

Topic 3 Parallel and Perpendicular Lines

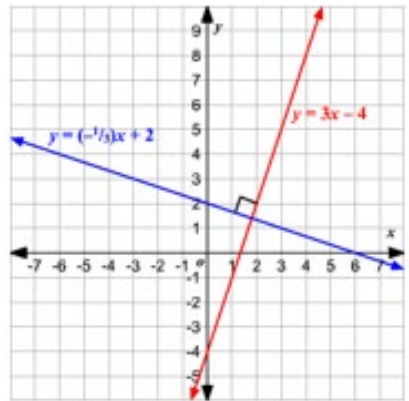


Table of Contents

Slope.....	pg. 2 – 3
Parallel vs. Perpendicular.....	pg. 4 – 6
Parallel Lines cut by a Transversal.....	pg. 7 – 9

Slope

Practice: Use the slope formula to find the slope of the line passing through the following points.

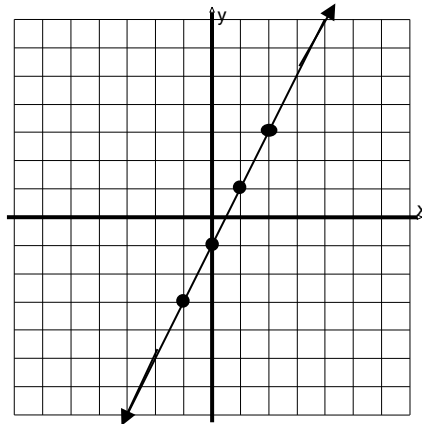
1. $(0, 0)$ and $(4, 8)$

2. $(1, 5)$ and $(3, 9)$

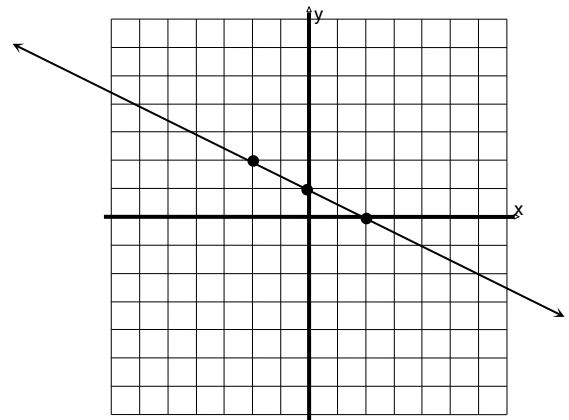
3. $(-1, 3)$ and $(2, 3)$

4. $(4, 2)$ and $(4, 1)$

For each of the following, count the slope of the line on the graph.



$m =$ _____



$m =$ _____



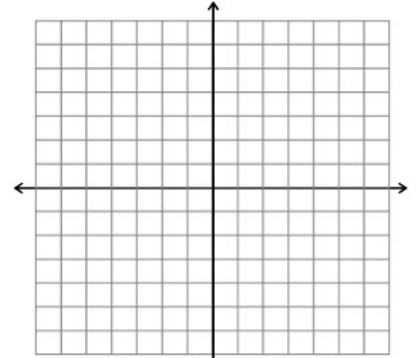
Which method do you like better?



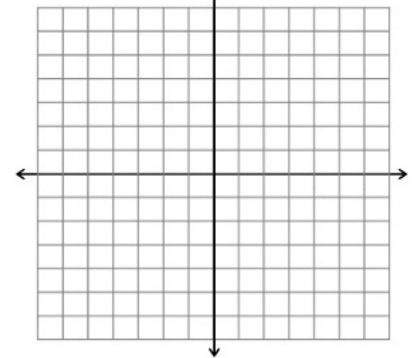
Practice

Directions: Use the slope formula to find the slope. Then check on the graph by counting.

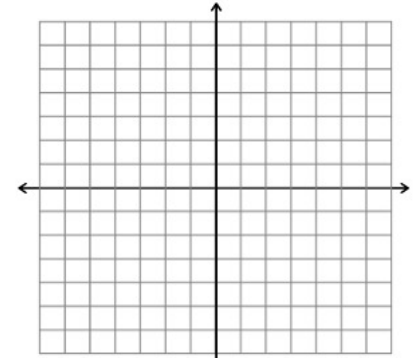
1. Find the slope of the line between $(-2, -3)$ and $(1, 3)$.



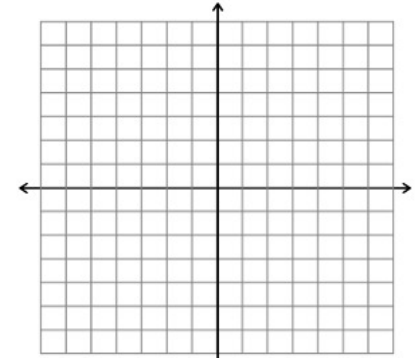
2. Find the slope of the line between $(-2, 5)$ and $(4, -4)$.



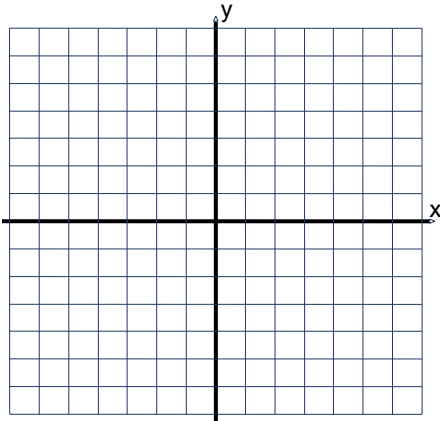
3. Find the slope of the line between $(-1, 3)$ and $(2, 3)$.



4. Find the slope of the line between $(4, 2)$ and $(4, 1)$.



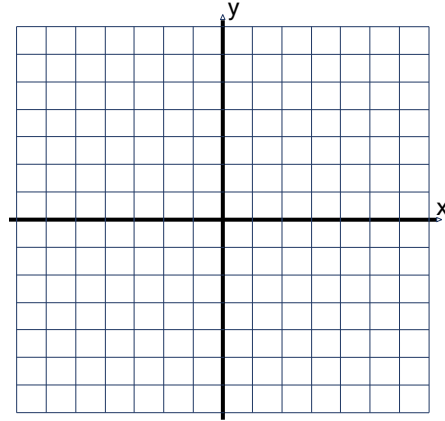
Parallel vs. Perpendicular



Graph Line A to pass through the points (-4, 1) and (0, 3)

Graph Line B to pass through the points (-3, -2) and (3, 1)

Lines A and B are _____



Graph Line A to pass through the points (-4, 1) and (0, 3)

Graph Line B to pass through the points (-5, 5) and (1, 1)

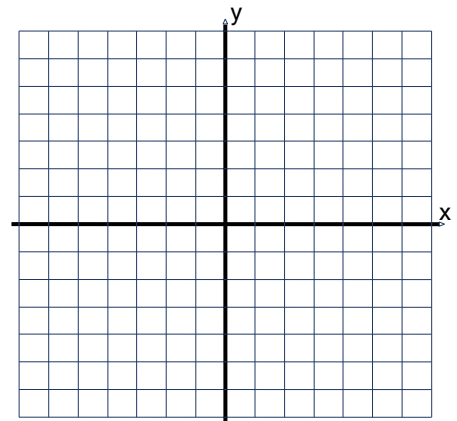
Lines A and B are _____

Parallel lines have **SAME** slopes.

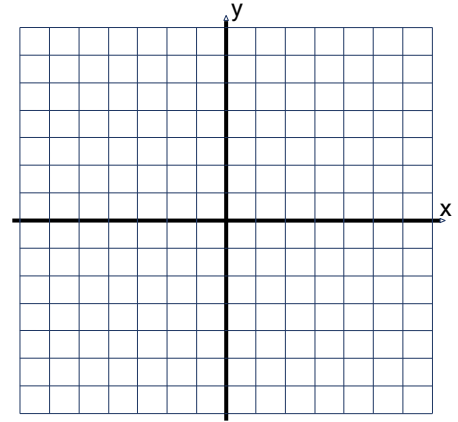
Perpendicular lines have **NEGATIVE RECIPROCAL** slopes.

Examples

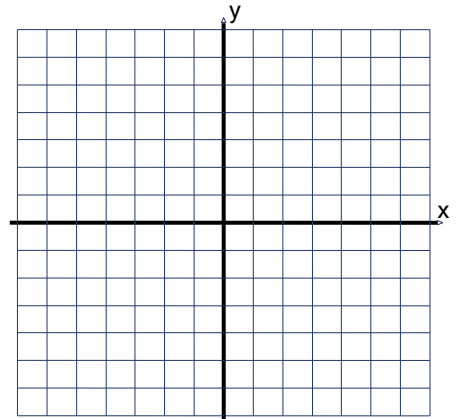
1. Are the lines $y = -\frac{1}{3}x + 5$ and $y = -\frac{1}{3}x - 1$ parallel, perpendicular or neither? Graph the lines to prove your answer.



2. Are the lines $y = \frac{3}{2}x$ and $y = -\frac{2}{3}x + 3$ parallel, perpendicular or neither? Graph the lines to prove your answer.



3. Are the lines $y = \frac{1}{2}x - 4$ and $y = 2x - 3$ parallel, perpendicular or neither? Graph the lines to prove your answer.



4. Which line is perpendicular to the line whose equation is $5y + 6 = -3x$?

1) $y = -\frac{5}{3}x + 7$

2) $y = \frac{5}{3}x + 7$

3) $y = -\frac{3}{5}x + 7$

4) $y = \frac{3}{5}x + 7$

Practice

For each of the following, decide whether the set of lines are parallel, perpendicular or neither.
Place the letter in the appropriate box.

Parallel	Perpendicular	Neither

A.

$$y = 3x - 1$$

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

B.

$$y = 2x$$

$$y = 2x + 4$$

C.

$$y = 2x$$

$$y = -2x + 4$$

D.

$$y = \frac{1}{2}x$$

$$y = 2x + 4$$

E.

$$y = \frac{1}{2}x$$

$$2y = x + 4$$

F.

$$2x + 3y = 6$$

$$2y - 3x = 9$$

G.

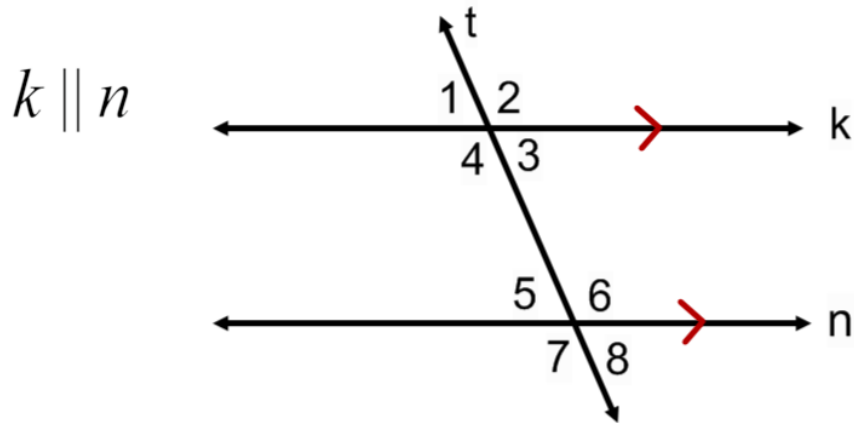
$$-x + 3y = 6$$

$$y - 3x = 9$$

What is the slope of a line that is parallel to the line that passes through the points(-3,-1) and (1,2)?

What is the slope of a line that is perpendicular to the line that passes through the points (-3,-1) and (1,2)?

Parallel Lines cut by a Transversal



Types of Angles that are formed:

Alternate Interior Angles —

Alternate Exterior Angles —

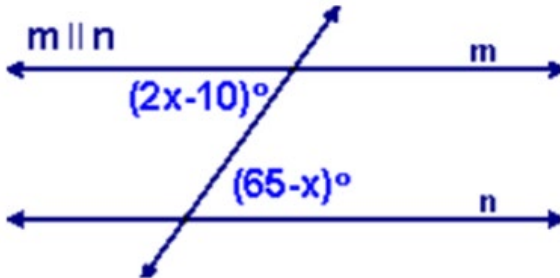
Corresponding Angles —

Same Side Interior Angles —

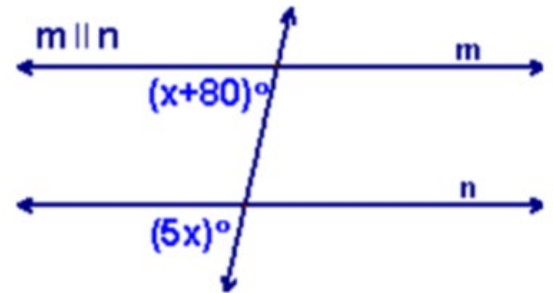
Examples

Directions: Solve for x and each angle.

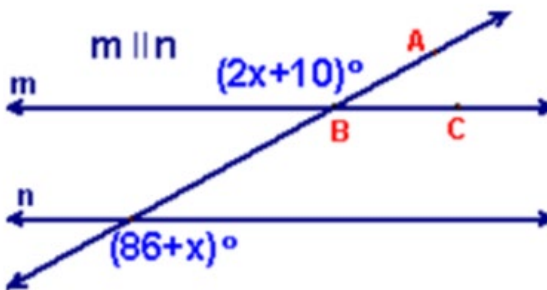
Ex. 1



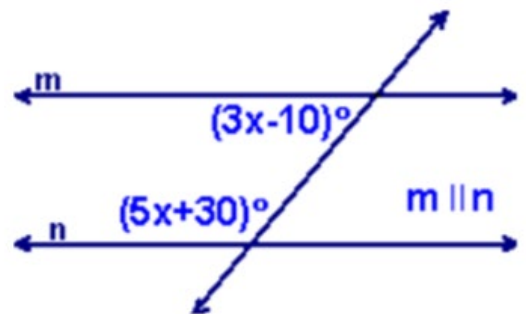
Ex. 2



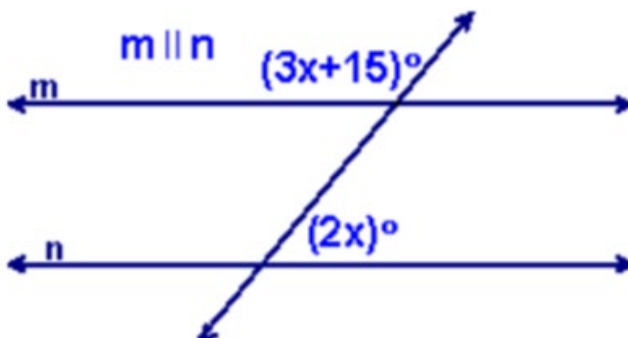
Ex. 3



Ex. 4



Ex. 5



Practice

For each of the following, identify the type of angles and then solve each of the following for x .

