

# 6.5 Part 1

Name: KEY

Topic:

Writing Eq's of Parallel Lines

Date:

Summary:

## SLOPE FORMULA:

$$m = \frac{Y_2 - Y_1}{X_2 - X_1}$$

How do we know if two lines are parallel?

They have the exact same Slope.

Determine if the two lines are parallel.

1) Line 1: through  $(-1, 0)$  and  $(0, 4)$

Line 2: through  $(-2, -6)$  and  $(-1, -2)$

$$m_1 = \frac{4 - 0}{0 - (-1)} = \frac{4}{1} = \textcircled{4}$$

$$m_2 = \frac{-2 - (-6)}{-1 - (-2)} = \frac{4}{1} = \textcircled{4}$$

\* Yes, the lines are parallel because they have the same Slope.

2) Line 1:  $y = 3x + 4$

Line 2:  $y = 3x - 8$

$$m_1 = 3$$

$$m_2 = 3$$

\* Yes the lines are parallel because they have the same Slope.

3) Line 1:  $y = -\frac{1}{2}x$   $m_1 = -\frac{1}{2}$

Line 2:  $y = \frac{1}{2}x + 5$   $m_2 = \frac{1}{2}$

\* No, the lines are NOT PARALLEL. One is positive and one is negative.

1st Step:

Change to Slope-Intercept Form.  $y = mx + b$

Line 1:

$$2y = -3x + 6$$

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

← 4) Line 1:  $3x + 2y = 6$

Line 2:  $1.5x + y = -1$

2nd Step:

$$m_1 = -\frac{3}{2}$$

$$m_2 = -1.5 = -\frac{3}{2}$$

\* Yes the lines

5) Line 1:  $-x - y = 10 \rightarrow y = -x - 10$

Line 2:  $-4x + 4y = -12 \rightarrow y = x - 3$

$$m_1 = -1 \quad m_2 = 1$$

\* No, the lines are NOT PARALLEL.

Step 1:  
Identify  
slope of  
original  
line.

EX: Write an equation of a line that passes through  $(2, -3)$  and is parallel to the line  $y = 2x - 3$

①  $m = 2$

②  $m_{||} = 2$

③  $y + 3 = 2(x - 2)$

$y + 3 = 2x - 4$

$y = 2x - 7$

Step 2:  
Identify  
parallel  
Slope  
(Same).

TRY: Write an equation of a line that passes through  $(4, -1)$  and is parallel to the line  $y = -x + 4$

①  $m = -1$

②  $m_{||} = -1$

③  $y + 1 = -1(x - 4)$

$y + 1 = -1x + 4$

$y = -x + 3$

Step 3:  
Plug point  
and  $m_{||}$   
into  
Point-Slope  
Formula  $\rightarrow$   
 $y - y_1 = m(x - x_1)$

EX: Write an equation of a line that passes through  $(3, -2)$  and is parallel to the line that passes through  $(3, 0)$  and  $(-3, 1)$ .

$m = \frac{1 - 0}{-3 - 3} = -\frac{1}{6}$ , so  $m_{||} = -\frac{1}{6}$

$y + 2 = -\frac{1}{6}(x - 3)$

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

$y = -\frac{1}{6}x - \frac{3}{2}$

TRY: Write an equation of a line that passes through  $(-1, 3)$  and is parallel to the line that passes through  $(1, 5)$  and  $(4, 2)$ .

$m = \frac{2 - 5}{4 - 1} = -\frac{3}{3} = -1$ , so  $m_{||} = -1$

$y - 3 = -1(x + 1)$

$y - 3 = -x - 1$

$y = -x + 2$