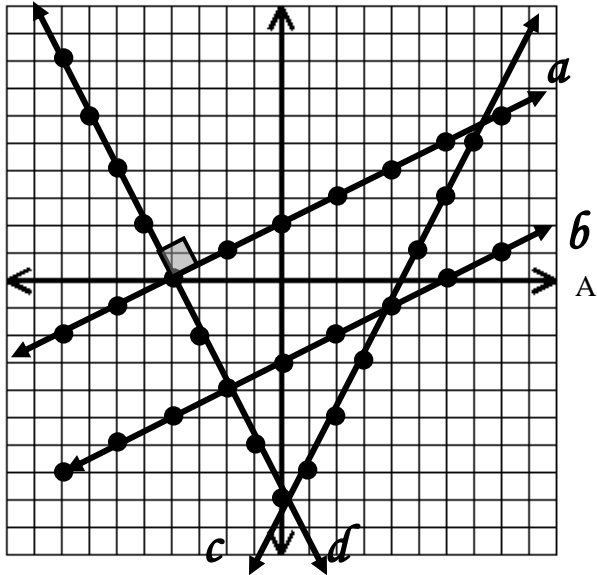


# TOPIC 3-5: PERPENDICULAR AND PARALLEL LINES

Use the graph below to find the slope of each line.



<i>line</i>	<i>slope</i>
<i>a</i>	
<i>b</i>	
<i>c</i>	
<i>d</i>	

Which lines are parallel?

What do you notice about their slopes?

Which lines are perpendicular?

What do you notice about their slopes?

EXAMPLES: Fill in the chart.

GIVEN SLOPE	PARALLEL SLOPE	PERPENDICULAR SLOPE
$\frac{2}{3}$		
-4		
$-\frac{1}{4}$		
2		
0		

**EXAMPLES:** Determine if the given lines are parallel, perpendicular, or neither.

1) _____	$y = -\frac{1}{2}x + 4$ and $y = 2x - 8$
2) _____	$y = 3x + 7$ and $y = -3x + 2$
3) _____	$7y + 42 = x$ and $y = \frac{1}{7}x$

**What is the formula we use to find the slope of a line given 2 points?**

**Formula:**

**From a Graph:**

**How can we find the slope of a line given two points on a calculator?**

**Determine if the following lines are parallel, perpendicular, or neither.**

**EXAMPLE 4** By formula.....

$\overleftrightarrow{WX}$  and  $\overleftrightarrow{YZ}$  for  $W(3,1)$ ,  $X(3,-2)$ ,  $Y(-2,3)$ ,  $Z(4,3)$

**EXAMPLE 5** How about a calculator for this one!!!

$\overleftrightarrow{KL}$  and  $\overleftrightarrow{MN}$  for  $K(-4,4)$ ,  $L(-2,-3)$ ,  $M(3,1)$ ,  $N(-5,-1)$

**EXAMPLE 6** Your choice.....

$\overleftrightarrow{BC}$  and  $\overleftrightarrow{DE}$  for  $B(1,1)$ ,  $C(3,5)$ ,  $D(-2,-6)$ ,  $E(3,4)$

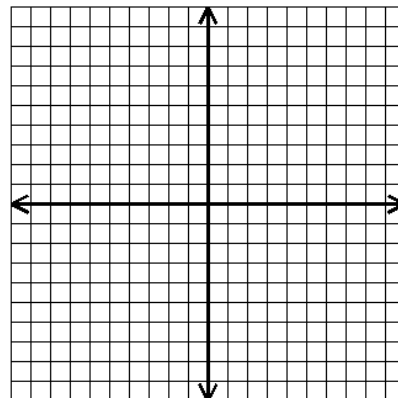
We can also write the equation of a line given two points or a point and a slope. To do this, we use

$$y = mx + b$$

$m = \text{slope}; b = \text{y-intercept}; (x, y)$

**7. Write the equation, in slope-intercept form, of a line with the given slope and point. Then graph the line.**

$$(2, 9); \quad m = \frac{5}{2}$$



**8. Write the equation, in slope-intercept form, of a line that passes through the given points. Then graph the line.**

$$(-9, -1); \quad (3, 7)$$

