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

and	
and	
and	

2. The equations of 5 lines are listed below:

A
$$y = 6x - 3$$

$$B \quad y = 2x - 5$$

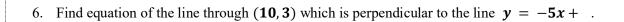
C
$$y = 2x + 2$$

$$D \quad y = 6x - 5$$

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 y = -4x + 3
- 4. Write down the equations of 2 lines which are perpendicular to 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 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	



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

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

9. Find equation of the line through (8, -2) which is perpendicular to the line 4x - 2y = 6.

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

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).