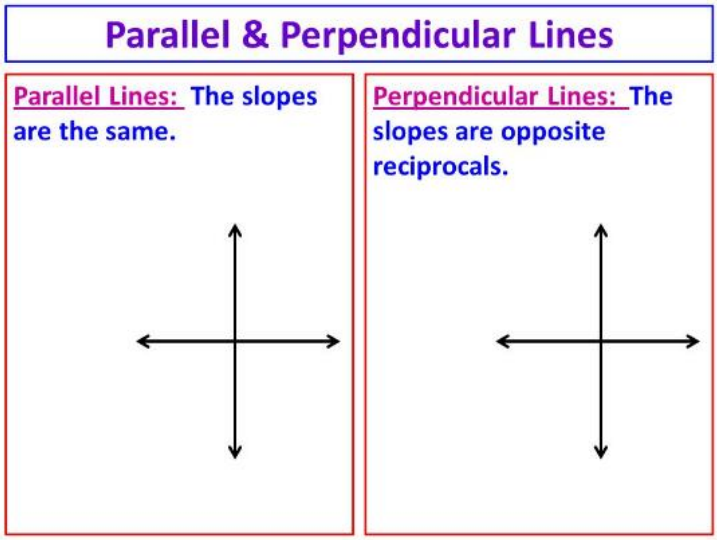
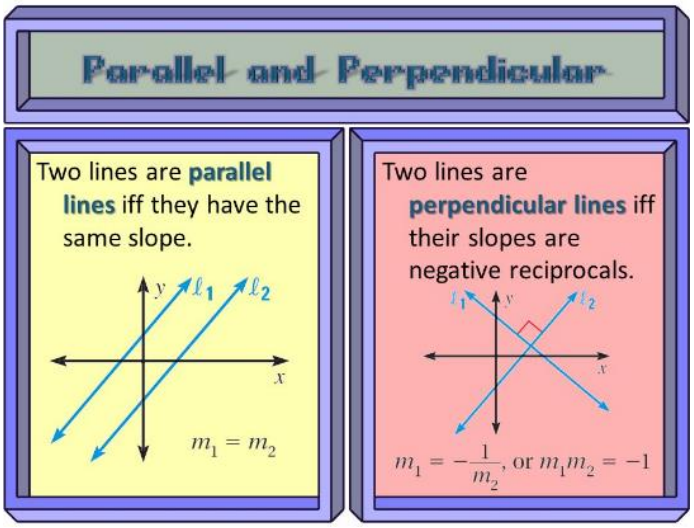
Name:_____ Date:_____

Guided Notes: Parallel and Perpendicular Equations through a Point





Objective #1: I can use slope-intercept form to find a parallel or perpendicular line that goes through a given point.

I DO 1: What is the equation of line perpendicular to y = 3x + 5 and through the point (1, 7)?

Substitute the slope from original line into y = mx + b	Substitute the given point into the x and y values	Solve for b (the y-intercept)	Substitute all new values back into y = mx + b
original slope:_____ *slope we need:_____* _____	*point: (_____)* x y	*b: _____*	$y = mx + b$

WE DO 1: What is the equation of line parallel to y = 4x + 3 and through the point (5,9)?

Substitute the slope from original line into y = mx + b	Substitute the given point into the x and y values	Solve for b (the y-intercept)	Substitute all new values back into y = mx + b
original slope:_____ *slope we need:_____* _____	*point: (_____)* x y	*b: _____*	$y = mx + b$ *Got it?*

Objective #2: I can use point-slope form to find a parallel or perpendicular line that goes through a given point.

Point-Slope Form

$y - y_1 = m(x - x_1)$

Slope

Coordinates of the point on the line

(Note: x and y (in black) remain variables.)

I DO 2: What is the equation of line perpendicular to y = 3x + 5 and through the point (1, 7)?

Substitute the slope from original line into the point slope equation.	Substitute the given point into the x_1 and y_1 values	Solve for y get y alone, put in y = mx + b) distribute, add or subtract
original slope:_____ *slope we need:_____* _____ ☐ →	*point: (_____)* x_1 y_1 *You COULD be done here.* *The equation COULD be:*	*Final Equation:*

WE DO 2: What is the equation of line parallel to y = 4x + 3 and through the point (5,9)?

Substitute the slope from original line into the point slope equation.	Substitute the given point into the x_1 and y_1 values	Solve for y get y alone, put in y = mx + b) distribute, add or subtract
original slope:_____ *slope we need:_____* _____ ☐ →	*point: (_____)* x_1 y_1 *You COULD be done here.* *The equation COULD be:*	*Final Equation:* ○ *Got it?*

YOU DO: ***DO YOUR WORK, numbered neatly, on a separate sheet of paper. You may use either method (Objective #1 or #2), whatever is best for you.***

1. Write the equation of a line that is perpendicular to y = -1/4 x – 6 that passes through the point (12,4).
original slope:_____ Slope I need and why:_____

2. Write the equation of a line that is parallel to y = - 6x + 2 that passes through the point (-2, -3)
original slope:_____ Slope I need and why:_____

3. Write the equation of a line that is perpendicular to y = - 6x + 2 and that has a y-intercept of 6.
original slope:_____ Slope I need and why:_____
What does it mean, 'the y-intercept of 6"?_____

4. Write the equation of a line that is parallel to y = 2x + 3 and that has a y-intercept of 12

5. Find the equation of a line perpendicular to y = 3x + 1 that goes through the point (2,8) ?

6. Find the equation of a line parallel to y = 2x +7 and that goes through the point (4 , 12) ?

7. Find the equation of a line perpendicular to y =4x + 12 that goes through the point (1,9) ?

8. Find the equation of a line parallel to y =4x + 12 that goes through the point (-2 , 3) ?

Bonus Problems

9. Find the equation of a line parallel to y = 5 that goes through the point (-2 , -3) ?

10. Find the equation of a line perpendicular to x = 5 that goes through the point (6 , -3) ?

Number:_____Name:_____ Date:_____

Exit Ticket: Parallel and Perpendicular Equations through a Point

☐ *1.) Write the equation of a line that is parallel to y = 2x + 3 that passes through the point (6,2).*

☐ *2.) Write the equation of a line that is perpendicular to y = 2x + 3 that passes through the point (6,2).*

☐ *3.) Write the equation of a line that is parallel to y = ½ x + 5 that passes through the point (2,6).*

☐ *3.) Write the equation of a line that is perpendicular to y = ½ x + 5 that passes through the point (2,6).*