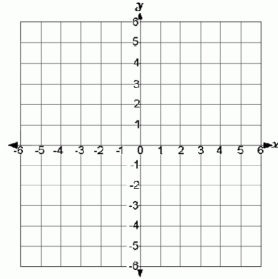


1. Graph the following linear equation (1 mark):

$$y = \frac{-3}{4}x + 1$$



1. Graph the following linear equation (1 mark):

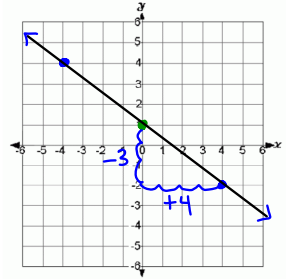
$y = mx + b$ !

$$y = \frac{-3}{4}x + 1$$

y-int = +1 ... (0,1)

slope =  $\frac{-3}{4}$  = down 3 right 4

or up 3 left 4



2. Write the equation of the line passing through the point  $(-4, 10)$  with a slope  $m = \frac{-2}{7}$  in point-slope form (2 marks).

2. Write the equation of the line passing through the point  $(-4, 10)$  with a slope  $m = \frac{-2}{7}$  in point-slope form (2 marks).

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

$$y - (10) = \frac{-2}{7}(x - (-4))$$

$$y - 10 = \frac{-2}{7}(x + 4)$$

3. Find the slope and y-intercept of the line  $5x - 2y = -8$  (2 marks).

slope: \_\_\_\_\_

y-intercept: \_\_\_\_\_

3. Find the slope and y-intercept of the line  $5x - 2y = -8$  (2 marks).  
 turn into  $y = mx + b$  ... solve for y!

$$5x - 2y = -8$$

$$\begin{matrix} -5x & & -5x \end{matrix}$$

$$\frac{-2y}{-2} = \frac{-5x - 8}{-2}$$

$$y = \frac{5}{2}x + 4$$

slope:  $\frac{5}{2}$

y-intercept: 4

OR (0, 4)

or...  $m = \frac{-A}{B}$  and set  $x = 0$  for y-int

4. Write the equation of the line in **slope-intercept form** and **standard form** (2 marks).

Slope-intercept form: \_\_\_\_\_

Standard form: \_\_\_\_\_

4. Write the equation of the line in **slope-intercept form** and **standard form** (2 marks).

y-int = 2

$m = -\frac{1}{4}$

Slope-intercept form:  $y = -\frac{1}{4}x + 2$

Standard form:  $x + 4y = 8$

$x^4$   
 $y = -\frac{1}{4}x + 2$   
 $4y = -x + 8$   
 $+x$   
 $x + 4y = 8$

5. Write the equation of the line, in slope-intercept form, that passes through the points A(-6, -4) and B(2, 8) (2 marks).

5. Write the equation of the line, in slope-intercept form, that passes through the points A(-6, -4) and B(2, 8) (2 marks).

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8 - (-4)}{2 - (-6)} = \frac{12 \div 4}{8 \div 4} = \frac{3}{2} = m$$

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

$$y - (-8) = \frac{3}{2}(x - 2)$$

$$y - 8 = \frac{3}{2}x - 3$$

$$y = \frac{3}{2}x + 5$$

choose pt. (2, 8)

or... use  $y = mx + b$

6. Is the following system of equations parallel, perpendicular, or neither (3 marks):

$$2x - 7y = -9 \quad \text{and} \quad 21x + 6y = 31$$

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$$2x - 7y = -9 \quad \text{and} \quad 21x + 6y = 31$$

$$m = \frac{-A}{B} = \frac{+2}{7}$$

$$m = \frac{-21}{6} = \frac{-7}{2}$$

flipped, AND sign changed

∴ neg. reciprocals,

∴ perpendicular lines!

using  $y = mx + b$

$$2x - 7y = -9$$

$$-2x \quad -2x$$

$$21x + 6y = 31$$

$$-21x \quad -21x$$

$$-7y = -2x - 9$$

$$\frac{-7y}{-7} = \frac{-2x - 9}{-7}$$

$$6y = -21x + 31$$

$$\frac{6y}{6} = \frac{-21x + 31}{6}$$

$$y = \frac{2}{7}x + \frac{9}{7}$$

$$y = \frac{-7}{2}x + \frac{31}{6}$$

neg. reciprocals, ∴ perpendicular!

7. Write the equation of a line, in **slope-intercept form**, that is **perpendicular** to  $x - 3y = 9$  and passes through  $(2, -5)$  (2 marks).

7. Write the equation of a line, in **slope-intercept form**, that is **perpendicular** to  $x - 3y = 9$  and passes through  $(2, -5)$  (2 marks).

slope of  $x - 3y = 9$

$$m = \frac{-A}{B}$$

$$m = \frac{1}{3}$$

→ slope of perpendicular line is  $-3$

and passes through  $(2, -5)$

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

$$y - (-5) = -3(x - 2)$$

$$y + 5 = -3x + 6$$

$$y = -3x + 1$$

8. Write the equation of a line, in **standard form**, that is **parallel** to  $5y + 4 = -4x$  and passes through  $(3, -6)$  (3 marks).

8. Write the equation of a line, in **standard form**, that is **parallel** to  $5y + 4 = -4x$  and passes through  $(3, -6)$  (3 marks).

need slope! turn into  $y = mx + b$ !

$$5y + 4 = -4x$$

$$5y = -4x - 4$$

$$y = -\frac{4}{5}x - \frac{4}{5}$$

$$m = -\frac{4}{5}$$

m of parallel is also  $-\frac{4}{5}$

→  $m = -\frac{4}{5}$ , point  $(3, -6)$

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

$$y - (-6) = -\frac{4}{5}(x - 3)$$

$$(y + 6 = -\frac{4}{5}x + \frac{12}{5}) \times 5$$

$$5y + 30 = -4x + 12$$

$$4x + 5y = -18$$

9. Write the equation of the line **perpendicular** to  $x = 3$  that passes through  $(1, 5)$  (1 mark).

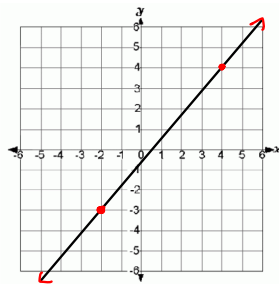
9. Write the equation of the line **perpendicular** to  $x = 3$  that passes through  $(1, 5)$  (1 mark).

$x = 3$  is vertical line,  
 $\therefore$  perp. line to vertical is horizontal!  
 horizontal lines have equations  $y = k$  ↖ y value of line

$(1, 5)$  so... equation is  $y = 5$

10. Write the equation of the line, in **slope-intercept form**, that is **parallel** to the line on the graph and passes through the point  $(7, -3)$  (3 marks).

10. Write the equation of the line, in **slope-intercept form**, that is **parallel** to the line on the graph and passes through the point  $(7, -3)$  (3 marks). leave m + b as fractions!  $y = mx + b!$



$m = \frac{7}{6}$ , so  $m \uparrow \uparrow = \frac{7}{6}$

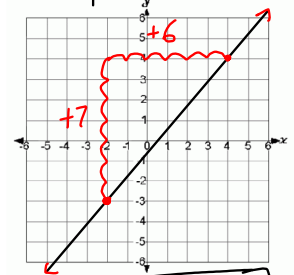
$m = \frac{7}{6}$ , through  $(7, -3)$

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

$y - (-3) = \frac{7}{6}(x - 7)$

$y + 3 = \frac{7}{6}x - \frac{49}{6}$  -3x6 +6

$y + 3 = \frac{7}{6}x - \frac{49}{6} - \frac{18}{6}$



$y = \frac{7}{6}x - \frac{67}{6}$

11. Find the equation of a line, in **slope-intercept form**, that is **perpendicular** to  $y = \frac{1}{4}x + 7$  with the same y-intercept as  $5x + 2y = 10$  (3 marks).

11. Find the equation of a line, in **slope-intercept form**, that is **perpendicular** to  $y = \frac{1}{4}x + 7$  with the same y-intercept as  $5x + 2y = 10$  (3 marks).

Handwritten solution for Question 11:

$y = mx + b$

perp to  $y = \frac{1}{4}x + 7$

$m = \frac{1}{4}$ ,  $m_{\perp} = -4$

$y = mx + b$

$y = -4x + 5$

same y-int as  $5x + 2y = 10$   
 y-int where  $x = 0$ !  
 $5(0) + 2y = 10$   
 $2y = 10$   
 $y_{\text{int}} = 5$   
 $b = 5$

12. For  $f(x) = -3x + 5$ , find (1 mark each):

a.  $f(7)$

b)  $f(-3)$

12. For  $f(x) = -3x + 5$ , find (1 mark each):

a.  $f(7)$

$f(x) = -3x + 5$   
 $f(7) = -3(7) + 5$   
 $f(7) = -21 + 5$   
 $f(7) = -16$

b)  $f(-3)$

$f(x) = -3x + 5$   
 $f(-3) = -3(-3) + 5$   
 $f(-3) = 9 + 5$   
 $f(-3) = 14$

12. For  $f(x) = -3x + 5$ , find (1 mark each):

c)  $f(x) = -25$ , find  $x$

d)  $f(x) = 29$ , find  $x$

12. For  $f(x) = -3x + 5$ , find (1 mark each):

c)  $f(x) = -25$ , find  $x$

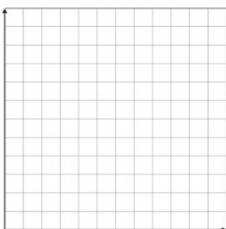
d)  $f(x) = 29$ , find  $x$

$$\begin{aligned} f(x) &= -3x + 5 \\ -25 &= -3x + 5 \\ -5 & \quad -5 \\ \hline -30 &= -3x \\ -3 & \quad -3 \\ \hline 10 &= x, \quad \boxed{x = 10} \end{aligned}$$

$$\begin{aligned} f(x) &= -3x + 5 \\ 29 &= -3x + 5 \\ -5 & \quad -5 \\ \hline 24 &= -3x \\ -3 & \quad -3 \\ \hline -8 &= x, \quad \boxed{x = -8} \end{aligned}$$

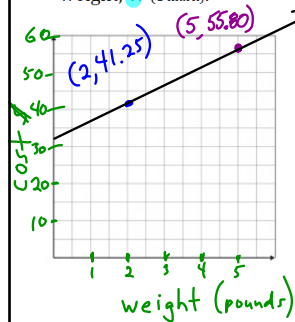
13. To ship a package from Victoria to Ottawa overnight costs \$41.25 for a two pound package, and \$55.80 for a five pound package.

a. Sketch the graph the linear relation between the cost,  $C$ , and the weight,  $W$  (1 mark).



13. To ship a package from Victoria to Ottawa overnight costs \$41.25 for a two pound package, and \$55.80 for a five pound package.

a. Sketch the graph the linear relation between the cost,  $C$ , and the weight,  $W$  (1 mark).



$$\begin{aligned} (W, C) \\ x, y \\ (2, 41.25) \\ (5, 55.80) \end{aligned}$$

cost is "y" since cost depends on weight

13. To ship a package from Victoria to Ottawa overnight costs \$41.25 for a two pound package, and \$55.80 for a five pound package.

b. Find the rate of change (1 mark).

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b. Find the rate of change (1 mark).

$$\begin{aligned} & \begin{matrix} (2, 41.25) & (5, 55.80) \\ x_1 & y_1 & x_2 & y_2 \end{matrix} \\ & \frac{\Delta \text{cost}}{\Delta \text{weight}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{55.80 - 41.25}{5 - 2} = \frac{\$14.55}{3 \text{ pounds}} \\ & = \boxed{\$4.85 \text{ / pound}} \end{aligned}$$

13. To ship a package from Victoria to Ottawa overnight costs \$41.25 for a two pound package, and \$55.80 for a five pound package.

c. Find the fixed cost (1 mark).

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c. Find the fixed cost (1 mark).

$$\begin{aligned} & m = \$4.85 \text{ / pound} \\ & y = mx + b \\ & C = 4.85w + b \quad \text{use } (2, 41.25) \\ & 41.25 = 4.85(2) + b \\ & 41.25 = 9.70 + b \\ & \quad \quad \quad -9.70 \quad \quad -9.70 \\ & 31.55 = b \\ & \boxed{\text{Fixed cost} = \$31.55} \end{aligned}$$



13. To ship a package from Victoria to Ottawa overnight costs \$41.25 for a two pound package, and \$55.80 for a five pound package.

d. Write the cost equation (1 mark).  
using your answers from b and c

think  
 $y = mx + b$

13. To ship a package from Victoria to Ottawa overnight costs \$41.25 for a two pound package, and \$55.80 for a five pound package.

rate =  $\frac{\$4.85}{\text{pound}}$ , fixed cost is \$31.55

d. Write the cost equation (1 mark).  
using your answers from b and c

$$C = 4.85w + 31.55$$

13. To ship a package from Victoria to Ottawa overnight costs \$41.25 for a two pound package, and \$55.80 for a five pound package.

e. Find the cost of shipping a 6.5 pound package (1 mark).

13. To ship a package from Victoria to Ottawa overnight costs \$41.25 for a two pound package, and \$55.80 for a five pound package.

$C = 4.85w + 31.55$   
e. Find the cost of shipping a 6.5 pound package (1 mark).

$$C = 4.85(6.5) + 31.55$$

$$C = 31.53 + 31.55$$

$$C = \$63.08$$

13. To ship a package from Victoria to Ottawa overnight costs \$41.25 for a two pound package, and \$55.80 for a five pound package.

$$C = 4.85w + 31.55$$

f. If a package cost \$84.90, how much does it weigh?

13. To ship a package from Victoria to Ottawa overnight costs \$41.25 for a two pound package, and \$55.80 for a five pound package.

$$C = 4.85w + 31.55$$

f. If a package cost \$84.90, how much does it weigh?

$$\begin{array}{r} 84.90 = 4.85w + 31.55 \\ -31.55 \phantom{=} \phantom{=} \\ \hline 53.35 = 4.85w \end{array}$$

$$\begin{array}{r} 53.35 = 4.85w \\ \hline 4.85 \phantom{=} \phantom{=} \\ \hline w = 11 \text{ pounds} \end{array}$$

$$w = 11 \text{ pounds}$$

### Want more practice Questions?

who wouldn't right??

Ch. 5 Review from WORKBOOK,  
pg. 228, #1-8, 9ab, 10ab, 11-17,

18a-d, 19ab *function notation!*

Ch. 5 UNIT TEST is Monday!!!

Be Prepared!!