Equation of a line

Gold

The points *P* and *Q* have coordinates $(1,-1)$ and $\left(\frac{7}{2},\frac{1}{2}\right)$ respectively. The line l_1 passes through *P* and *Q*.

The line l_2 is perpendicular to l_1 and passes through *Q*.

a Find an equation for l_2 giving your answer in the form $ax+by+c=0$.

b Find the exact length of the line between point *Q* and origin, *O.*

Silver

The points A, B and C have coordinates $(0,4)$, $(10, 5)$ and $(11, -2)$ respectively.

A straight line l_1 passes through A and B.

a Find an equation of the line l_2 passing through C and parallel to line l_1.

The point D with coordinates $(n-2, 2n-9)$ lies on the line l_2.

b Find the value of n and give the coordinates of D.

Bronze

The line l_1 has equation 15x + 3y – 7=0

a Find the gradient of l_1.

The line l_2 is parallel to l_1 and passes through the point (-2,4).

b Find the equation of l_2 in the form $y=mx+c$, where m and c are constants.

c Find the coordinates of C, the point where the line l_2 crosses the x-axis.