[redacted]

YASHWANT CLASSES Estd.1995

Subject: [redacted]

Time: 2 Hours **MARCH – 2023** **[Max. Marks: 40]**

Note: i) All questions are compulsory.

ii) Use of a calculator is not allowed.

iii) The numbers of the right of the questions indicates full marks.

iv) In case of MCQs (Q.1.(A)), only the first attempt will be evaluated and will be given credit.

v) For every MCQ, the correct alternative (A), (B), (C) or (D) with subquestion number is to be written as an answer.

Q.1. (A) Four alternative answers are given for every sub-question. Select the correct alternative and write the alphabet of that answer: [4]

(1) If a, b, c are sides of a triangle and $a^2 + b^2 = c^2$, name the type of triangle:

(a) Obtuse angled triangle (b) Acute angled triangle

(c) Right angled triangle (d) Equilateral triangle

(2) Chords AB and CD of a circle intersect inside the circle at point E. If AE = 4, EB = 10, CE = 8, then find ED:

(a) 7 (b) 5

(c) 8 (d) 9

(3) Co-ordinates of origin are ....

(a) (0, 0) (b) (0, 1) (c) (1, 0) (d) (1, 1)

(4) If radius of the base of cone is 7 cm and height is 24 cm, then find its slant height:

(a) 23 cm (b) 26 cm (c) 31 cm (d) 25 cm

Q.1. (B) Solve the following sub-questions. [4]

(1) If $\Delta ABC \sim \Delta PQR$ and $\frac{A(\Delta ABC)}{A(\Delta PQR)} = \frac{16}{25}$, then find AB:PQ.

(2) In ΔRST, $\angle S = 90°$, $\angle T = 30°$, RT = 12 cm, then find RS.

(3) If radius of a circle is 5 cm, then find the length of the longest chord of the circle.

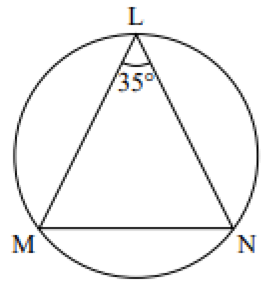
(4) Find the distance between the points O(0, 0) and P(3, 4).

Q.2. (A) Complete the following activities. (Any *two*) **[4]**

(1) In the given figure, $\angle L = 35°$,

find:

a. m(arc MN) b. m(arc MLN)



Solution:

a. $\angle L = \frac{1}{2}\, m(\text{arc MN})$ .... (By inscribed angle theorem)

$\therefore \quad \boxed{} = \frac{1}{2} m(\text{arc MN})$

$\therefore \quad 2 \times 35 = m(\text{arc MN})$

$\therefore \quad m(\text{arc MN}) = \boxed{}$

b. $m(\text{arc MLN}) = \boxed{} - m(\text{arc MN})$ ...... [Definition of measure of arc]

$= 360° - 70°$

$m(\text{arc MLN}) = \boxed{}$

(2) Show that $\cot\theta + \tan\theta = \operatorname{cosec}\theta \times \sec\theta$

(3) Find the surface area of a sphere of radius 7 cm.

Solution:

Surface area of sphere $= 4\pi r^2$

$= 4 \times \frac{22}{7} \times \boxed{}^2$

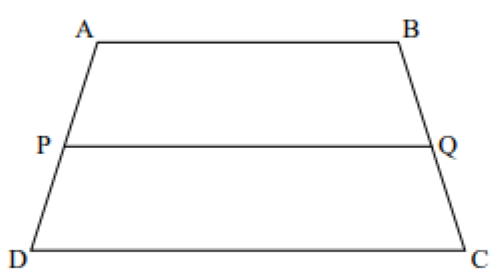
$= 4 \times \frac{22}{7} \times \boxed{}$

$= \boxed{} \times 7$

$\therefore$ Surface area of sphere $= \boxed{}$ sq.cm

Q.2. (B) Solve the following sub-questions. (Any *four*) **[8]**

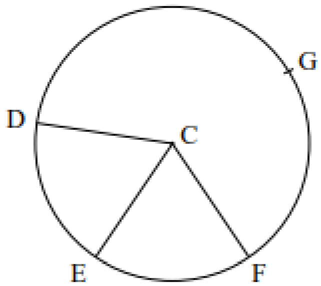
(1)



In trapezium ABCD side AB || side PQ || side DC. AP = 15, PD = 12, QC = 14, find BQ.

(2) Find the length of the diagonal of a rectangle whose length is 35 cm and breadth is 12 cm.

(3)



In the given figure points G, D, E, F are points of a circle with centre C, $\angle ECF = 70°$, m(arc DGF) = 200°.

Find:

a. m(arc DE)

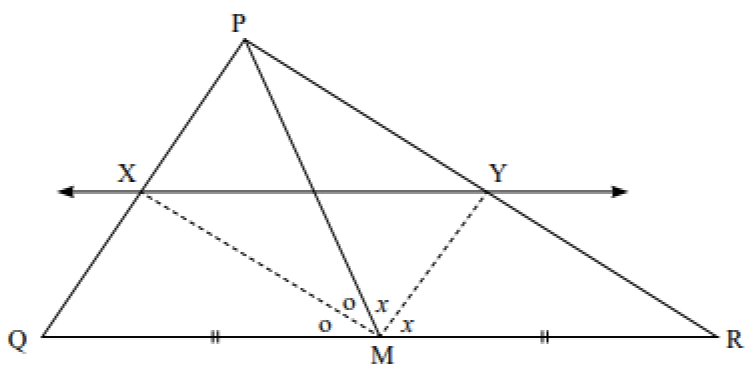
b. m(arc DEF)

(4) Show that points A(–1, –1), B(0, 1), C(1, 3) are collinear.

(5) A person is standing at a distance of 50 m from a temple looking at its top. The angle of elevation is of 45°. Find the height of the temple.

Q.3. (A) Complete the following activities. (Any *one*) **[3]**

(1)



In ΔPQR, seg PM is a median. Angle bisectors of $\angle PMQ$ and $\angle PMR$ intersect side PQ and side PR in points X and Y respectively. Prove that XY || QR.

Complete the proof by filling in the boxes.

Solution:

In ΔPMQ,

Ray MX is the bisector of $\angle PMQ$.

$\therefore \dfrac{MP}{MQ} = \dfrac{\boxed{}}{\boxed{}}$ ....(I) (Theorem of angle bisector)

Similarly, in ΔPMR, Ray MY is the bisector of $\angle PMR$.

$\therefore \dfrac{MP}{MR} = \dfrac{\boxed{}}{\boxed{}}$ ....(II) (Theorem of angle bisector)

But $\dfrac{MP}{MQ} = \dfrac{MP}{MR}$ ....(III) (As M is the midpoint of QR)

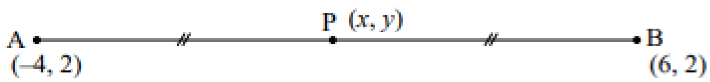
Hence MQ = MR.

$\therefore \dfrac{PX}{\boxed{}} = \dfrac{\boxed{}}{YR}$ ....[From (I), (II) and (III)]

$\therefore$ XY || QR ....[Converse of basic proportionality theorem]

(2) Find the co-ordinates of point P where P is the midpoint of a line segment AB with A(–4, 2) and B(6, 2).

Solution:



Suppose (–4, 2) = (x_1, y_1) and (6, 2) = (x_2, y_2) and co-ordinates of P are (x, y).

$\therefore$ According to midpoint theorem,

$$x = \frac{x_1 + x_2}{2} = \frac{\boxed{} + 6}{2} = \frac{\boxed{}}{2} = \boxed{}$$

$$y = \frac{y_1 + y_2}{2} = \frac{2 + \boxed{}}{2} = \frac{4}{2} = \boxed{}$$

Co-ordinates of midpoint P are $\boxed{}$.

Q.3. (B) Solve the following sub-questions. (Any *two*) **[6]**

(1) In ΔABC, seg AP is a median. If BC = 18, $AB^2 + AC^2 = 260$, find AP.

(2) Prove that "Angles inscribed in the same arc are congruent."

(3) Draw a circle of radius 3.3 cm. Draw a chord PQ of length 6.6 cm. Draw tangents to the circle at points P and Q.

(4) The radii of circular ends of a frustum are 14 cm and 6 cm respectively and its height is 6 cm. Find its curved surface area. ($\pi = 3.14$)

Q.4. Solve the following sub-questions. (Any *two*) **[8]**

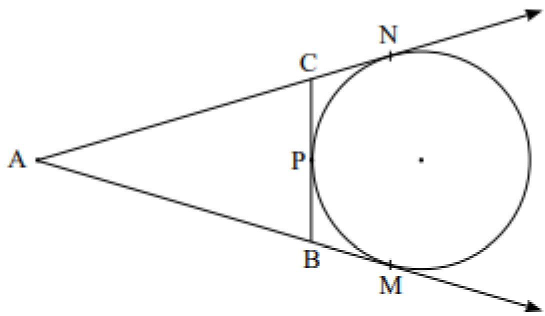
(1) In ΔABC, seg DE || side BC. If $2A(\Delta ADE) = A(\square DBCE)$, find AB:AD and show that $BC = \sqrt{3}DE$.

(2) $\Delta SHR \sim \Delta SVU$. In ΔSHR, SH = 4.5 cm, HR = 5.2 cm, SR = 5.8 cm and $\frac{SH}{SV} = \frac{3}{5}$, construct ΔSVU.

(3) An ice-cream pot has a right circular cylindrical shape. The radius of the base is 12 cm and height is 7 cm. This pot is completely filled with ice-cream. The entire ice-cream is given to the students in the form of right circular ice-cream cones, having diameter 4 cm and height 3.5 cm. If each student is given one cone, how many students can be served?

Q.5. Solve the following sub-questions. (Any *one*) **[3]**

(1)



A circle touches side BC at point P of ΔABC, from outside of the triangle. Further extended lines AC and AB are tangents to the circle at N and M respectively. Prove that:

$AM = \frac{1}{2}$ (Perimeter of ΔABC)

(2) Eliminate θ if $x = r\cos\theta$ and $y = r\sin\theta$.

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Q.1. (A) Four alternative answers are given for every sub-question. Select the correct alternative and write the alphabet of that answer: [4]

(1) If a, b, c are sides of a triangle and $a^2 + b^2 = c^2$, name the type of triangle: [1]

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(2) Chords AB and CD of a circle intersect inside the circle at point E. If AE = 4, EB = 10, CE = 8, then find ED: [1]

(a) 7 (b) 5
(c) 8 (d) 9

(3) Co-ordinates of origin are .... [1]

(a) (0, 0) (b) (0, 1) (c) (1, 0) (d) (1, 1)

(4) If radius of the base of cone is 7 cm and height is 24 cm, then find its slant height: [1]

(a) 23 cm (b) 26 cm (c) 31 cm (d) 25 cm

Ans. (1) – (c), (2) – (b), (3) – (a), (4) – (d)

Q.1. (B) Solve the following sub-questions. **[4]**

(1) If $\Delta ABC \sim \Delta PQR$ and $\frac{A(\Delta ABC)}{A(\Delta PQR)} = \frac{16}{25}$, then find AB:PQ.

Solution:

$\Delta ABC \sim \Delta PQR$ ...(Given)

$\therefore \frac{A(\Delta ABC)}{A(\Delta PQR)} = \frac{AB^2}{PQ^2}$ ...$\begin{pmatrix}\text{Ratio of the areas of}\\ \text{two similar triangles}\end{pmatrix}$ [½]

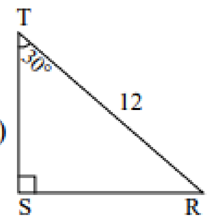
$\therefore \frac{AB^2}{PQ^2} = \frac{16}{25}$

$\therefore \frac{AB}{PQ} = \frac{4}{5}$ (Taking square roots) [½] [1]

Ans. $\therefore$ AB:PQ = 4:5

(2) In ΔRST, $\angle S = 90°$, $\angle T = 30°$, RT = 12 cm, then find RS.

Solution:



In ΔRST,

$\angle S = 90°$ and $\angle T = 30°$ ...(Given)

$\therefore \angle R = 60°$ ...(Remaining angle)

$\therefore$ By 30°– 60°– 90° theorem,

$RS = \frac{1}{2} RT$ ...(Side opposite 30°) [½]

$\therefore RS = \frac{1}{2} \times 12$

Ans. $\therefore$ RS = 6 cm [½] [1]

(3) If radius of a circle is 5 cm, then find the length of the longest chord of the circle.

Solution:

Radius = 5 cm

We know that the longest chord of a circle is a diameter. [½]

diameter = 2 × radius

$\therefore$ diameter = 2 × 5

= 10 cm [½][1]

Ans. $\therefore$ The length of the longest chord is 10 cm.

(4) Find the distance between the points O(0, 0) and P(3, 4).

Solution:

$O(0, 0) \equiv (x_1, y_1)$

$P(3, 4) \equiv (x_2, y_2)$

By distance formula,

$$d(\text{O, P}) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \quad [½]$$
$$= \sqrt{(3 - 0)^2 + (4 - 0)^2}$$
$$= \sqrt{9 + 16}$$
$$= \sqrt{25}$$
$$\therefore \quad d(\text{O, P}) = 5 \quad [½]\ [1]$$

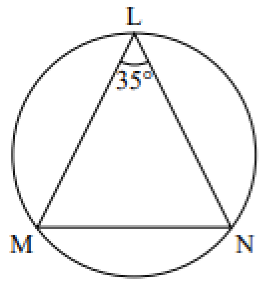
Ans. $\therefore$ The distance between the two given points is 5 units.

Q.2. (A) Complete the following activities. (Any *two*) **[4]**

(1) In the given figure, $\angle L = 35°$,

find:

a. m(arc MN) b. m(arc MLN)



Solution:

a. $\angle L = \frac{1}{2} m(\text{arc MN})$

...(By inscribed angle theorem)

$\therefore \quad \boxed{35°} = \frac{1}{2} m(\text{arc MN})$ [½]

$\therefore \quad 2 \times 35 = m(\text{arc MN})$

$\therefore \quad m(\text{arc MN}) = \boxed{70°}$ [½]

b. $m(\text{arc MLN}) = \boxed{360°} - m(\text{arc MN})$ [½]

...[Definition of measure of an arc]

$= 360° - 70°$

Ans. $\therefore m(\text{arc MLN}) = \boxed{290°}$ [½] [2]

(2) Show that $\cot\theta + \tan\theta = \operatorname{cosec}\theta \times \sec\theta$

Solution:

$\text{L.H.S} = \cot\theta + \tan\theta$

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

$= \frac{\boxed{\cos^2\theta} + \boxed{\sin^2\theta}}{\sin\theta \times \cos\theta}$ [½ + ½]

$= \frac{1}{\sin\theta \times \cos\theta}$ $\quad \ldots \boxed{\sin^2\theta + \cos^2\theta = 1}$ [½]

$= \frac{1}{\sin\theta} \times \frac{1}{\boxed{\cos\theta}}$ [½]

$= \operatorname{cosec}\theta \times \sec\theta$

L.H.S.= R.H.S. [2]

$\therefore \cot\theta + \tan\theta = \operatorname{cosec}\theta \times \sec\theta.$

(2) Show that $\cot\theta + \tan\theta = \operatorname{cosec}\theta \times \sec\theta$

Solution:

L.H.S $= \cot\theta + \tan\theta$

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

$$= \frac{\boxed{\cos^2\theta} + \boxed{\sin^2\theta}}{\sin\theta \times \cos\theta} \qquad [½ + ½]$$

$$= \frac{1}{\sin\theta \times \cos\theta} \quad \cdots \boxed{\sin^2\theta + \cos^2\theta = 1} \qquad [½]$$

$$= \frac{1}{\sin\theta} \times \frac{1}{\boxed{\cos\theta}} \qquad [½]$$

$$= \operatorname{cosec}\theta \times \sec\theta$$

L.H.S.= R.H.S. [2]

$\therefore$ $\cot\theta + \tan\theta = \operatorname{cosec}\theta \times \sec\theta$.

(3) Find the surface area of a sphere of radius 7 cm.

Solution:

Surface area of sphere $= 4\pi r^2$

$$= 4 \times \frac{22}{7} \times \boxed{7}^2 \qquad [½]$$

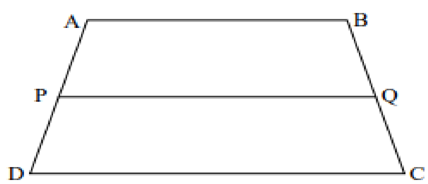
$$= 4 \times \frac{22}{7} \times \boxed{49} \qquad [½]$$

$$= \boxed{88} \times 7 \qquad [½]$$

Ans. $\therefore$ Surface area of sphere $= \boxed{616}$ sq.cm. [½] [2]

Q.2. (B) Solve the following sub-questions. (Any *four*) [8]

(1)



In trapezium ABCD side AB || side PQ || side DC. AP = 15, PD = 12, QC = 14, find BQ.

Solution:

$AB \parallel PQ \parallel DC$ (Given)

$\therefore \dfrac{AP}{PD} = \dfrac{BQ}{QC}$ $\begin{pmatrix}\text{Intercepts made by}\\ \text{three parallel lines}\end{pmatrix}$ [½]

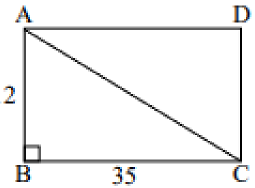
$\therefore \dfrac{15}{12} = \dfrac{BQ}{14}$ [½]

$\therefore BQ = \dfrac{15 \times 14}{12}$ [½]

Ans. $\therefore BQ = 17.5$ [½] [2]

(2) Find the length of the diagonal of a rectangle whose length is 35 cm and breadth is 12 cm.

Solution:



Let □ABCD be the rectangle.

$\angle ABC = 90°$ ...(Angle of a rectangle)

$\therefore$ In ΔABC, $\angle ABC = 90°$

$\therefore AC^2 = AB^2 + BC^2$

...(Pythagoras theorem) [½]

$\therefore AC^2 = 12^2 + 35^2$

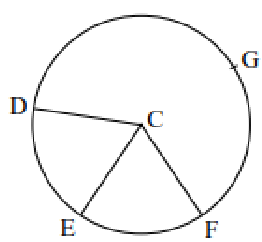
$\therefore AC^2 = 144 + 1225$ [½]

$\therefore AC^2 = 1369$ [½]

$\therefore AC = 37$ ...(Taking square roots) [½] [2]

Ans. The length of the diagonal is 37 cm.

(3) In the given figure, points G, D, E, F are points of a circle with centre C, $\angle ECF = 70°$, $m(\text{arc DGF}) = 200°$.



Find:

a. $m(\text{arc DE})$

b. $m(\text{arc DEF})$

Solution:

a. $\angle DCF = m(\text{arc DGF}) = 200°$ ...(Central angle)

$\angle DCF + \angle DCE + \angle ECF = 360°$ ...(Total angular measure of a circle)

$\therefore 200° + \angle DCE + 70° = 360°$ [½]

$\therefore \angle DCE = 360° - 270°$

$\therefore \angle DCE = 90°$

$m(\text{arc DE}) = m\angle DCE$ ...(Central angle)

Ans. $\therefore m(\text{arc DE}) = 90°$ [½]

b. $m(\text{arc EF}) = m\angle ECF$ ...(Central angle)

$\therefore m(\text{arc EF}) = 70°$

$m(\text{arc DEF}) = m(\text{arc DE}) + m(\text{arc EF})$

$\therefore m(\text{arc DEF}) = 90° + 70°$ [½]

Ans. $\therefore m(\text{arc DEF}) = 160°$ [½] [2]

(4) Show that points A(–1, –1), B(0, 1), C(1, 3) are collinear.

Solution:

Let A(–1, –1) $\equiv (x_1, y_1)$

B(0, 1) $\equiv (x_2, y_2)$

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

$= \dfrac{1 - (-1)}{0 - (-1)}$

$= \dfrac{2}{1}$

$= \mathbf{2}$ [½]

Let B(0, 1) $\equiv (x_1, y_1)$

C(1, 3) $\equiv (x_2, y_2)$

Slope of BC $= \dfrac{y_2 - y_1}{x_2 - x_1}$

$= \dfrac{3 - 1}{1 - 0}$

$= \dfrac{2}{1}$

$= \mathbf{2}$ [½]

Let A(–1, –1)$\equiv (x_1, y_1)$

C(1, 3) $\equiv (x_2, y_2)$

Slope of AC $= \dfrac{y_2 - y_1}{x_2 - x_1}$

$= \dfrac{3 - (-1)}{1 - (-1)}$

$= \dfrac{4}{2}$

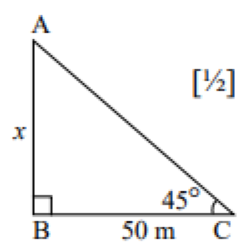
$= \mathbf{2}$ [½]

Since the slopes of AB, BC and AC are equal, points A(–1, –1), B(0, 1) and C(1, 3) are collinear.

Hence proved. [½] [2]

(5) A person is standing at a distance of 50 m from a temple looking at its top. The angle of elevation is of 45°. Find the height of the temple.

Solution:



[½]

Let AB be the height of the temple and the person is standing at point 'C'. BC is the distance between the person and the temple.

Angle of elevation = ∠ACB [½]

In ΔABC,

∠B = 90° ....(The temple is pendicular to the ground)

$\therefore \tan C = \dfrac{AB}{BC}$

$\therefore \tan 45° = \dfrac{x}{50}$ ...($\because \angle C = 45°$) [½]

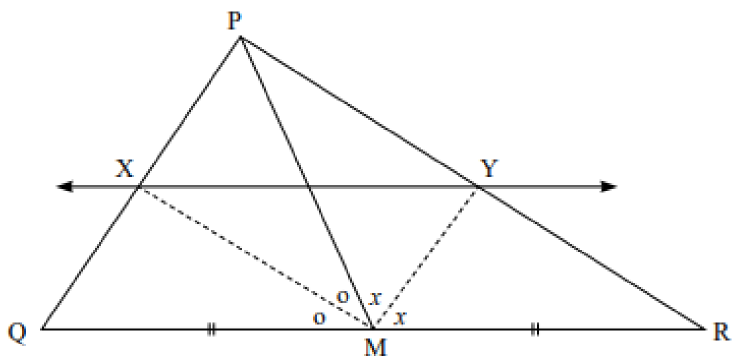
$\therefore \quad 1 = \dfrac{x}{50}$

$\therefore \quad x = 50$ m [½] [2]

Ans. $\therefore$ The height of the temple is 50 m.

Q.3. (A) Complete the following activities. (Any *one*) [3]

(1)



In ΔPQR, seg PM is a median. Angle bisectors of $\angle$PMQ and $\angle$PMR intersect side PQ and side PR in points X and Y respectively. Prove that XY || QR.

Complete the proof by filling in the boxes.

Solution:

In ΔPMQ,

Ray MX is the bisector of $\angle$PMQ.

$\therefore \dfrac{MP}{MQ} = \dfrac{\boxed{PX}}{\boxed{QX}}$ ...(I) (Theorem of angle bisector) [½ + ½]

Similarly, in ΔPMR, Ray MY is the bisector of $\angle$PMR.

$\therefore \dfrac{MP}{MR} = \dfrac{\boxed{PY}}{\boxed{RY}}$ ...(II) (Theorem of angle bisector) [½ + ½]

But $\dfrac{MP}{MQ} = \dfrac{MP}{MR}$ ...(III) (As M is the midpoint of QR)

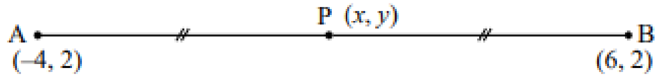
Hence MQ = MR [½]

$\therefore \dfrac{PX}{\boxed{QX}} = \dfrac{\boxed{PY}}{YR}$ ...[From (I), (II) and (III)] [½] [3]

$\therefore$ XY || QR ...[Converse of basic proportionality theorem]

(2) Find the co-ordinates of point P where P is the midpoint of a line segment AB with A(–4, 2) and B(6, 2).

Solution:



Suppose, (–4, 2) = (x_1, y_1) and (6, 2) = (x_2, y_2) and co-ordinates of P are (x, y).

$\therefore$ According to midpoint theorem,

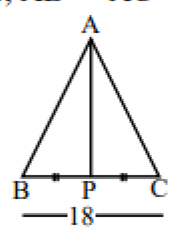
$$x = \frac{x_1 + x_2}{2} = \frac{\boxed{-4} + 6}{2} = \frac{\boxed{2}}{2} = \boxed{1} \qquad [½ + ½ + ½]$$

$$y = \frac{y_1 + y_2}{2} = \frac{2 + \boxed{2}}{2} = \frac{4}{2} = \boxed{2} \qquad [½ + ½]$$

$\therefore$ Co-ordinates of midpoint P are $\boxed{(1, 2)}$ [½] [3]

Q.3. (B) Solve the following sub-questions. (Any *two*) [6]

(1) In ΔABC, seg AP is a median. If BC = 18, $AB^2 + AC^2 = 260$, find AP.



Solution:

In ΔABC, AP is a median.

$\therefore$ BP = PC = 9 [½]

$\therefore$ $AB^2 + AC^2 = 2AP^2 + 2BP^2$ ...(Apollonius theorem) [½]

$\therefore$ $260 = 2(AP^2 + 9^2)$ [½]

$\therefore$ $AP^2 + 81 = \frac{260}{2}$ [½]

$\therefore$ $AP^2 = 130 - 81$ [½]

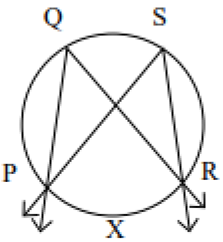
$\therefore$ $AP^2 = 49$

$\therefore$ AP = 7 ...(Taking square roots) [½] [3]

Ans. AP = 7

(2) Prove that "Angles inscribed in the same arc are congruent."

Solution:



Given: $\angle PQR$ and $\angle PSR$ are inscribed in the same arc PQR and their intercepted are is arc PXR. [½]

To Prove: $\angle PQR \cong \angle PSR$ [½]

Proof: $m\angle PQR = \frac{1}{2} m(\text{arc } PXR)$

...(Inscribed angle) ...(1) [½]

$m\angle PSR = \frac{1}{2} m(\text{arc } PXR)$ ...(Inscribed angle) ...(2) [½]

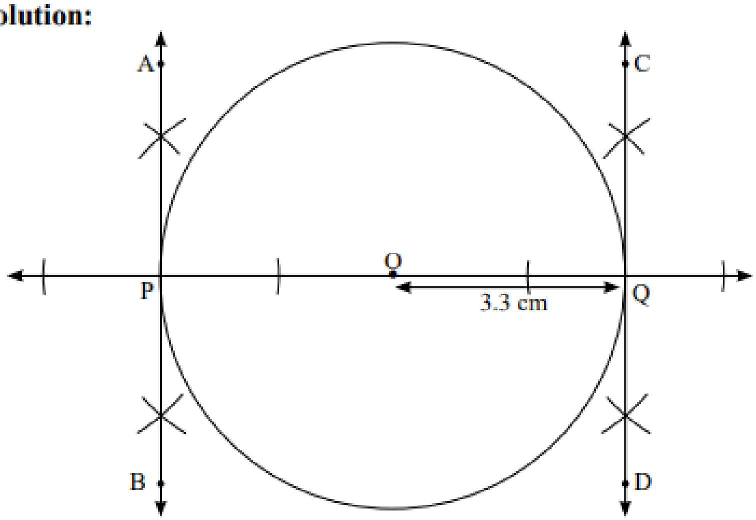
$\therefore$ $m\angle PQR = m\angle PSR$ ...[From (1) and (2)] [½]

$\therefore$ $\angle PQR \cong \angle PSR$ [½] [3]

Hence proved.

(3) Draw a circle of radius 3.3 cm. Draw a chord PQ of length 6.6 cm. Draw tangents to the circle at points P and Q.

Solution:



AB and CD are the tangents at points P and Q respectively.

1. To draw a circle of radius 3.3 cm. [½]
2. To draw a 6.6 cm chord passing through the centre [½]
3. To draw tangents at point P [1]
4. To draw tangents at point Q [1] [3]

(4) The radii of circular ends of a frustum are 14 cm and 6 cm respectively and its height is 6 cm. Find its curved surface area. ($\pi = 3.14$)

Solution:

Here, $r_1 = 14$ cm, $r_2 = 6$ cm and $h = 6$ cm.

$$\text{Slant height of a frustum } (l) = \sqrt{h^2 + (r_1 - r_2)^2} \quad [½]$$

$$= \sqrt{6^2 + (14 - 6)^2} \quad [½]$$

$$= \sqrt{6^2 + 8^2}$$

$$= \sqrt{36 + 64}$$

$$= \sqrt{100}$$

$$\therefore \quad l = 10 \text{ cm} \quad [½]$$

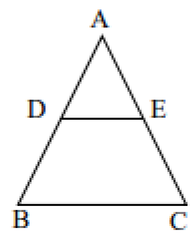
Curved surface area of a frustum $= \pi(r_1 + r_2)l$ [½]

$= 3.14 \times (14 + 6) \times 10$ [½]

Q.4. Solve the following sub-questions. (Any *two*) **[8]**

(1) In ΔABC, seg DE || side BC. If $2A(\Delta ADE) = A(\square DBCE)$, find AB:AD and show that $BC = \sqrt{3}\,DE$.

Solution:



Given: In ΔABC, seg DE || side BC.

To find: AB:AD

To prove: $BC = \sqrt{3}\,DE$

Proof:

$2A(\Delta ADE) = A(\square DBCE)$ ...(Given)

$A(\Delta ABC) = A(\Delta ADE) + A(\square DBCE)$

$\therefore$ $A(\Delta ABC) = A(\Delta ADE) + 2A(\Delta ADE)$ [½]

$= 3A(\Delta ADE)$

$\therefore$ $\dfrac{A(\Delta ABC)}{A(\Delta ADE)} = 3$ ..... (I) [½]

In ΔADE and ΔABC,

$\angle DAE = \angle BAC$ ...(common angles) [½]

$\angle ADE = \angle ABC$ ...(corresponding angles) [½]

$\therefore$ $\Delta ADE \sim \Delta ABC$ ...(By AA test) [½]

$\therefore$ $\dfrac{A(\Delta ABC)}{A(\Delta ADE)} = \dfrac{BC^2}{DE^2}$ (Areas of similar triangles)... (II) [½]

$\therefore$ $\dfrac{BC^2}{DE^2} = 3$ ....[From I and (II)] [½]

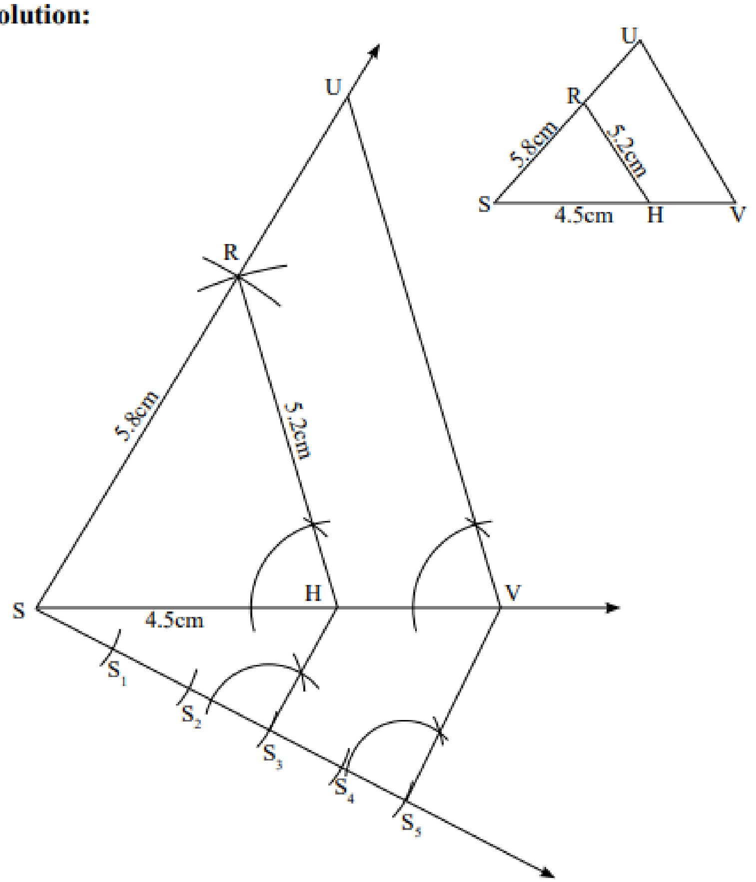
$\therefore$ $\dfrac{BC}{DE} = \sqrt{3}$ ....(Taking square root)

$\therefore$ $BC = \sqrt{3}DE$ [½][4]

Hence proved.

(2) $\Delta SHR \sim \Delta SVU$. In ΔSHR, SH = 4.5 cm, HR = 5.2 cm, SR = 5.8 cm and $\dfrac{SH}{SV} = \dfrac{3}{5}$, construct ΔSVU.

Solution:



1. For rough figure [1]
2. For constuction of ΔSHR [1]
3. For drawing line $S_5V \,||\, S_3H$ [1]
4. For drawing line $YU \,||\, HR$ [1] [4]

(3) An ice-cream pot has a right circular cylindrical shape. The radius of the base is 12 cm and height is 7 cm. This pot is completely filled with ice-cream. The entire ice-cream is given to the students in the form of right circular ice-cream cones, having diameter 4 cm and height 3.5 cm. If each student is given one cone, how many students can be served?

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