



Exercise 17A

Question 17:

Let each side $a = 13$ cm and the base $b = 20$ cm

$$\begin{aligned}\therefore \text{Area of triangle} &= \left(\frac{1}{4} b \sqrt{4a^2 - b^2} \right) \text{cm}^2 \\ &= \left(\frac{1}{4} \times 20 \times \sqrt{4 \times 169 - 20 \times 20} \right) \text{cm}^2 \\ &= (5 \times 16.61) \text{cm}^2 = 83.1 \text{cm}^2\end{aligned}$$

Hence, area of the triangle = 83.1 cm^2 .

Question 18:

Let each equal side be a cm in length.

Then,

$$\frac{1}{2} \times a \times a = 200 \Rightarrow a = 20 \text{ cm}$$

$$\begin{aligned}\text{Hypotenuse (h)} &= \sqrt{a^2 + a^2} \text{ cm} \\ &= a\sqrt{2} \text{ cm} = 20\sqrt{2} \text{ cm} \\ &= (20 \times 1.414) \text{ cm} = 28.28 \text{ cm}\end{aligned}$$

$$\begin{aligned}\therefore \text{Perimeter of the triangle} &= (2a + h) \text{ cm} \\ &= (2 \times 20 + 28.28) \text{ cm} = 68.28 \text{ cm}\end{aligned}$$

Hence, hypotenuse = 28.28 cm and perimeter = 68.28 cm

Question 19:

Let each equal side be a cm and base = 80 cm

$$\begin{aligned}
 \text{Area} &= \frac{1}{4}b \times \sqrt{4a^2 - b^2} \text{ sq. units} \\
 &= \frac{1}{4} \times 80 \times \sqrt{4a^2 - 6400} \text{ cm}^2 \\
 &= 20 \times \sqrt{4a^2 - 6400} \text{ cm}^2
 \end{aligned}$$

$$\text{But area} = 360 \text{ cm}^2$$

$$\therefore 20\sqrt{4a^2 - 6400} = 360$$

$$\Rightarrow 20 \times 2\sqrt{a^2 - 1600} = 360$$

$$\Rightarrow \sqrt{a^2 - 1600} = 9$$

$$\Rightarrow a^2 - 1600 = 81$$

$$\Rightarrow a^2 = 1681$$

$$\Rightarrow a = 41 \text{ cm}$$

perimeter of triangle = $(2a + b)$ cm

= $(2 \times 41 + 80)$ cm

= $(82 + 80)$ cm = 162 cm

Hence, perimeter of the triangle = 162 cm

***** END *****