Essential Skills

Essential Exam Practice

The following questions demonstrate the contexts you will be likely to find in SQA examinations. The course descriptors are labelled on each question.

Straight Line

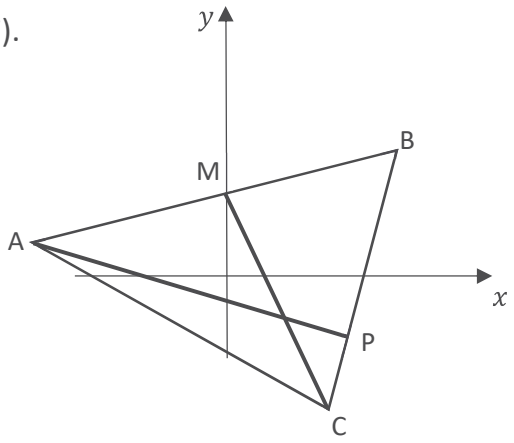
1. [G1] Find the equation of a line perpendicular to $3y + 2x - 9 = 0$ and passing through (-5, 1).

2. [G1, G2] Find the equation of a line, parallel to one that makes an angle of 150° with the positive direction of the x-axis and passing (0, -4).

3. [G1] The equation of a line connecting A(4, p) to B(7, 4) is $y - 3x + 17 = 0$.
Calculate the value of p.

4. [G3] Find the equation of the perpendicular bisector of a line connecting S(-1, 8) to T(3, -2).

5. [G3] Triangle ABC has vertices A(-8, 1), B(8, 3) and C(3, -7).



(a) Find the equation of median CM.

(b) Find the equation of altitude AP.

(c) Find the coordinates of the point of Intersection of CM and AP.

Quadratic Theory

1. [A2] Write $3x^2 - 12x + 1$ in the form $a(x + b)^2 + c$.

2. [A9] Find the value of p such that $3x^2 + 12x + 3p - 9 = 0$ has equal roots.

3. [A2] Prove that the roots of the equation $x^2 + (1 - 2k)x - k = 0$ are real for all values of k.

4. [A9, A8] Find the range of values of k such that the equation $kx^2 - 2kx + 6 = 0$ has no real roots.

5. [A11] Show that $x = 1$ is the only real root of $x^3 - 2x^2 + 3x - 2 = 0$.