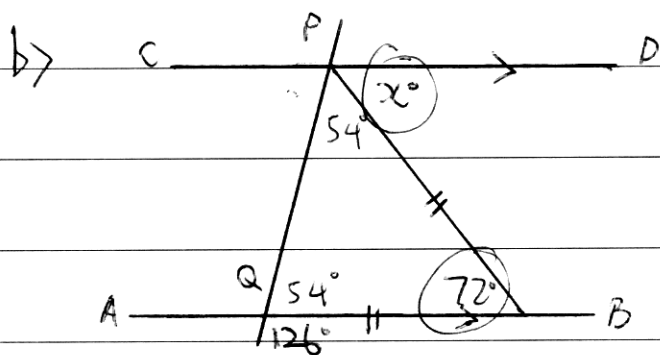
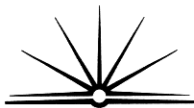


a) ~~the answer~~

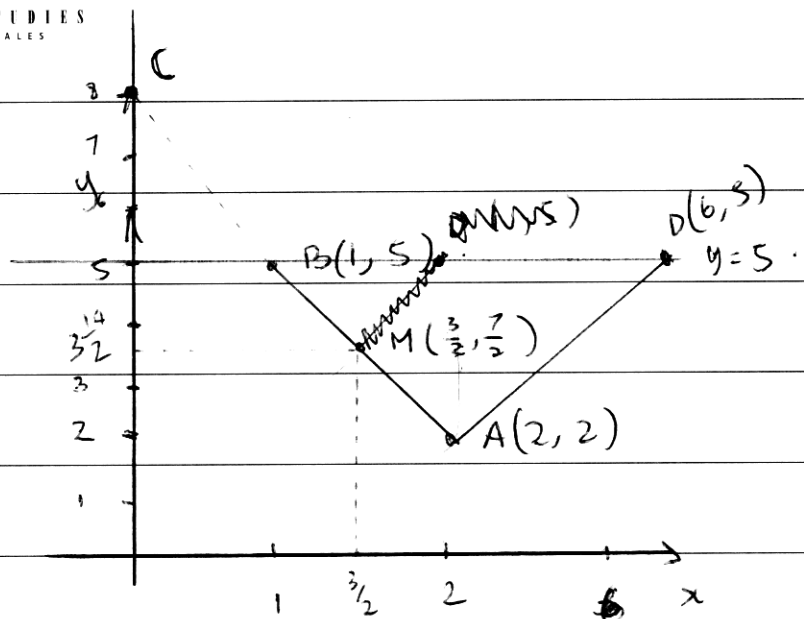


$x^\circ = 72^\circ$
alternate
~~corresponding~~ angles.

$\left. \begin{array}{l} \angle PQB = 54^\circ \\ \angle QPB = 54^\circ \end{array} \right\} \text{Isosceles } \Delta$
 $PB = QB \therefore \angle PQB = \angle QPB$



c)



i) ~~$x_1 + x_2 = 2$~~
 ~~$y_1 + y_2 = 2$~~

$$x = \frac{2+1}{2} = \frac{3}{2} \quad \frac{2+5}{2} = \frac{7}{2} = y$$

MIDPOINT = x, y $(\frac{3}{2}, \frac{7}{2})$

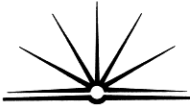
ii) ~~$C - 3y + a = 0$~~
 ~~$\frac{3}{2} - 3(\frac{7}{2}) + a = 0$~~

$$y - \frac{7}{2} = \frac{1}{3}(x - \frac{3}{2})$$

$$y - \frac{7}{2} = \frac{x}{3} - \frac{1}{2}$$

$$y = \frac{x}{3} + 3$$

so, $3y = x + 9$



$$\text{iii} \rightarrow \text{AB equation} : y_2 - y_1 = m(x - x_1)$$

$$\text{gradient AB} = -3 \quad y - 2 = -3(x - 2)$$

$$y - 2 = -3x + 6$$

$$y = -3x + 8$$

$$\text{at } x = 0, \quad y = 8$$

$$\text{iv} \rightarrow x - 3y + 9 = 0 \quad \text{at } y = 5$$

$$x - 15 + 9 = 0$$

$$x - 15 = -9$$

$$x = 6$$

$$\text{v} \rightarrow \text{AB} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(2 - 1)^2 + (2 + 5)^2}$$

$$= \sqrt{50} = \sqrt{2 \times 5 \times 5}$$

$$= 2\sqrt{5}$$

$$\Delta \text{ ABD} = \frac{1}{2} \times 2\sqrt{5} \times 3$$

$$= 6.708 \text{ units}^2$$