

Word Problems!

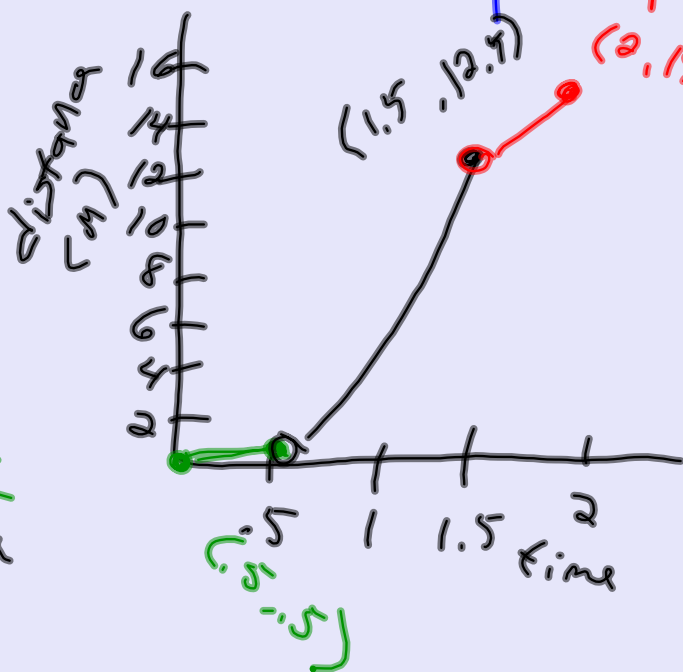
Workout!

Jennifer is completing a 15.5-mile triathlon. She swims 0.5 mile in 30 minutes, bicycles 12 miles in 1 hour, and runs 3 miles in 30 minutes. Sketch a graph of Jennifer's distance versus time. Then write a piecewise function for the graph.

Remember!

The distance formula $d = rt$ can be arranged to find rates: $r = \frac{d}{t}$.

| | Time (t) | dist | rate | |
|------|----------|------|-------|--------------------|
| swim | .5 | .5 | 1mph | $0 \leq t \leq .5$ |
| bike | 1 | 12 | 12mph | $.5 < t \leq 1.5$ |
| run | .5 | 3 | 6mph | $1.5 < t \leq 2$ |



$$y - y_1 = m(x - x_1)$$

$$y - 0 = 1(t - 0)$$

$$y = t$$

$$y - 12.5 = 12(t - 1.5)$$

$$y - 12.5 = 12t - 18$$

$$y = 12t - 5.5$$

$$y - 15.5 = 6(t - 2)$$

$$y - 15.5 = 6t - 12$$

$$y = 6t + 3.5$$

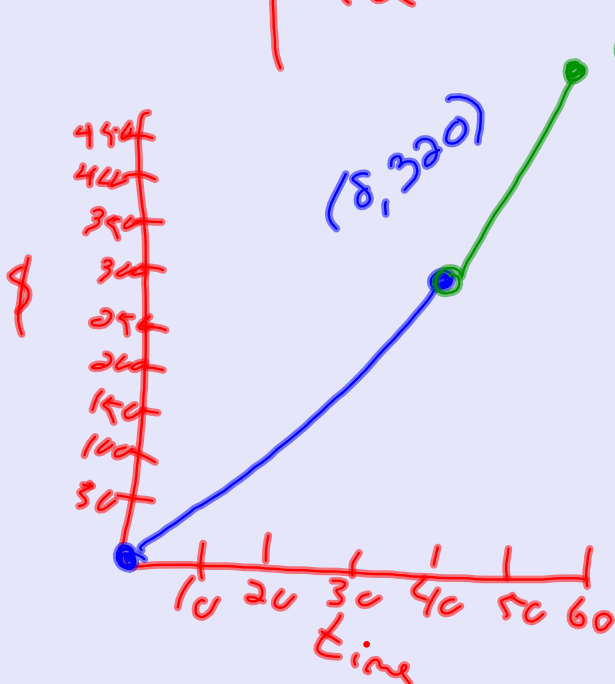
More!

Shelly earns \$8 an hour. She earns \$12 an hour for each hour over 40 that she works. Sketch a graph of Shelly's earnings versus the number of hours that she works up to 60 hours. Then write a piecewise function for the graph.

| Time | rate |
|------|------|
| 40 | 8 |
| 20 | 12 |

$$0 \leq t \leq 40$$

$$40 < t \leq 60$$



$$y - 0 = 8(t - 0)$$

$$y = 8t$$

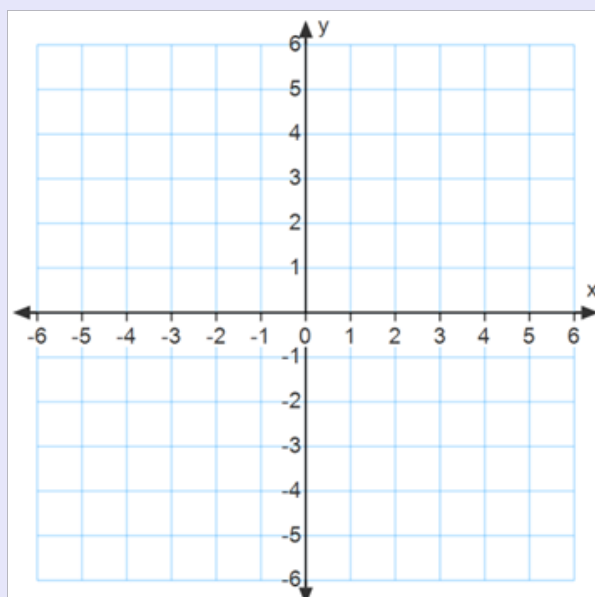
$$y - 560 = 12(t - 60)$$

$$y - 560 = 12t - 720$$

$$y = 12t - 160$$

A Real-Life Application... Kind of

One side of a sandwich lies on a coordinate grid. The lower left corner of the triangle is on the coordinate $(-4,-2)$ and the lower right corner of the triangle is on the coordinate $(4,-2)$. The top corner of the triangle has the coordinate $(0,2)$. Assuming that the top corner is the vertex, what is the absolute value equation that connects the vertex to the bottom left and right corners?



Furniture!

Jake imports furniture from Mexico. The exchange rate is 11.30 pesos per U.S. dollar. The cost of each piece of furniture is given in pesos. The total cost of each piece of furniture includes a 15% service charge.

- A.** Write a composite function to represent the total cost of a piece of furniture in dollars if the cost of the item is c pesos.

$$F(c) = c + .15c = 1.15c$$

$$c(c) = \frac{c}{11.3} = 1.15 \left(\frac{c}{11.3} \right) = \frac{1.15c}{11.3}$$

$11.3 = 1\$$
 $\$(11.30)$

- B.** Find the total cost of a table in dollars if it costs 1800 pesos.

$$\frac{1.15(1800)}{11.3} = \$183.19$$