

Ex 7.4

5(i) taking origin A
 P(4,6), Q(3,2), R(6,5)

$$\text{ar}(\Delta PQR) = \frac{1}{2} \begin{vmatrix} 4 & 6 \\ 3 & 2 \\ 6 & 5 \\ 4 & 6 \end{vmatrix}$$

$$= \frac{1}{2} |8 - 18 + 15 - 12 + 36 - 20|$$

$$= \frac{1}{2} |59 - 50|$$

$$= \frac{9}{2} \text{ sq. units}$$

(ii) taking C as origin
 P(12,2), Q(13,6), R(10,3)

$$\text{ar}(\Delta PQR) = \frac{1}{2} \begin{vmatrix} 12 & 2 \\ 13 & 6 \\ 10 & 3 \\ 12 & 2 \end{vmatrix}$$

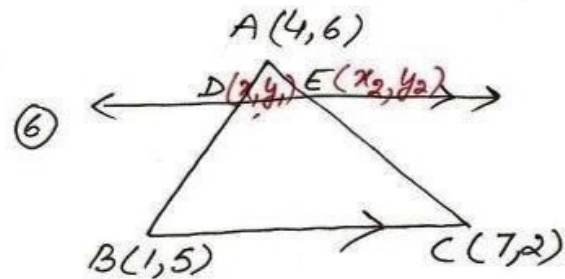
$$= \frac{1}{2} |72 - 26 + 39 - 60 + 20 - 36|$$

$$= \frac{1}{2} |131 - 122|$$

$$= \frac{1}{2} |9|$$

$$= \frac{9}{2} \text{ sq. units}$$

Both areas are equal



$$\frac{AD}{AB} = \frac{1}{4}$$

$$\Rightarrow \frac{AB}{AD} = \frac{4}{1}$$

app div.

$$\frac{AB - AD}{AD} = \frac{4 - 1}{1}$$

$$\Rightarrow \frac{DB}{AD} = \frac{3}{1}$$

$$\Rightarrow \frac{AD}{DB} = \frac{1}{3}$$

Sim. $\frac{AE}{EC} = \frac{1}{3}$

$$x_1 = \frac{1 + 12}{4}, \quad y_1 = \frac{5 + 18}{4}$$

$$= \frac{13}{4}, \quad = \frac{23}{4}$$

$$\therefore D\left(\frac{13}{4}, \frac{23}{4}\right)$$

$$x_2 = \frac{7 + 12}{4}, \quad y_2 = \frac{2 + 18}{4}$$

$$= \frac{19}{4}, \quad = \frac{20}{4} = 5$$

$$\text{ar}(\Delta ABC) = \frac{1}{2} \begin{vmatrix} 4 & 6 \\ 1 & 5 \\ 7 & 2 \\ 4 & 6 \end{vmatrix}$$

$$= \frac{1}{2} |20 - 6 + 2 - 35 + 42 - 8|$$

$$= \frac{1}{2} |64 - 49|$$

$$= \frac{15}{2} \text{ sq units}$$