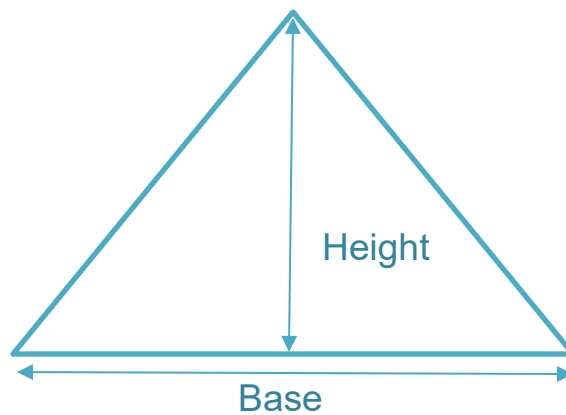


What is triangle?

A triangle is a closed figure with three sides.



Formula:

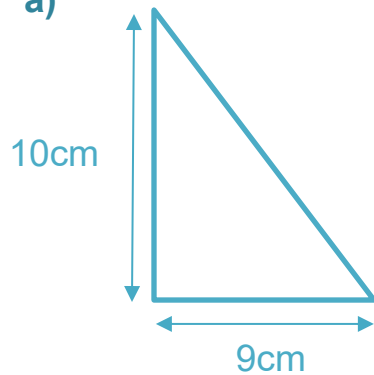
1) Area of triangle = $\frac{(\text{Base} \times \text{Height})}{2}$

2) Base = $\frac{(2 \times \text{Area})}{\text{Height}}$

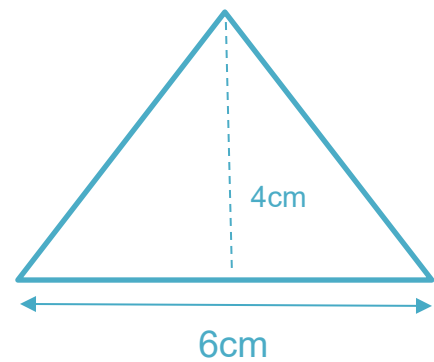
3) Height = $\frac{(2 \times \text{Area})}{\text{Base}}$

**** Calculate the area of the following triangle:**

a)



b)



Solution:

a) Given,

$$\text{Base} = 9\text{cm}$$

$$\text{Height} = 10\text{cm}$$

We know,

$$\text{Area of triangle} = \frac{(\text{Base} \times \text{Height})}{2}$$

$$= \frac{(9 \times 10)}{2} \text{ Sq. cm}$$

$$= \frac{90}{2} \text{ Sq. cm}$$

$$= 45 \text{ Sq. cm}$$

Ans: 45 Sq. cm.

b) Given,

$$\text{Base} = 6\text{cm}$$

$$\text{Height} = 4\text{cm}$$

We know,

$$\begin{aligned}\text{Area of triangle} &= \frac{(\text{Base} \times \text{Height})}{2} \\ &= \frac{(6 \times 4)}{2} \text{ Sq. cm} \\ &= \frac{24}{2} \text{ Sq. cm} \\ &= 12 \text{ Sq. cm}\end{aligned}$$

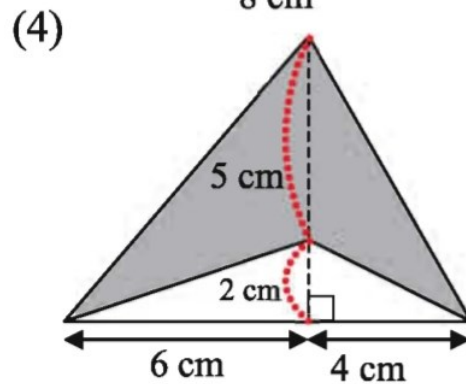
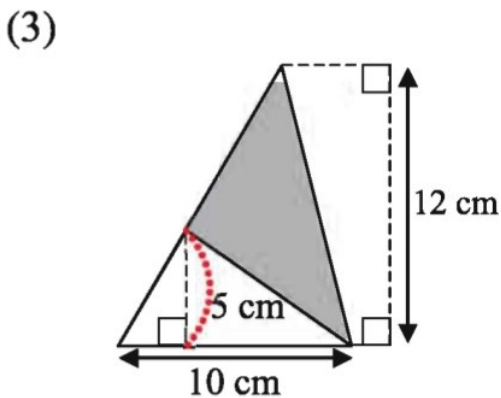
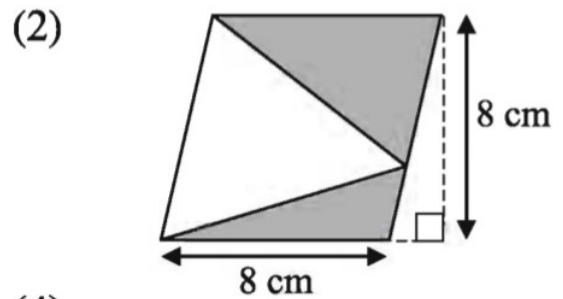
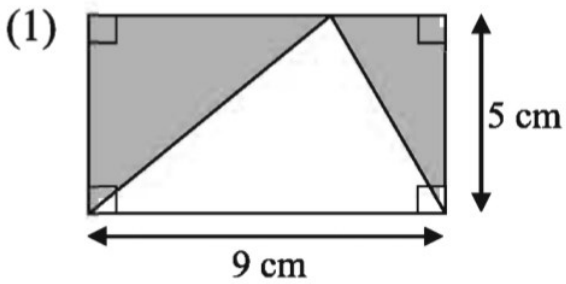
Ans: 12 Sq. cm.

1. Exercise (Do Yourself)

**** Calculate the area of the following triangle:**

- a) Base = 4cm, Height = 3cm
- b) Base = 5cm, Height = 7cm
- c) Base = 5m, Height = 5m
- d) Base = 2km, Height = 2.5km

**** Calculate the area of the coloured parts in the following figures:**



Solution:

1) Given,

For rectangle, Length = 9cm and width = 5cm

For triangle, Base = 9cm and height = 5cm

Area of the coloured part = Area of the rectangle – Area of the triangle

$$= \left\{ (\text{Length} \times \text{Width}) - \left(\frac{\text{Base} \times \text{Height}}{2} \right) \right\}$$

$$= \left\{ (9 \times 5) - \left(\frac{9 \times 5}{2} \right) \right\} \text{ Sq. cm.}$$

$$= \left(45 - \frac{45}{2} \right) \text{ Sq. cm.}$$

$$= (45 - 22.5) \text{ Sq. cm.}$$

$$= 22.5 \text{ Sq. cm.}$$

Ans: 22.5 Sq. cm.

2) Given,

For parallelogram, base = 8cm and height = 8cm

For triangle, Base = 8cm and height = 8cm

Area of the coloured part = Area of the parallelogram – Area of the triangle

$$= \left\{ (\text{Base} \times \text{Height}) - \left(\frac{\text{Base} \times \text{Height}}{2} \right) \right\}$$

$$= \left\{ (8 \times 8) - \left(\frac{8 \times 8}{2} \right) \right\} \text{ Sq. cm.}$$

$$= \left(64 - \frac{64}{2} \right) \text{ Sq. cm.}$$

$$= (64 - 32) \text{ Sq. cm.}$$

$$= 32 \text{ Sq. cm.}$$

Ans: 32 Sq. cm.

3) Area of the coloured part

= Area of the triangle with base 10cm and height 12cm – Area of the triangle with base 10cm and height 5cm

$$= \left\{ \left(\frac{\text{Base} \times \text{Height}}{2} \right) - \left(\frac{\text{Base} \times \text{Height}}{2} \right) \right\}$$

$$= \left\{ \left(\frac{10 \times 12}{2} \right) - \left(\frac{10 \times 5}{2} \right) \right\} \text{ Sq. cm.}$$

$$= \left(\frac{120}{2} - \frac{50}{2} \right) \text{ Sq. cm.}$$

$$= (60 - 25) \text{ Sq. cm.}$$

$$= 35 \text{ Sq. cm.}$$

Ans: 35 Sq. cm.

4) Area of the coloured part

= Area of the triangle with base (6+4) cm or 10cm and height (5+2) cm or 7cm – Area of the triangle with base (6+4) cm or 10cm and height 2cm

$$= \left\{ \left(\frac{\text{Base} \times \text{Height}}{2} \right) - \left(\frac{\text{Base} \times \text{Height}}{2} \right) \right\}$$

$$= \left\{ \left(\frac{10 \times 7}{2} \right) - \left(\frac{10 \times 2}{2} \right) \right\} \text{ Sq. cm.}$$

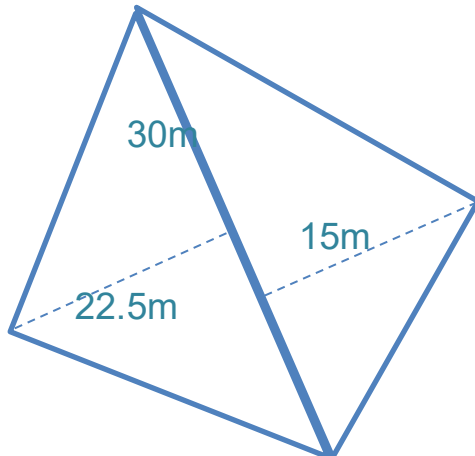
$$= \left(\frac{70}{2} - \frac{20}{2} \right) \text{ Sq. cm.}$$

$$= (35 - 10) \text{ Sq. cm.}$$

$$= 25 \text{ Sq. cm.}$$

Ans: 25 Sq. cm.

**** There is a quadrilateral field that one of the diagonals is 30m and the distance from the diagonal to the opposite vertices are 15m and 22.5m. calculate the area of this quadrilateral.**



Solution: According to the given figure,

Area of quadrilateral = Area of the triangle with height 15m and base 30m

+ Area of the triangle with height 22.5m and base 30m

$$\begin{aligned}\therefore \text{Required area} &= \left\{ \left(\frac{\text{Base} \times \text{Height}}{2} \right) + \left(\frac{\text{Base} \times \text{Height}}{2} \right) \right\} \\ &= \left\{ \left(\frac{30 \times 15}{2} \right) + \left(\frac{30 \times 22.5}{2} \right) \right\} \text{ Sq. m.} \\ &= \{ (15 \times 15) + (15 \times 22.5) \} \text{ Sq. m.} \\ &= (225 + 337.5) \text{ Sq. m.} \\ &= 562.5 \text{ Sq. m.}\end{aligned}$$

Ans: 562.5 Sq. m.

2. Exercise (Do Yourself)

** The height of a triangle is 0.8 km and its area is 1.2 square km, then how many kilometres is the base?