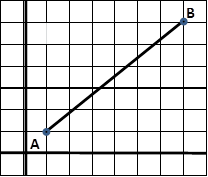
**Writing Equations of Parallel and Perpendicular Lines**

**To begin!** Write the equation of the line through the given points.

1. (5,-1), (-3,3) B. 

C. Circle the equation(s) parallel to 2x – 3y = 6.

y = x + 7 y = 2x + 7

y = 2x – 1 4x – 6y =9

D. Circle the equation(s) perpendicular to 2x–3y=6.

y = x + 7 y = 2x + 7

y = - x – 1 6x – 4y =9

PARALLEL and PERPENDICULAR LINES

The slope of parallel lines are EQUAL. The slope of perpendicular lines are Opposite Reciprocals.

If line *a* is perpendicular to line *b*, then (slope of *a*)(slope of *b*) = -1

EX: *Given y = 2x + 3 and y = - x -2 2(- - ) = - 1, so the two lines are perpendicular.*

To find the equation of a line that passes through a given point, (x,y), and is parallel or perpendicular to a given line, we must know the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the given line and can use the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to find the equation of the line that passes through the given point.

Point Slope Formula (y - ) = m (x - )

Ex1) Find the equation of the line that passes through (3,1) and is **PARALLEL** to the line y = x + 4.

STEP 1: We know that ***parallel*** lines have EQUAL slopes, so m =2/3.

STEP 2: We can use the Point Slope Formula and the coordinates of the given point to complete the equation. Use the values given for ‘x’ and ‘y’ and the slope equal to that of the given equation.

(y - ) = m (x - )

(y - ) = (x - )

Do the algebra to place into slope-intercept form.

Ex2) Find the equation of the line that passes through the point (-5,5) and is ***parallel*** to the line y = x + 4 .

***You Try*** Ex3) Find the equation of the line that passes through the point (-2, 3) and is ***parallel*** to the line y = 2x - 3.

Ex4) Find the equation of the line that passes through point ‘C’ and is ***parallel*** to .



Ex5) Find the equation of the line that passes through (3,1) and is **PERPENDICULAR** to the line y = x + 4.

STEP 1: We know that ***perpendicular*** lines have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ slopes, so m = .

STEP 2: We can use the Point Slope Formula and the coordinates of the given point to complete the equation. Use the values given for ‘x’ and ‘y’ and the negative inverse of the slope from the given equation.

(y - ) = m (x - )

(y - ) = - (x - )

Do the algebra to complete!

Ex6) Find the equation of the line that passes through (-1.4) and is ***perpendicular***  to y = 3x – 2.

***You Try*** Ex7) Find the equation of the line that passes through (3,2) and is ***perpendicular*** to y = x + 1.

Ex8) Find the equation of the line that passes through point ‘C’ and is ***perpendicular*** to .



Ex9) Write an equation of a line ***parallel*** to . A(2,1) and B(3,5).

**Step 1:** Find the slope of the line. **Step 2**: Find // slope **Step 3**: Find/write the EQ of the line

Ex10) Write an equation of a line ***perpendicular*** to . A(2,1) and B(3,5).

**Step 1:** Find the slope of the line. **Step 2**: Find // slope **Step 3**: Find/write the EQ of the line

***You Try***  Ex 11) Write an equation of a line ***parallel*** to . A(2,3) and B(8,6).

***You Try*** Ex 12) Write an equation of a line ***perpendicular*** to . A(2,3) and B(8,6).