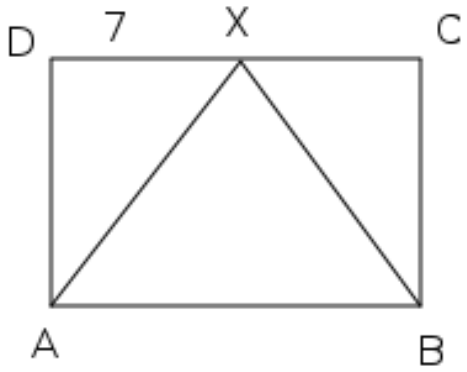
Thrikonamithi

Que 1: In the figure X is the midpoint of DC ∆AXB is an equilateral triangle and ABCD is a rectangle also DX = 7 cm ***Marks :(5)***

a) What is the measure of∠ AXB?

b) What is the measure of∠ DAX ?

c) Calculate the area of the rectangle.



Ans: a) ∠ AXB = 60^0

b) ∠ DAX = 30^0

c) For identifying DX : AD : AX = 1 : $\sqrt{3}$: 2

AD = 7√3, AX = 14

Area of the rectangle =14 x 7√3

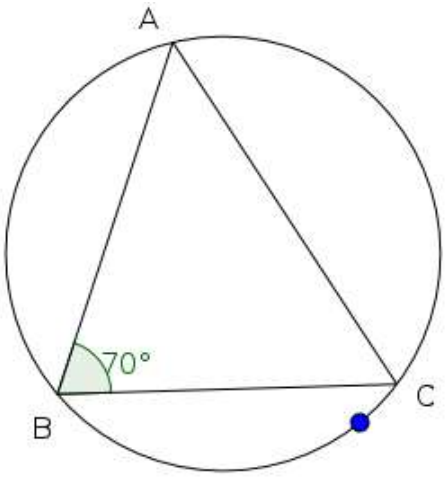
Que 2: In the figure the radius of the circle is 6cm, AB=AC and ∠ B=70°.

Find ***Marks :(3)***

a) ∠ A

b) The length of BC ?

Angle	**sin**	**cos**	**tan**
40°	**.6428**	**.7660**	**.8391**
70°	**.9397**	**.34202**	**.7475**



Ans: a) ∠ A=40°

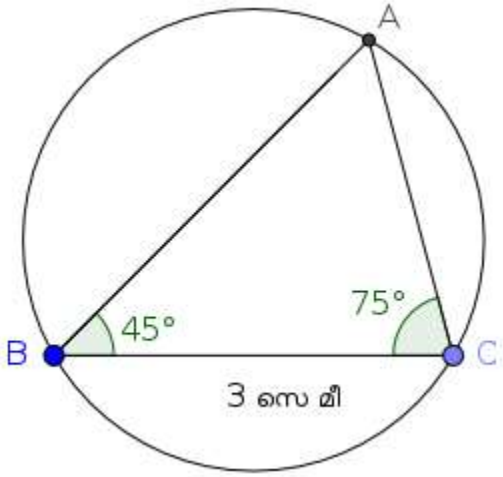
b) 2rsinA=BC

12 sin40°= BC

Que 3: In ∆ABC , BC= 3cm, ∠ B=45°, ∠ C=75°

a) Find ∠ A?

b) Find the circum radius ? ***Marks :(3)***



Ans:

a) $\angle A = 60^0$

b) $\frac{3}{\sin 60} = 2r$

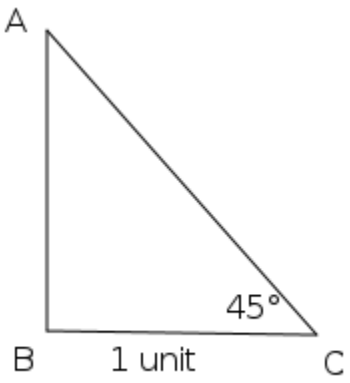
$2r = 3 \times \frac{2}{\sqrt{3}} = 2\sqrt{3}$

$r = \sqrt{3}$

Que 4: One of the angles of the right-angled triangle ABC is 45°. The length of one of the perpendicular sides is 1 unit. ***Marks :(3)***

a) Find the value of sin45°

b) Prove that tan 45° = $\frac{\sin 45^\circ}{\cos 45^\circ}$



Ans:

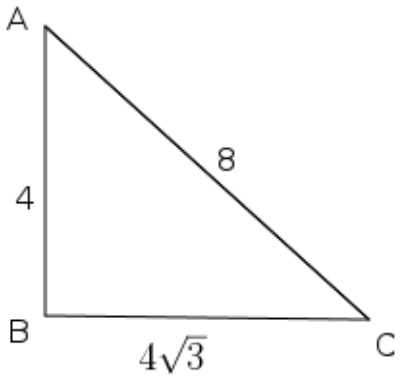
a) sin 45°= $\frac{1}{\sqrt{2}}$

b) tan 45°= $\frac{1}{1}$ =1

$\frac{\sin 45^\circ}{\cos 45^\circ} = \frac{(\frac{1}{\sqrt{2}})}{(\frac{1}{\sqrt{2}})} = 1$

Que 5: a) write the ratio of the sides of the triangle in the figure.

b) Which is the smallest angle in this triangle.? What is its measure?
Marks :(3)



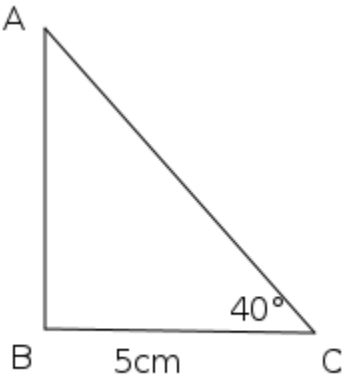
Ans: 4 : 4√3 : 8 =1: √3 : 2

∠ C, ∠ C = 30°

Que 6: In ∆ ABC, BC = 5 cm and ∠C = 40°

Find the length of AB? ***Marks :(2)***

Con	**sin**	**cos**	**tan**
40°	**.6428**	**.7660**	**.8391**
50°	**.7660**	**.6428**	**1.1918**



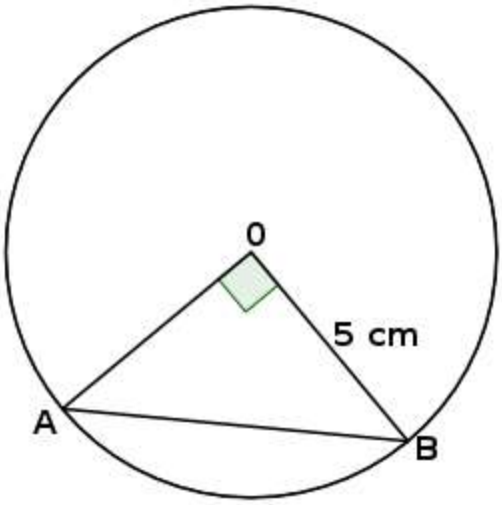
Ans: Tan40°= AB/BC

AB = 5tan 40°

Que 7: In the figure the radius of the circle is 5 cm. ∠ AOB= 90°. then

1. Find the length of AB.

2.Calculate the area of the triangle. ***Marks :(3)***



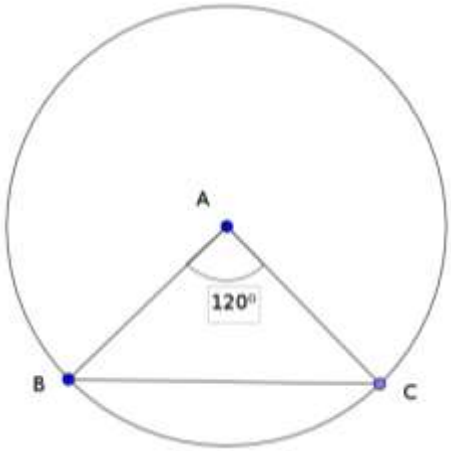
Ans: 1. AB= $5\sqrt{2}$ cm

2. Area of the triangle = 1/2 x 5x 5= 12.5 sq.cm

Que 8: In the figure A is the centre of the circle and ∠A= 120^0

a) Find AB : AC : BC

b) If AB = 8 cm what is length of BC ? ***Marks :(3)***



Ans: a) For drawing perpendicular to the chord and forming two right triangles

1 : 1 : $\sqrt{3}$ or 2 : 2 : 2 $\sqrt{3}$

b) BC = 8 $\sqrt{3}$ cm

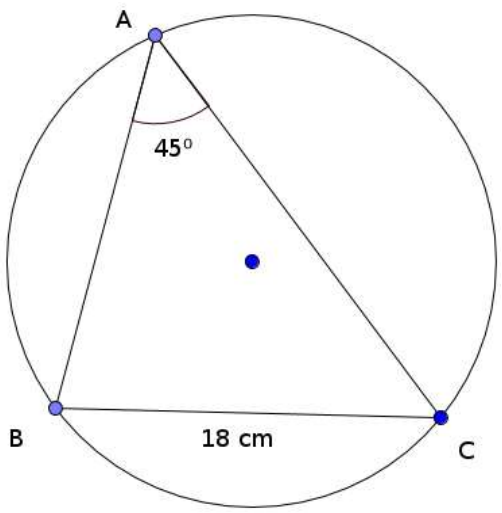
Que 9: In triangle ABC, ∠ B= 90^0**, AC = 10 cm, BC = 6 cm. Find Sin A and Cos A.** ***Marks :(3)***

Ans: AB = 8 cm

Sin A = 6/10

Cos A = 8/10

Que 10: Find the radius of the circle. ***Marks :(3)***



Ans:

$$\frac{18}{\sin 45^\circ} = 2R$$

$$\frac{18}{\left(\frac{1}{\sqrt{2}}\right)} = 2R$$

$$18\sqrt{2} = 2R$$

$$R = 9\sqrt{2}$$

Que 11: The diagonal of a rectangle is 16 centimetres. This diagonal makes an angle 30° with one side of the rectangle.

a) Find the length and breadth of the rectangle?

b) What is the area of the rectangle ? ***Marks :(3)***

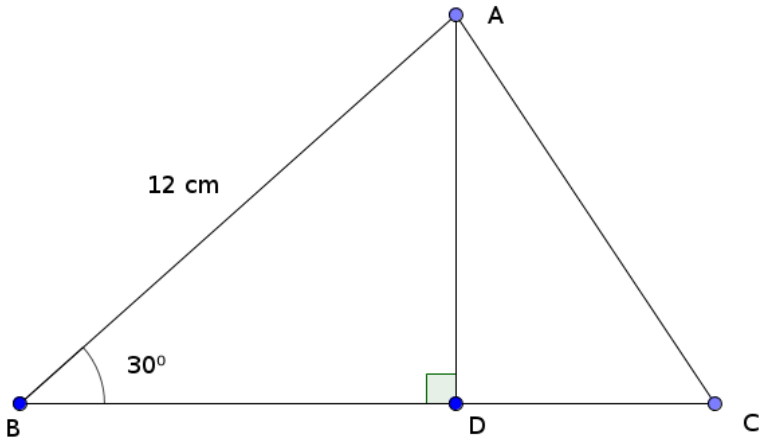
Ans: a) 8 cm, $8\sqrt{3}$ cm

b) $64\sqrt{3}$ sq.cm

Que 12: In the figure AB = 12 cm , ∠B=30°

a) What is the length of AD ?

b) If BC = 15 cm, Find the area of the triangle. ***Marks :(3)***



Ans: a) Identifying the angles of the triangle as 30°, 60°, 90°

AD = 6 cm

b) 45 sq.cm

Que 13: Angle	**sin**	**cos**
0	**0.0000**	**1.0000**
1	**0.0175**	**0.9998**
2	**0.0349**	**0.9994**
3	**0.0523**	**0.9986**
.		
.		
.		
.		
87	**0.9986**	**0.0523**
88	**0.9994**	**0.0349**
89	**0.9998**	**0.0175**
90	**1.0000**	**0.0000**

Observing the table we have sin 0 = cos 90 = 0.0000 , sin 1 = cos 89 = 0.0175 sin 2 = cos 88 = 0.0349 ..... Then answer the questions given below.

a) What is the value of sin 90 ?

b) If sin 10 = cos p, what is the value of p ?

c) Find the value of x which satisfies sin x = cos x

d) If sin x = cos y, then x+y = ...

e) Arrange sin 5, cos 5, sin 10 in ascending order of values. ***Marks :(6)***

Ans: a) sin 90 = 1 or cos 0

b) p = 80

c) x = 45

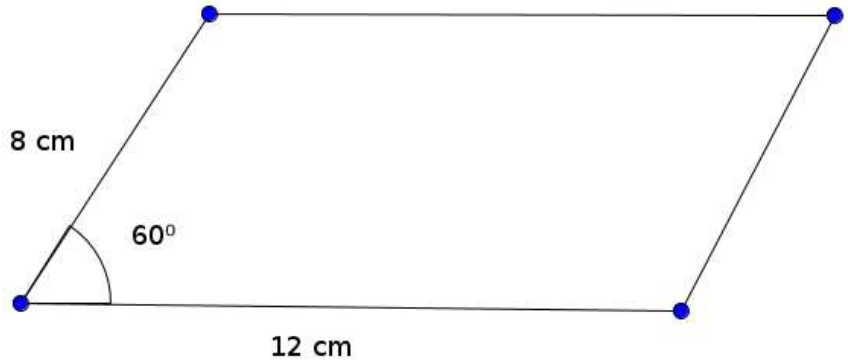
d) x + y = 90

e) sin 5 < sin 10 < cos 5

Que 14: In the figure two sides of the parallelogram are 8 cm , 12 cm and the angle between these sides is 60°.

a) What is the distance between the lengths ?

b) What is the area of the parallelogram ? ***Marks :(3)***



Ans: a) Distance = $4\sqrt{3}$

b) Area = $48\sqrt{3}$

Que 15: a) What is the ratio of the sides of a triangle with angles 45°, 45°, 90° ?

b) What is the length of the hypotenuse of such a triangle if the opposite side of angle 45° is 5 centimetre ? ***Marks :(2)***

Ans: a) 1: 1: $\sqrt{2}$

b) $5\sqrt{2}$ c.m

Que 16: A 1.5 meter tall boy sees the top of a 15 meter high building at an angle of elevation 50°.

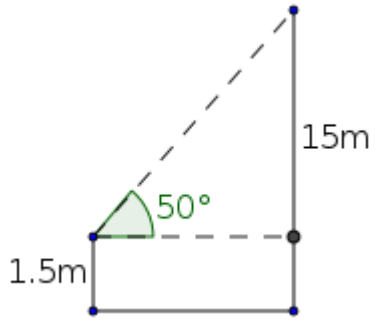
a) Based on these facts draw a rough figure.

b) Find the distance between the boy and the building?

(sin 50°= 0.7660 cos50°= 0.6428 tan 50°= 1.1918) ***Marks :(3)***

Ans:

a) For Drawing rough figure



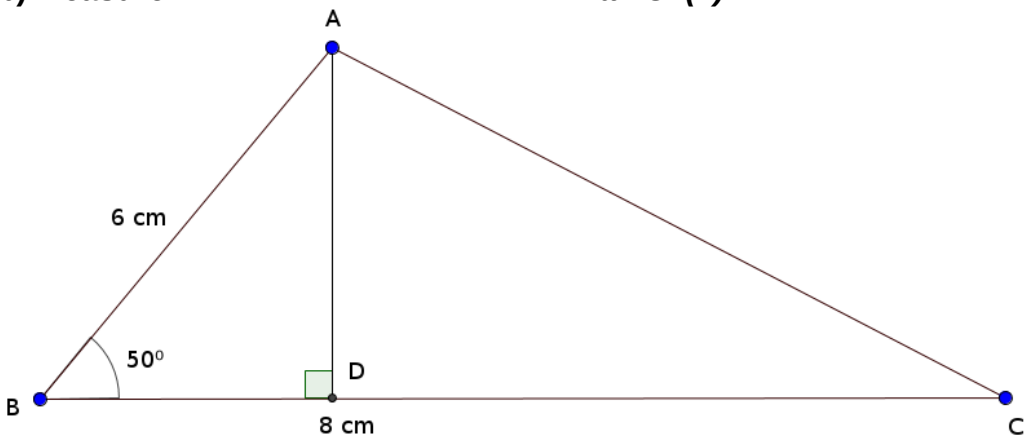
b) For finding the distance

$$\text{tan } 50 = \frac{13.5}{distance}$$

$$\text{distance} = \frac{13.5}{1.1918} = 11.32 \text{ cm}$$

Que 17: a) Draw the figure with given measures.

b) Measure AD. ***Marks :(4)***



c) Find the length of AD using trigonometry.

(sin50^0=.77 cos 50^0 =.64 tan50^0= 1 .2)

Ans: a) For Drawing figure

b) AD = 4.6 cm (approximately)

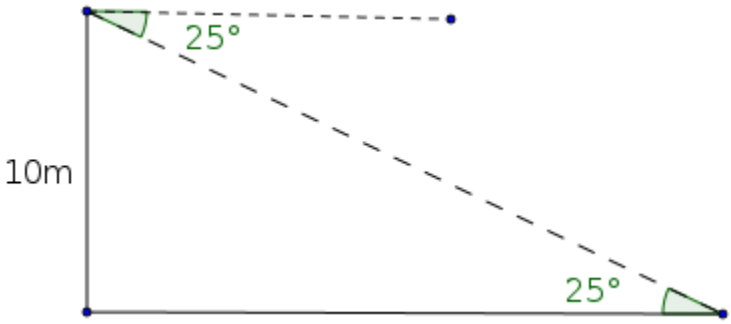
c) For finding AD =4.62 cm using trigonometry.

Que 18: From the top of a tower of height 10 m, a car on the ground was seen at an angle of depression 25°.

a) Draw a rough figure.

b) Find the distance between the car and the tower? ***Marks :(3)***

Ans: a)



b) $\tan 25 = \frac{10}{distance}$

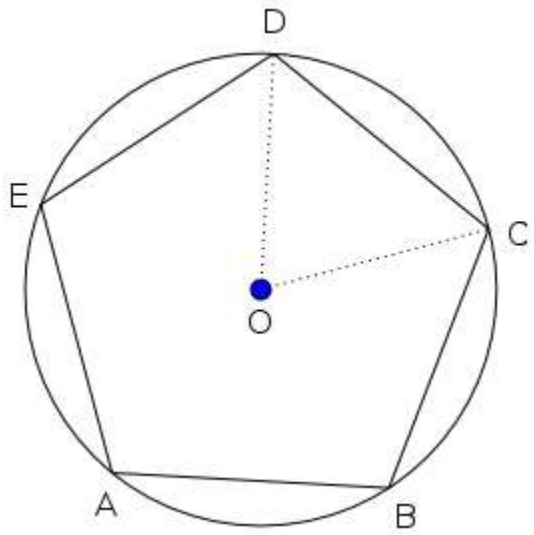
$distance = \frac{10}{.4663} = 21.44\ m$

Que 19: The vertices of a regular pentagon are on the circle of radius 10 cm.

1.Find ∠ COD? ***Marks :(3)***

2. Calculate the perimeter of the pentagon?

(Sin36= 0.5878, cos36=0.8090, tan36= =0.7265)



Ans: a) ∠ COD=72°

b) length of one side = 2x10xsin36

perimeter = 5 x 2 x 10 x sin36

Que 20: In the figure O is the centre of the circle, BE = 5cm, BC = 6cm ∠ EAB = 40°.

a) Find ∠ABE ?

b) What is the length of AB?

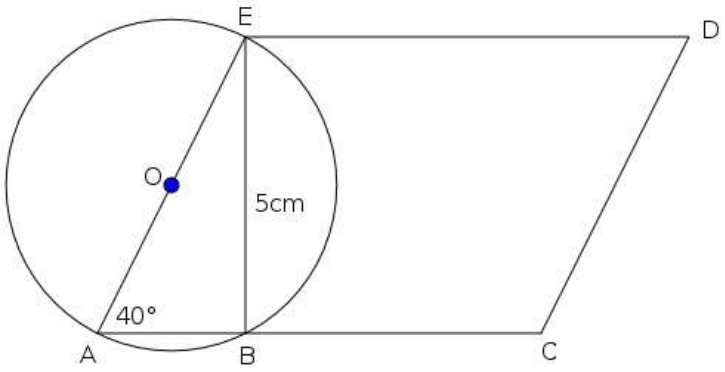
c) Calculate the area of the parallelogram ACDE

(Sin40°=.6428 cos40°=.7660

tan 40°=.8391)

(sin 50°=.7660 cos50°=.6428

tan 50°=1.1918) ***Marks :(4)***



Ans: a) ∠ABE = 90°

b) AB = 5 x tan50

c) Area of the parallelogram = (AB + BC) X BE

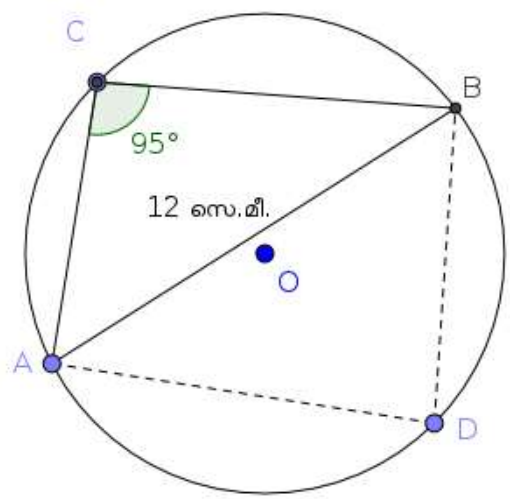
Area = 11.96 square centimetres (approximately)

Que 21: In the figure, ∠ ACB= 95° and AB=12 cm,

a) Find ∠ ADB?

b) Find the circum radius of ∆ ABC?

(sin 85°=.9962 cos 85°=.0872) ***Marks :(3)***



Ans: a) ∠ADB=85°

b) 2r sin85=12

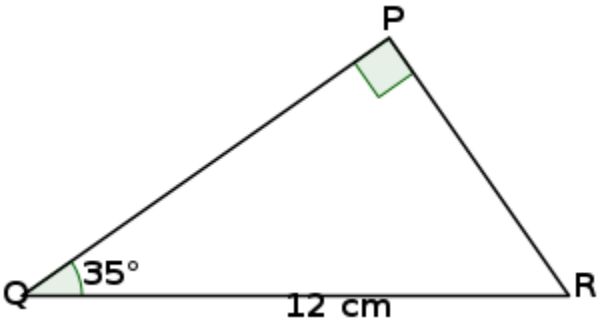
r = 6.02 cm (approximate)

Que 22: In the figure ∠ P=90°, ∠ Q =35°, and QR=12cm, Find

a) ∠ R

b) The length of PR

c) Area of ∆PQR ***Marks :(3)***



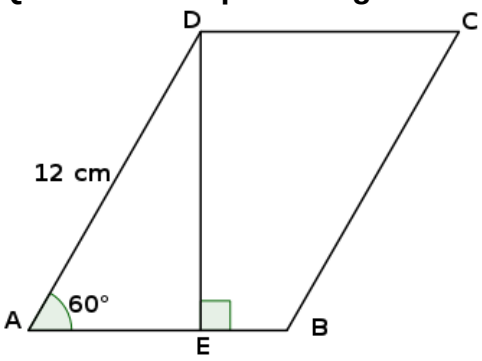
Angle	**sin**	**cos**	**tan**
35°	**.5736**	**.8192**	**.7002**
55°	**.8192**	**.5736**	**1.4281**

Ans: c) ∠R = 55°

b) For finding PR

c) For finding the area of ∆ PQR

Que 23: In the parallelogram ABCD, ∠ A= 60° and AD=12cm.



a) Find the distance between the parallel lines AB and CD?

b) If AB= 9 cm, Calculate the area of the parallelogram ***Marks :(3)***

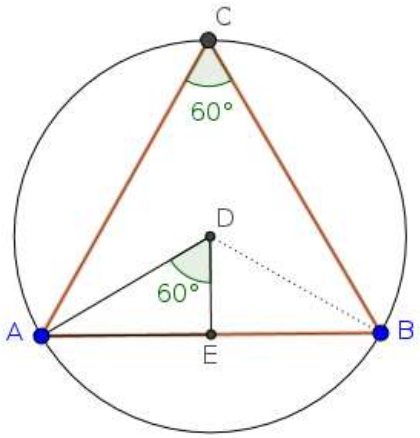
Ans: For finding the ratio oof the sides of the triangle 30° , 60° , 90° as 1:√3:2

DE= 6√3 cm

Area = 9 x 6√3 = 54 √3 sq.cm

Que 24: Find the circum diameter of an equilateral triangle with sides 18 cm, correct to two decimal places. ***Marks :(4)***

Ans:



For Drawing rough figure

$$\text{radius} = \frac{18}{\sqrt{3}}$$

$$\text{Diametre} = 2 \times \frac{18}{\sqrt{3}} =$$

$$= 20.76 \text{ cm}$$

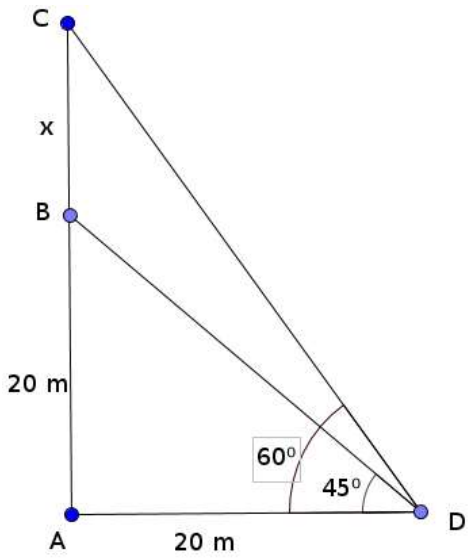
Que 25: A man standing on the ground sees the top of a 20 metre high building at an angle of elevation 45^0. He sees the top of a mobile tower fixed on the building at an angle of elevation 60^0

a) Draw a rough figure based on these statements.

b) At what distance the man stands from the bottom of the building ?

c) Find the height of the tower. ***Marks :(5)***

Ans:



a) For Drawing figure

b) Distance = 20 meter

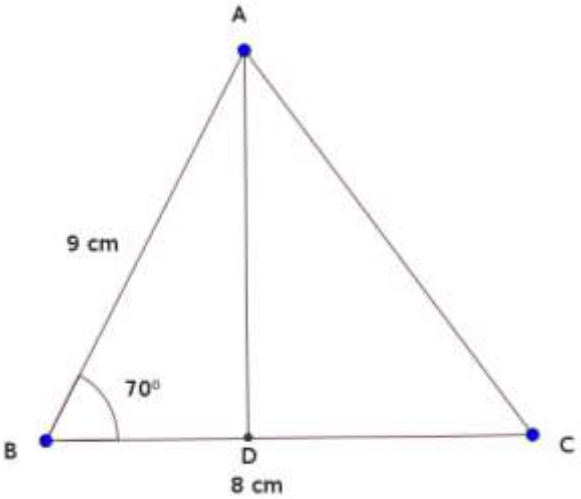
c) $20+x = 20\sqrt{3}$

x = 14.6 cm

Que 26: Two sides of a triangle are 9 cm, 8 cm and the angle between them is 70^0 . Find the area of the triangle.

(sin 700 = 0.9397, cos 700 = 0.3420, tan 700 = 2.7465) ***Marks :(3)***

Ans:



For Drawing the figure

AD = AB sin 70

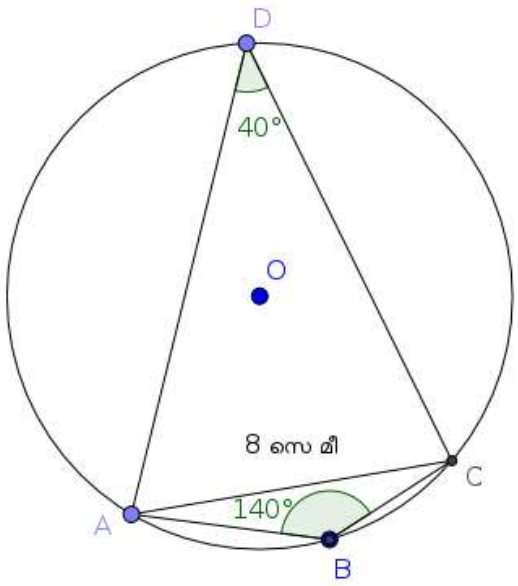
= 9 X 0.93

Area =12X 9 X 0.93 X 8

= 33.48 cm2

Que 27: One angle of a triangle is 140° and its opposite side is 8 cm. What is the radius of its circumcircle ?
(sin 40° = 0.64 , cos 40° = 0.76 , tan 40°= 0.80) ***Marks :(4)***

Ans:



For Drawing figure

$\angle D = 40°$

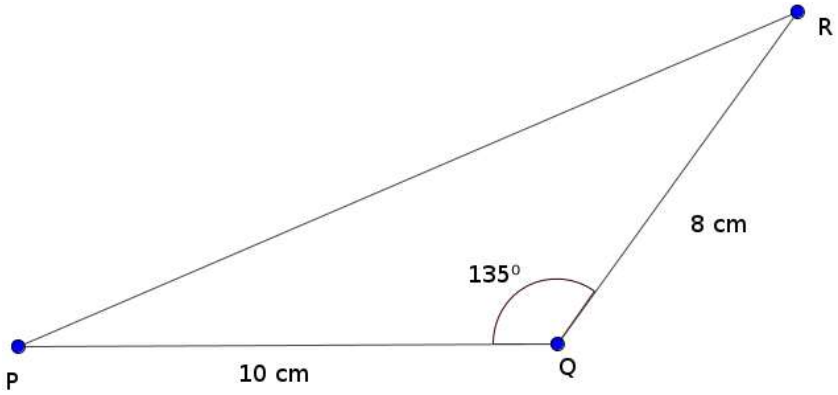
$\frac{8}{\sin 40} = 2R$

$R = \frac{4}{\sin 40}$

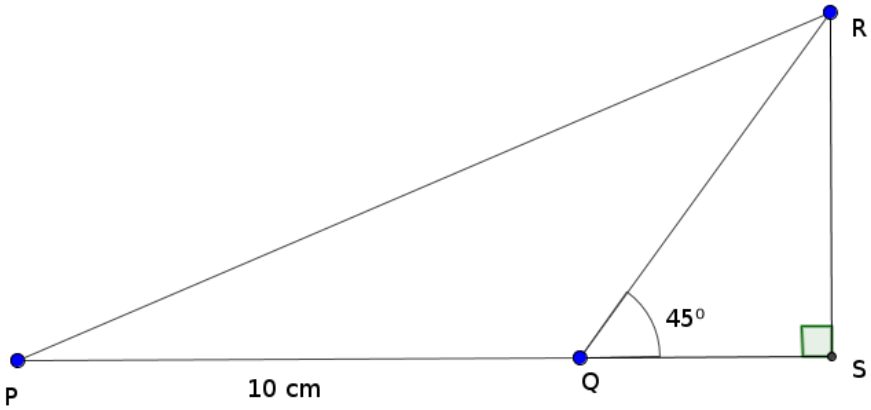
$= 6.25$ cm

Que 28: In the figure PQ = 10 cm , QR = 8 cm , $\angle Q = 1350$

Find the area of the triangle. ***Marks :(3)***



Ans:



a) Identifying the angles of triangle RSQ as 45°, 45°, 90°

Height = $\frac{8}{\sqrt{2}}$ cm

Area = $\frac{40}{\sqrt{2}}$ sq.cm

Que 29: A pole erected perpendicular to the ground, and two ropes are fastened from the top of the pole to the ground, on either side of the pole. One rope makes an angle 50^0 with the ground. This rope touches the ground at a distance of 10 m from the foot of the pole. The other rope makes an angle 55^0 with the ground.

1. **Draw a rough figure**
2. **What is the height of the pole?**
3. **What is the approximate length of the rope?**

(sin50=0.77, cos50=0.64, tan50=1.19) ***Marks :(5)***

Ans: b) height of pole = 10 X tan50 = 11.9 m

c) hypotenuse of small triangle = $\frac{10}{cos50}$=15.625

hypotenuse of large triangle= 10 X 2 = 20

Approximate length of rope =15.6+20 =35.6m