

Section 6.4 - Parallel and Perpendicular Lines

MPM1D

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Parallel Lines - lines in the same plane that never meet.

Perpendicular Lines - Two lines that cross at 90 degrees.

DO IT NOW!

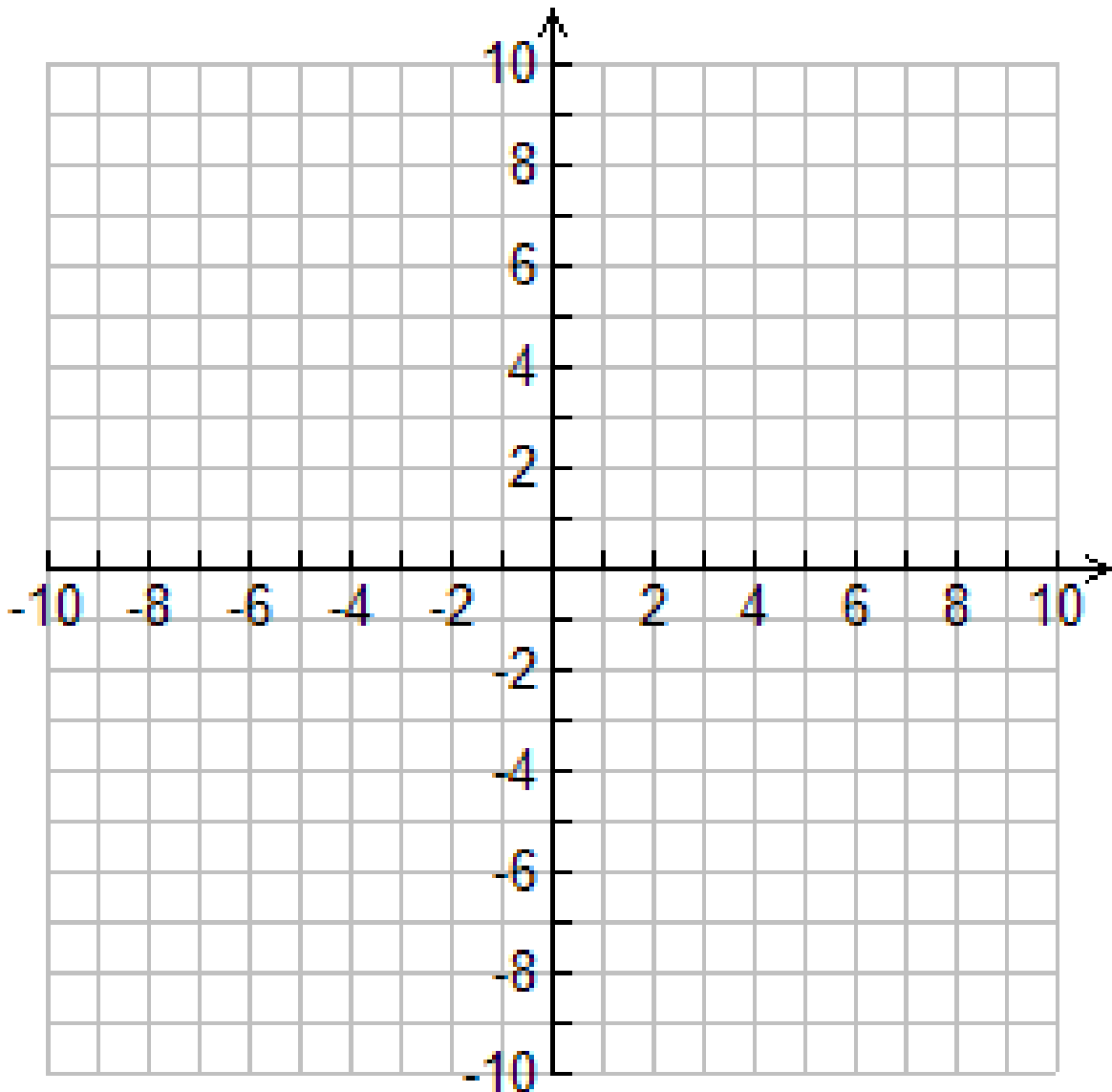
Instructions: Draw and label each of the following lines on the grid below:

A) $y = 2x + 4$

B) $y = 2x + 8$

C) $y = \frac{1}{2}x + 4$

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



1) Which lines are parallel?

2) What do you notice about the slopes of lines that are parallel?

3) Which lines are perpendicular?

4) What do you notice about the slopes of lines that are perpendicular?

5) What is the product of the perpendicular slopes?

6) Does the y-intercept matter when deciding if two lines are parallel or perpendicular?

Consolidation:

Parallel lines will have _____ slopes.

Perpendicular lines will have slopes that are _____ .
Their product is -1.

Example 1:

a) The equation of a line is $y = 3x - 4$. What is the slope of a line that is parallel to this line?

b) The equation of a line is $y = -x + 15$. What is the slope of a line that is parallel to this line?

c) The equation of a line is $y = 2x + 1$. What is the slope of a line that is perpendicular to this line?

d) The equation of a line is $y = \frac{3}{5}x + 2$. What is the slope of a line that is perpendicular to this line?

d) The equation of a line is $y = -\frac{1}{7}x - \frac{3}{7}$. What is the slope of a line that is perpendicular to this line?

Example 2: The slopes of two lines are given. Determine whether the lines are parallel, perpendicular or neither.

a) $m = 3, m = -\frac{1}{3}$

b) $m = 5, m = -5$

c) $m = 6, m = \frac{1}{6}$

d) $m = -2, m = -2$

Example 3:

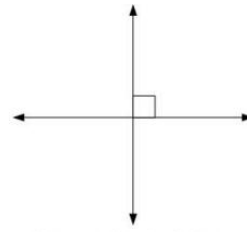
a) Determine the slope of a line that is parallel to the line $2x - 3y - 6 = 0$.

b) Determine the slope of a line that is perpendicular to the line $2x - 3y - 6 = 0$.

Consolidate:



Parallel Lines



Perpendicular Lines

a) Explain how you can determine if the two lines $3x - 4y - 12 = 0$ and $4x - 3y - 24 = 0$ are parallel, perpendicular or neither.

b) Determine if the two lines $3x - 4y - 12 = 0$ and $4x - 3y - 24 = 0$ are parallel, perpendicular or neither.