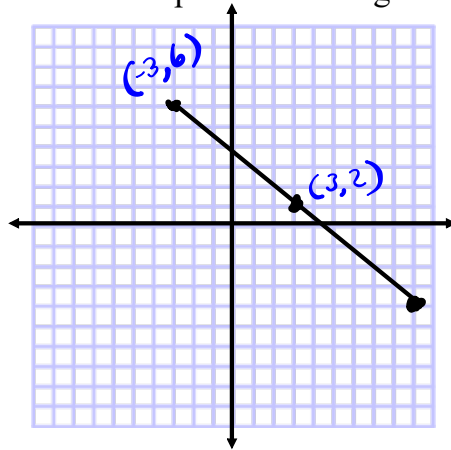


1) Determine the slope of a line segment perpendicular to this line



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

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

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

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

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

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

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) $m_{\perp} = 4$

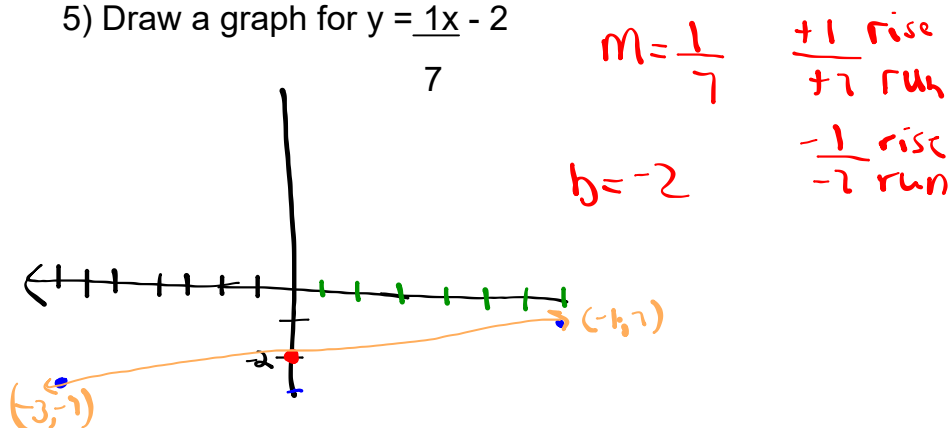
4) A line has x-intercept 2 and y-intercept -7. Determine the slope of a line a) parallel to this line. b) Perpendicular to this line

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

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

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

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



6) Write an equation for the line

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

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

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

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

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

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

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

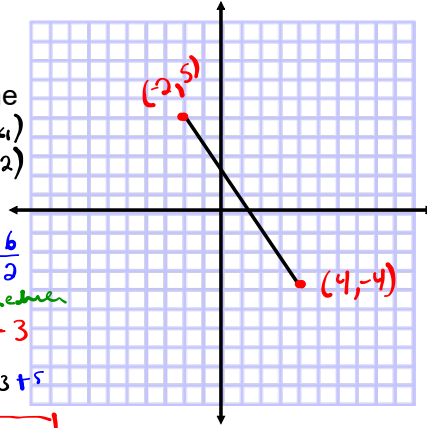
$$y - 5 = -\frac{3}{2}x - \frac{6}{2}$$

Reduce

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

16) Write this equation in general form:

a) $(y-5) = -4x + (6)^{15}$
 $5y = -4x + 30$
 $5y = -4x + 30$
 $4x + 5y = 30$
 $4x + 5y - 30 = 0$

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

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 $x = 8$

$3x + 6y = 24$
 $3x + 6y - 24 = 0$
 $3x + 6(0) - 24 = 0$
 $3x - 24 = 0$
 $3x = 24$
 $x = 8$

18) Write an equation for the line that passes through Z(-1, 3) and is:

a) perpendicular to the line $y = -\frac{5}{4}x - 3$ $m_1 = \frac{4}{5}$ $Z(-1, 3)$

$y - 3 = \frac{4}{5}(x + 1)$
 $y - 3 = \frac{4}{5}x + \frac{4}{5} + \frac{3}{1}$
 $y = \frac{4}{5}x + \frac{4}{5} + \frac{15}{5}$
 $y = \frac{4}{5}x + \frac{19}{5}$

b) parallel to the line $8x + 3y + 10 = 0$
 $8x + 3y + 10 = 0$
 $8x + 3y + 10 = 0 - 8x - 10$
 $3y = -8x - 10$
 $y = -\frac{8}{3}x - \frac{10}{3}$
 $m_1 = -\frac{8}{3}$ $Z(-1, 3)$
 $y - 3 = -\frac{8}{3}(x + 1)$
 $y - 3 = -\frac{8}{3}x - \frac{8}{3}$
 $y - 3 = -\frac{8}{3}x - \frac{8}{3} + \frac{3}{1}$
 $y = -\frac{8}{3}x - \frac{8}{3} + \frac{15}{3}$
 $y = -\frac{8}{3}x + \frac{7}{3}$

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)

$m = \frac{y_2 - y_1}{x_2 - x_1}$
 $-2 = \frac{(k - 5)}{-3 - (-9)}$
 $-2 = \frac{(k - 5)}{-3 + 9}$
 $-2 = \frac{(k - 5)}{6}$
 $6x - 2 = \frac{(k - 5)}{6} \times 6$
 $-12 = k - 5$
 $-12 + 5 = k - 5 + 5$
 $-7 = k$

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

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

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

SLOPE

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

Types of questions:

1) What is the slope between $(2, 3)$ and $(7, -4)$?

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

2) Using the points below, find the slope of each line $(3, 5)$ $(-3, -5)$

Finding Intercepts

X - Intercept - is where the graph crosses the x-axis ($y = 0$)

Y- Intercept - is where the graph crosses the y-axis ($x = 0$)

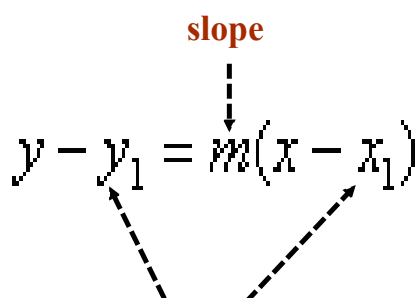
Example: What are the x and y intercepts for

a) $2x + 3y = 12$

b) $x - 3y = 9$

Point - Slope Form

You can also find the equation of a line if you are given a point and the slope of the line. In order to do this you use the formula:

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


The x and y values from the given point

1) Find the equation of a line that passes through (-3,4) and has the same slope as $y = 3x + 2$.

2) Find the equation of a line that passes through the points (0,5) and (-2,1)

Parallel Lines

More on Slope...

Lines that are **parallel** will have the same slope.

Remember $y = mx + b$ $m = \text{slope}$

The lines $y = 3x + 1$ and $y = 3x - 2$ are parallel

You can see this when you graph it...

Perpendicular Lines

When two lines are perpendicular, their slopes are the opposite reciprocal of one another.

Example...

The lines $y = 2x + 1$ and $y = -1/2x + 1$ are perpendicular.

Again, you can see this when you graph the two lines on a coordinate plane.

Example:

What is the slope of each pair of lines? Are they parallel or perpendicular?

a) $y = 2x - 4$
 $y = 2x - 8$

b) $y = 4$
 $y = 9$

c) $y = 4x$
 $y = -1/4 x$

d) $x = 4$
 $y = 4$

Rearranging Equations

Anytime we have looked at equations of lines that have all been in the form $y = mx + b$. However, there are some cases in which an equation is written in a different form and we have to rearrange it in order to put it in $y = mx + b$ form.

For example: Write $3x + y = 7$ in the form $y = mx + b$

Rearrange the following equations in the form $y = mx + b$

a) $2x + y = 4$

b) $3x - 3y = 9$

c) $x + 2y - 12 = 0$

d) $y + 4 = 10x$

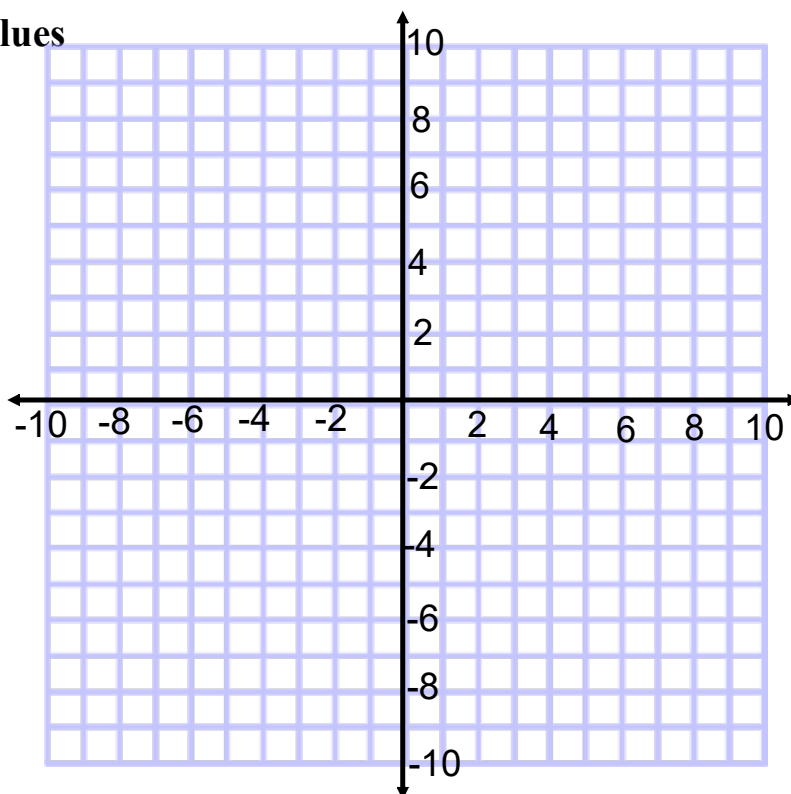
e) $2y = 50x - 100$

f) $2x = -y + 13$

Graphing

Three ways to do it

1. Using a Table of Values
2. Using $y = mx + b$
3. Using intercepts



Homework

Attachments

WORKSHEET TEST REVIEW (Day 1).notebook