

# Linear Functions Review

Name:

Date:

Hour:

1. Select all of the ordered pairs (x, y) that are solutions to the linear equation  $2x + 3y = \underline{\underline{6}}$ .

a. (0, 2)

$$2(0) + 3(2) = 6 \quad \checkmark$$

b. (0, 6)

$$2(0) + 3(6) = 18 \quad \times$$

c. (2, 3)

$$2(2) + 3(3) = 13 \quad \times$$

d. (3, -2)

$$2(3) + 3(-2) = 0 \quad \times$$

e. (3, 0)

$$2(3) + 3(0) = 6 \quad \checkmark$$

f. (6, -2)

$$2(6) + 3(-2) = 6 \quad \checkmark$$

2. It costs \$0.25 to download an individual song and \$7 to download an album. Jada has \$16 to spend downloading music.

a. Complete the table showing three ways Jada can spend \$16 downloading individual songs and albums.

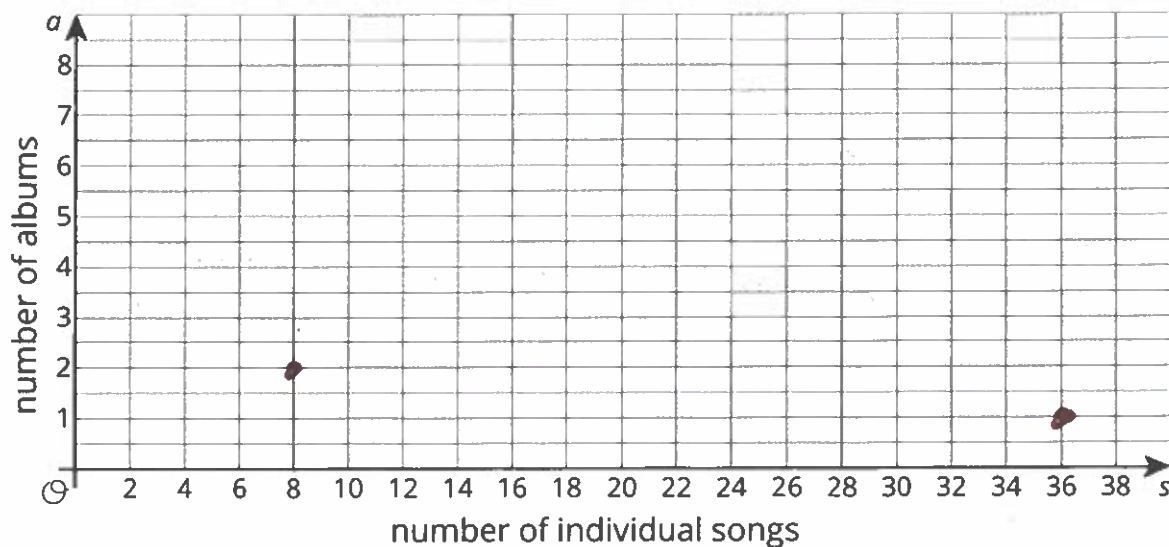
Number of individual songs, s	Number of albums, a
8 $\$2$	2 $= 16$
36	1 $= 16$
36	1 $= 16$

$9 / 0.25$

b. Write an equation relating the number of individual songs  $s$  and the number of albums  $a$  Jada can download.

$$0.25x + 7y = 16$$

c. Sketch a graph of the solutions to your equation.



3. An emergency room nurse gets paid \$8 per hour and is given a \$50 sign-on bonus.

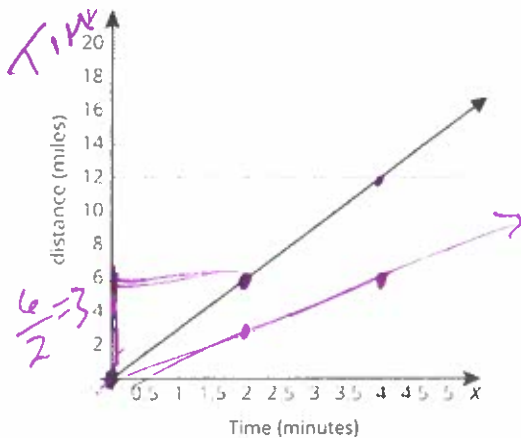
a. Write a linear equation that represents this situation.

$$y = 8x + 50$$

b. How much will he get paid if he is hired and works a 12-hour shift?

$$\begin{array}{r} 8 \cdot 12 = 96 \\ + 50 \\ \hline \$146 \end{array}$$

4. Each person is running at a constant rate. The graph represents Tim's relationship between the time,  $x$ , he has spent running and the distance,  $y$ , he has walked in miles. The table represents Jacob's walking information.



Jacob's Run	
Distance (miles) $y$	Time (minutes) $x$
2	7
4	14
6	21
8	28
10	35

Erica is also running at a constant rate. The relationship between her distance,  $y$ , and her time,  $x$ , is shown with the equation  $y = \frac{3}{2}x$ .

a. Graph Erica's equation on the graph above.

b. Write an equation for Tim's line.

$$y = 3x$$

c. What is the rate of change for all three people and what does the rate of change mean?

Tim / 3 miles per min

Jacob /  $\frac{2}{7} \rightarrow$  2 miles in 7 minutes

Erica /  $\frac{3}{2}$   
3 miles in 2 min

d. Who is running faster and by how much?

Tim

5. State the meaning of the slope and y-intercept for each situation.

a. The graph shows the relationship between the cost,  $y$ , to attend a fair and the number of rides,  $x$ , that you ride. The slope is 3.25 and the y-intercept is 7.

Slope: Cost per ride      y-int: Admission fee

b. The equation  $y = .75x + 3.5$  shows the cost of an ice cream sundae with different numbers of  $x$  toppings.

Slope: Cost per topping      y-int: Cost of just ice cream

c. The height of a candle,  $y$ , that has been burning for  $x$  minutes is represented by a graph with a y-intercept of 6 and a slope of -3.

Slope: Burning 3 inches per minute      y-int: Starting height

6. To rent the Biltmore Estates gardens for a wedding reception, there is an initial charge of \$750 and then an additional rate of \$125 an hour.

a. Write an equation to represent this situation.

$$y = 750 + 125x$$

b. How much would it cost to rent the gardens for 15 hours?

$$\$2625$$

c. Graph this situation on the graph provided.

d. The Daniel Stowe Botanical Gardens charges an initial charge of \$500 for a wedding reception plus \$125 per hour. Write an equation for this situation and then graph it on the graph above.

$$y = 125x + 500$$

$$\frac{125}{1} \rightarrow \frac{250}{2}$$

e. Are these situations proportional? How do you know?

No

(0,0) No

