

Mathematics Department – Langholm Academy

**HIGHER HOMEWORK                      UNIT 1**

**CHAPTER 1.1**

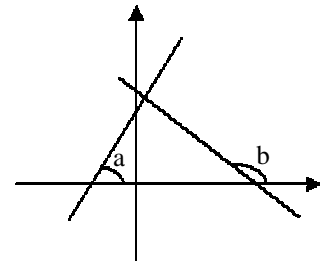
**The Straight Line – Homework 2**

**Higher - Unit 1**  
**The Straight Line - Homework 2**

1. Find the equation of a line with gradient 3 passing through the point (5,-7).
2. Find the equation of a line perpendicular to  $3y - 5x + 2 = 0$  passing through the point (-2,5).
3. Find the perpendicular bisector of
  - a. A(1,6), B(5,8)
  - b. P(2,-4), Q(-2,6)

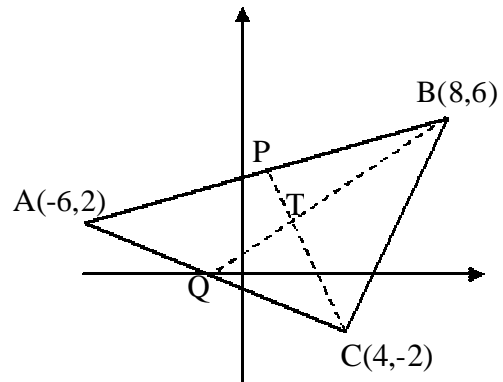
4. The lines  $y = 2x + 4$  and  $x + y = 13$  are shown on the diagram.

- a. Find the angles **a** and **b**
- b. Calculate the acute angle between the two lines



5. ABCD is a square with A(2,3) and C(6,5). Find the point of intersection of the diagonals and the coordinates of B and D.

6. Find the coordinates of the point T the intersection of the **medians** CP and BQ



7. The vertices of a triangle are A(-4,10), B(10,3) and C(0,-10). Find the point of intersection of the **median** BM and the **altitude** CP.

8. Lines  $L_1$  and  $L_2$  are **parallel**.  $L_1$  has equation  $4y = x + 13$  and  $L_2$  passes through the point (0,-1). Point A lies on the x axis.

- a. Find the equation of  $L_2$  and the coordinates of A.
- b. Given that AB is **perpendicular** to both lines find algebraically the coordinates of B.
- c. **Hence** calculate the **exact** shortest distance between the two lines.

