

TRIGONOMETRY

**QUESTION - 1**

In the figure BC is the diameter of the semicircle and

A is a point on it . The line BA is extended to D .

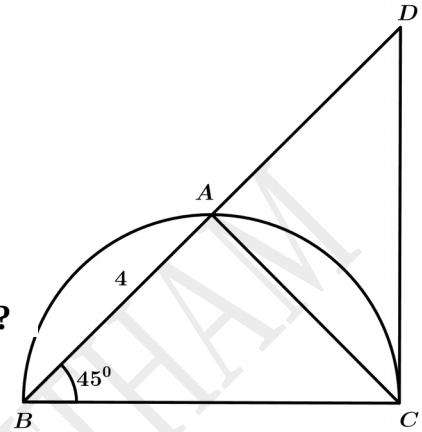
A is the midpoint of the line BD .  $\angle B = 45^\circ$  .

AB = 4 centimetres .

a) What are the measures of  $\angle BAC$  ,  $\angle ACB$  and  $\angle ADC$  ?

b) What is the diameter of the semicircle ?

c) What is the perimeter of the triangle BCD ?



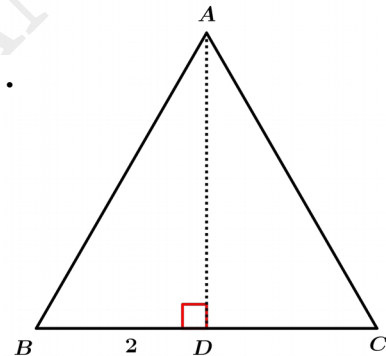
**QUESTION - 2**

In the figure  $AB = BC = AC$  . AD is perpendicular to BC .

a) What are the measures of  $\angle B$  and  $\angle CAD$  ?

b) What is the length of AD ?

c) Calculate the area of the triangle ABC .



**QUESTION - 3**

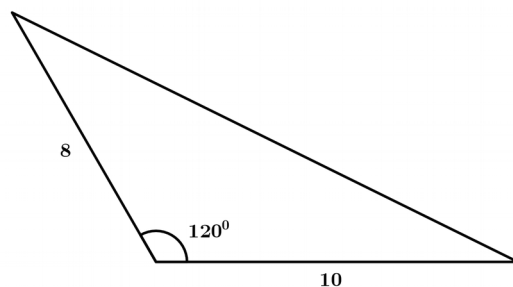
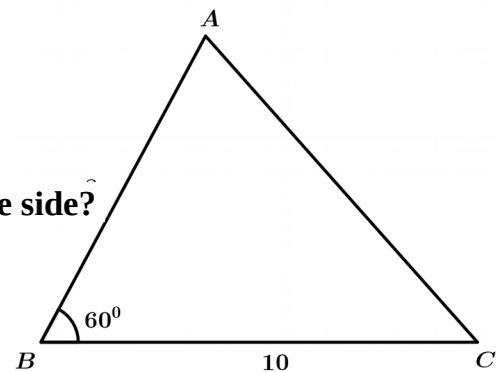
In the figure , in triangle ABC , AB = 8 centimetres ,

BC = 10 centimetres ,  $\angle B = 60^\circ$

a) What is the perpendicular distance from A to its opposite side?

b) What is the area of the triangle ABC ?

c) Calculate the area of the triangle given below

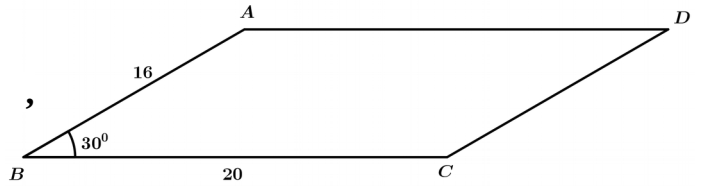


### QUESTION - 4

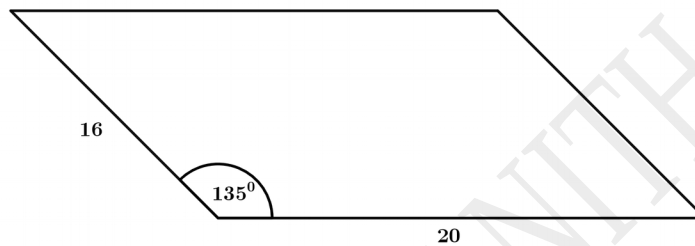
In the figure , in parallelogram ABCD ,

AB = 16 centimetres , BC = 20 centimetres ,

$\angle B = 30^\circ$



- What is the perpendicular distance from A to its opposite side ?
- What is the area of the parallelogram ABCD ?
- Calculate the area of the parallelogram given below .

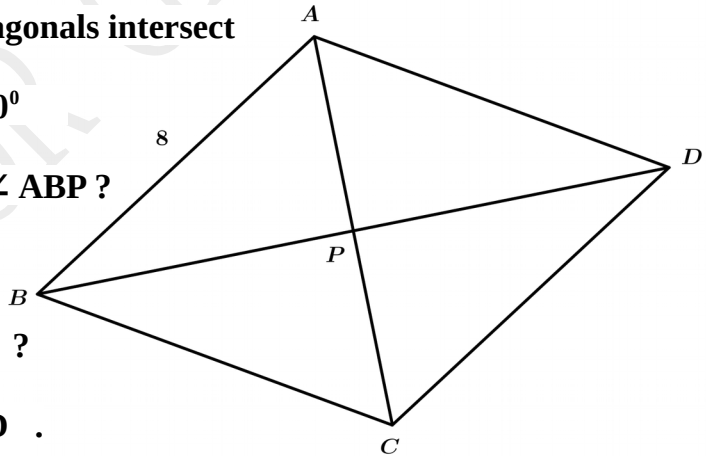


### QUESTION - 5

In the figure ABCD is a rhombus . The diagonals intersect

at P . AB = 8 centimetres ,  $\angle ABC = 60^\circ$

- What are the measures of  $\angle APD$  and  $\angle ABP$  ?
- What is the length of PA ?
- What is the length of the diagonal BD ?
- Calculate the area of the rhombus ABCD .



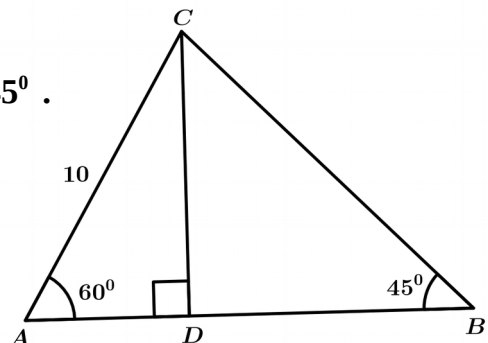
- An angle of a rhombus is  $120^\circ$  and the diagonal opposite to this angle is  $10\sqrt{3}$  centimetres . Calculate the area .

### QUESTION - 6

In the figure AC = 10 centimetres ,  $\angle A = 60^\circ$  ,  $\angle B = 45^\circ$  .

The line CD is perpendicular to the side AB .

- What are the measures of  $\angle ACD$  and  $\angle ACB$  ?



b) What is the length of  $CD$  ?

c) What is the perimeter of triangle  $ABC$  ?

d) What is the ratio of the length of the sides of a triangle if the ratio of the measures of its angles is  $3 : 4 : 5$  ?

### QUESTION -7

In the figure  $AP = 6$  centimetres ,  $\angle B = \angle C = 30^\circ$  .

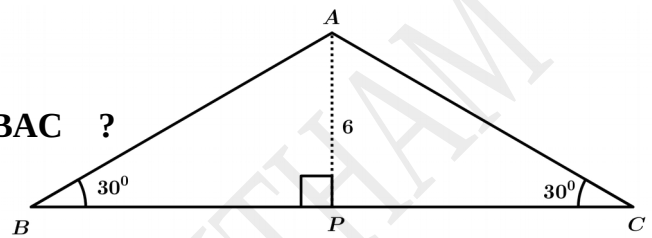
$AP$  is perpendicular to  $BC$  .

a) What are the measures of  $\angle BAP$  and  $\angle BAC$  ?

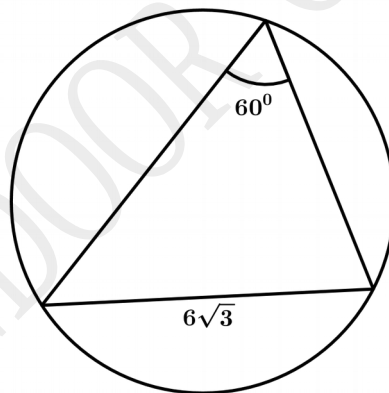
b) What is the length of  $AB$  ?

c) What is the perimeter of the triangle  $ABC$  ?

d) What is the ratio of the length of the sides of a triangle if the ratio of the measures of its angles is  $1 : 1 : 4$  ? ?



e)



What is the angle made by the the chord of length  $6\sqrt{3}$  centimetres at the centre of the circle in the figure ? What is the radius of the circle ?

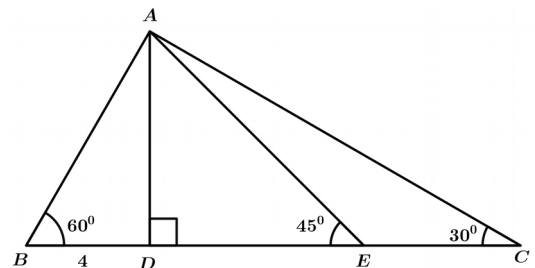
### QUESTION - 8

In the figure ,  $BD = 4$  centimetres ,  $\angle B = 60^\circ$  ,

$\angle D = 90^\circ$  ,  $\angle AED = 45^\circ$  ,  $\angle C = 30^\circ$  .

a) What are the measures of  $\angle BAD$  and  $\angle EAC$  ?

b) What are the lengths of the lines  $AD$  ,  $AE$  and  $EC$  ?

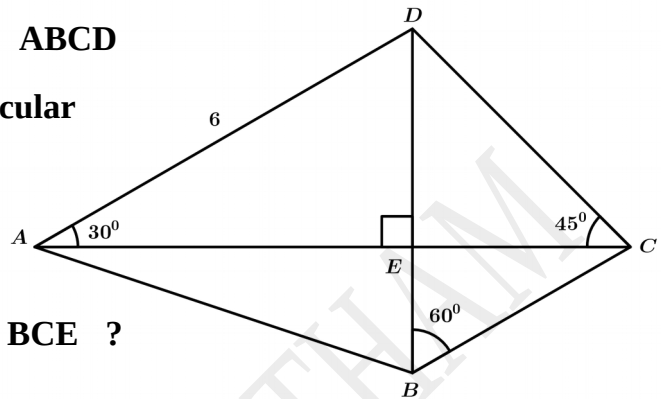


- c) Calculate the perimeter of the triangle ABC ?
- d) What is the ratio of the length of the sides of a triangle if the ratio of the measures of its angles is  $1 : 2 : 9$  ?

### QUESTION -9

In the figure , diagonals of the quadrilateral ABCD intersect at E . The diagonals are perpendicular to each other . AD = 6 centimetres ,

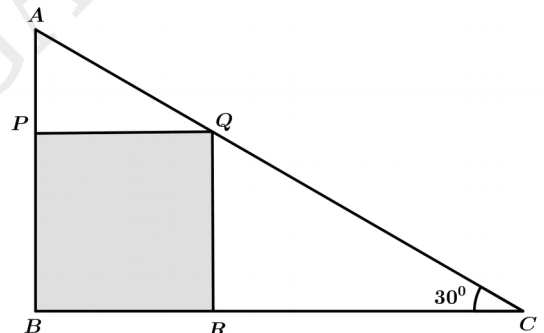
$$\angle DAC = 30^\circ , \angle ACD = 45^\circ , \angle CBD = 60^\circ$$



- a) What are the measures of  $\angle ADE$  and  $\angle BCE$  ?
- b) What are the lengths of AE , BE and AC ?
- c) Calculate the area of the quadrilateral ABCD .

### QUESTION - 10

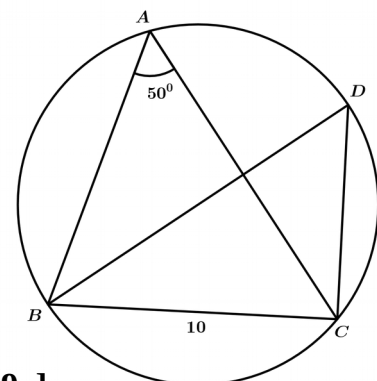
In the figure , PBRQ is a square joining the points on the side of a right triangle ABC .  $\angle C = 30^\circ$  . Area of the square PBRQ is 9 square centimetres .



- a) What are the measures of  $\angle A$  and  $\angle CQR$  ?
- b) What are the lengths of the lines QR and AP ?
- c) What is the perimeter of the triangle ABC ?
- d) What is the radius of the circumcircle of the triangle ABC ?

### QUESTION - 11

In the figure , BD is the diameter of the circle . BC = 10 centimetres .  $\angle A = 50^\circ$  .



- a) What are the measures of  $\angle D$  and  $\angle BCD$  ?
- b) Calculate the radius of the circle .

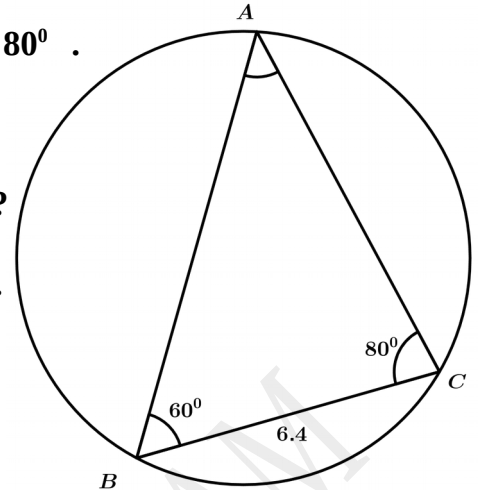
$$[ \sin 50^\circ = 0.76 \quad , \quad \cos 50^\circ = 0.64 \quad , \quad \tan 50^\circ = 1.19 ]$$

### QUESTION - 12

In the figure ,  $BC = 6.4$  centimetres .  $\angle B = 60^\circ$  ,  $\angle C = 80^\circ$  .

- What is the measure of  $\angle A$  ?
- What is the diameter of the circumcircle of the triangle ?
- Compute the lengths of the other two sides of the triangle.

$\sin 40^\circ = 0.64$	$\cos 40^\circ = 0.76$	$\tan 40^\circ = 0.84$
$\sin 80^\circ = 0.98$	$\cos 80^\circ = 0.17$	$\tan 80^\circ = 5.67$



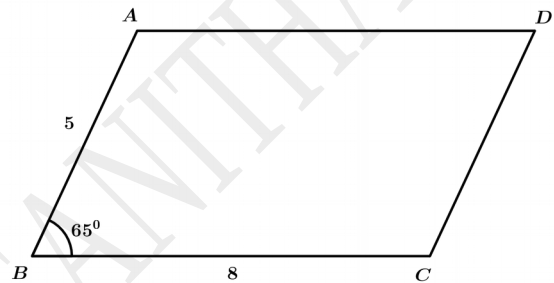
### QUESTION - 13

In the figure , ABCD is a parallelogram .

$AB = 5$  centimetres ,  $BC = 8$  centimetres

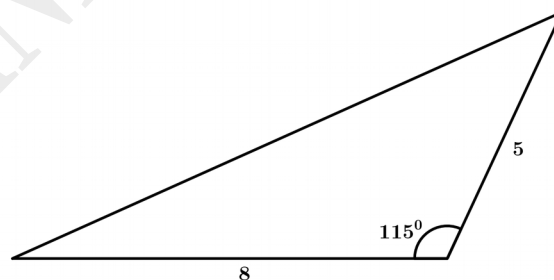
$\angle B = 65^\circ$  .

- What is the perpendicular distance from A to its opposite side ?
- Calculate the area of the parallelogram .



$\sin 65^\circ = 0.91$	$\cos 65^\circ = 0.42$	$\tan 65^\circ = 1.19$
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- Calculate the area of the triangle given below .

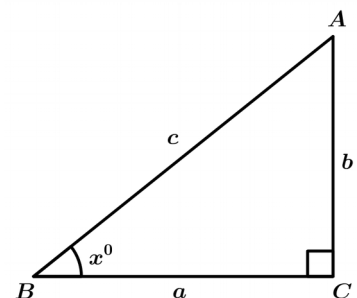


### QUESTION - 14

In triangle ABC ,  $\angle C = 90^\circ$  ,  $\angle B = x^\circ$  . The lengths of the sides

BC , AC , AB are  $a$  ,  $b$  ,  $c$  .

- Which among the following is  $\tan x^\circ$  ?



$$\left[ \frac{a}{b}, \frac{b}{c}, \frac{a}{b}, \frac{b}{a} \right]$$

b) Similarly write  $\sin x^\circ$  and  $\cos x^\circ$  from this triangle .

c) Prove that  $\tan x^\circ \times \cos x^\circ = \sin x^\circ$  .

### QUESTION - 15

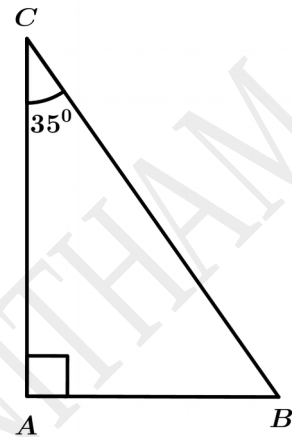
In the triangle ABC ,  $\angle A = 90^\circ$  ,  $\angle C = 35^\circ$  .

a) Which among the following is  $\tan 35^\circ$  ?

$$\left[ \frac{AB}{BC}, \frac{AC}{BC}, \frac{AB}{AC}, \frac{AC}{AB} \right]$$

b) Prove that  $\sin 35^\circ = \cos 55^\circ$  .

c) Find the value of  $\tan 35^\circ \times \tan 55^\circ$



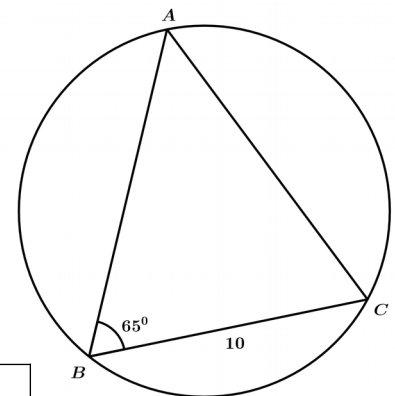
### QUESTION - 16

In the figure , in triangle ABC  $BC = 10$  centimetres ,

$AB = AC$  .  $\angle B = 65^\circ$  .

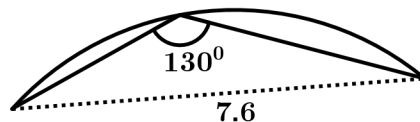
a) What is the measure of  $\angle A$  ?

b) What is the radius of the circumcircle of the triangle ?



$\sin 50^\circ = 0.76$	$\cos 50^\circ = 0.64$	$\tan 50^\circ = 1.19$
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c) The picture below shows part of a circle .



What is the radius of the circle ?

### QUESTION - 17

When sun is an elevation of  $45^\circ$  , the length of the shadow of a tree is 15 meters.

a) Draw a rough figure based on the given details ?

b) What is the height of the tree ?

c) What will be the length of the shadow if sun is an elevation of  $60^\circ$  ?

**QUESTION - 18**

Ramu and Anu stand on either side of a tower . The tower and the children are on the same line . Ramu sees the top of the tower at an elevation of  $45^\circ$  and Anu sees it an elevation of  $30^\circ$  . Ramu stands 100 metres away from the tower .

a) Draw a rough figure based on the given details .

b) What is the height of the tower ?

c) How far does Anu stand from the tower ?

**QUESTION - 19**

A boy standing at the edge of a canal sees the top of a tree at an elevation of  $60^\circ$  . Stepping 20 metres back , he sees it an elevation of  $30^\circ$  .

a) Draw a rough figure based on the given details .

b) How wide is the canal ?

c) How tall is the tree ?

**QUESTION - 20**

A man standing at the foot of a tower , sees the top of a hill 90 metres away at an elevation of  $60^\circ$  . Climbing to the top of the tower , he sees it an elevation of  $30^\circ$  .

a) Draw a rough figure based on the given details .

b) What is the height of the hill ?

c) What is the height of the tower ?

**QUESTION - 21**

A man stands on the top of a light house 20 metres high and sees a ship at a depression of  $30^\circ$  . Climbing to the top of the tower , he sees it an elevation of  $30^\circ$  .

a) Draw a rough figure based on the given details .

b) How far is the ship from the foot of the light house ?

**QUESTION - 22**

A man standing on the top of a building sees the top of a hill at an elevation of  $60^\circ$  and its base at a depression of  $30^\circ$ . The height of the building is 40 metres.

a) Draw a rough figure based on the given details ?

b) What is the distance between the building and the hill ?

c) What is the height of the hill ?

WANDOOR GANTHAM