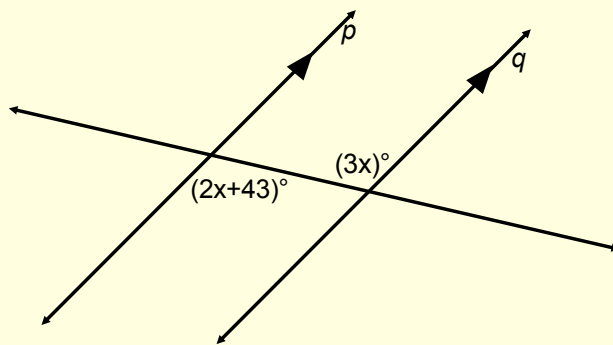


Bellwork 10/03/2011

1. Find the value of x that makes $p \parallel q$.



$$\begin{array}{r} 2x + 43 = 3x \\ -2x \quad -2x \\ \hline \end{array}$$

$$x = 43$$

Geometry

3.4 Find and Use Slopes of Lines

Standard(s): 2,3

Vocabulary:

1. Slope: the ratio of vertical change to horizontal change.

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

KEY CONCEPT

For Your Notebook

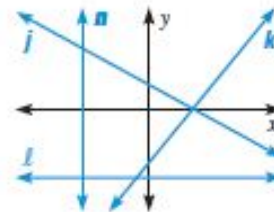
Slope of Lines in the Coordinate Plane

Negative slope: falls from left to right, as in line j

Positive slope: rises from left to right, as in line k

Zero slope (slope of 0): horizontal, as in line l

Undefined slope: vertical, as in line n



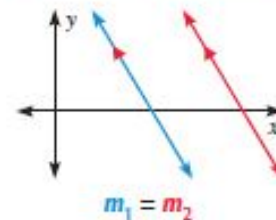
POSTULATES

For Your Notebook

POSTULATE 17 Slopes of Parallel Lines

In a coordinate plane, two nonvertical lines are parallel if and only if they have the same slope.

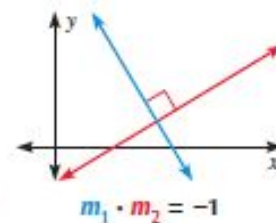
Any two vertical lines are parallel.



POSTULATE 18 Slopes of Perpendicular Lines

In a coordinate plane, two nonvertical lines are perpendicular if and only if the product of their slopes is -1 .

Horizontal lines are perpendicular to vertical lines.

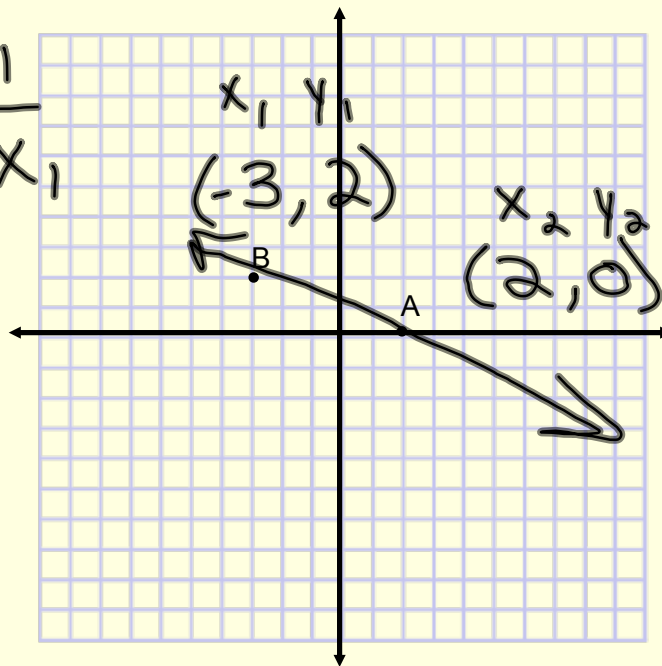


Note: perpendicular slope
★ Opposite reciprocal★

Find Slopes of Lines in a Coordinate Plane

Find the slope of the line that passes through the two points.

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



$$\frac{0 - 2}{2 - (-3)} = \frac{-2}{5}$$

Identify Parallel & Perpendicular Lines

Find the slope of each line. Are they parallel?

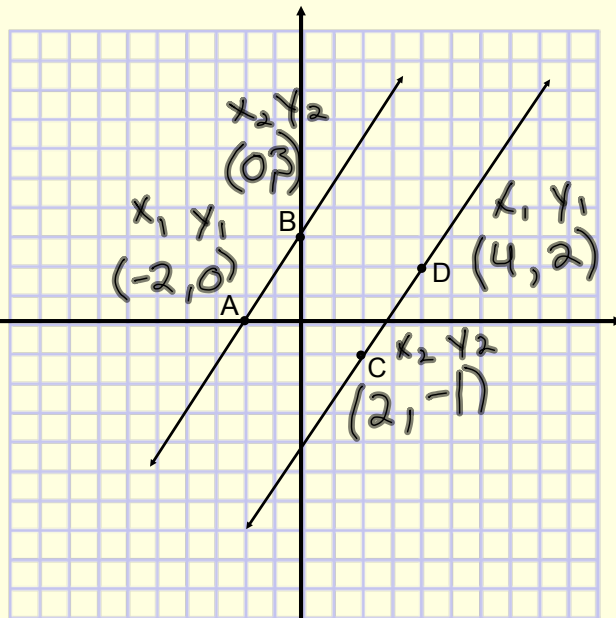
AB

$m =$

$$\frac{3-0}{0-(-2)}$$

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

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



$\overleftrightarrow{AB} \parallel \overleftrightarrow{DC}$

DC

$$m = \frac{-1-2}{2-4}$$

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

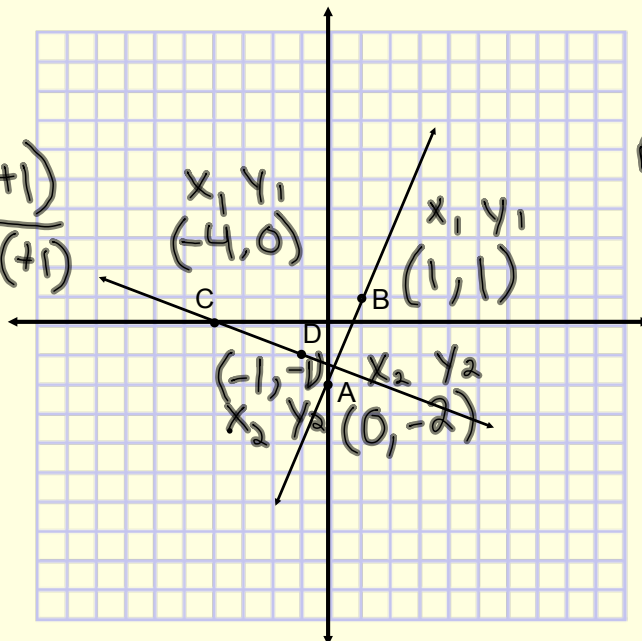
$$= \frac{3}{2}$$

Find the slope of each line. Are they perpendicular?

CD

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

$$= \frac{1}{-3}$$



$\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$

AB

$$m = \frac{-2+1}{0-1}$$

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

$$= 1$$

Compare the Slope of Lines

Pull

Tell which line through the points is steeper.

$$\text{Line 1: } \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (-3, 4), & & (-3, 1) \end{matrix}$$

$$\text{Line 2: } \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (2, 1), & & (5, 5) \end{matrix}$$

Line 1:

$$m = \frac{1-4}{-3+3} = \frac{-3}{0}$$

Vertical

$$\text{Line 1: } (-5, 0), (-3, -2)$$

$$\text{Line 2: } (-2, 2), (0, 4)$$

Line 2:

$$m = \frac{1-5}{2-5}$$

$$\frac{-4}{-3}$$

$$\frac{4}{3}$$

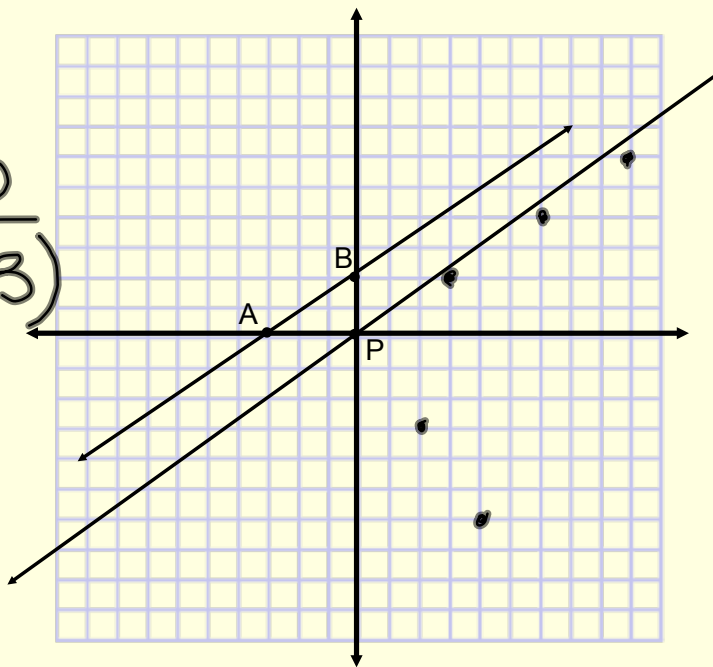
Draw Parallel & Perpendicular Lines

Draw the line parallel to \overleftrightarrow{AB} through point P.

$$AB$$

$$m = \frac{2-0}{0+3}$$

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



1. Find Slope of the given line.
2. Start at the given pt. & use your new slope.
3. Draw a line

*How could you draw a line perpendicular to \overleftrightarrow{AB} through P?

Homework Assignment

Worksheet 3.4B

