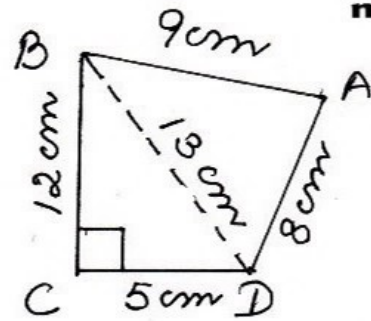


① construction - join BD



Solution

In rt $\triangle BCD$

$$BD^2 = BC^2 + CD^2 \quad (\text{pythagoras theorem})$$

$$= 12^2 + 5^2$$

$$= 144 + 25$$

$$= 169$$

$$BD = \sqrt{169}$$

$$= \sqrt{13^2}$$

$$= 13 \text{ cm}$$

$$\text{ar}(\triangle BCD) = \frac{1}{2} \times CD \times BC$$

$$= \frac{1}{2} \times 5 \times 12$$

$$= 30 \text{ cm}^2$$

$$\triangle ABD \quad s = \frac{8+9+13}{2}$$

$$= \frac{30}{2} = 15 \text{ cm}$$

$$\text{area} = \sqrt{15(15-8)(15-9)(15-13)}$$

$$= \sqrt{15 \times 7 \times 6 \times 2}$$

$$= \sqrt{3 \times 5 \times 7 \times 2 \times 3 \times 2}$$

$$= 2 \times 3 \sqrt{35}$$

$$= 6 \sqrt{35} \text{ cm}^2$$

$$\text{area of } \square ABCD = (30 + 6\sqrt{35}) \text{ cm}^2$$