

(C1-5.5a) Name:

### Homework Questions 5 – Parallel and Perpendicular Lines

1. If the gradient of a line is 2, what is the gradient of the parallel line to it?

Ans 2

2. If the gradient of a line is  $\frac{3}{5}$ , what is the gradient of a line perpendicular to it?

Ans  $-\frac{5}{3}$

3. Line A has the equation  $y = 5x + 2$  and line B has the equation  $y = 5x - 3$   
Are the lines parallel or perpendicular? You must prove it.

Ans parallel

4. What is the gradient of a line perpendicular to the line  $4x + 7y = 3$

Ans  $\frac{7}{4}$

5. Find the equation of the line which passes through the point (0,-3) and which is parallel to the line  $y = 7x + 2$  Write your answer in the form of  $ax+by+c=0$

Ans  $7x - y - 3 = 0$

6. A line has an equation of  $y = 8x + 3$ . What is the equation of the line perpendicular to this one which has a y-intercept of -2 Write your answer in the form of  $ax+by+c=0$

Ans  $x + 8y + 16 = 0$

7. A(-1,1) B(8,3) C(9,7) D(0,5) Show that ABCD is a parallelogram

$$ab = cd = \frac{2}{9}$$

$$bc = ad = 4$$

8. Find the equation of the line through (5,-1) which is perpendicular to the line  $x+3y=4$

Ans  $y = 3x - 16$

9. Two lines are perpendicular and intersect on the x-axis. One of the lines is  $y=2x-6$ . Find the equation of the other line.

Ans  $x + 2y - 3 = 0$

10. a) show that the triangle XYZ with X(4,15) Y(-1,4) and Z(7,7) is a right angled triangle  
b) find the equation of the hypotenuse

Ans  $5y = 11x + 31$