Hereon's Formula

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Revision questions and Answers

Ex - 12.2

ans (1) First construct a quadrilateral ABCD and join BD.

$C = 90°$ $AB = 9m$ $BC = 12m$ $CD = 5m$ and $AD = 8m$

Pythagorean theorem in ΔBCD

$BD^2 = BC^2 + CD^2$

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

$BD^2 = 169$

$BD = 13m$

$$S = \frac{\text{Perimeter}}{2}$$

$$S = \frac{8+9+13}{2}$$

$$S = \frac{30}{2} m$$

$S = 15m$

$$\sqrt{S(s-a)(s-b)(s-c)}$$

$$\sqrt{15(15-13)(15-9)(15-8)}\ m^2$$

$$\sqrt{15 \times 2 \times 6 \times 7}\ m^2$$

$$6\sqrt{35}\ m^2 = 35.5m^2$$

∴ The area of quadrilateral $= 30m^2 + 35.5m^2 = 65.5m^2$

ans(6) Phythagorean theorem $= AC^2 = AB^2 + BC^2$

$5^2 = 3^2 + 4^2$

$25 = 25$

area of $\Delta BCD = 6cm^2$

$s = \frac{5+5+4}{2} = \frac{14}{2} = 7m$

$\sqrt{s(s-a)(s-b)(s-c)}$

$\sqrt{7(7-5)(7-5)(7-4}\ cm^2$

$\sqrt{7 \times 2 \times 2 \times 3}\ cm^2$

$2\sqrt{21}\ cm^2 = 9.17 cm^2$

Area of quadrilateral ABCD = $6cm^2 + 9.17 cm^2$

$= 15.17 cm^2$