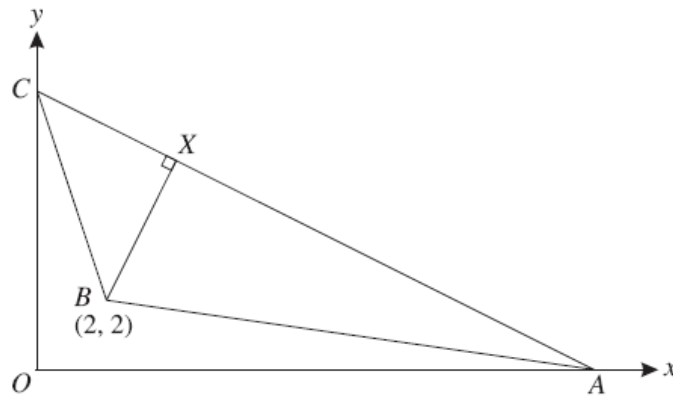**P1 June 08**

11

In the diagram, the points A and C lie on the x- and y-axes respectively and the equation of AC is $2y + x = 16$. The point B has coordinates $(2, 2)$. The perpendicular from B to AC meets AC at the point X.

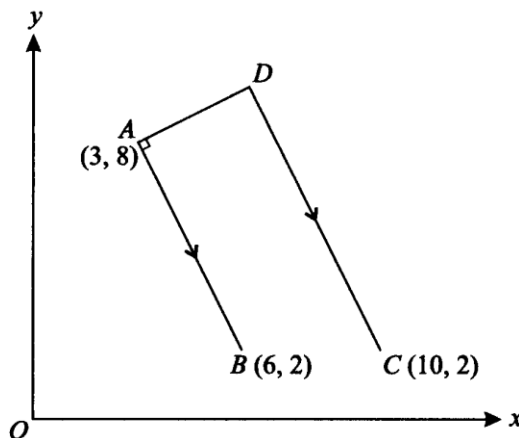 (i) Find the coordinates of X.   [4]

The point D is such that the quadrilateral $ABCD$ has AC as a line of symmetry.

  (ii) Find the coordinates of D.   [2]

  (iii) Find, correct to 1 decimal place, the perimeter of $ABCD$.   [3]
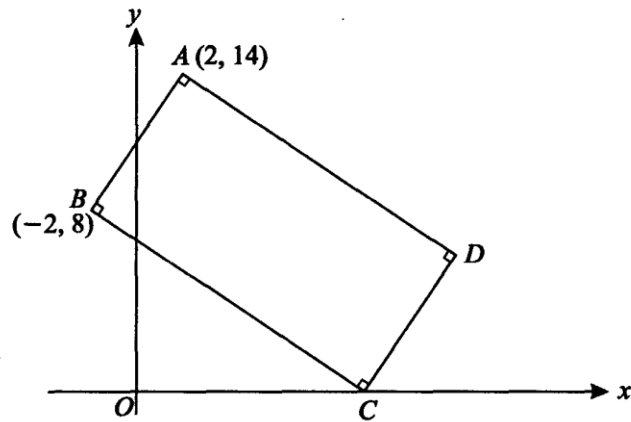
P1 Nov 08

6

The three points A $(3, 8)$, B $(6, 2)$ and C $(10, 2)$ are shown in the diagram. The point D is such that the line DA is perpendicular to AB and DC is parallel to AB. Calculate the coordinates of D.   [7]

6

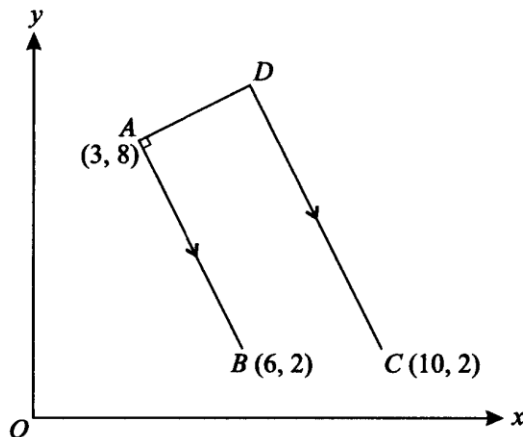

The diagram shows a rectangle $ABCD$. The point A is $(2, 14)$, B is $(-2, 8)$ and C lies on the x-axis. Find

  (i) the equation of BC,   [4]
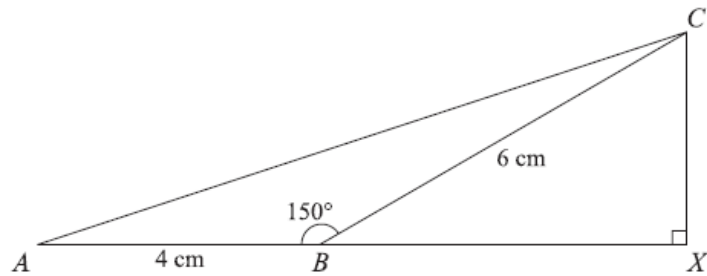
  (ii) the coordinates of C and D.   [3]

6

The three points A $(3, 8)$, B $(6, 2)$ and C $(10, 2)$ are shown in the diagram. The point D is such that the line DA is perpendicular to AB and DC is parallel to AB. Calculate the coordinates of D.   [7]
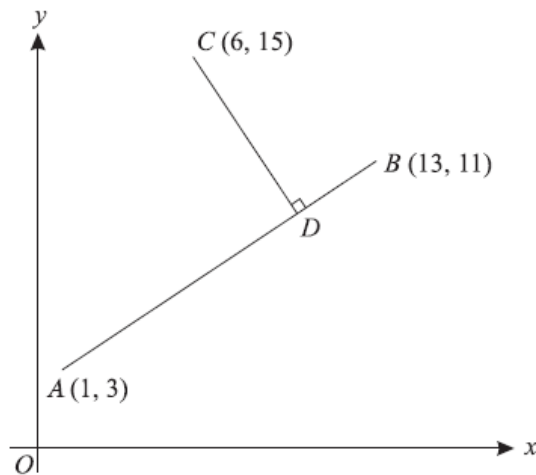
5   The curve $y^2 = 12x$ intersects the line $3y = 4x + 6$ at two points. Find the distance between the two points.   [6]

6

In the diagram, ABC is a triangle in which $AB = 4\,\text{cm}$, $BC = 6\,\text{cm}$ and angle $ABC = 150°$. The line CX is perpendicular to the line ABX.

   (i) Find the exact length of BX and show that angle $CAB = \tan^{-1}\left(\dfrac{3}{4+3\sqrt{3}}\right)$.   [4]

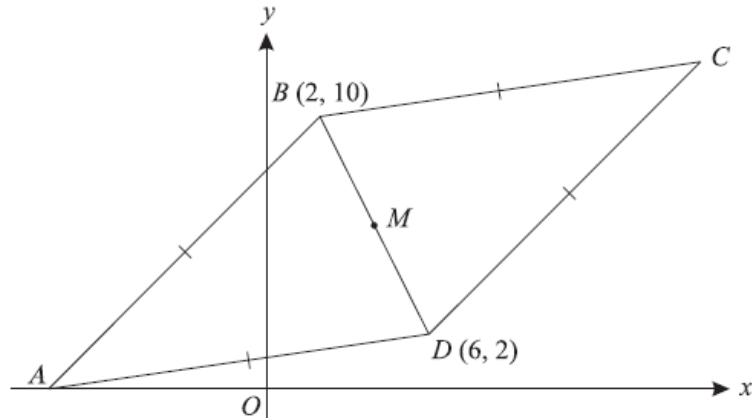   **(ii)** Show that the exact length of AC is $\sqrt{(52+24\sqrt{3})}$ cm.   [2]

P1 Nov 06

5

The three points $A\,(1,\,3)$, $B\,(13,\,11)$ and $C\,(6,\,15)$ are shown in the diagram. The perpendicular from C to AB meets AB at the point D. Find

   (i) the equation of CD,   [3]

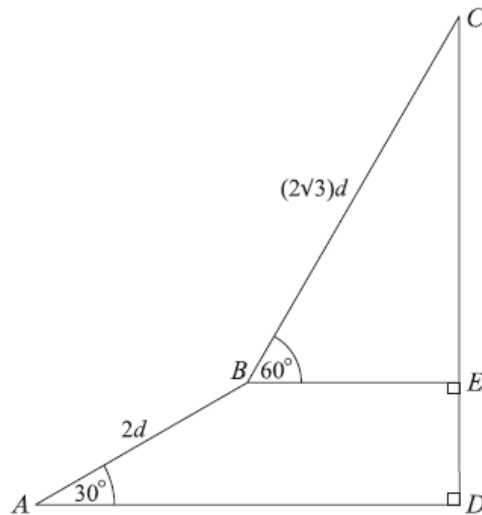   **(ii)** the coordinates of D.   [4]

5

The diagram shows a rhombus $ABCD$. The points B and D have coordinates $(2, 10)$ and $(6, 2)$ respectively, and A lies on the x-axis. The mid-point of BD is M. Find, by calculation, the coordinates of each of M, A and C. [6]

P1 Nov 05

3

In the diagram, $ABED$ is a trapezium with right angles at E and D, and CED is a straight line. The lengths of AB and BC are $2d$ and $(2\sqrt{3})d$ respectively, and angles BAD and CBE are $30°$ and $60°$ respectively.

(i) Find the length of CD in terms of d. [2]

(ii) Show that angle $CAD = \tan^{-1}\left(\dfrac{2}{\sqrt{3}}\right)$. [3]

7   Three points have coordinates A (2, 6), B (8, 10) and C (6, 0). The perpendicular bisector of AB meets the line BC at D. Find

    (i) the equation of the perpendicular bisector of AB in the form $ax + by = c$,   [4]

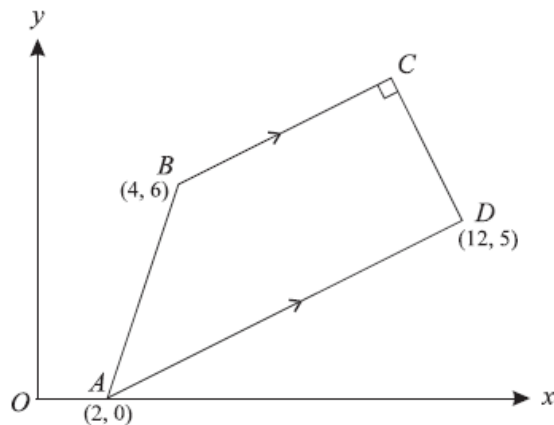   (ii) the coordinates of D.   [4]

P1 June 04

6   The curve $y = 9 - \dfrac{6}{x}$ and the line $y + x = 8$ intersect at two points. Find

    (i) the coordinates of the two points,   [4]

    (ii) the equation of the perpendicular bisector of the line joining the two points.   [4]

P1 June 03

7   The line L_1 has equation $2x + y = 8$. The line L_2 passes through the point A (7, 4) and is perpendicular to L_1.

    (i) Find the equation of L_2.   [4]

    (ii) Given that the lines L_1 and L_2 intersect at the point B, find the length of AB.   [4]
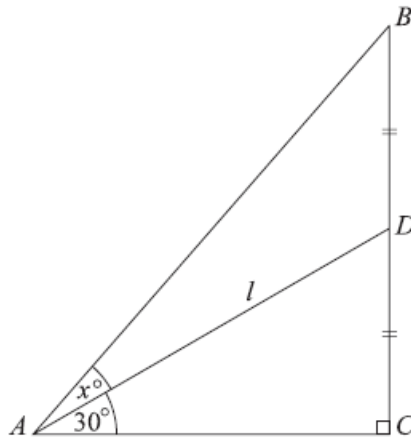
P1 Nov 03

5

The diagram shows a trapezium $ABCD$ in which BC is parallel to AD and angle $BCD = 90°$. The coordinates of A, B and D are (2, 0), (4, 6) and (12, 5) respectively.

    (i) Find the equations of BC and CD.   [5]
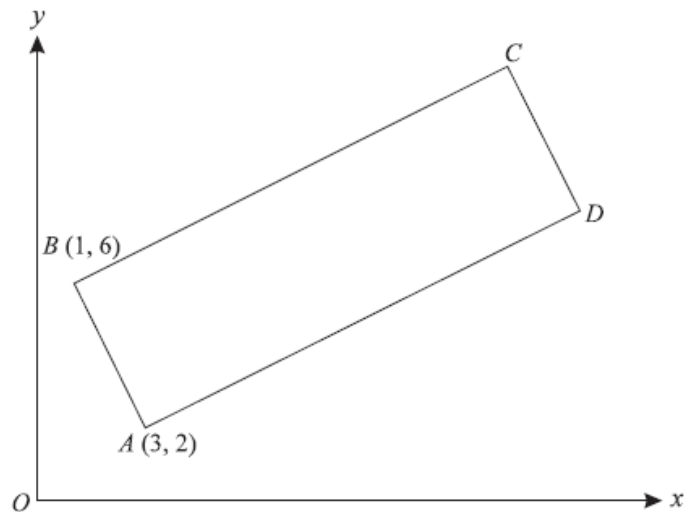
    (ii) Calculate the coordinates of C.   [2]

6

In the diagram, triangle ABC is right-angled and D is the mid-point of BC. Angle $DAC = 30°$ and angle $BAD = x°$. Denoting the length of AD by l,

   (i) express each of AC and BC exactly in terms of l, and show that $AB = \frac{1}{2}l\sqrt{7}$,   [4]

   (ii) show that $x = \tan^{-1}\left(\dfrac{2}{\sqrt{3}}\right) - 30$.   [2]

9

The diagram shows a rectangle $ABCD$, where A is $(3, 2)$ and B is $(1, 6)$.

   (i) Find the equation of BC.   [4]

Given that the equation of AC is $y = x - 1$, find

   (ii) the coordinates of C,   [2]

   (iii) the perimeter of the rectangle $ABCD$.   [3]