



Algebra I

Chapter 5 Review

Lesson 5-1...Slope

Find the slope of the line that passes through each pair of points.

(1, 3), (-2, -6)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - (-6)}{1 - (-2)}$$
$$= \frac{9}{3} = 3$$

(2.9, 4.7), (0.5, 1.1)

(0, 5), (6, 2)

$(\frac{1}{2}, 1), (-1, \frac{2}{3})$

Lesson 5-2...Slope & Direct Variation

$$y = kx$$

Graph the equation $y = -\frac{1}{4}x$

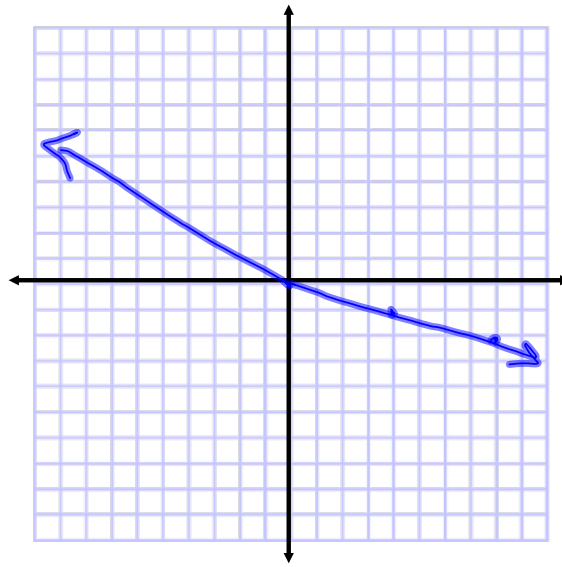
$$y = -\frac{1}{4}(1)$$

$$y = -\frac{1}{4} \quad (1, -\frac{1}{4})$$

$$y = -\frac{1}{4}(4)$$

$$y = -1 \quad (4, -1)$$

Graph the equation $y = \frac{3}{2}x$



Suppose y varies directly as x . Write a direct variation equation that relates x and y .

$y = -6$ when $x = 9$

$$\frac{-6}{9} = \frac{k \cdot 9}{9}$$

$$-\frac{2}{3} = k$$

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

$$y = kx$$

$y = 4$ when $x = -4$

$$\frac{4}{-4} = \frac{k \cdot -4}{-4}$$

$$-1 = k$$

$$y = -1x$$

$$y = -x$$

$y = -6$ when $x = -18$

$$\frac{-6}{-18} = \frac{k \cdot -18}{-18}$$

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

$$y = \frac{1}{3}x$$

$y = 15$ when $x = 2$

$$\frac{15}{2} = \frac{k \cdot 2}{2}$$

$$\frac{15}{2} = k$$

$$y = \frac{15}{2}x$$

Lesson 5-3...Slope-Intercept Form

Write an equation of the line with the given slope and y-intercept.

slope: 3, y-intercept: 2

slope: 0, y-intercept: 4

$$y = mx + b$$

$m = \text{slope}$

$b = \text{y-intercept}$

$$y = 0x + 4$$

$$y = 4$$

slope: -1.3 , y-intercept: 0.4

slope: $\frac{1}{3}$, y-intercept: 2

$$y = -1.3x + 0.4$$

Lesson 5-4...Writing Equations in Slope-Intercept Form

Write an equation of the line that satisfies each condition.

passes through $(-3, 3)$
with slope 1

passes through $(4, -3)$

with slope $-\frac{3}{5}$

$$-3 = -\frac{3}{5}(4) + b$$

$$-3 = -\frac{12}{5} + b$$

$$\begin{array}{r} +\frac{12}{5} \\ +\frac{12}{5} \\ \hline \end{array}$$

$$-\frac{3}{5} = b \quad y = -\frac{3}{5}x - \frac{3}{5}$$

passes through $(4, 6)$
with slope 0

$$6 = 0(4) + b$$

$$6 = b$$

$$y = 6$$

passes through $(-4, 2)$ and $(1, 12)$

$$m = \frac{12-2}{1-(-4)} = \frac{10}{5} = 2$$

$$12 = 2(1) + b$$

$$12 = 2 + b$$

$$\begin{array}{r} -2 \\ -2 \\ \hline \end{array}$$

$$10 = b$$

$$y = 2x + 10$$

Lesson 5-5...Writing Equations in Point-Slope Form

Write the point-slope form of an equation for a line that passes through each point with the given slope.

$$(-1, 4), m = -2$$

$$\left(\frac{1}{4}, -2\right), m = 3$$

$$y - 4 = -2(x - (-1)) \quad y - y_1 = m(x - x_1)$$

$$y - 4 = -2(x + 1)$$

$$(3, -3), m = 0$$

$$(2, 4), m = -\frac{5}{2}$$

$$y - (-3) = 0(x - 3)$$

$$y + 3 = 0$$

$$y = -3$$

Write each equation in standard form.

$$y - 1 = 2(x + 1)$$

$$y + 4 = 1.5(x - 4)$$

$$y + (-1) = 2x + 2 \quad Ax + By = C$$

$$\frac{-2x \quad -2x}{-2x + y + (-1) = 2}$$

$$\frac{+1 \quad +1}{-1(-2x + y) = 3(-1)}$$

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

$$2x - y = -3$$

$$y + 6 = \frac{1}{3}(x - 9)$$

Lesson 5-6...Geometry: Parallel & Perpendicular Lines

Write the slope-intercept form for an equation for the line parallel to the graph of the given equation and passing through the given point.

$$y = 3x - 2, (4, 6)$$

$$y = \frac{5}{12}x + 2, (0, 4)$$

parallel lines have same slope

$$4x - y = 7, (2, -1)$$

$$3x + 9y = 1, (3, 0)$$

Handwritten work for $4x - y = 7, (2, -1)$:

$$\begin{array}{r}
 +y \quad +y \\
 4x = y + 7 \\
 \underline{-1} \quad \underline{-1} \\
 4x - 7 = y \\
 y = 4x - 7
 \end{array}$$

$m = 4$

$$\begin{array}{r}
 y - (-1) = 4(x - 2) \\
 y + 1 = 4x - 8 \\
 \underline{-1} \quad \underline{-1} \\
 y = 4x - 9
 \end{array}$$

$y = 4x - 9$ (circled)

Write the slope-intercept form for an equation of the line perpendicular to the graph of the given equation and passing through the given point.

$$2x - 7y = 1, (-4, 0)$$

$$5y = -x + 1, (2, -5)$$

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

Handwritten work for $2x - 7y = 1, (-4, 0)$:

$$\begin{array}{r}
 +7y \quad +7y \\
 2x = 7y + 1 \\
 \underline{-1} \quad \underline{-1} \\
 2x - 1 = 7y \\
 \underline{2} \quad \underline{2} \\
 x - \frac{1}{2} = \frac{7}{2}y \\
 m = \frac{2}{7}
 \end{array}$$

$\frac{2}{7}x - \frac{1}{2} = y$ (circled)

perpendicular lines slopes are
 • opposite
 • reciprocals

$$\begin{array}{r}
 y - 0 = -\frac{7}{2}(x - (-4)) \\
 y = -\frac{7}{2}x - 14
 \end{array}$$

$y = -\frac{7}{2}x - 14$ (circled)

$$y = -2x - 7, (0, -3)$$

$$y = 0.4x + 1, (2, -5)$$

Lesson 5-7...Statistics: Scatter Plots and Lines of Fit

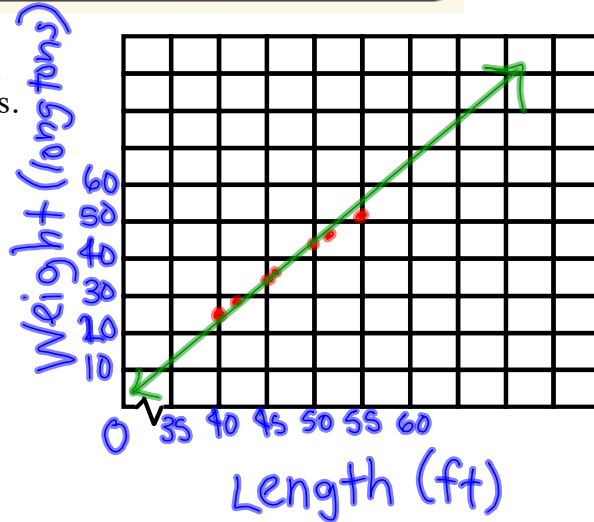
The table shows the length and weight of several humpback whales.

Length (ft)	40	42	45	46	50	52	55
Weight (long tons)	<u>25</u>	29	34	<u>35</u>	43	45	51

Draw a scatter plot with length on the x-axis and weight on the y-axis.

Draw a line of fit for the data.

try to use 2 given points



Write the slope-intercept form of an equation for the line of fit.

$$(40, 25) \quad (46, 35)$$

$$m = \frac{35 - 25}{46 - 40} = \frac{10}{6} = \frac{5}{3}$$

$$25 = \frac{5}{3}(40) + b$$

$$\frac{75}{3} - \frac{200}{3} = \frac{200}{3} + b - \frac{200}{3}$$

$$-\frac{125}{3} = b$$

$$y = \frac{5}{3}x - \frac{125}{3}$$

Predict the weight of a 48-foot humpback whale.

$$y = \frac{5}{3}(48) - \frac{125}{3}$$

$$y = 80 - \frac{125}{3}$$

$$y = 38\frac{1}{3} \text{ long tons}$$



Assignment:

Chapter 5 Test Tomorrow

All Ch.5 corrects
are due before the
test