

2/11/2020  
MONDAY

# MATHEMATICS

STD - X  
class - 52

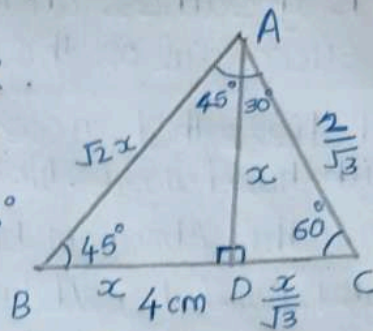
## Assignment

1) Calculate the area of the triangle shown.

Ans) Draw AD perpendicular to BC.

$$\angle DAC = 180 - (60 + 90) = 30^\circ$$

$$\angle DAB = 180 - (45 + 90) = 45^\circ$$



Since the angles of  $\triangle ABD$  are  $45^\circ$ ,  $45^\circ$  and  $90^\circ$ , its sides are in the ratio  $1:1:\sqrt{2}$

Let  $AD = x$ , then  $BD = x$  and  $AB = \sqrt{2}x$

The angles of  $\triangle ADC$  are  $30^\circ$ ,  $60^\circ$ ,  $90^\circ$

So its sides are in the ratio  $1:\sqrt{3}:2$

In  $\triangle ADC$ ,  $AD = x$ ,  $DC = \frac{x}{\sqrt{3}}$ ,  $AC = \frac{2}{\sqrt{3}}$

Since  $BC = 4 \text{ cm}$ ,  $BD + DC = 4$

$$x + \frac{x}{\sqrt{3}} = 4$$

Multiplying by  $\sqrt{3}$ ,  $\therefore \sqrt{3}x + x = 4\sqrt{3}$

$$x(1 + \sqrt{3}) = 4\sqrt{3}$$

$$x = \frac{4\sqrt{3}}{1 + \sqrt{3}}$$

Area of the triangle

$$= \frac{1}{2}bh$$

$$= \frac{1}{2}BC \times AD$$

$$= \frac{1}{2} \times 4 \times \frac{4\sqrt{3}}{1 + \sqrt{3}}$$

$$\text{Area} = \frac{8\sqrt{3}}{1 + \sqrt{3}} \text{ cm}^2$$