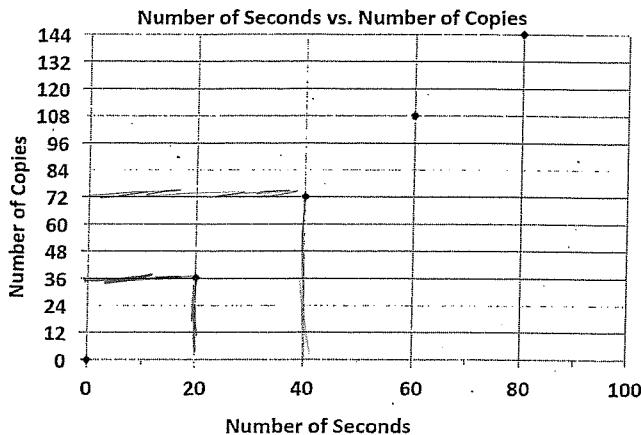
Which motorcycle is more gas efficient and by how much?

The Leisure Motorcycle is more gas efficient by 2.5 miles/gal.

$$\begin{array}{r} 57.5 \\ - 55.0 \\ \hline 2.5 \end{array}$$

- g. Milton Middle School is planning to purchase a new copy machine. The principal has narrowed the choice to two models: SuperFast Deluxe and Quick Copies. He plans to purchase the machine that copies at the fastest rate. Use the information below to determine which copier the principal should choose.

SuperFast Deluxe:



Quick Copies:

$c = 1.5t$

(where t represents the amount of time in seconds, and c represents the number of copies)

The principal should use Quick Copies because it makes copies 1.8 - 1.5 = 3 sec. faster.

of copies / # of seconds = $\frac{36}{20} = 1.8$ $\frac{72}{40} = 1.8$

- (h) Elijah and Sean are participating in a walk-a-thon. Each student wants to calculate how much money he would make from his sponsors at different points of the walk-a-thon. Use the information in the tables below to determine which student would earn more money if they both walked the same distance. How much more money would that student earn per mile?

Elijah's Sponsor Plan:

Number of Miles Walked	7	14	21	28
Money Earned in Dollars	35	70	105	140

$$\frac{35}{7} = 5 \quad \frac{70}{14} = 5 \quad \frac{105}{21} = 5 \quad \frac{140}{28} = 5$$

Sean's Sponsor Plan:

Number of Miles Walked	6	12	18	24
Money Earned in Dollars	33	66	99	132

$$\frac{33}{6} = 5.50 \quad \frac{66}{12} = 5.50 \quad \frac{99}{18} = 5.50 \quad \frac{132}{24} = 5.50$$

Sean's Sponsor plan would earn more money. He would earn 0.50 more than Elijah.

- (i) Gerson is going to buy a new computer to use for his new job and also to download movies. He has to decide between two different computers. How many more kilobytes does the faster computer download in one second?

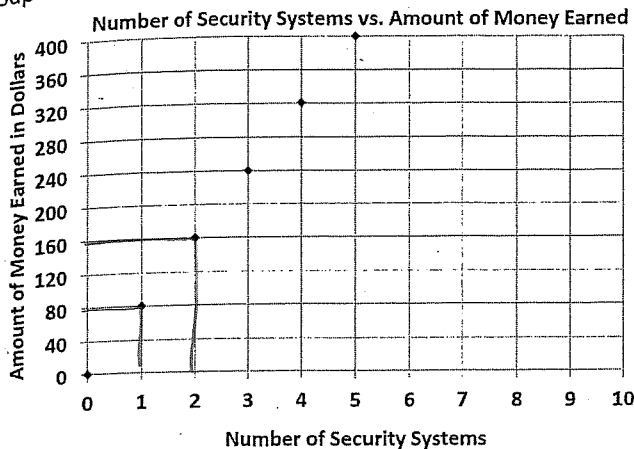
Choice 1: The rate of download is represented by the following equation: $k = 153t$, where t represents the amount of time in seconds, and k represents the number of kilobytes.

Choice 2: The rate of download is represented by the following equation: $k = 150t$, where t represents the amount of time in seconds, and k represents the number of kilobytes.

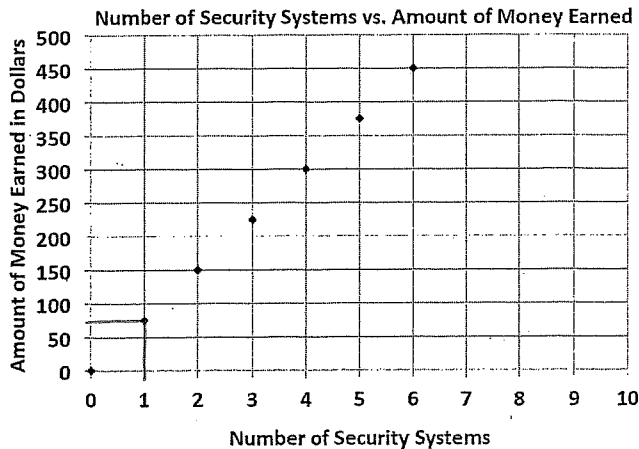
Choice 1 downloads 3 more kilobytes faster/sec. than choice 2.

- j. Zyearaye is trying to decide which security system company he will make more money working for. Use the graphs below that show Zyearaye's potential commission rate to determine which company will pay Zyearaye more commission. How much more commission would Zyearaye earn by choosing the company with the better rate?

Superior Security:



Top Notch Security:



$$\frac{80}{1} = 80 \quad \frac{160}{2} = 80$$

$$\frac{75}{1} = 75$$

Superior Security would pay \$5 more/security system sold than Top Notch Security.

- k. Emilia and Miranda are sisters, and their mother just signed them up for a new cell phone plan because they send too many text messages. Using the information below, determine which sister sends the most text messages. How many more text messages does this sister send per week?

Emilia:

Number of Weeks	3	6	9	12
Number of Text Messages	1,200	2,400	3,600	4,800

$$\frac{1200}{3} = 400$$

$$\frac{2400}{6} = 400$$

$$\frac{3600}{9} = 400$$

Miranda: $m = 410w$, where w represents the number of weeks, and m represents the number of text messages.

Miranda sends 10 more text messages/week than Emilia.