

Name: _____

Date: _____

Learning Goal 1A	I can graph and describe linear relations.
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9.1 Solving Linear Inequalities.

There are 3 ways to represent a line for graphing

1. slope-intercept

$$y = mx + b$$

↑ slope ↑ y-int.

2. slope-point

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

↑ slope line passes through (x_1, y_1)

3. standard

$$Ax + By = C$$

x-int : $x = \frac{C}{A}$
y-int : $y = \frac{C}{B}$

Example 1 Graph the following lines on the grid provided.

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

$m = \text{slope}$
 $= \frac{\text{rise}}{\text{run}}$
 $= \frac{\Delta y}{\Delta x}$
 $= \frac{y_2 - y_1}{x_2 - x_1}$

$$y = 3x + 2$$

↑ y-int
 $y = 2$
 $y = 3(0) + 2$
 $= 0 + 2$
 $= 2$

$$y = \frac{1}{3}x + 2$$

↑ y-int
 $y = 2$
 $m = \frac{+1}{+3}$
 $= \frac{-1}{-3}$

$$y = -3x - 4$$

↑ y-int
 $y = -4$
 $m = \frac{-3}{+1}$
 $= \frac{+3}{-1}$

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

↑ y-int
 $y = -4$
 $m = \frac{-1}{+3}$
 $= \frac{+1}{-3}$

Example 2 Graph the following lines on the grid provided.

$$x + 4y = 8$$

x-int
 $y = 0$
 $x + 4(0) = 8$
 $x = 8$

y-int
 $x = 0$
 $0 + 4y = 8$
 $4y = 8$
 $y = 2$

$$4x + y = 8$$

x-int
 $y = 0$
 $4x + 0 = 8$
 $4x = 8$
 $x = 2$

y-int
 $x = 0$
 $4(0) + y = 8$
 $y = 8$

$$2x + 6y = 18$$

x-int
 $y = 0$
 $2x = 18$
 $x = 9$

y-int
 $x = 0$
 $6y = 18$
 $y = 3$

$$3x + 4y = 24$$

x-int
 $y = 0$
 $3x = 24$
 $x = 8$

y-int
 $x = 0$
 $4y = 24$
 $y = 6$

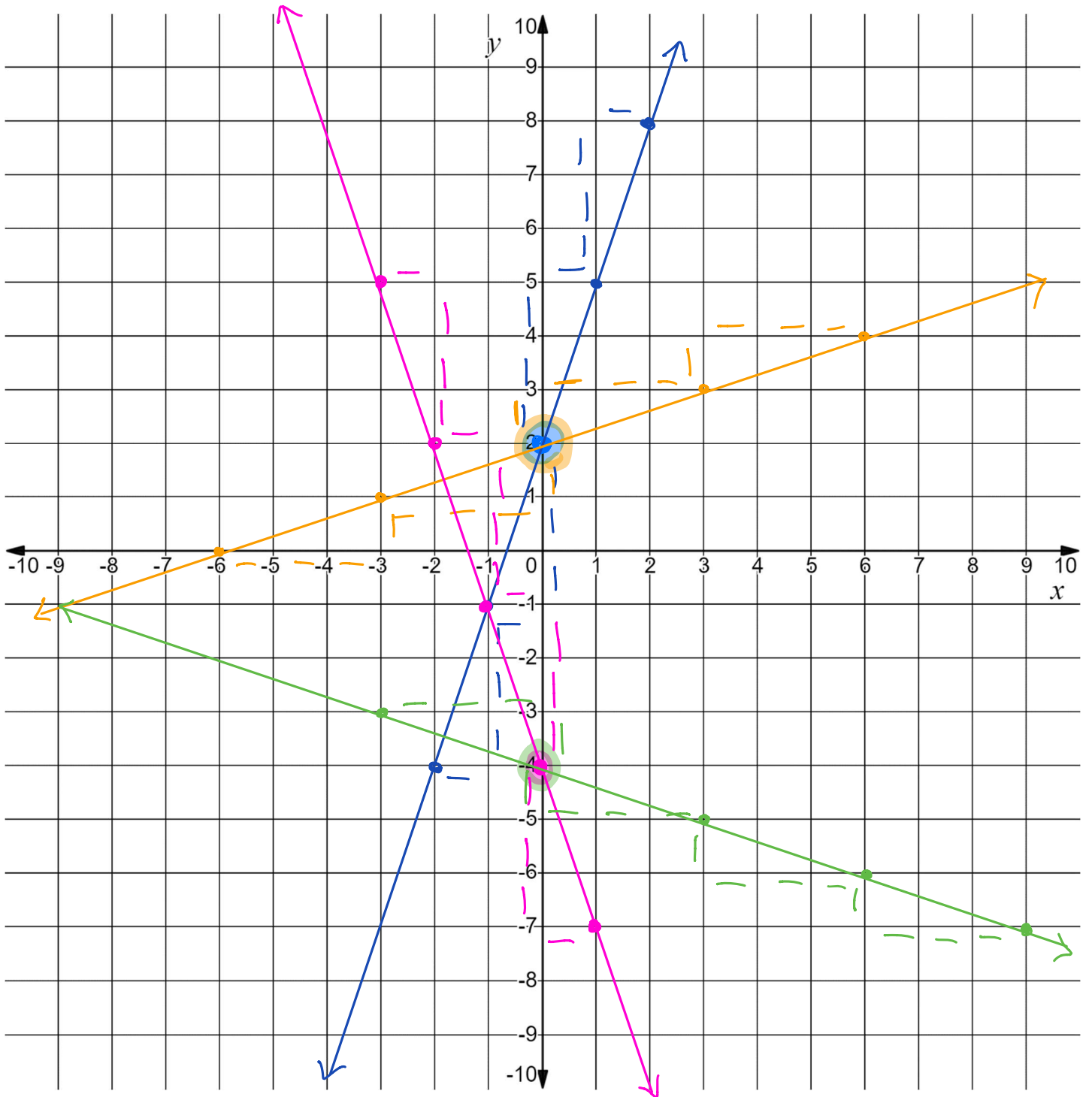
Example 1

$y = 3x + 2$

$y = \frac{1}{3}x + 2$

$y = -3x - 4$

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



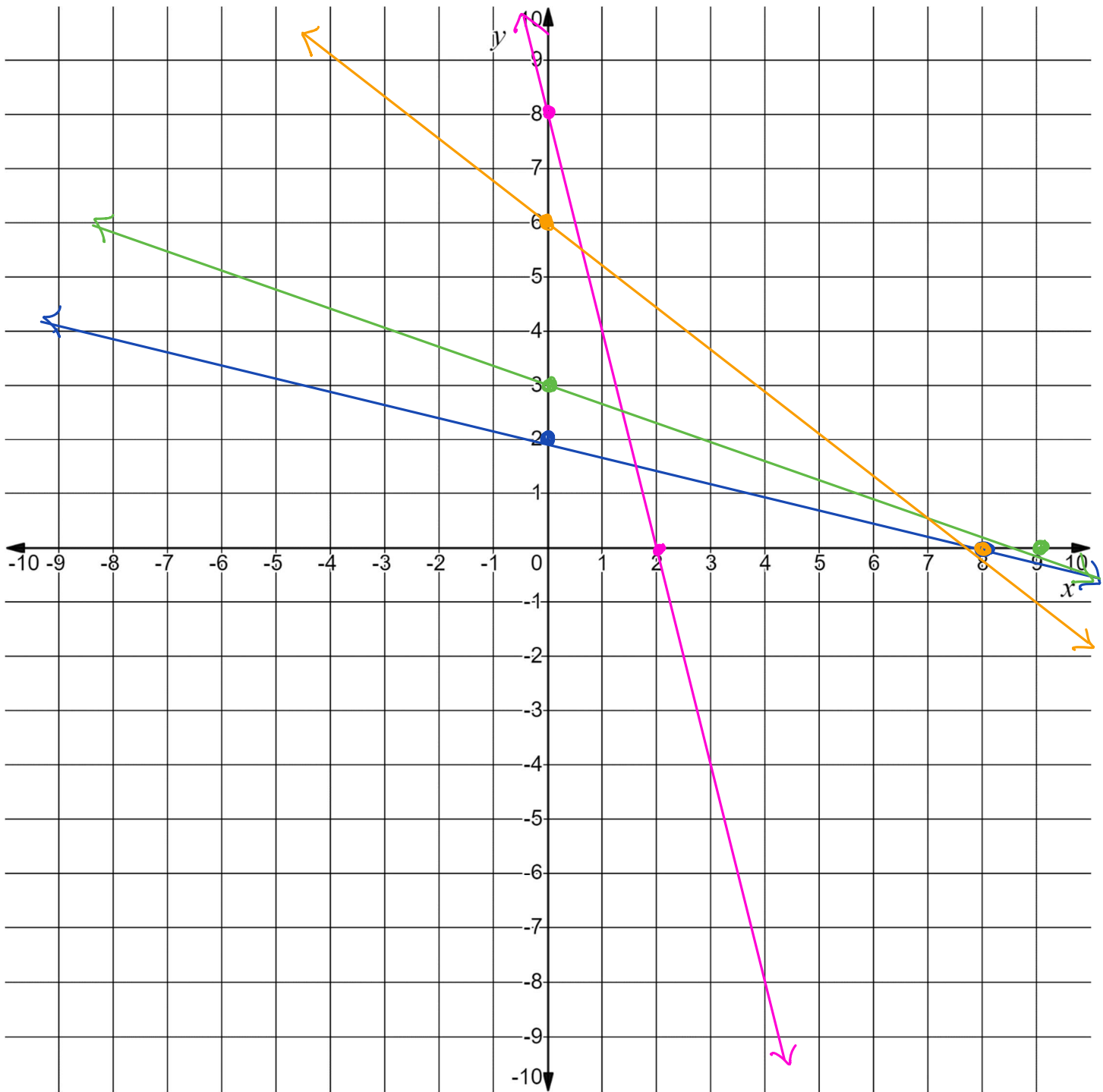
$x + 4y = 8$

$4x + y = 8$

$2x + 6y = 18$

$3x + 4y = 24$

Example 2



Example 3 Graph the following lines on the grid provided.

$$y - 2 = \frac{1}{2}(x - 6)$$

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

point $(6, 2)$

$$y + 2 = \frac{1}{2}(x + 6)$$

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

$(-6, -2)$

$$y - 2 = -2(x - 6)$$

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

$(6, 2)$

$$y + 2 = -2(x + 6)$$

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

$(-6, -2)$

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

(x_1, y_1)

Example 4 Graph the following lines on the grid provided.

$$y - 2 = 0$$

$$+2 \quad +2$$

$$y = 2$$

$$y = -2$$

$$x + 3 = 0$$

$$-3 \quad -3$$

$$x = -3$$

$$x = 3$$

$y = a \Rightarrow$ horizontal line

$x = b \Rightarrow$ vertical line

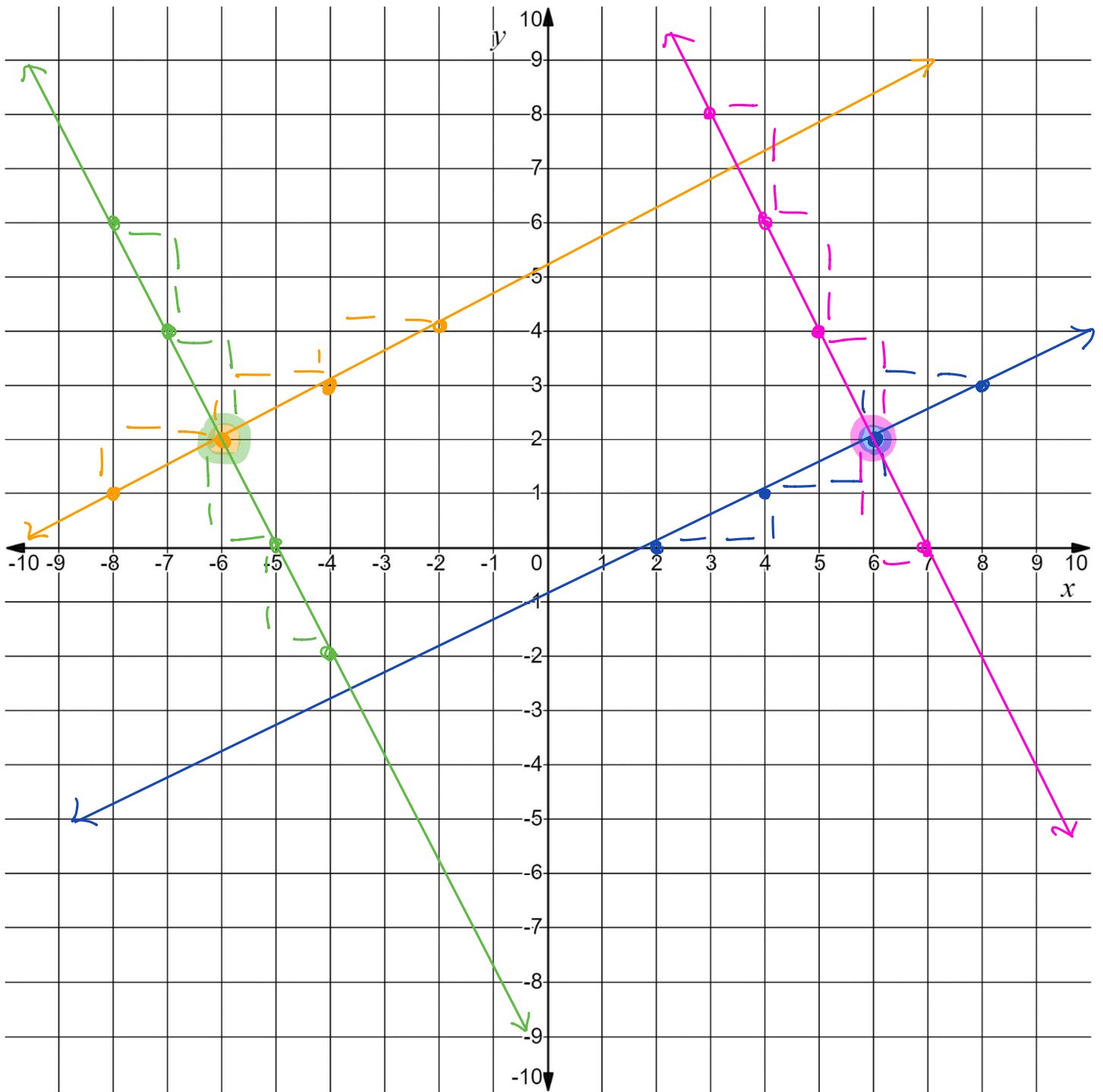
$$y - 2 = \frac{1}{2}(x - 6)$$

$$y + 2 = \frac{1}{2}(x + 6)$$

$$y - 2 = -2(x - 6)$$

$$y + 2 = -2(x + 6)$$

Example 3



$y - 2 = 0$

$y = -2$

$x + 3 = 0$

$x = 3$

Example _____

