

**ICSE Board
Class X Mathematics
Board Paper
Semester 2 - 2022**

**Time: 90 minutes
Marks : 40**

*Maximum Marks: 40
Time allowed: **One and a half hours***

Answers to this Paper must be written on the paper provided separately.

*You will not be allowed to write during the first **10 minutes**.
This time is to be spent reading the question paper.*

The time given at the head of this Paper is the time allowed for writing the answers.

*Attempt all questions from **Section A** and any three questions from **Section B**.
The intended marks for questions or parts of questions are given in **brackets []**.*

**SECTION A
(Attempt all questions from this section)**

Question 1:

Choose the correct answers to the questions from the given options. (Do not copy the question, Write the correct answer only.)

(i) The probability of getting a number divisible by 3 in throwing a dice is:

- (a) $\frac{1}{6}$
- (b) $\frac{1}{3}$
- (c) $\frac{1}{2}$
- (d) $\frac{2}{3}$

Ans.

- (b) $\frac{1}{3}$

Sample space of dice = 1, 2, 3, 4, 5, 6, = (6)

Favourable out once which is divisible by 3 are $-3, 6 = (2)$

$$P(E) = \frac{\text{Favourable out cone}}{\text{total out cone}} = \frac{2}{6} = \frac{1}{3}$$

(ii) The volume of a conical tent is 462 m^3 and the area of the base is 154 m^2 , the height of the cone is:

- (a) 15 m
- (b) 12 m
- (c) 9 m
- (d) 24 m

Ans. (c) 9m

Ans. volume of tent = 462 m^3

Area of base = 154 m^2

Height = ?

Vol of cone = $\frac{1}{3}\pi r^2 h$

$$462 = \frac{1}{3} \times \left[\frac{22}{7} \times r^2 \right] \times h$$

$$462 = \frac{1}{3} \times [154] \times h$$

$$\frac{462 \times 3}{154} = h$$

$$9\text{m} = h$$

(iii) The median class for the given distribution is:

Class Interval	0 - 10	10 - 20	20 - 30	30 - 40
Frequency	2	4	3	5

- (a) 0 - 10
- (b) 10 - 20
- (c) 20 - 30
- (d) 30 - 40

Ans. (c) 20 - 30

Ans.

Class interval	Frequency	C.F
0 - 10	2	2
10 - 20	4	6
20 - 30	3	9
30 - 40	5	14

$n = 14$ which is even so

$$\text{Median} = \frac{n}{2} = \frac{14}{2}$$

= 7th term therefore 20 - 30 is median class

(iv) If two lines are perpendicular to one another then the relation between their slopes m_1 and m_2 is:

- (a) $m_1 = m_2$
- (b) $m_1 = \frac{1}{m_2}$
- (c) $m_1 = -m_2$
- (d) $m_1 \times m_2 = -1$

Ans. (d) $m_1 \times m_2 = -1$

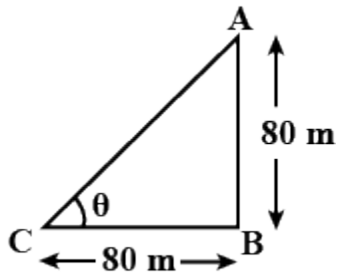
Ans. If perpendicular then slope m_1 and slope m_2 are related to $m_1 \times m_2 = -1$

(v) A lighthouse is 80 m high. The angle of elevation of its top from a point 80 m away from its foot along the same horizontal line is:

- (a) 60°
- (b) 45°
- (c) 30°
- (d) 90°

Ans. (b) 45°

Ans.



Height of the lighthouse = 80 m

Angle of elevation = ?

Dis from foot = 80 m

Let AB is height of height house and BC is distance from foot of light house

$$\Rightarrow \tan \theta = \frac{\text{Perpendicular}}{\text{Base}}$$

$$\Rightarrow \tan \theta = \frac{80}{80} = 1$$

$$\Rightarrow \tan 45^\circ = 1$$

Therefore, $\theta = 45^\circ$

(vi) The modal class of a given distribution always corresponds to the:

- (a) interval with highest frequency
- (b) Interval with lowest frequency
- (c) The first interval
- (d) The last interval

Ans. (a) interval with highest frequency

Ans. We know that modal class of any distribution is height frequency

Therefore = interval with high frequency

(vii) The coordinates of the point $P(-3, 5)$ on reflecting on the x -axis are:

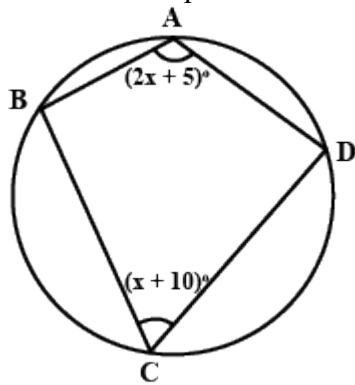
- (a) $(3, 5)$
- (b) $(-3, -5)$
- (c) $(3, -5)$
- (d) $(-3, 5)$

Ans. (b) $(-3, -5)$

Ans. On reflecting x axis value of y (ordinate) change

Therefore $P(-3, 5) \xrightarrow{x \text{ axis}} (-3, -5)$

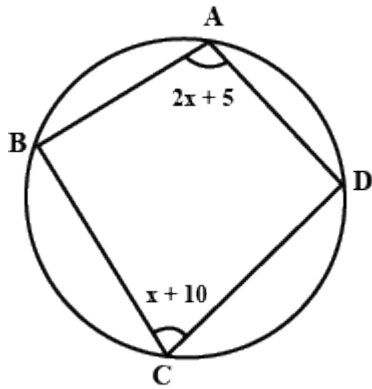
(viii) ABCD is a cyclic quadrilateral. If $\angle BAD = (2x + 5)^\circ$ and $\angle BCD = (x + 10)^\circ$ or then x is equal to:



- (a) 65°
- (b) 45°
- (c) 55°
- (d) 5°

Answer : (c) 55°

Ans.



According to law of cyclic properties that sum of opposite angle is 180°
Hence $\angle A + \angle C = 180$

$$\Rightarrow 2x + 5 + x + 10 = 180$$

$$\Rightarrow 3x + 15 = 180$$

$$\Rightarrow 3x = 180 - 15$$

$$\Rightarrow 3x = 165$$

$$\Rightarrow x = \frac{165}{3}$$

$$\Rightarrow x = 55^\circ$$

(ix) A (1,4), B (4,1) and C (x, 4) are the vertices of $\triangle ABC$. If the centroid of the triangle is G (4,3) then x is equal to:

- (a) 2
- (b) 1
- (c) 7
- (d) 4

Ans. (c) 7

Ans.

$$\mathbf{A = (1, 4), B = (4, 1), C = (x, y)}$$

$$\begin{array}{c} \downarrow \downarrow \\ x_1 \ y_1 \end{array}$$

$$\begin{array}{c} \downarrow \downarrow \\ x_2 \ y_2 \end{array}$$

$$\begin{array}{c} \downarrow \downarrow \\ x_3 \ y_3 \end{array}$$

and Centroid = (4, 3) given

$$\begin{array}{c} \downarrow \downarrow \\ x \ y \end{array}$$

$$\text{Centroid (G) } x = \frac{x_1 + x_2 + x_3}{3} \text{ and } y = \frac{y_1 + y_2 + y_3}{3}$$

$$\Rightarrow 4 = \frac{1+4+x}{3} \text{ and } 3 = \frac{4+1+4}{3}$$

$$\Rightarrow 12 = 5 + x \text{ and } 9 = 9$$

$$\Rightarrow 12 - 5 = x$$

$$\Rightarrow 7 = x$$

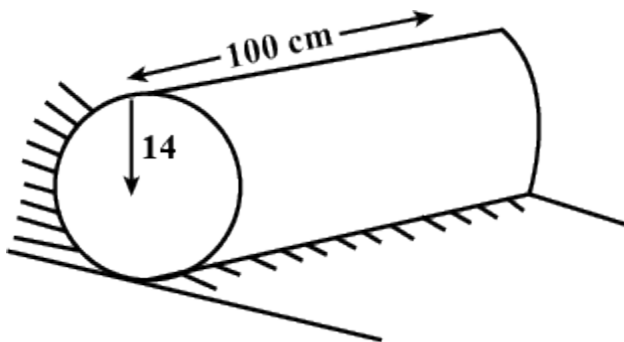
(x) The radius of a roller 100 cm long is 14 cm. The curved surface area of the roller is

(Take $\pi = \frac{22}{7}$)

- (a) 13200 cm^2
- (b) 15400 cm^2
- (c) 4400 cm^2
- (d) 8800 cm^2

Ans. (d) 8800 cm^2

Ans.



radius = 14 cm

long / height = 100 cm

Attention - Read the question very carefully to understand which value is radius and which is height.

$$\begin{aligned}
 C S A &= 2\pi r h \\
 &= 2 \times \frac{22}{7} \times 14 \times 100 \\
 &= 8800 \text{ cm}^2
 \end{aligned}$$

SECTION B

(Attempt all questions from this section)

Question 2:

(i) Prove that:

$$\frac{1}{1 + \sin \theta} + \frac{1}{1 - \sin \theta} = 2 \sec^2 \theta$$

Ans.

$$\begin{aligned}
 LHS &= \frac{1}{1 + \sin \theta} + \frac{1}{1 - \sin \theta} \\
 &= \frac{1 - \sin \theta + 1 + \sin \theta}{(1 + \sin \theta)(1 - \sin \theta)} \\
 &= \frac{1 - \sin \theta + 1 + \sin \theta}{(1 + \sin \theta)(1 - \sin \theta)} \\
 &= \frac{2}{1 - \sin^2 \theta}
 \end{aligned}$$

$$\begin{aligned}
&= \frac{2}{\cos^2 x} \\
&= 2 \times \frac{1}{\cos^2 x} \\
&= 2 \sec^2 x
\end{aligned}$$

(i) L. H. S

$$\begin{aligned}
&\frac{1}{1 + \sin \theta} + \frac{1}{1 - \sin \theta} \\
&\Rightarrow \frac{(1 - \sin \theta) + (1 + \sin \theta)}{(1 + \sin \theta)(1 - \sin \theta)} \\
&\Rightarrow \frac{1 - \sin \theta + 1 + \sin \theta}{1 - \sin^2 \theta} \\
&\Rightarrow \frac{2}{\cos^2 \theta} [1 - \sin^2 \theta = \cos^2 \theta] \\
&\Rightarrow 2 \sec^2 \theta \left[\frac{1}{\cos} = \sec \right] \\
&\Rightarrow R.H.S
\end{aligned}$$

(ii) Find a if A $(2a + 2, 3)$, B $(7, 4)$ and C $(2a + 5, 2)$ are collinear.

Ans.

If any 3 point collinear (straight)

Then slope of first 2 point = slope of Last 2 point

Slope of AB = slope of BC

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{y_2 - y_1}{x_2 - x_1}$$

$\Rightarrow$ first we find slope of AB

A = (2a+2, 3) and B = (7, 4)

$$\begin{array}{ccc}
\downarrow & \downarrow & \downarrow \downarrow \\
x_1 & y_1 & x_2 \quad y_2
\end{array}$$

$$\text{Slope of AB} = \frac{y_2 - y_1}{x_2 - x_1} =$$

$$\frac{4-3}{7-(2a+2)} \text{ [do not forget put bracket during putting value of } x_1]$$

$$\Rightarrow \frac{1}{7-2a-2}$$

$$\Rightarrow \frac{1}{5-2a}$$

Now slope of BC

B = (7, 4) and C = (2a + 5, 2)

$$\begin{array}{ccc}
\downarrow & \downarrow & \downarrow \downarrow \\
x_1 & y_1 & x_2 \quad y_2
\end{array}$$

$$\text{Slope BC} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2-4}{2a+5-7}$$

$$\Rightarrow \frac{-2}{2a-2} = \frac{-2}{2(a-1)}$$

$$\Rightarrow \frac{-1}{(a-1)}$$

But slope AB and BC equal due to collinear point

$$\text{So } \frac{1}{5-2a} = \frac{-1}{a-1}$$

$$\Rightarrow a-1 = -5+2a$$

$$\Rightarrow -1+5 = 2a-a$$

$$\Rightarrow 4 = a$$

Attention [do not use area of Δ formula for above it is CBSE method]

(iii) Calculate the mean of the following frequency distribution.

Class Interval	5 - 15	15 - 25	25 - 35	35 - 45	45 - 55
Frequency	2	6	4	8	4

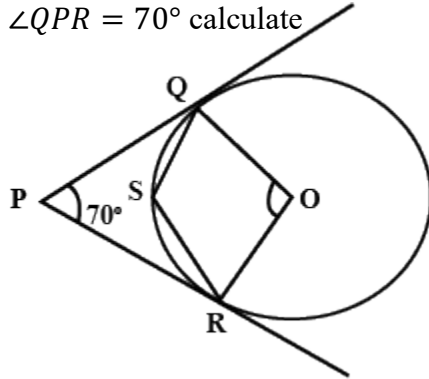
Ans.

Class interval	Frequency(F)	Class mark (x)	fx
5 - 15	2	10	20
15 - 25	6	20	120
25 - 35	4	30	120
35 - 45	8	40	320
45 - 55	4	50	200

$$\Sigma f = 24 \quad \Sigma fx = 780$$

$$\text{mean } \frac{\Sigma x.f}{\Sigma f} = \frac{780}{24} = 32.5$$

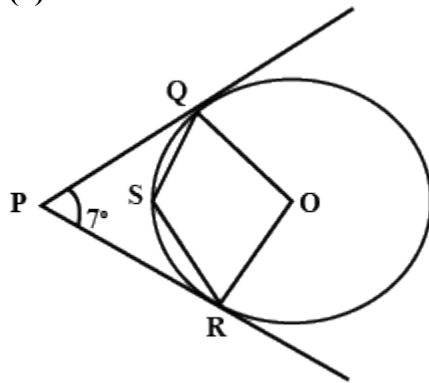
(iv) In the given figure O is the center of the circle. PQ and PR are tangent and $\angle QPR = 70^\circ$ calculate



- (a) $\angle QOR$
- (b) $\angle QSR$

Ans.

(a)



$$\angle Q = 90^\circ$$

$\angle R = 90^\circ$ [straight line drawn from centre to tangent is 90°]

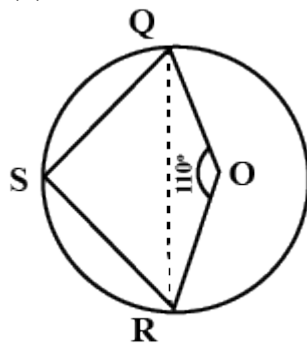
$\angle O + 90^\circ + 90^\circ + 70^\circ = 360^\circ$ [sum of all angles of a quadrilateral is 360°]

$$\angle QOR + 250^\circ = 360^\circ$$

$$\angle QOR = 360^\circ - 250^\circ$$

$$= 110^\circ$$

(b)



from part (a)

$$\angle QSR = ?$$

Draw a line QR which is chord.

$$\angle QSR = \frac{1}{2} [\angle QOR]$$

$$\angle QSR = \frac{1}{2} \times 110^\circ$$

$$\angle QSR = 55^\circ$$

[angle subtended by a chord at centre is double then any other point on circle by same chord]

Question 3:

(i) A bag contains 5 white, 2 red and 3 black balls. A ball is drawn at random. What is the probability that the ball drawn is a red ball?

Ans. white ball = 5

Red ball = 2

Black ball = 3

Total ball = W = R + B

= 5 + 2 + 3

= 10

Favourable outcome = red ball

= 2

$$P(\text{Event}) = \frac{\text{Favourable outcome}}{\text{total outcome}} = \frac{2}{10} = \frac{1}{5}$$

(ii) A Solid cone of radius 5 cm and height 9 cm is melted and made into small cylinders of radius of 0.5 cm and height 1.5 cm. Find the number of cylinders so formed.

Ans. radius of cone = 5 cm

Height = 9 cm

First find vol of cone = ?

$$\text{Vol of cone} = \frac{1}{3} \pi r^2 h = \frac{1}{3} \times \frac{22}{7} \times 5^2 \times 9 = \pi \times 25 \times 3 = 75\pi \text{ cm}^3$$

Now radius of cylinder = 0.5 cm

Height, h = 1.5 cm

$$\text{Vol of 1 cylinder } \pi r^2 h = \pi \times 0.5^2 \times 1.5 = \pi \times 0.25 \times 1.5 = \pi \times \text{cm}^3$$

Let no of cylinder = n

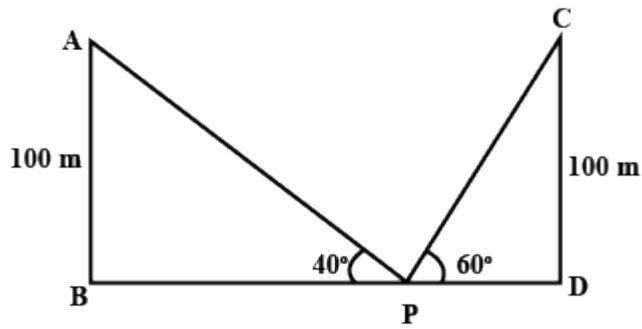
According law of conservation of mass vol of all cylinder formed = vol of 1 cone method

$$n \times 0.375 \pi = 75\pi$$

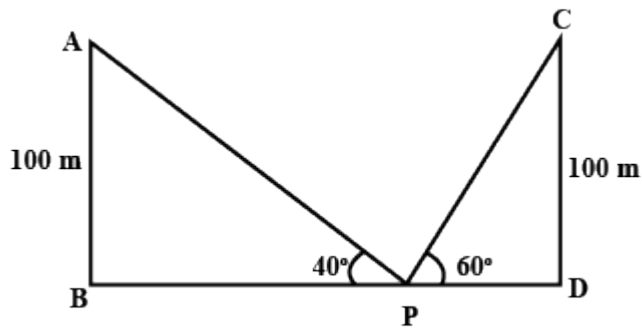
$$n = \frac{75}{0.375}$$

$$= 200$$

(iii) Two lamp posts AB and CD each of height 100 m are on either side of the road. P is a point on the road between the two lamp posts. The angles of elevation of the top of the lamp posts from the point P are 60° and 40° . Find the distances PB and PD.



Ans.



In $\triangle ABP$

$$\tan 40 = \frac{AB}{BP}$$

$$0.84 = \frac{100}{BP}$$

$$BP = \frac{100}{0.84} = 119 \text{ m}$$

So $PB = 119 \text{ m}$

$$PD = \frac{100\sqrt{3}}{3} \text{ m}$$

In $\triangle CPD$

$$\tan 60 = \frac{CD}{PD}$$

$$\sqrt{3} = \frac{100}{PD}$$

$$PD = \frac{100}{\sqrt{3}}$$

$$PD = \frac{100 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}}$$

$$PD = \frac{100\sqrt{3}}{3}$$

$$PD = \frac{100 \times 1.732}{3}$$

$$= \frac{173.2}{3}$$

$$= 57.73$$

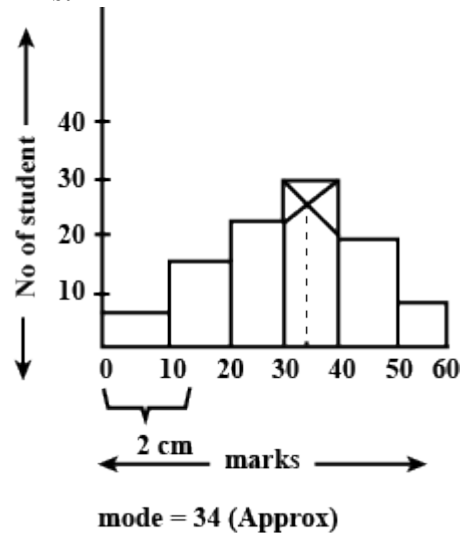
(iv) Marks obtained by 100 students in an examination are given below.

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
No. of students	5	15	20	28	20	12

Draw a histogram for the given data using a graph and find the mode.

Take 2 cm = 10 marks along one axis and 2 cm = 10 students along the other axis.

Ans.



Question 4:

(i) Find a point P which divides internally the line segment joining the points A $(-3,9)$ and B $(1,-3)$ in the ratio 1:3.

(ii) A letter of the word SECONDARY is selected at random. What is the probability that the letter selected is not a vowel?

(iii) Use a graph paper for this question. Take 2cm- 1 unit along both the axes.

(a) Plot the points A(0,4), B(2,2), C(5,2) and D(4,0). E (0,0) is the origin.

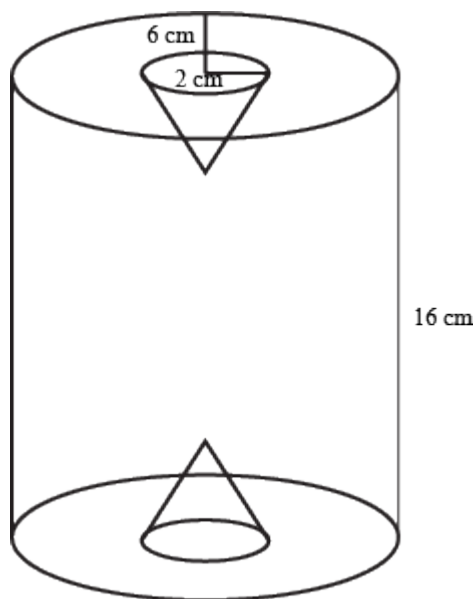
(b) Reflect B, C, D on the y-axis and name them as B', C' and D' respectively.

(c) Join the points ABCDD'C'B' and A in order and give a geometrical name to the closed figure

(iv) A solid wooden cylinder is of radius 6 cm and height 16 cm. Two cones each of radius 2 cm and height 6 cm are

drilled out of the cylinder. Find the volume of the remaining solid.

Take $\pi = 22/7$



Ans.

[i]

$$\begin{array}{ccccc}
 & m & & n & \\
 & \uparrow & & \uparrow & \\
 A & \xleftarrow{1} & \rightarrow & P & \xleftarrow{3} \rightarrow B \\
 \hline
 (-3,9) & & (x,y) & & (1,-3) \\
 \downarrow \downarrow & & & & \downarrow \downarrow \\
 x_1 \ y_1 & & & & x_2 \ y_2
 \end{array}$$

Let the co-ordinate of P(x, y)

$$x = \frac{mx_2 + nx_1}{m + n}$$

$$x = \frac{1 \times 1 + 3(-3)}{1+3}$$

$$x = \frac{1 - 9}{4}$$

$$x = \frac{-8}{4}$$

$$x = -2$$

$$y = \frac{my_2 + ny_1}{m + n}$$

$$y = \frac{1 \times (-3) + 3 \times 9}{1+3}$$

$$y = \frac{-3 + 27}{4}$$

$$y = \frac{24}{4}$$

$$y = 6$$

Therefore coordinate of p(x, y) = p(-2,6)

[ii]

Total outcome = S, E, C, O, N, D, A, R, Y

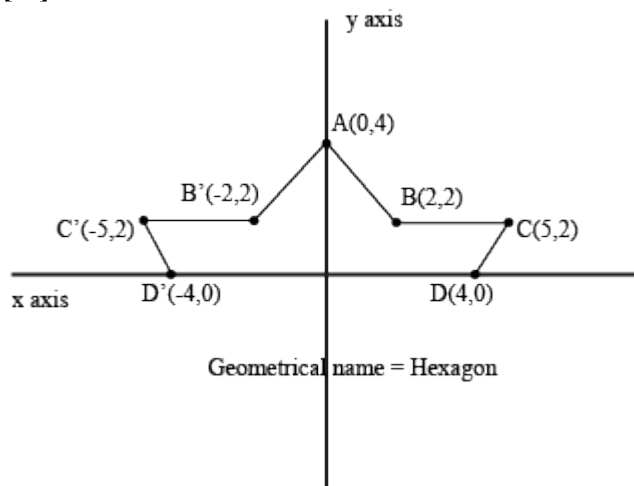
$$= 9$$

Favorable Outcome = S, C, N, D, R, Y
= 6

$$P(E) = \frac{\text{Favorable Outcome}}{\text{Total Outcome}}$$

$$= \frac{6}{9} = \frac{2}{3}$$

[iii]



[iv]

Radius of cylinder = 6 cm

Height = 16 cm

Volume of cylinder = $\pi r^2 h$

$$= \pi \times 6^2 \times 16$$

$$= 36 \times 16\pi$$

Radius of each cone = 2 cm

Height = 6 cm

$$\text{Vol of} = \frac{1}{3} \times \pi \times 2^2 \times 6$$

$$\text{Vol of 2 cone} = 8\pi$$

$$\text{Vol of 2 cone} = 2 \times \text{vol of 1 cone}$$

$$\text{Vol of 2 cone} = 2 \times 8\pi$$

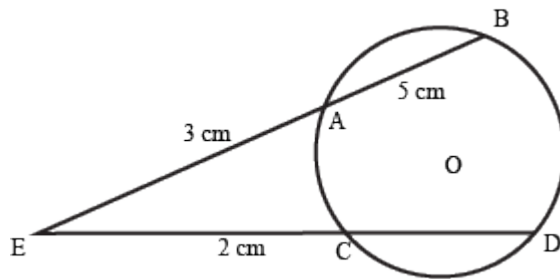
$$\text{Vol of 2 cone} = 16\pi$$

Vol of remaining = vol of cylinder – vol of 2 cones solved

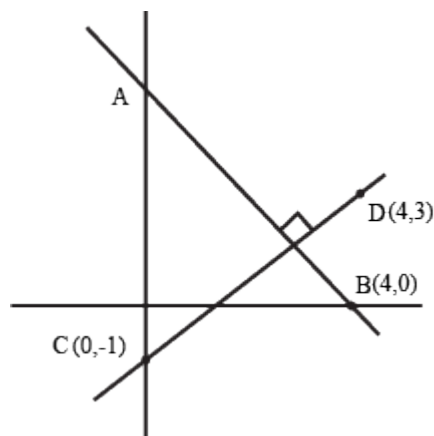
$$\begin{aligned}
 &= 36 \times 16\pi - 16\pi \\
 &= 16\pi(36 - 1) \\
 &= 16\pi \times 35 \\
 &= 16 \times 22 \times 5 \\
 &= 1760 \text{ cm}^3
 \end{aligned}$$

Question 5:

- (i) Two chords AB and CD of a circle intersect externally at E. If $EC = 2 \text{ cm}$, $EA = 3$ and $AB = 5 \text{ cm}$, Find the length of CD.



- (ii) Line AB is perpendicular to CD. Coordinate of B, C and D are respectively $(4,0)$, $(0, -1)$ and $(4,3)$.



Find:

- (a) Slope of CD
(b) Equation of AB

- (iii) Prove that :

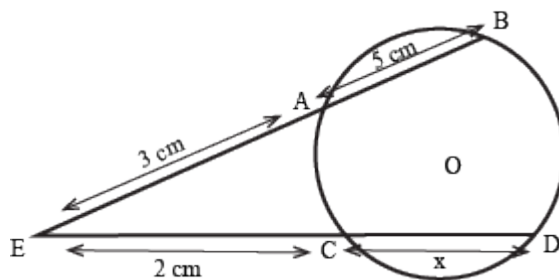
$$(1 + \sin \theta)^2 + (1 - \sin \theta)^2 / 2 \cos^2 \theta = \sec^2 \theta + \tan^2 \theta$$

(iv) The name of the following distribution is 50. Find the unknown frequency.

Class interval	Frequency
0 - 20	6
20 - 40	f
40 - 60	8
60 - 80	12
80 - 100	8

Ans.

[i]



If the two lines from external point intersect the circle at two points respectively, then:

$$EA \times EB = EC \times ED$$

$$\Rightarrow 3 \times (3 + 5) = 2 \times (2 + x)$$

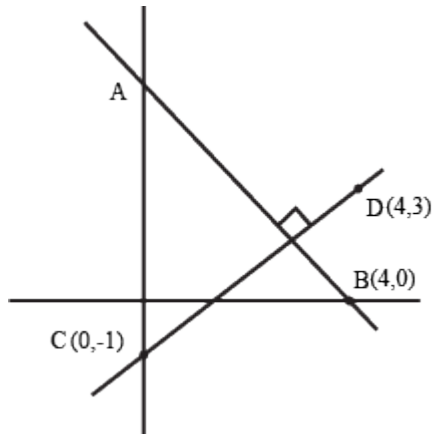
$$\Rightarrow g + 15 = 4 \times 2x$$

$$\Rightarrow 24 - 4 = 2x$$

$$\Rightarrow \frac{20}{2} = x$$

$$\Rightarrow 10 = x$$

[ii]



Slope CD = ?

$C = (0, -1), D = (4, 3)$

$\downarrow \downarrow \quad \downarrow \downarrow$

$x_1 \ y_1 \quad x_2 \ y_2$

$$\text{Slope } CD = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - (-1)}{4 - 0} = \frac{3 + 1}{4} = \frac{4}{4} = 1$$

Slope CD = 1

[b] Let slope of AB is m_2

According to law of perpendicularity

$$m_1 \times m_2 = -1$$

$$\Rightarrow 1 \times m_2 = -1 \quad [m_1 = 1 \text{ from part a}]$$

$$m_2 = \frac{-1}{1} = -1$$

Now equation AB = ?

$B = (4,0)$

$x_1 \ y_1$

equation of a line of one coordinate and slope given is

$$y - y_1 = m(x - x_1)$$

$$y - 0 = -1(x - 4)$$

$$y = -x + 4$$

$$[m = \text{slope of } AB = m_2]$$

$$x + y = 4$$

$$x + y - 4 = 0$$

[iii]

L.H.S

$$\frac{(1 + \sin\theta)^2 + (1 - \sin\theta)^2}{2 \cos^2\theta}$$

$$= \frac{1 + \sin^2\theta + 2\sin\theta + 1 + \sin^2\theta - 2\sin\theta}{2 \cos^2\theta}$$

$$= \frac{2 + 2 \sin^2\theta}{2 \cos^2\theta}$$

$$= \frac{2 (1 + \sin^2\theta)}{2 \cos^2\theta}$$

$$= \frac{1 + \sin^2\theta}{\cos^2\theta}$$

$$= \frac{1}{\cos^2\theta} + \frac{\sin^2\theta}{\cos^2\theta}$$

$$[\frac{1}{\cos^2\theta} = \sec^2\theta, \frac{\sin\theta}{\cos\theta} = \tan\theta]$$

$$= \sec^2\theta + \tan^2\theta$$

$$= R.H.S$$

[iv]

Class interval	Classwork	Frequency	fx
0 - 20	10	6	60
20 - 40	30	f	$30f$
40 - 60	50	8	400
60 - 80	70	12	840
80 - 100	90	8	720

$$\sum f = 34 + f \quad \sum f \cdot f = 2020 + 30f$$

Mean = 50 (given)

$$\text{mean} = \frac{\sum fx}{\sum f}$$

$$50 = \frac{2020 + 30f}{34 + f}$$

$$50 \times (34 + f) = 2020 + 30f$$

$$1700 + 50f = 2020 + 30f$$

$$50f - 30f = 2020 - 1700$$

$$20f = 320$$

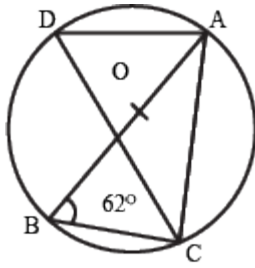
$$f = \frac{320}{20}$$

Question 6 :

(i) Prove that:

$$1 + \tan^2\theta / (1 + \sec\theta) = \sec\theta$$

(ii) In the given figure A, B, and D are points on the circle with centre O.



Given, $\angle ABC = 62^\circ$.

Find:

(a) $\angle ADC$

(b) $\angle CAB$

(iii) Find the equation of a line parallel to the line $2x + y - 7 = 0$ and passing through the intersection of the line $x + y - 4 = 0$ and $2x - y = 8$.

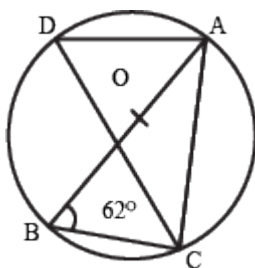
(iv) Marks obtained by students in an examination are given below.

Marks	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
No. of Student	3	8	14	9	4	2

Using graph paper, draw an ogive and estimate the median marks. Take 2 cm = 10 marks along one axis and 2 cm = 5 students along the other axis.

Ans.

[i]



$$\text{L.H.S} = 1 + \frac{\tan^2 \theta}{1 + \sec \theta}$$

$$\begin{aligned}
&= \frac{1 + \sec\theta + \tan^2\theta}{1 + \sec\theta} \\
&= \frac{1 + \sec\theta + \sec^2\theta - 1}{1 + \sec\theta} \quad [\tan^2\theta = \sec^2\theta - 1] \\
&= \frac{\sec\theta + \sec^2\theta}{1 + \sec\theta} \\
&= \frac{\sec\theta + (1 + \sec\theta)}{(1 + \sec\theta)} \\
&= \sec\theta = R.H.S
\end{aligned}$$

[ii]

[a] $\angle ADC = ?$

$\angle ADC = \angle ABC$

$\angle ADC = 62^\circ$ [same chord subtend equal angles on the circle]

[b] $\angle CAB = ?$

$\angle ACB = 90^\circ$ [angle on semi circle = 90°]

Now in $\triangle ABC$

$\angle ACB + \angle CBA + \angle BAC = 180^\circ$

$90^\circ + 62^\circ + \angle ACB = 180^\circ$

$152^\circ + \angle ACB = 180^\circ$

$\angle ACB = 180^\circ - 152^\circ$

$\angle ACB = 28^\circ$

[iii]

The equation $2x + y - 7 = 0$ can be written as $y = 7 - 2x$

Comparing the above equation with $y = mx + c$, slope of the equation $2x + y - 7 = 0$ will be:

Slope = $m = -2$

Let $m = m_1$ and a line parallel to any line has slope m_2 then,

$$m_1 = m_2 = -2$$

Therefore, slope of line parallel to $2x + y - 7 = 0$ is -2

Now, it is given that $x + y - 4 = 0$ and $2x - y = 8$ intersects, so

$$x + y - 4 = 0$$

$$2x - y = 8$$

$$3x = 12$$

$$x = 4$$

Therefore, the parallel line cut at (4,0)

Putting value of $x = 4$ in the equation of line, we get:

$$x + y - 4 = 0$$

$$4 + y = 4$$

$$y = 4 - 4$$

$$y = 0$$

So now the equation of the line parallel to $2x + y - 7 = 0$ and passing through the intersection of the line $x + y - 4 = 0$ and $2x - y = 8$ will be:

$$y - y_1 = m (x - x_1)$$

$$y - 0 = -2 (x - 4)$$

$$y = -2x + 8$$

$$y + 2x - 8 = 0$$

[iv]

Marks	No of student	cf
10 - 20	3	3
20 - 30	8	11
30 - 40	14	25
40 - 50	9	34
50 - 60	4	38
60 - 70	2	40

Now we will plot the points (20,3), (30,11), (40,25), (50,34), (60,38) and (70,40) on graph

To get the median $n = 40$, which is even:

$$\text{Median} = \frac{n}{2} = \frac{40}{2} = 20$$

Take a point 20 on y axis and through it draw a line parallel to x axis which meet current at A. Through A draw a perpendicular on x axis which meet on 3 > 5

So median is = 3 > 5

