

Chapter 6 Review

For each type of question, the achievement level is indicated. Showing work is an important strategy in communicating your knowledge and ideas so please be thorough.

Learning Goal 6.2	Constructing and using the following forms of a linear equation: <ul style="list-style-type: none"> • Slope – Intercept Form $y = mx + b$, • Slope – Point Form $y - y_1 = m(x - x_1)$, and • General Form $Ax + By + C = 0$.
--------------------------	---

Developing	
1. Write the equation slope-intercept of a line with	
a. a slope of 3 and a y-intercept of 1	b. a slope of $-\frac{1}{3}$ and a y-intercept of 5
c. a slope of $-\frac{5}{3}$ and a y-intercept of -4	d. a slope of $\frac{3}{2}$ and a y-intercept of $(0, -1)$
e. a slope of $\frac{2}{5}$ and a y-intercept of $(0, 8)$	f. a slope of 1 and a y-intercept of $(0, -7)$

$$m = -\frac{5}{3}$$

$$b = -4$$

form
slope-intercept $y = mx + b$

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

2. Write the equation in slope-point of a line with	
a. a slope of 3 through the point $(2, 5)$	b. a slope of $-\frac{1}{3}$ through the point $(-9, 2)$
c. a slope of $-\frac{5}{3}$ through the point $(3, 0)$	d. a slope of $\frac{3}{2}$ through the point $(7, -1)$
e. a slope of $\frac{3}{4}$ through the point $(-10, 3)$	f. a slope of -1 through the point $(-1, -1)$
g. a slope of $\frac{3}{2}$ through $(6, -2)$	h. a slope of $-\frac{2}{3}$ through $(-3, 1)$

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

$$(-9, 2)$$

$x_1 \ y_1$

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

$$y - (2) = -\frac{1}{3}(x - (-9))$$

$$y - 2 = -\frac{1}{3}(x + 9)$$

3. State the slope, x – and y –intercepts of the following equations.	
a. $x + 2y + 10 = 0$	b. $2x - 3y - 6 = 0$
c. $3x + 6y - 12 = 0$	d. $2x - y + 5 = 0$
e. $x + 8y - 2 = 0$	f. $5x + 7y + 11 = 0$

$$\text{y-int } (x=0)$$

$$(0) + 8y - 2 = 0$$

$$\quad \quad \quad +2 \quad +2$$

$$\frac{8y}{8} = \frac{2}{8}$$

$$y = \frac{1}{4}$$

$$(0, \frac{1}{4})$$

$$\text{x-int } (y=0)$$

$$x + 8(0) - 2 = 0$$

$$\quad \quad \quad +2 \quad +2$$

$$x = 2$$

$$(2, 0)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{\frac{1}{4} - 0}{0 - 2}$$

y-int x-int

$$= \frac{\frac{1}{4}}{-2} = -\frac{1}{8}$$

Proficient	
4. Determine the equation of each of the following lines. Leave your answer in slope-point form.	
a. Line through points $M(1, -3)$ and $N(7, -21)$	b. Line through points $A(24, 8)$ and $B(4, -7)$
c. Line parallel to $y = -\frac{6x}{5} - 1$ and through $(10, 2)$	d. Line parallel to $y = -x + 2$ and through $(8, 0)$
e. Line perpendicular to $y = \frac{x}{4} + 5$ and through $(10, 2)$	f. Line perpendicular to $y = -\frac{2x}{7}$ and through $(0, 2)$

x_1, y_1

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

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

$$y - (2) = -4(x - (10))$$

$$y - 2 = -4(x - 10)$$

Proficient		
5. Graph the following equations		
a. $y = 2x + 1$	b. $y = \frac{2}{3}x - 4$	c. $y = 3(x + 2)$
d. $y = x + 3$	a. $y = -\frac{5x}{4}$	b. $y = -x + 2$
e. $y = -\frac{6x}{5} - 1$	c. $y - 2 = -\frac{5}{4}(x - 1)$	d. $y + 1 = \frac{2}{5}(x - 4)$
f. $y - 3 = 2(x + 1)$	e. $y = -\frac{1}{2}(x + 3)$	f. $y + 5 = -\frac{4}{3}(x - 1)$
g. $x + 2y + 6 = 0$	g. $3x + 6y - 12 = 0$	h. $x + 6y - 6 = 0$
h. $2x - 3y - 6 = 0$	i. $3x - y + 6 = 0$	j. $5x + 7y + 35 = 0$

Pink
slope-intercept
 $y = mx + b$

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

$$b = 0$$

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

$$m = \frac{+2}{+1} = \frac{-2}{-1}$$

$$(-1, 3)$$

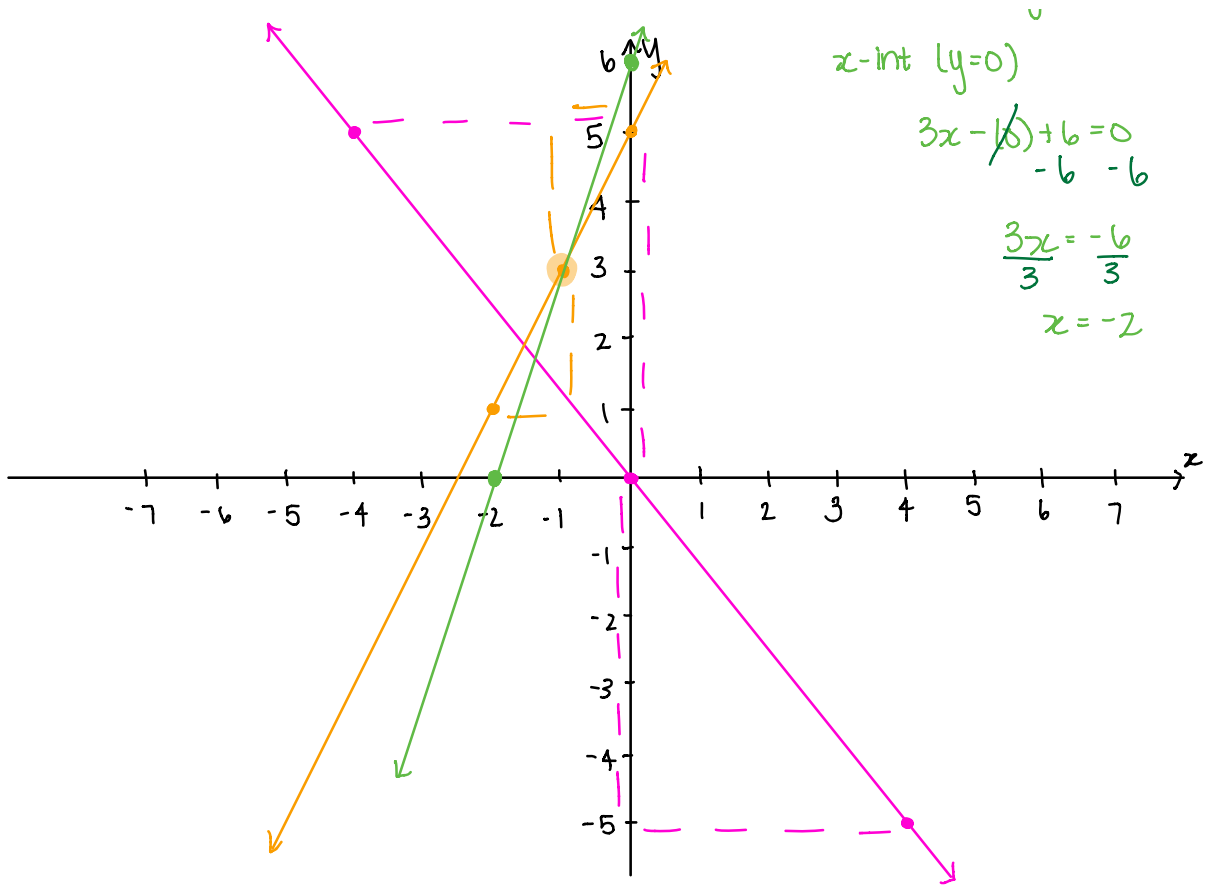
Green
y-int ($x=0$)

$$3(0) - y + 6 = 0$$

$$\quad \quad \quad +y \quad \quad +y$$

$$6 = y$$

$$y = 6$$



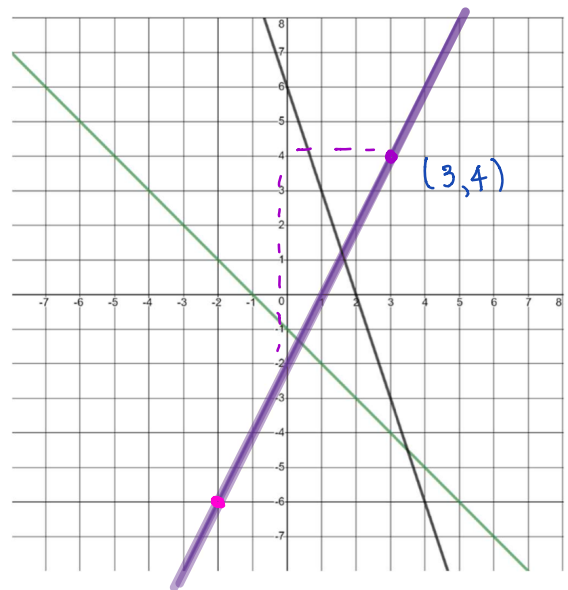
Proficient

1. Find the equation of each of the following lines. Write the equation in all three forms.

$$b = -2$$

$$m = \frac{+6}{+3} = 2$$

$$y = -2x + 2$$



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

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

$$y = -2x + 2$$

$$+2x \quad +2x$$

$$2x + y = 2$$

$$-2x \quad -2$$

$$7(2x + y - 2 = 0)$$

$$14x + 7y - 14 = 0$$

Extending	
2. Determine the equation of each of the following lines. Leave your answer in slope-intercept form.	
a. Line with slope $\frac{3}{2}$ through $(6, -2)$	b. Line with slope $-\frac{2}{3}$ through $(-3, 1)$
c. Line through points $M(1, -3)$ and $N(7, -21)$	d. Line through points $A(24, 8)$ and $B(4, -7)$
e. Line parallel to $y = -\frac{6x}{5} - 1$ and through $(10, 2)$	f. Line parallel to $y = -x + 2$ and through $(8, 0)$
g. Line perpendicular to $y = \frac{x}{4} + 5$ and through $(10, 2)$	h. Line perpendicular to $y = -\frac{2x}{7}$ and through $(0, 2)$

$$d. \quad \begin{matrix} 2 & 1 \\ (24, 8) & (4, -7) \\ x_2 & y_2 & x_1 & y_1 \end{matrix}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8 - (-7)}{24 - 4}$$

$$= \frac{15}{20}$$

$$= \frac{3}{4}$$

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

$$y - (-7) = \frac{3}{4}(x - 4)$$

$$y + 7 = \frac{3}{4}(x - 4)$$

$$y + 7 = \frac{3}{4}x - 3$$

$$-7 \quad -7$$

$$y = \frac{3}{4}x - 10$$

$$g. \quad y = \frac{x}{4} + 5 \quad (10, 2)$$

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

$$\perp m = -4$$

$$y - 2 = -4(x - 10)$$

$$y - 2 = -4x + 40$$

$$+2 \quad \quad +2$$

$$y = -4x + 42$$