Name: _____

Perpendicular Lines

1. From the following set of equations, which pairs would you expect to be perpendicular?

A: $y = 2x + 6$	**B:** $y = \frac{2}{3}x + 3$	**C:** $y = -\frac{1}{2}x + 1$
D: $y = \frac{1}{2}x + 5$	**E:** $y = -2x + 4$	**F:** $y = -\frac{1}{2}x + 2$

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2. The equations of 5 lines are listed below:

A $y = 6x - 3$

B $y = 2x - 5$

C $y = 2x + 2$

D $y = 6x - 5$

E $y = -\frac{1}{2}x + 5$

a) Which line is parallel to A?

b) Which line is parallel to C?

c) Which line is perpendicular to B and C?

3. Write down the equations of 2 lines which are parallel to $\boldsymbol{y = -4x + 3}$

4. Write down the equations of 2 lines which are perpendicular to $\boldsymbol{y = 3x + 8}$

5. Determine whether the following pairs of lines are perpendicular or not. You will need to rearrange some of the equations first so they are in the form $\boldsymbol{y = mx + c}$.

	Line A	**Line B**	**Perpendicular?**
1	$y = -4x + 3$	$4y + x = -1$	
2	$y = -\frac{2}{3}x + 4$	$3x + 2y = 1$	
3	$2x - 5y = -3$	$5x + 2y = 6$	
4	$x - 3y = 9$	$8y + 24x = 16$	
5	$x + y = 6$	$4y - 4x = 12$	
6	$y = -x + 8$	$x - y = -1$	

6. Find equation of the line through $(\mathbf{10}, \mathbf{3})$ which is perpendicular to the line $\boldsymbol{y} = -\mathbf{5}\boldsymbol{x} +$.

7. Find equation of the line through $(\mathbf{8}, \mathbf{5})$ which is perpendicular to the line $\boldsymbol{y} = \frac{\mathbf{1}}{\mathbf{4}}\boldsymbol{x} + \mathbf{10}$.

8. Find equation of the line through $(\mathbf{4}, \mathbf{10})$ which is perpendicular to the line $\boldsymbol{y} = -⅔\boldsymbol{x} + \mathbf{2}$.

9. Find equation of the line through $(\mathbf{8}, -\mathbf{2})$ which is perpendicular to the line $\mathbf{4}\boldsymbol{x} - \mathbf{2}\boldsymbol{y} = \mathbf{6}$.

10. Find equation of the line through $(-\mathbf{2}, -\mathbf{3})$ which is perpendicular to the line $\mathbf{2}\boldsymbol{y} + \mathbf{4}\boldsymbol{x} = \mathbf{8}$.

Extension

A. Find the equation of the line which passes through the intersection point of the lines $y = x + 3$ and $y = 11 - 3x$ and is parallel to $x + y = 2$

B. Find the equation of the perpendicular bisector of the line joining the points $(4,3)$ and $(8, 11)$.