



let D is midpt of BC

$$\begin{aligned} \therefore x &= \frac{3+5}{2}, & y &= \frac{-2+2}{2} \\ &= \frac{8}{2} & &= \frac{0}{2} \\ &= 4 & &= 0 \end{aligned}$$

$$\therefore D(4, 0)$$

$$\begin{aligned} \text{ar}(\triangle ABD) &= \frac{1}{2} |4(-2-0) + 3(0+6) + 4(-6+2)| \\ &= \frac{1}{2} |4(-2) + 3 \times 6 + 4(-4)| \\ &= \frac{1}{2} |-8 + 18 - 16| \\ &= \frac{1}{2} |-6| \\ &= \frac{1}{2} \times 6 \\ &= 3 \text{ sq. units} \end{aligned}$$

$$\begin{aligned} \text{ar}(\triangle ACD) &= \frac{1}{2} |4(0-2) + 4(2+6) + 5(-6-0)| \\ &= \frac{1}{2} |4(-2) + 4 \times 8 + 5(-6)| \\ &= \frac{1}{2} |-8 + 32 - 30| \\ &= \frac{1}{2} |-6| \end{aligned}$$

$$\begin{aligned} &= \frac{1}{2} \times 6 \\ &= 3 \text{ sq. units} \end{aligned}$$

$$\therefore \text{ar}(\triangle ABD) = \text{ar}(\triangle ACD)$$