Parallel and Perpendicular Lines

1. Write the gradient of the line perpendicular to the line with gradient
   (a) 5 (b) 7 (c) -4 (d) -9 (e) ½ (f) $-\frac{3}{4}$ (g) $\frac{3}{8}$ (h) $-\frac{2}{3}$

2. A is the point (4,-3) and B is (-1,1). Find the gradient of a line perpendicular to AB.

3. P is the point (6,5) and Q is (-3,4).
   (a) Write down the gradient of a line parallel to PQ.
   (b) Write down the gradient of a line perpendicular to PQ.

4. M is the point (5,7) and N is (7,-2). Find the equation of a line **parallel** to MN which passes through the point (1,-3).

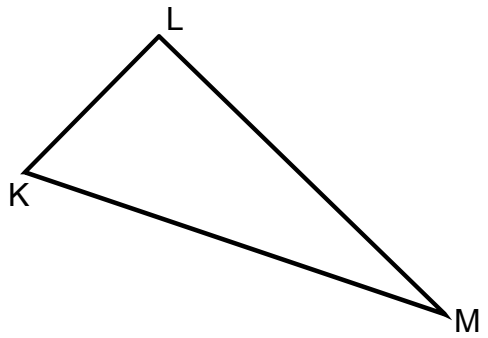
5. A is the point (0,-4) and B is (3,2). Find the equation of the line which is **perpendicular** to AB and passes through the point (5,1).

6. A line joins the points (1,-4) and (4,-3), Find the equation of the line passing through (-4,-4) which is **perpendicular** to this line.

7. A line passes through the points (1,3) and (6,2). Find the equation of the line which is **parallel** to the given line and passes through (-3,7).

8. G is the point (-5,-6) and H is (-3, -3). Find the equation of the line **perpendicular** to GH which passes through the point (-4,0).

9. Given that K,L and M are the points (-5,0), (-2,3) and (3,-2) respectively, prove that triangle KLM is right-angled.



10. A is the point (0,5), B is (1,1) and C is (9,3). Show that triangle ABC is right-angled at B.

11. A(-2,2) and C(3,-1) are opposite vertices of a kite ABCD.
    Find the gradient of diagonal BD.