

Fall 2018 Benchmark #2 Study Guide

Solve each equation.

1)  $-3n + 3 - 7 = 8$

$-3n - 4 = 8$

$-3n = 12$   
 $n = -4$

2)  $8k - 2 + 1 = -1$

$8k - 1 = -1$

$8k = 0$

$k = 0$

Solve each inequality and graph its solution.

3)  $4 - 4n + 2 \geq 18$



$-4n + 6 \geq 18$

$-4n \geq 12$

$n \leq -3$

4)  $2k + 7 - 3 > 12$



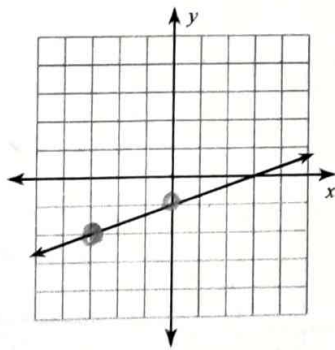
$2k + 4 > 12$

$2k > 8$

$k > 4$

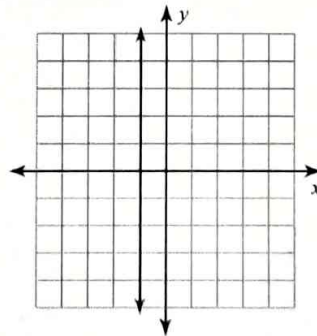
Find the slope of each line.

5)



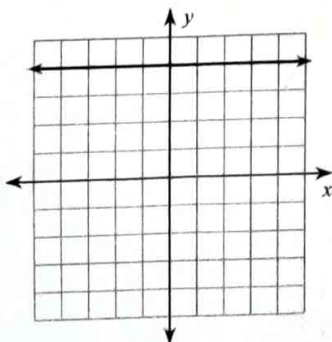
$m = +\frac{1}{2}$

6)



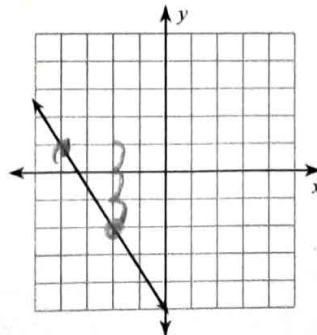
undefined

7)



$m = 0$

8)



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

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

9)  $(-3, 11), (-7, -5)$

$$m = \frac{-5 - 11}{-7 - (-3)} = \frac{-16}{-4} = 4$$

10)  $(-11, 3), (-11, -8)$

$$\frac{-8 - 3}{-11 - (-11)} = \frac{-11}{0}$$

undefined

11)  $(-6, 17), (19, 17)$

$$\frac{17 - 17}{19 - (-6)} = \frac{0}{25} = 0$$

12)  $(9, -16), (-6, -7)$

$$\frac{-7 - (-16)}{-6 - 9} = \frac{9}{-15} = -\frac{3}{5}$$

Write each equation in slope-intercept form, then find the slope and y-intercept of each line.

13)  $3x + 2y = 8$

$$\begin{aligned} 2y &= -3x + 8 \\ \frac{2y}{2} &= \frac{-3x}{2} + \frac{8}{2} \\ y &= -\frac{3}{2}x + 4 \end{aligned}$$

$m = -\frac{3}{2}$   $b = 4$

14)  $x - 5y = -25$

$$\begin{aligned} -5y &= -x - 25 \\ \frac{-5y}{-5} &= \frac{-x}{-5} - \frac{25}{-5} \\ y &= \frac{1}{5}x + 5 \end{aligned}$$

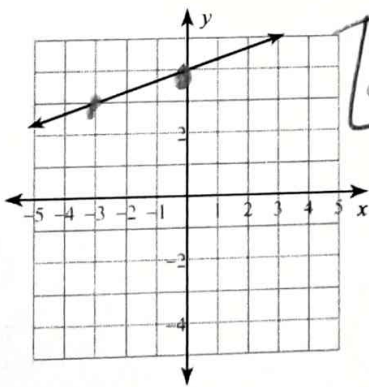
$m = \frac{1}{5}$   $b = 5$

15)  $y = 1$

16)  $x = -2$

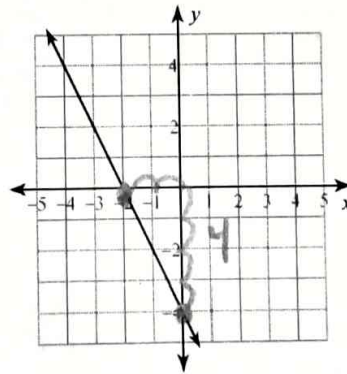
Write the slope-intercept form of the equation of each line.

17)



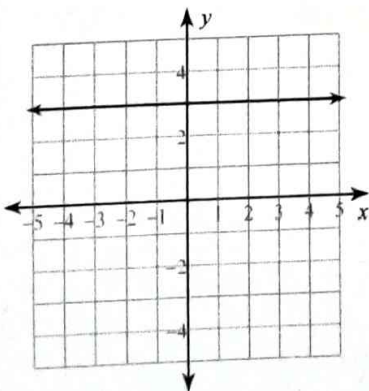
$$y = \frac{1}{3}x + 4$$

18)



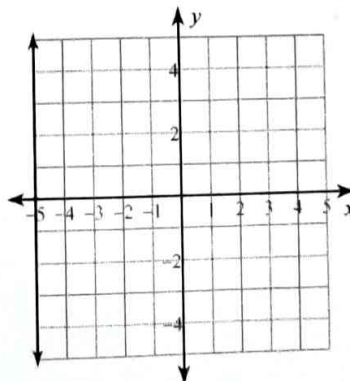
$$\begin{aligned} m &= -\frac{4}{2} = -2 \\ y &= -2x - 4 \end{aligned}$$

19)



$$y = 3$$

20)



$$x = -5$$

Write the slope-intercept form of the equation of the line through the given point with the given slope.

21) through: (5, 3), slope =  $\frac{2}{5}$

$$3 = \frac{2}{5}(5) + b$$

$$3 = 2 + b$$

$$1 = b$$

$$y = \frac{2}{5}x + 1$$

22) through: (-1, 4), slope = 0

$$y = 4$$

23) through: (-1, -1), slope = -1

$$-1 = -1(-1) + b$$

$$-1 = 1 + b$$

$$-2 = b$$

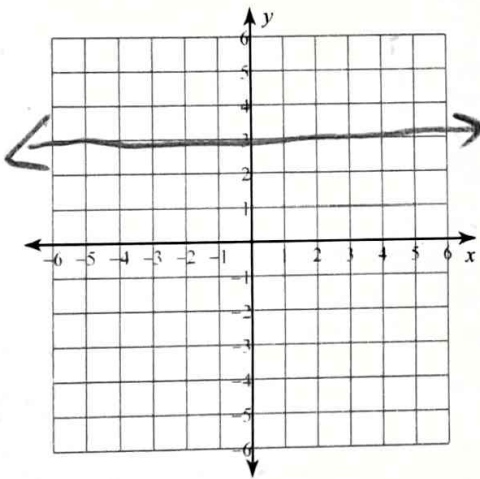
$$y = -1x - 2$$

24) through: (1, -2), slope = undefined

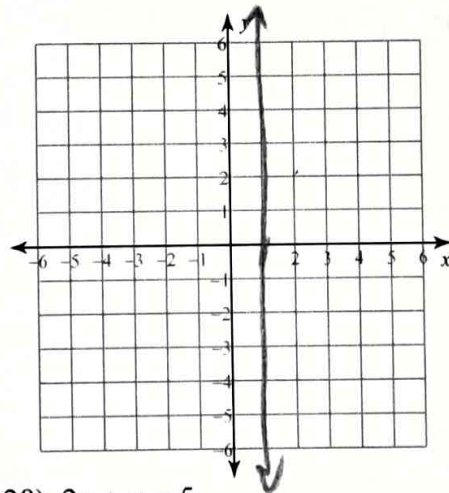
$$x = 1$$

Sketch the graph of each line.

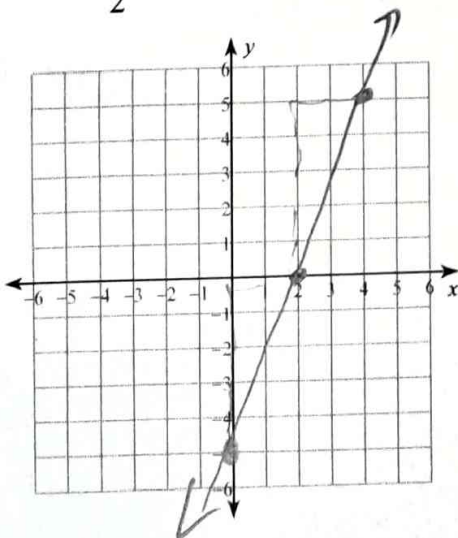
25)  $y = 3$



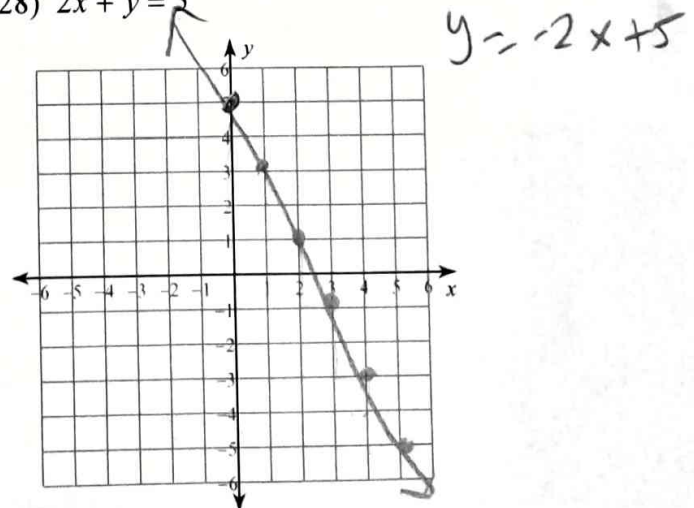
26)  $x = 1$



27)  $y = \frac{5}{2}x - 5$

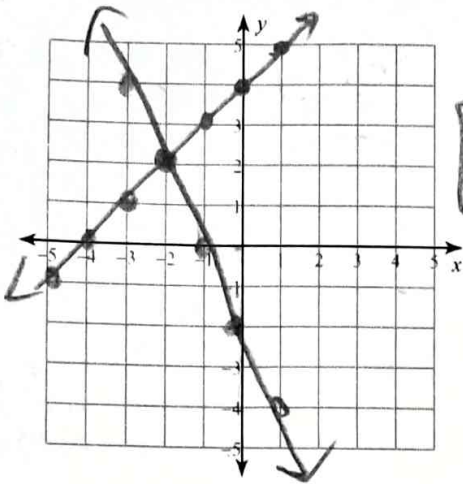


28)  $2x + y = 5$



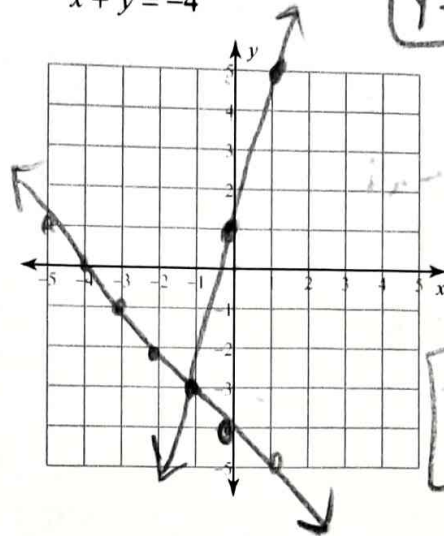


37)  $y = x + 4$   
 $y = -2x - 2$



$(-2, 2)$

38)  $4x - y = -1$   
 $x + y = -4$



$-y = -4x - 1$   
 $y = 4x + 1$

$y = -x - 4$

$(-1, -3)$

The y-intercept of line 2 is greater than the y-intercept of line 1.

39) Compare the slopes and y intercepts of the following lines.

$3x - 4y = 4$

Line 1:  $3x - 4y = 4$

Line 2:  $5x - 4y = -12$

Line 2

$5x - 4y = -12$

$\frac{y}{-4} = \frac{-5x - 12}{-4}$

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

The slope of line 2 is greater than the slope of line 1.

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

Line 1

40) Compare the y intercepts of the following lines.

$7x + 8y = 56$

Line 1:  $7x + 8y = 56$

Line 2:  $4x - 3y = -21$

$\frac{8y}{8} = \frac{-7x + 56}{8}$

$y = -\frac{7}{8}x + 7$

$4x - 3y = -21$

$\frac{-3y}{-3} = \frac{-4x - 21}{-3}$

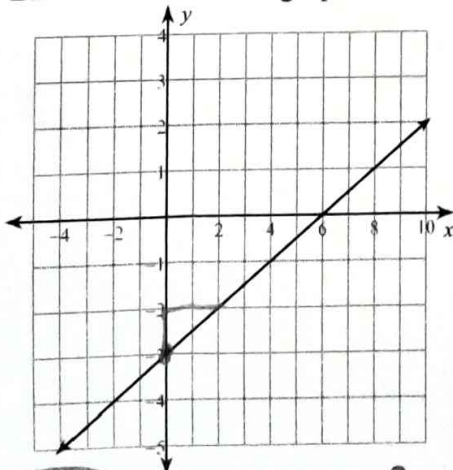
$y = \frac{4}{3}x + 7$

The y intercepts are the same.

41) Identify the slope and y-intercept of each. Compare the slope and y-intercepts of each equation.

Line 1:  $3x - 4y = 4$  (solve for y first)

Line 2: Line on the graph



Line 2  $m = \frac{1}{2}$   $b = -3$

Line 1

$3x - 4y = 4$

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

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

$m = \frac{3}{4}$   $b = -1$

The slope of line 1 is greater than the slope of line 2. The y intercept of line 1 is higher than the y intercept of line 2.

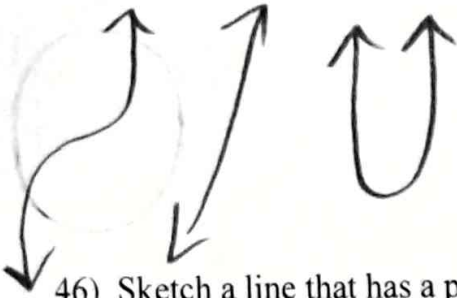
42) Write the domain and range for the following relation.

(3,4) (5, 7) (7, 9) (12, 18)

$D: \{3, 5, 7, 12\}$

$R: \{4, 7, 9, 18\}$

44) Sketch two relations that are functions.



46) Sketch a line that has a positive slope.



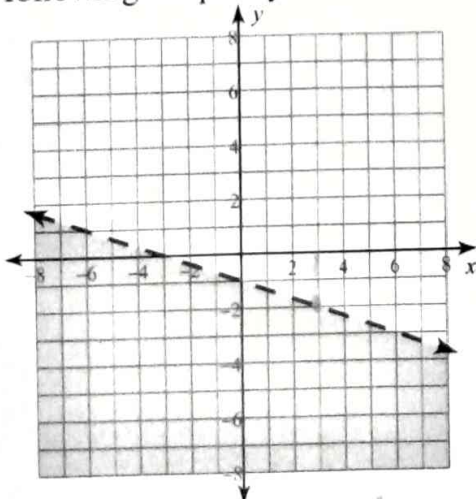
48) Sketch a line that has a zero slope.



50) Sketch a horizontal line.



52) Circle the points that are solutions the following inequality.



A) (3, -2) N

B) (4, 6) N

C) (-4, -6) Y

D) (-7, 1) Y

43) Determine which relations are functions.

A) (1,3), (5, 6), (7, 8), (9,10)

B) (3,4), (5, 6), (7, 8), (5,10)

C) (3,4), (5, 6), (7, 8), (9,10)

D) (3,4), (5, 6), (3, 8), (9,10)

45) Sketch two relations that are not functions.



47) Sketch a line that has a negative slope.



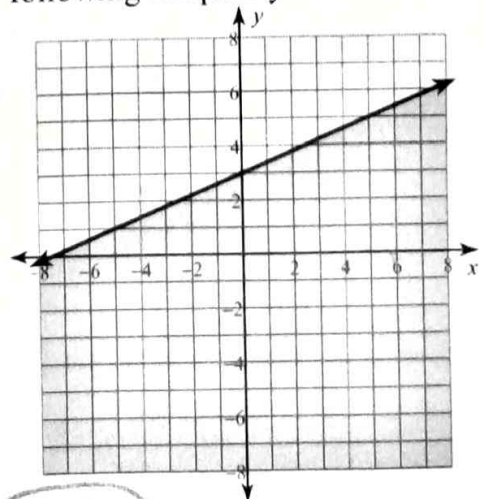
49) Sketch a line that has an undefined slope.



51) Sketch a vertical line.



53) Circle the points that are solutions the following inequality.



A) (6,4) Y

B) (0,8)

C) (0,3) Y

D) (-4,3)