Parallel and Perpendicular lines part2

1. State if the following lines are:
   (i) Parallel
   (ii) Perpendicular to each other or
   (iii) Neither parallel nor perpendicular to each other
   (a) $y = 9x - 5$ and $y - 9x = 19$
   (b) $6y + 18x = 30$ and $y - \frac{1}{3}x = 16$
   Provide evidence of your answer in each case.

2. State if the following lines are :
   (i) Parallel
   (ii) Perpendicular to each other or
   (iii) Neither parallel nor perpendicular to each other.
   $7y = 28x - 14$
   $16y = -4x + 5$
   Provide evidence of your answer in each case.

3. Draw the graph of the linear equations $y = -5x + 2$ and $y = -5x - 1$ on the same graph paper with the same scale and axes. Prove that the two straight lines are either parallel or perpendicular.

4. Given the linear equations
   $6y = 5x - 12$
   $5y = 13 - 6x$
   $6y - 5x = -18$
   Write down the three equations in the form $y = mx + c$
   Hence state:
   (i) Which pair/s of straight lines are parallel
   (ii) Which pair/s of straight lines are perpendicular
   Provide evidence of your answer in each case.

5. State which of the following pairs of lines are:
   (i) Parallel
   (ii) Perpendicular to each other or
   (iii) Neither parallel nor perpendicular to each other
   a) $8y = 24x + 7$ and $24y + 8x = 11$
   b) $9y = 5x - 9$ and $18y + 7 = 10x$
   c) $10y + 7 = 11x$ and $10y = 9x - 3$

6. There are 4 points on a graph A(2, −3), B(4, −7), C(2, −7) and D(3, −9). Show that by joining points AB and joining points CD, they form two parallel lines

7. There are 4 points on a graph E(4, 5), F(−4, 3), G(2, −5) and H(0, 3). Show that by joining points AB and joining points CD, they form two perpendicular lines

8. The coordinates of I and J are (−2, −3) and (1, 12) respectively. X is the midpoint of IJ
   (a) Calculate :
   (i) the length of IJ
   (ii) the gradient of IJ
   (iii) the coordinates of X
   (b) Determine the gradient of the perpendicular bisector of IJ

9. Given the points K (−1, −9) and L(5, 9) respectively. X is the midpoint of KL
   (a) Calculate :
   (i) the length of the straight line KL
   (ii) the gradient of KL
   (iii) the coordinates of X
   (iv) the intercept on the y-axis
   (v) the intercept on the x-axis
   (vi) the equation of the line KL

   (b) Determine the gradient of the perpendicular bisector of KL and state the coordinates of the point at which the perpendicular bisector meets the y-axis.