

Know:

how to calculate slope from two points: $m = \frac{y_2 - y_1}{x_2 - x_1}$

how to calculate slope from a graph

the point slope form: $y - y_1 = m(x - x_1)$

the slope intercept form: $y = mx + b$

how to find the x and y intercepts

how to write linear functions from word problems

parallel lines have the same slope

perpendicular lines slopes' are opposite reciprocals (example $\frac{3}{4}$ and $-\frac{4}{3}$ are opposite reciprocals)

vertical lines have a slope that is undefined and take the form $x = \text{number}$ (example $x = 2$)

horizontal lines have a slope that is 0 and take the form $y = \text{number}$ (example $y = 5$)

1) Write an equation for the line passing through the pair of points.

a. (2,3) and (4,8)

b. (5, 10) and (-2, 10)

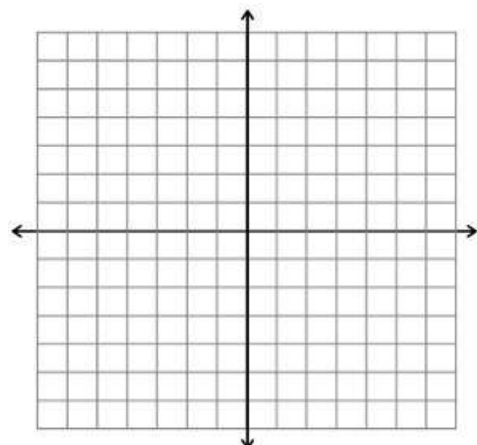
c. (5,3) and (5,9)

2) Write an equation for the following lines.

a. line through point (5,3) and (7,-1)

b. line through the point (7, -1) that is perpendicular to the line from part a.

c. line on the grid



3) Determine whether or not the two lines described below are parallel. Show work to support your answer.

* The line $-5x+2y=4$

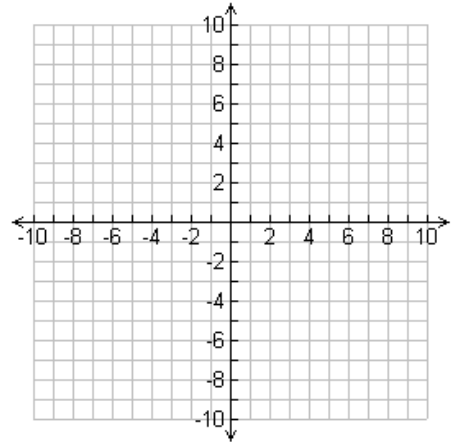
* The line with the slope of $\frac{5}{2}$ and a y-intercept of 7

4) Find the x-intercept and the y-intercept of each line. Graph the line.

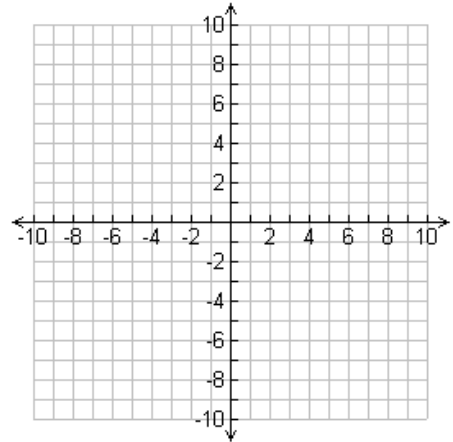
a. $y = -\frac{3}{4}x + 6$

y-intercept is $(0, \underline{\hspace{2cm}})$

x-intercept is $(\underline{\hspace{2cm}}, 0)$



b. $9x - 3y = 27$



5) You are web designer. You charge your clients an initial fee of \$2000 dollars to set up the web server and \$120 per hour to customize the web site. Write a linear function $C(x)$ that is total bill to your client. (Cost is a function of hours worked.)

Let $C(x)$ = the total cost you bill your client

x = hours worked

What would be the cost to the client, if the job required 20 hours to customize the web site?

If the client had a budget of \$5600 for their web site how many hours of customization could they afford?

6) Your family is obsessed with New Jersey culture. You want to record *Jerseylicious* on your TiVo . Each episode is 0.5 hours long. Your mother has already recorded 30 hours of *The Real Housewives of New Jersey*. Write a linear function $J(x)$ that is the total hours of New Jersey shows recorded on your TiVo.

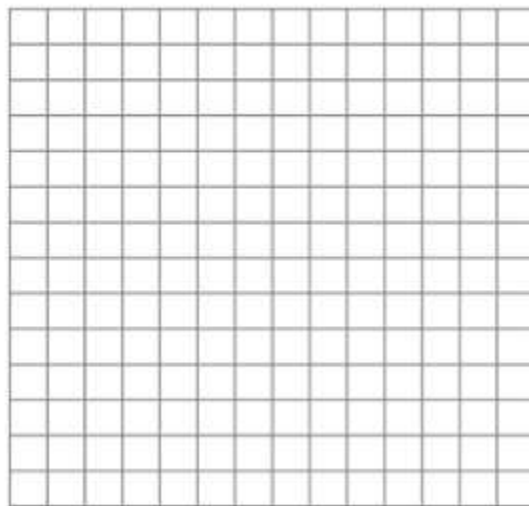
Let $J(x)$ = total hours of New Jersey shows.

x = number of episodes of *Jerseylicious* you recorded.

Find $J(6)$ and explain what $J(6)$ means.

Your TiVo can hold 45 hours of recordings. Your mother will kill you if you delete any hours of *The Real Housewives of New Jersey*. How many episodes of *Jerseylicious* can you record?

Graph $J(x)$. Remember to label your axis and scale your graph so it fits on the grid.



6) You are climbing a mountain. You notice that at bottom (where the elevation is 0 feet) of the mountain the temperature is $70^{\circ}F$. After you have climbed 1500 feet up the mountain, you notice the temperature is $60^{\circ}F$. (Temperature is a function of elevation)

a. Write a linear equation that models the temperature as elevation increases.

y is the temperature in Fahrenheit and x is the elevation in feet.

The mountain is 4000 feet high. What is the temperature at the top?

Graph your equation. Remember to label your axis and scale your graph so it fits on the grid.



8) Mr. Slushy sells ice cream from his refrigerated push cart at the local park. On a Saturday he sells 160 cones if the temperature is $75^{\circ}F$ and 200 if it is $85^{\circ}F$. Write a linear equation that models the number of ice creams he sells as the temperature increases. y is the number of ice creams sold and x is the temperature in Fahrenheit.

How many ice creams could Mr. Slushy sell if the temperature is $90^{\circ}F$?