

**CODE:- AG-TS-4-8199**

पजियन क्रमांक

REGNO:-TMC -D/79/89/36**GENERAL INSTRUCTIONS :**

- All questions are compulsory.
- The question paper consists of 34 questions divided into four sections A,B,C and D. Section – A comprises of 8 question of 1 mark each. Section – B comprises of 6 questions of 2 marks each. Section – C comprises of 10 questions of 3 marks each and Section – D comprises of 10 questions of 4 marks each.
- Question numbers 1 to 8 in Sections – A are multiple choice questions where you are to select one correct option out of the given four.
- There is no overall choice. However, internal choice has been provided in 1 question of two marks, 3 questions of three marks each and 2 questions of four mark each. You have to attempt only one If the alternatives in all such questions.
- Use of calculator is not permitted.

सामान्य निर्देश :

- सभी प्रश्न अनिवार्य हैं।
- इस प्रश्न पत्र में 34 प्रश्न हैं, जो चार खण्डों में अ, ब, स व द में विभाजित हैं। खण्ड – अ में 8 प्रश्न हैं और प्रत्येक प्रश्न 1 अंक का है। खण्ड – ब में 6 प्रश्न हैं और प्रत्येक प्रश्न 2 अंको के हैं। खण्ड – स में 10 प्रश्न हैं और प्रत्येक प्रश्न 3 अंको का है। खण्ड – द में 10 प्रश्न हैं और प्रत्येक प्रश्न 4 अंको का है।
- प्रश्न संख्या 1 से 8 बहुविकल्पीय प्रश्न हैं। दिए गए चार विकल्पों में से एक सही विकल्प चुनें।
- इसमें कोई भी सर्वोपरि विकल्प नहीं है, लेकिन आंतरिक विकल्प 1 प्रश्न 2 अंको में, 3 प्रश्न 3 अंको में और 2 प्रश्न 4 अंको में दिए गए हैं। आप दिए गए विकल्पों में से एक विकल्प का चयन करें।
- कैलकुलेटर का प्रयोग वर्जित है।
- इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है। इस अवधि के दौरान छात्र केवल प्रश्न-पत्र को पढ़ेंगे और वे उत्तर-पुस्तिका पर कोई उत्तर नहीं लिखेंगे।

MATHEMATICS**CLASS X****(SA- 2)**Time : 3 to 3 $\frac{1}{4}$ Hoursअधिकतम समय : 3 से 3 $\frac{1}{4}$

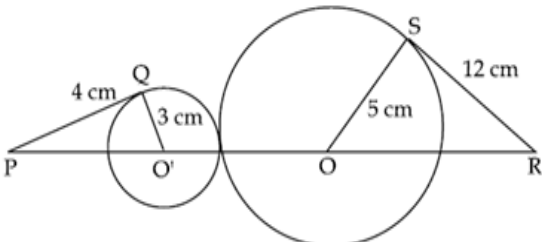
Maximum Marks : 90

अधिकतम अंक : 90

Total No. Of Pages : 4

कुल पृष्ठों की संख्या : 4

PRE-BOARD EXAMINATION 2013 -14**SECTION A**

- | | |
|------------|---|
| Q.1 | The point of intersection of medians of a triangle whose vertices are (-1,0), (5,-2) and (8,2) is (a) (4,0) (b) $(-8, \frac{4}{3})$ (c) $(\frac{4}{3}, 8)$ (d) $(\frac{4}{3}, -8)$ Ans a |
| Q.2 | 1 st term of an AP is -3 and common difference is -2 , then fourth term of the AP is (a) 3 (b) -3 (c) 4 (d) -9 Ans d |
| Q.3 | Distance of point (1,2), from the mid point of the line segment joining the points (6,8) and (2,4) is (a)4 units (b) 3 units (c) 2 units (d) 5 units Ans d |
| Q.4 |  <p>In given fig. the length of PR is
 (a) 20 cm (b) 26 cm (c) 24 cm (d) 28 cm Ans b</p> |
| Q.5 | A circle is inscribed in a triangle with sides 8, 15 and 17cm. The radius of the circle is (a) 6cm (b) 5cm (c) 4cm (d) 3cm Ans d |

Q.6	Rahim and karim are friends. What is the probability that both have their birthdays on the same day in a non-leap year ? (a) $\frac{1}{365}$ (b) $\frac{1}{7}$ (c) $\frac{1}{53}$ (d) $\frac{7}{365}$ Ans. A
Q.7	The circumference of a circle is 100 cm. the side of a square inscribed in the circle is (a) $50\sqrt{2}$ cm (b) $\frac{100}{\pi}$ cm (c) $\left(\frac{50\sqrt{2}}{\pi}\right)$ cm (d) $\left(\frac{100\sqrt{2}}{\pi}\right)$ cm. Ans c
Q.8	Minute hand of a clock is 21cm. Distance moved by the tip of minute hand in 1 hr is (a) 21π cm (b) 42π cm (c) 10.5π cm (d) 7π cm Ans b
SECTION B	
Q.9	If PA and PB are two tangents from external point P to a circle with centre O and $\angle APB = 35^\circ$, find the angle OAB. Ans 145°
Q.10	A box contains cards bearing numbers from 6 to 70. if one card is drawn at random from the box, find the probability that it bears. (i) a one digit number (ii) a number divisible by 5. Ans (i) $4/65$ (ii) $1/5$
Q.11	If for a given A.P. : $a = 7, a_{13} = 35$, find S_{13} . Ans. $a = 7, a_{13} = 35$ $\therefore a_{13} = a + 12d$ $\Rightarrow 35 = 7 + 12d$ or $d = \frac{7}{3}$ $S_{13} = \frac{13}{2} \left[2(7) + 12 \left(\frac{7}{3} \right) \right]$ $= \frac{13}{2} \times [42]$ $= 273$ 1
Q.12	Find a relation between x and y such that the point $P(x, y)$ is equidistant from the points $A(2, 5)$ and $B(-3, 7)$. Sol. Let $P(x, y)$ be equidistant from the points $A(2, 5)$ and $B(-3, 7)$ $AP = BP$...(Given) $\therefore AP^2 = BP^2$ (Squaring both sides) $\Rightarrow (x-2)^2 + (y-5)^2 = (x+3)^2 + (y-7)^2 \Rightarrow x^2 - 4x + 4 + y^2 - 10y + 25 = x^2 + 6x + 9 + y^2 - 14y + 49$ $\Rightarrow -4x - 10y + 29 = 6x + 14y - 40$ $\Rightarrow -10x - 24y = -69$ $\therefore 10x + 29 = 4y$ is the required relation OR Determine the ratio in which the line $3x + 4y - 9 = 0$ divides the line segment joining the points $(1,3)$ and $(2,7)$. Ans $6:25$
Q.13	A coin is tossed three times. Find the probability of getting exactly two tails. Ans. Total no of out comes = 8 $\frac{1}{2}$ No of cases of two tails = 3 1 Prob = $3/8$ $\frac{1}{2}$
Q.14	For what value of 'k' the points $A(1, 5)$, $B(k, 1)$ and $C(4,11)$ are collinear? Sol. We have $A(x_1, y_1) = A(1, 5)$. & $B(x_2, y_2) = B(k, 1)$ $C(x_3, y_3) = C(4,11)$. Since the given points are collinear, therefore the area of the triangle formed by them must be 0 $\therefore \frac{1}{2} [x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)] = 0$ $\Rightarrow \frac{1}{2} [1(1 - 11) + k(11 - 5) + 4(5 - 1)] = 0 \Rightarrow -10 + 6k + 16 = 0 \Rightarrow 6k + 6 = 0 \Rightarrow 6k = -6 \Rightarrow k = -6/6 = -1$ \therefore The required value of $k = -1$
SECTION C	
Q.15	If -5 is a root of the quadratic equation $2x^2 + 2px - 15 = 0$ and the quadratic equation $p(x^2 + x) + k = 0$ has equal roots find the value of k. Ans. $k = 7/8$
Q.16	The diameter of cycle wheel is 28 cm. How many revolution will it make in moving

13.2 km ? **Sol.** Distance traveled by the wheel is one revolution

$$= 2\pi r = 2 \times \frac{22}{7} \times \frac{28}{2} = 88 \text{ cm}$$

and the total distance covered by the wheel

$$= 13.2 \times 1000 \times 100 \text{ cm} = 1320000 \text{ cm}$$

$$\therefore \text{Number of revolution made by the wheel} = \frac{1320000}{88} = 15000$$

OR

Area of a sector of a circle of radius 36 cm is 54π cm². Find the length of the corresponding arc of the sector. **Solution :** Let the central angle (in degrees) be θ

$$\therefore \frac{\pi \times (36)^2 \theta}{360} = 54\pi \quad \therefore \theta = \frac{54 \times 360}{36 \times 36} = 15$$

$$\text{Now, length of the arc} = \frac{\theta}{360} \times 2\pi r = \frac{15}{360} \times 2\pi \times 36 \text{ cm} = 3\pi$$

Q.17 Which term of the sequences 114, 109, 104 is the first negative term ? **Ans** $n = 24^{\text{th}}$ term

Q.18 The sum of first 8 terms of an A.P. is 140 and sum of first 24 terms is 996. Find the

$$S_8 = 140 \Rightarrow 4[2a + 7d] = 140$$

$$\text{A.P. Ans. } S_{24} = 996 \Rightarrow 12[2a + 23d] = 996$$

$$\text{or } 2a + 7d = 35 \quad (1)$$

$$2a + 23d = 83 \quad (2)$$

$$\text{Solving } 16d = 48 \text{ or } d = 3 \quad 1$$

$$a = 7 \quad 1$$

$$\therefore \text{A.P. is } 7, 10, 13, \dots \quad 1$$

OR

If the 10th term of an A.P. is 47 and its first term is 2, find the sum of its first 15 terms.

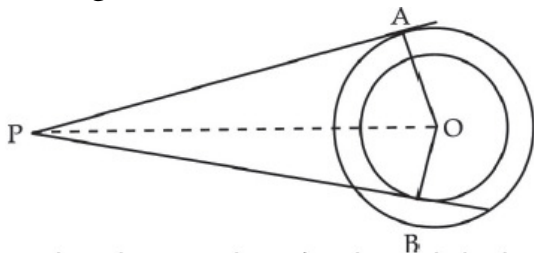
Sol. Let a be the first term and d be the common difference of an A.P. $a_{10} = 47, a = 2$

(Given), ... (i) $\Rightarrow a + 9d = 47$ [$\because a_n = a + (n-1)d$] $\Rightarrow 47 = 2 + (10-1)d \Rightarrow 47 = 2 + 9d \Rightarrow$

$$9d = 47 - 2 = 45 \quad \therefore d = \frac{45}{9} = 5 \quad S_n = \frac{n}{2} [2a + (n-1)d] \quad \therefore S_{15} = \frac{15}{2} [2(2) + (15-1)(5)] \Rightarrow$$

$$S_{15} = \frac{15}{2} [4 + (14)(5)] \Rightarrow S_{15} = \frac{15}{2} [4 + 70] \Rightarrow S_{15} = \frac{15}{2} [74] \quad \therefore S_{15} = 15(37) = 555$$

Q.19 Two concentric circles are of radii 3 cm and 3cm and centre at O. Two tangents PA and PB are drawn to two circles from an external point P such that AP = 12 cm (see figure). Find length of BP.



$$\text{In } \triangle OAP, OP^2 = OA^2 + AP^2$$

$$\Rightarrow OP = 13 \text{ cm}$$

$$\text{Ans. In } \triangle OBP$$

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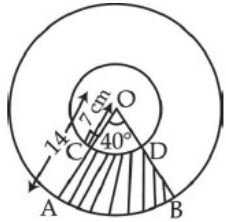
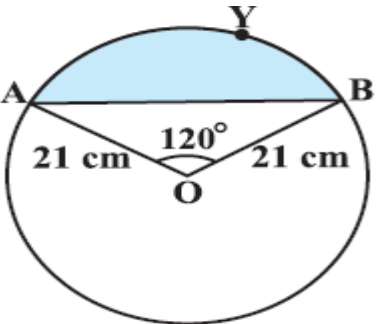
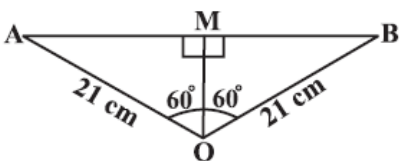
$$OP^2 = OB^2 + BP^2$$

$$BP^2 = 13^2 - 3^2 = 160$$

$$\Rightarrow BP = 4\sqrt{10} \text{ cm}$$

1

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<p>Q.20</p>	<p>Find the area of shaded region in given figure, where radii of the two concentric circle with centre O are 7 cm and 14 cm respectively and angle AOB = 40°.</p>  <div style="background-color: yellow; padding: 5px;"> <p>Area of shaded region = ar(OAB) - ar(OCD)</p> $= \frac{\pi R^2 \theta}{360^\circ} - \frac{\pi r^2 \theta}{360^\circ} = \frac{\pi \theta}{360^\circ} (R^2 - r^2)$ </div> <p>Ans.</p> $= \frac{22}{7} \times \frac{40^\circ}{360^\circ} (14^2 - 7^2) = \frac{22}{7} \times \frac{1}{9} \times 21 \times 7 = 51.33 \text{ cm}^2$
<p>Q.21</p>	<p>In a housing society there are 100 flats in which 500 persons resides, out of which 430 never indulge in any anti-social activity. Find the probability of the persons who ever indulge in any anti-social activity .which moral value is reflected in this problem? Ans: Here total number of persons are 500, persons who never indulge in any anti-social activity =430 , persons who ever indulge in any anti-social activity =500-430=70, probability of person to indulge in anti-social activity = $\frac{70}{500} = \frac{7}{50}$ Mostly the person do not indulge in any kind of anti-social activities. They possess the value Harmony with society and nation.</p>
<p>Q.22</p>	<p>Find the area of the segment AYB shown in Fig. 12.9, if radius of the circle is 21 cm and</p>  <p style="text-align: center;">Fig. 12.9</p> <p>AOB = 120°. (Use $\pi = \frac{22}{7}$).</p> <p>Solution : Area of the segment AYB</p> $= \text{Area of sector OAYB} - \text{Area of } \Delta \text{ OAB} \quad (1)$ <p>Now, area of the sector OAYB = $\frac{120}{360} \times \frac{22}{7} \times 21 \times 21 \text{ cm}^2 = 462 \text{ cm}^2$ (2)</p> <p>For finding the area of Δ OAB, draw $OM \perp AB$ as shown in Fig. 12.10. Note that OA = OB. Therefore, by RHS congruence, Δ AMO \cong Δ BMO.</p> <p>So, M is the mid-point of AB and \angle AOM = \angle BOM = $\frac{1}{2} \times 120^\circ = 60^\circ$.</p> <p>Let $OM = x$ cm</p> <p>So, from Δ OMA,</p> $\frac{OM}{OA} = \cos 60^\circ$ <p>or,</p> $\frac{x}{21} = \frac{1}{2} \left(\cos 60^\circ = \frac{1}{2} \right)$  <p style="text-align: center;">Fig. 12.10</p>

or, $x = \frac{21}{2}$

So, $OM = \frac{21}{2}$ cm

Also, $\frac{AM}{OA} = \sin 60^\circ = \frac{\sqrt{3}}{2}$

So, $AM = \frac{21\sqrt{3}}{2}$ cm

$$AB = 2 AM = \frac{2 \times 21\sqrt{3}}{2} \text{ cm} = 21\sqrt{3} \text{ cm}$$

$$\begin{aligned} \text{area of } \Delta OAB &= \frac{1}{2} AB \times OM = \frac{1}{2} \times 21\sqrt{3} \times \frac{21}{2} \text{ cm}^2 \\ &= \frac{441}{4} \sqrt{3} \text{ cm}^2 \end{aligned}$$

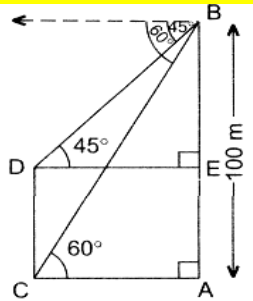
Therefore, area of the segment AYB =

$$= \left(462 - \frac{441}{4} \sqrt{3} \right) \text{ cm}^2$$

$$= \frac{21}{4} (88 - 21\sqrt{3}) \text{ cm}^2$$

Q.23 From the top of a building 100m high, the angles of depression of the top and bottom of a tower are observed to be 45° and 60° respectively. Find the height of the tower. Also find the distance between the foot of the building and the bottom of the tower. **Sol.**

In right ABAC $\tan 60^\circ = \frac{AB}{AC} \Rightarrow \frac{100}{AC} = \tan 60^\circ \Rightarrow AC = \left(\frac{100}{\sqrt{3}} \right)$ m $\therefore DE =$



$$AC = \left(\frac{100}{\sqrt{3}} \right) \text{ m}$$

In right ABED, $\frac{BE}{DE} = \tan 45^\circ \Rightarrow \frac{BE}{DE} = 1 \Rightarrow$

$$BE = DE \therefore BE = \left(\frac{100}{\sqrt{3}} \right) \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{100\sqrt{3}}{3} \Rightarrow \frac{100 \times 1.732}{3} = 57.73 \text{ m } [\because \sqrt{3} =$$

1.732] \therefore Height of tower (CD) = AE = AB - BE = (100-57.73) m = **42.27 m** Distance between the foot of the building and the bottom of the tower (AC) = **57.73 m.**

Q.24 Find the value of k so that the following quadratic equation has equal roots : $2x^2 - (k - 2)x + 1 = 0$. **Sol.** Here $a = 2$, $b = -(k - 2) = -k + 2 = 2 - k$, $c = 1 \Rightarrow D = 0$ \therefore Equal roots...(Given) $\Rightarrow b^2 - 4ac = 0 \Rightarrow (2-k)^2 - 4(2)(1) = 0 \Rightarrow 4 + k^2 - 4k - 8 = 0 \Rightarrow k^2 - 4k - 4 = 0$ Again here,

$$A = 1, B = -4, C = -4 \quad D = B^2 - 4AC = (-4)^2 - 4(1)(-4) = 16 + 16 = 32$$

$$\therefore \sqrt{D} = \sqrt{16 \times 2} = 4\sqrt{2} \Rightarrow k = \frac{-B \pm \sqrt{D}}{2A} \Rightarrow k = \frac{-(-4) \pm 4\sqrt{2}}{2(1)} \Rightarrow A = \frac{4 \pm 4\sqrt{2}}{2} \Rightarrow k = 2 \left(\frac{2 \pm 2\sqrt{2}}{2} \right) \therefore A = 2 + 2\sqrt{2} \text{ or } k = 2 - 2\sqrt{2}$$

OR

If a student had walked 1 km/hr faster, he would have taken 15 minutes less to walk 3 km. Find the rate at which he was walking. **Sol.** Let the original speed of the student

= x km/h . Increased speed = $(x + 1)$ km/h

$$\therefore \frac{3}{x} - \frac{3}{x+1} = \frac{15}{60}$$

$$\Rightarrow \frac{3x + 3 - 3x}{x(x+1)} = \frac{1}{4}$$

$$\left[\begin{array}{l} \therefore \text{Time} = \frac{\text{Distance}}{\text{Speed}} \\ 15 \text{ mns} = \frac{15}{60} \text{ hrs.} \end{array} \right]$$

$$\Rightarrow x(x+1) = 12 \Rightarrow x^2 + x - 12 =$$

	$0 \Rightarrow x^2 + 4x - 3x - 12 = 0 \Rightarrow x(x + 4) - 3(x + 4) = 0 \Rightarrow (x + 4)(x - 3) = 0$ $\Rightarrow x + 4 = 0$ or $x - 3 = 0$ $\Rightarrow x = -4$ or $x = 3$ Rejecting $x = -4$, because speed cannot be -ve \therefore His original speed was 3 km/h
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SECTION D

Q.25	<p>The sum of the areas of two squares is $468m^2$. If the difference of their perimeters is 24m, find the sides of the two squares.</p> <p>Let the sides of the two squares be x m and y m</p> <p>Ans.</p> <p>Area of 1st square = x^2</p> <p>Area of 2nd square = y^2</p> <p>Difference of perimeters = 24 m</p> $\Rightarrow 4x - 4y = 24$ $x - y = 6$ $x = y + 6 \quad \quad \quad \frac{1}{2}$ <p>By question,</p> $x^2 + y^2 = 468$ $(y + 6)^2 + y^2 = 468$ $2y^2 + 12y = 468 - 36 = 432 \quad \quad \quad \mathbf{1}$ $2y^2 + 12y - 432 = 0$ $y^2 + 6y - 216 = 0$ $y^2 + 18y - 12y - 216 = 0$ $y(y + 18) - 12(y + 18) = 0$ $(y - 12)(y + 18) = 0$ $Y = 12, -18 \quad \quad \quad \mathbf{2}$ <p>Since a side can't be negative $y = 12$.</p> <p>Sides of the two squares are 12 m and 18 m. $\frac{1}{2}$</p> <p style="text-align: center;">OR</p> <p>Using quadratic formula, solve the following equation for x : $abx^2 + (b^2 - ac)x - bc = 0$.</p>
Q.26	<p>Find the area of the shaded design in Fig. 12.17, where ABCD is a square of side 10 cm and semicircles are drawn with each side of the square as diameter. (Use $\pi = 3.14$)</p>

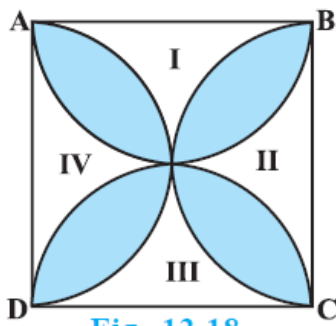


Fig. 12.18

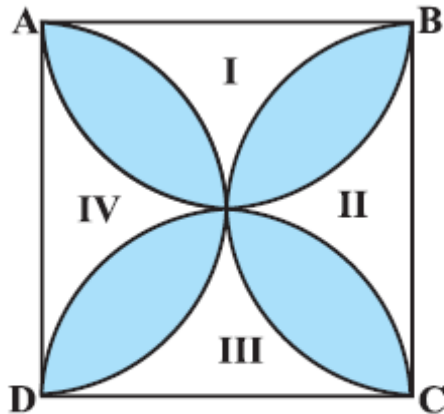


Fig. 12.18

Solution : Let us mark the four

unshaded regions as I, II, III and IV (see Fig. 12.18).

Area of I + Area of III = Area of ABCD – Areas of two semicircles of each of radius 5 cm

$$= \left(10 \times 10 - 2 \times \frac{1}{2} \times \pi \times 5^2 \right) \text{cm}^2 = (100 - 3.14 \times 25) \text{cm}^2$$

$$= (100 - 78.5) \text{cm}^2 = 21.5 \text{cm}^2$$

Similarly, Area of II + Area of IV = 21.5 cm²

So, area of the shaded design = Area of ABCD – Area of (I + II + III + IV)

$$= (100 - 2 \times 21.5) \text{cm}^2 = (100 - 43) \text{cm}^2 = 57 \text{cm}^2$$

Q.27 A mobile phones shopkeeper has 48 mobile phones of which 40 are good, 5 have only minor defect and 3 have major defect. He sells all the phones at same cost Paridhi will buy a phone is selected at random from the shop. What are the probabilities that it is (i) good phone (ii) major defect ? Which phone should not sell the shopkeeper at the same rate and why?

Ans: (i) Probability of selecting good phone = $\frac{5}{6}$. (ii)

Probability of mobile phone that it has major defect = $\frac{3}{48} = \frac{1}{16}$. Shopkeeper should not sell minor defected and major defected phones at the same cost, because if he/she do it his/her reliability and he/she will lose the value Honesty.

Q.28 In the given figure 1, ABC is a right angled triangle right angled at A. Semi – circles are drawn on AB, AC and BC as diameters. Find the area of the shaded region.

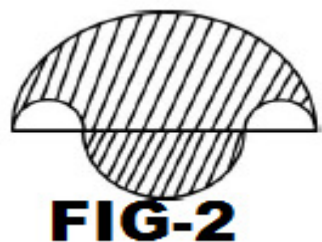
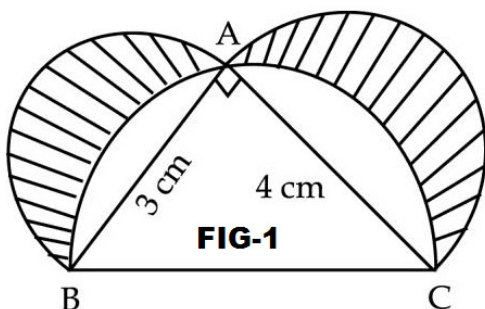


FIG-2

Area of shaded region

$$= (\text{Area of semi circle on AB}) + (\text{Area of semi circle on AC})$$

$$- [\text{Area of semi circle on BC} - \text{Area of triangle}]$$

$$= \frac{\pi(1.5)^2}{2} + \frac{\pi(2)^2}{2} - \frac{\pi(2.5)^2}{2} + \frac{1}{2} \times 3 \times 4$$

$$= \frac{\pi}{2} ((1.5)^2 + (2)^2 - (2.5)^2) + 6.$$

$$= \frac{\pi}{2} (0) + 6 = 6 \text{cm}^2$$

ANS:

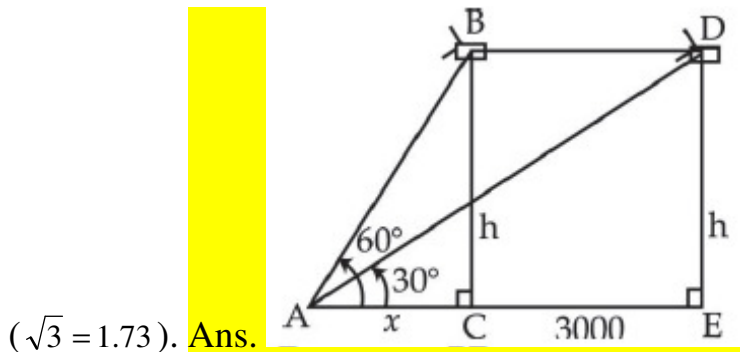
OR

In the given figure 2, the boundary of shaded region consists of four semicircular areas, two smallest being equal. If diameter of the largest is 14cm. and that of the smallest is 3.5 cm, calculate the area of the shaded region. ANS:

$$\begin{aligned} \text{Area of shaded region} &= \frac{\pi(7)^2}{2} - 2\left(\pi\left(\frac{3.5}{2}\right)^2\right) + \frac{\pi(3.5)^2}{2} \\ &= \pi\left[\frac{7^2}{2} - \frac{(3.5)^2}{2} + \frac{(3.5)^2}{2}\right] \\ &= \frac{22}{7} \times \frac{7 \times 7}{2} = 77 \text{ cm}^2 \end{aligned}$$

Q.29 Find the coordinates of the points which divide the line segment joining the points $(-8, 0)$ and $(4, -8)$ in four equal parts . **Ans $(-5, -2), (-2, -4), (1, -6)$**

Q.30 The angle of elevation of a jet aircraft from a point P on the ground is 60° . After a flight of 15 seconds, the angle of elevation becomes half of the previous angle. If the jet is flying at a speed of 720 km/hr, find the constant height at which the jet is flying.



$(\sqrt{3} = 1.73)$. **Ans.**

Distance = BD

$$\text{time} = 15 \text{ sec} = \frac{15}{3600} \text{ hr}$$

$$\text{speed} = 720 \frac{\text{km}}{\text{hr}}$$

$$\text{Dis} = \text{speed} \times \text{time} = 720 \frac{\text{km}}{\text{hr}} \times \frac{15}{3600} \text{ hr}$$

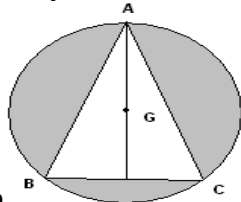
$$\text{i.e } BD = 3 \text{ km} = 3000 \text{ m}$$

In rt ΔABC	In rt ΔADE
$\tan 60^\circ = \frac{BC}{AC}$	$\tan 30^\circ = \frac{DE}{AE}$
$\sqrt{3} = \frac{h}{x}$	$\frac{1}{\sqrt{3}} = \frac{h}{x+3000}$
$h = x\sqrt{3}$	$\therefore \frac{1}{\sqrt{3}} = \frac{x\sqrt{3}}{x+3000}$
	$\Rightarrow 3x = x + 3000$
	$2x = 3000$
	$x = 1500$

$$\therefore h = 1500 \times \sqrt{3} = 1500 \times 1.73 = 2595 \text{ m}$$

Ans : The height at which jet is flying = 2595 m

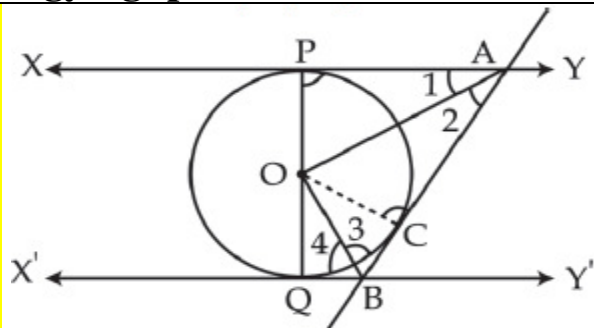
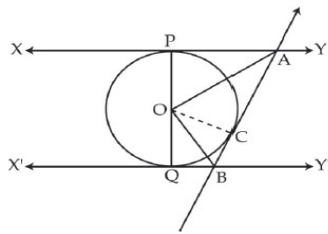
Q.31 In figure, ΔABC is an equilateral triangle inscribed in a circle of radius 4 cm. Find the



area of shaded portion

Ans 29.45 6cm^2

Q.32 In figure, XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB, with point of contact C intersects XY at A and X'Y' at B. prove that



$\angle AOB = 90^\circ$

$OP \perp XY$ (tangent \perp radius)

$OC \perp AB$

In $\triangle OPA$ and $\triangle OCA$

$\angle OPA = \angle OCA = 90^\circ$

$OP = OC$ (radii)

$OA = OA$

$\therefore \triangle OPA \cong \triangle OCA$ (SAS)

$\Rightarrow \angle 1 = \angle 2$ (CPCT)

$\therefore \angle 2 = \frac{1}{2} \angle PAC$

Similarly $\angle 3 = \angle 4$

$\Rightarrow \angle 3 = \frac{1}{2} \angle QBC$

$XY \parallel X'Y'$ and AB is transversal

$\therefore \angle PAB + \angle QBA = 180^\circ$ (interior ang. on same side of transversal) $\frac{1}{2}$

or $\angle PAC = \angle QBC = 180^\circ$

$\therefore \frac{1}{2} (\angle PAC) + \frac{1}{2} \angle QBC = 90^\circ$

$\Rightarrow \angle 2 + \angle 3 = 90^\circ$

In $\triangle OAB$

$\angle AOB + \angle 2 + \angle 3 = 180^\circ$

$\Rightarrow \angle AOB = 90^\circ$

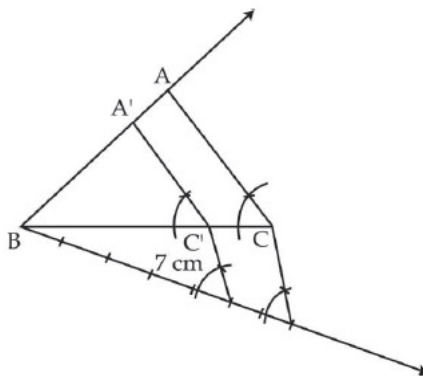
Hence proved

$1\frac{1}{2}$

1

Q.33

Construct a triangle similar to a given $\triangle ABC$ such that each side is $\left(\frac{5}{7}\right)^{th}$ of the corresponding sides of $\triangle ABC$. It is given that $AB = 5\text{ cm}$, $BC = 7\text{ cm}$ and $\angle ABC = 50^\circ$. **Ans.**



$\triangle ABC$
 $\triangle BA'C'$

1
2

Q.34

A round table cover has six equal designs as shown in fig. 7. If the radius of the cover is 28cm. find the cost of making the designs at the rate of Rs. 0.35 per sq. cm

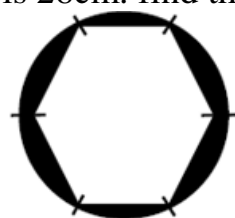
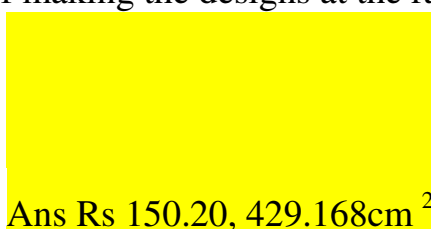


Fig. 7



Ans Rs 150.20, 429.168cm²

x

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**A MAN WHO DOESN'T TRUST HIMSELF ;
CAN NEVER TRULY TRUST ANYONE ELSE**