

## Review

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

Slope intercept form

$$y = mx + b$$

Point slope form

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

General form

$$Ax + By + c = 0$$

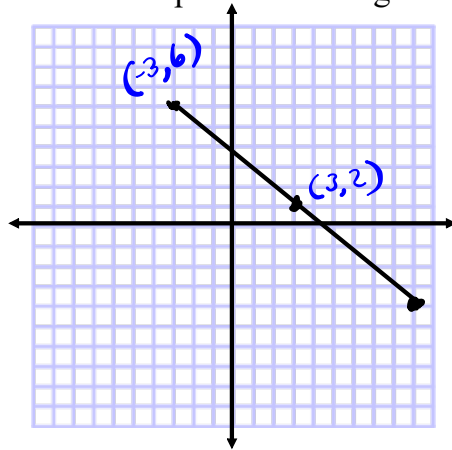
Distance

$$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Mid point

$$MP(x, y) = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

1) Determine the slope of a line segment **perpendicular** to this line



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

$$= \frac{2 - 6}{3 - (-3)}$$

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

$$= \frac{-4}{6}$$

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

$$m_{\perp} = \frac{+3}{2}$$

2)a) Determine the slope of a line that is **perpendicular** to the line through S(3,1) and R(8, -5)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-5 - 1}{8 - 3} = \frac{-6}{5}$$

$$m_{\perp} = \frac{+5}{6}$$

b) Determine the slope of a line that is **parallel** to the line through

M(-3, -4) and J(11, 2)

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

$$= \frac{2 - (-4)}{11 - (-3)}$$

3) Slope of a line is  $-\frac{1}{4}$

$$= \frac{2 + 4}{11 + 3} = \frac{6}{14} = \frac{3}{7}$$

$$m_{\parallel} = \frac{3}{7}$$

a) What is the slope of the line that is parallel to this line?  $m_{\parallel} = \frac{1}{4}$

b) What is the slope of the line that is perpendicular to this line?

b)  $m_{\perp} = 4$

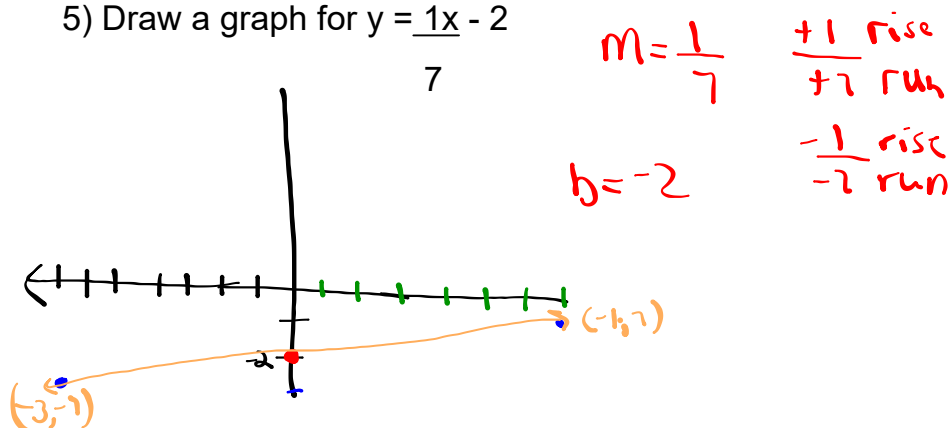
4) A line has **x-intercept 2** and **y-intercept -7**. Determine the slope of a line a) **parallel** to this line. b) **Perpendicular** to this line

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-7 - 0}{0 - 2} = \frac{-7}{-2} = \frac{+7}{2}$$

$$m_{\parallel} = \frac{7}{2}$$

$$m_{\perp} = \frac{-2}{7}$$

5) Draw a graph for  $y = \frac{1}{7}x - 2$



6) Write an equation for the line

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

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

$$= \frac{-4 - 5}{4 + 2}$$

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

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

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

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

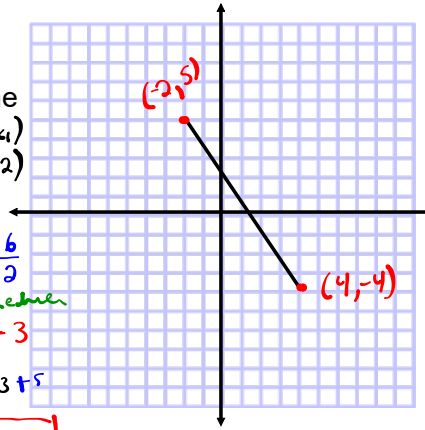
$$y - 5 = -\frac{3}{2}x - \frac{6}{2}$$

Reduce

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

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

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



7) Fred works on appliances. Fred charges a initial fee of \$30, plus a hourly fee of \$20. Write an equation to represent the total cost,  $C$  dollars, for  $h$  hours.  $C = 20h + 30$

8) write the point and slope from the following equations of a line

a)  $y - 7 = -\frac{2}{3}(x + 2)$

$$y - 7 = -\frac{2}{3}x - \frac{4}{3}$$

$$y - 7 = -\frac{2}{3}x - \frac{4}{3} + \frac{7}{1}$$

$$y = -\frac{2}{3}x - \frac{4}{3} + \frac{21}{3}$$

$$y = -\frac{2}{3}x + \frac{17}{3}$$

b)  $y + 4 = \frac{3}{4}(x - 10)$

$$y + 4 = \frac{3}{4}x - \frac{30}{4}$$

$$y + 4 = \frac{3}{4}x - \frac{30}{4} - \frac{4}{1}$$

$$y = \frac{3}{4}x - \frac{30}{4} - \frac{16}{4}$$

$$y = \frac{3}{4}x - \frac{46}{4}$$

Reduce

$$y = \frac{3}{4}x - \frac{23}{2}$$

c)  $y - 7 = 3(x - 9)$

$$y - 7 = 3x - 27$$

$$y - 7 = 3x - 27 + 7$$

$$y = 3x - 20$$

9) Write an equation of a line in point-slope form for the following:

a) slope =  $-\frac{2}{7}$ ,  $R(6, -1)$

b)  $m = 5$ ,  $P(4, 11)$

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

$$y + 1 = -\frac{2}{7}(x - 6)$$

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

$$y - 11 = 5(x - 4)$$

10) For the above questions (9a,b) convert the point-slope equation to slope-intercept equation

a)

$$y + 1 = -\frac{2}{7}x + \frac{12}{7}$$

$$y + 1 = -\frac{2}{7}x + \frac{12}{7} - \frac{1}{1}$$

$$y = -\frac{2}{7}x + \frac{12}{7} - \frac{7}{7}$$

$$y = -\frac{2}{7}x + \frac{5}{7}$$

b)

$$y - 11 = 5x - 20$$

$$y - 11 = 5x - 20 + 11$$

$$y = 5x - 9$$

11) Determine the x-intercept for  $y-8 = 2(x+10)$

let  $y=0$

$$0-8 = \frac{2(x+10)}{2}$$

$$-4 = x+10-10$$

$$\boxed{-14 = x}$$

12) Determine the y-intercept for  $y+5 = 2(x-6)$

let  $x=0$

$$y+5 = 2(-6)$$

$$y+5 = -12-5$$

$$\boxed{y = -17}$$

13) Write the following equation in general form:  $(y) = \left(\frac{-2}{3}x\right) - (7)$

$$3y = -2x - 21$$

$$2x + 3y + 21 = 0$$

14) The coordinates of the endpoints of segments are given below. Are the two line segments **parallel, perpendicular, or neither**?

P(4,-3), U(16,5) and K(-5,2), F(7,-1)

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

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

$$= \frac{8}{12}$$

Reduce

$$m_{PU} = \frac{2}{3}$$

$$m_{KF} = \frac{-1 - 2}{7 - (-5)}$$

$$= \frac{-3}{12}$$

Reduce

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

Neither

15) Write an equation for the line that passes through W(-7, 12) and N(-4,3).

a) slope-point form

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

$$y - 12 = -3(x + 7)$$

OR

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

b) slope-intercept form

$$y - 12 = -3x - 21$$

$$y - 12 + 12 = -3x - 21 + 12$$

$$\boxed{y = -3x - 9}$$

$$m = \frac{3 - 12}{-4 - (-7)}$$

$$= \frac{-9}{3}$$

$$\boxed{m_{WN} = -3}$$

$$y - 3 = -3x - 12 + 12$$

$$\boxed{y = -3x - 9}$$

16) Write this equation in general form:

a)  $(y-5) = (-4x+6)^2$   
 $5y = -4x + 30$   
 $5y = -4x + 30$   
 $4x + 5y = 30$   
 $4x + 5y - 30 = 0$

b)  $(y-5) = \frac{2}{3}(x+7)^2$   
 $3y - 15 = 2(x+7)$   
 $3y - 15 = 2x + 14 - 15$   
 $3y = 2x - 1$   
 $0 = 2x - 3y - 1$

17) For the following line determine:  $3x + 6y - 24 = 0$

i) the slope  
 $m = -\frac{1}{2}$

ii) the y-intercept  
 $b = 4$

iii) the x-intercept  
 $3x + 6y = 24$   
 $3x + 6(0) = 24$   
 $3x = 24$   
 $x = 8$   
 $y = -\frac{1}{2}x + 4$

18) Write an equation for the line that passes through Z(-1, 3) and is:  
 (leave answer in slope intercept form)

a) perpendicular to the line  $y = -\frac{3}{4}x - 3$   $m_1 = \frac{4}{3}$  Z(-1, 3)

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

b) parallel to the line  $8x + 3y + 10 = 0$

$8x + 3y + 10 = 0$   
 $8x + 3y + 10 = 0 - 8x - 10$   
 $3y = -8x - 10$   
 $y = -\frac{8}{3}x - \frac{10}{3}$

$y = \frac{4}{3}x + \frac{4}{3} + \frac{15}{3}$   
 $y = \frac{4}{3}x + \frac{19}{3}$

$m_1 = -\frac{8}{3}$  Z(-1, 3)

$y - 3 = -\frac{8}{3}(x + 1)$   
 $y - 3 = -\frac{8}{3}x - \frac{8}{3}$   
 $y - 3 = -\frac{8}{3}x - \frac{8}{3} + \frac{3}{1}$

$y = -\frac{8}{3}x - \frac{8}{3} + \frac{15}{3}$

$y = -\frac{8}{3}x + \frac{7}{3}$

19) The line AB has a slope of -2 and it passes through the points F(-9, 5) and G(-3, k), determine the value of "k".  
 (SHOW ALL WORK)

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

$-2 = \frac{k - 5}{-3 - (-9)}$

$-2 = \frac{k - 5}{-3 + 9}$

$-2 = \frac{k - 5}{6}$

$6x - 2 = \frac{k - 5}{6} \times 6$

$-12 = k - 5$

$-12 + 5 = k - 5 + 5$

$-7 = k$

## Attachments

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WORKSHEET TEST REVIEW (Day 1).notebook