Set 430/4/3

SOLUTIONS

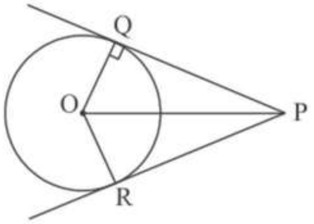
MATHEMATICS (Basic)

SECTION A *This section has **20** Multiple Choice Questions (MCQs) carrying **1** mark each.* *20×1=20* **1.** If $\sin A = \frac{2}{3}$, then $\cos A$ is equal to : (a) $\frac{3}{2}$ (b) $\frac{\sqrt{5}}{3}$ (c) $\frac{1}{3}$ (d) $\frac{1}{\sqrt{3}}$	
Ans.: (b) $\frac{\sqrt{5}}{3}$	1
2. The curved surface area of a cone with base radius 7 cm, is 550 cm^2. The slant height of the cone is : (a) 25 cm (b) 14 cm (c) 20 cm (d) 24 cm	
Ans.: (a) 25 cm	1
3. The value of m for which lines $14x + my = 20$ and $-3x + 2y = 16$ are parallel, is : (a) $-\frac{3}{14}$ (b) $-\frac{7}{3}$ (c) $-\frac{28}{3}$ (d) $-\frac{3}{28}$	
Ans.: (c) $-\frac{28}{3}$	1
4. If α, β are zeroes of the polynomial $3x^2 + 14x - 5$, then the value of $3\left(\frac{\alpha+\beta}{\alpha\beta}\right)$ is : (a) $\frac{14}{5}$ (b) $\frac{42}{5}$ (c) $-\frac{14}{5}$ (d) $-\frac{42}{5}$	
Ans.: (b) $\frac{42}{5}$	1

5. PQ and PR are tangents to the circle of radius 3 cm and centre O. If length of each tangent is 4 cm, then perimeter of Δ OQP is :

(a) 5 cm (b) 12 cm

(c) 9 cm (d) 8 cm



Ans.: (b) 12 cm

1

6. The LCM of two numbers is 3600. Which of the following can not be their HCF ?

(a) 600 (b) 400 (c) 500 (d) 150

Ans.: (c) 500

1

7. The distance between the points $(-6, 9)$ and $(2, 7)$ is :

(a) $2\sqrt{17}$ (b) $4\sqrt{17}$ (c) $2\sqrt{5}$ (d) $2\sqrt{15}$

Ans.: (a) $2\sqrt{17}$

1

8. If $\sec\theta - \tan\theta = 2$, then $\sec\theta + \tan\theta$ is equal to :

(a) $\frac{1}{2}$ (b) $\sqrt{2}$ (c) $\frac{1}{\sqrt{2}}$ (d) 2

Ans.: (a) $\frac{1}{2}$

1

9. Three coins are tossed together. The probability that only one coin shows tail, is :

(a) $\frac{1}{2}$ (b) $\frac{3}{8}$ (c) $\frac{7}{8}$ (d) 1

Ans.: (b) $\frac{3}{8}$

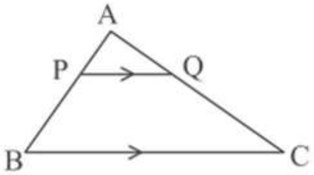
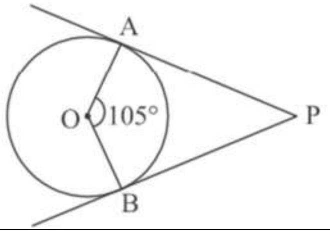
1

10. One of the zeroes of the polynomial $p(x) = kx^2 - 9x + 3$ is $\left(-\frac{3}{2}\right)$. The value of k is :

(a) $\frac{22}{3}$ (b) $-\frac{14}{3}$ (c) $\frac{14}{3}$ (d) $-\frac{22}{3}$

Ans.: (d) $-\frac{22}{3}$

1

11. Two right circular cylinders of equal volumes have their heights in the ratio $1:2$. The ratio of their radii is : (a) $\sqrt{2}:1$ (b) $1:2$ (c) $1:4$ (d) $1:\sqrt{2}$	
Ans.: (a) $\sqrt{2}$: 1	1
12. If $\sqrt{2}\sin\theta = 1$, then $\cot\theta \times \operatorname{cosec}\theta$ is equal to : (a) $\frac{1}{\sqrt{2}}$ (b) $\frac{1}{2\sqrt{2}}$ (c) $\sqrt{2}$ (d) $\frac{1}{2}$	
Ans.: (c) $\sqrt{2}$	1
13. In Δ ABC, PQ ‖ BC. It is given that AP = 2.4 cm, PB = 3.6 cm and BC = 5.4 cm. PQ is equal to : (a) 2.7 cm (b) 1.8 cm (c) 3.6 cm (d) 2.16 cm 	
Ans.: (d) 2·16 cm	1
14. PA and PB are tangents to a circle with centre O. If $\angle AOB = 105°$ then $\angle OAP + \angle APB$ is equal to : (a) 75° (b) 175° (c) 180° (d) 165° 	
Ans.: (d) 165^0	1
15. In an A.P., $a_n - a_{n-4} = 32$. Its common difference is : (a) -8 (b) 8 (c) $4n$ (d) 4	
Ans.: (b) 8	1
16. The perimeter of a quadrant of a circle of radius 7 cm, is : (a) 18 cm (b) 11 cm (c) 22 cm (d) 25 cm	
Ans.: (d) 25 cm	1

17. A card is drawn at random from a well shuffled deck of 52 playing cards. The probability that drawn card shows number '9' is :

(a) $\frac{1}{26}$ (b) $\frac{4}{13}$ (c) $\frac{1}{52}$ (d) $\frac{1}{13}$

Ans.: (d) $\frac{1}{13}$ 1

18. The 20th term of the A.P. : $10\sqrt{2}, 6\sqrt{2}, 2\sqrt{2}, ...$ is :

(a) $-76+10\sqrt{2}$ (b) $-62\sqrt{2}$ (c) $-66\sqrt{2}$ (d) $86\sqrt{2}$

Ans.: (c) $-66\sqrt{2}$ 1

Directions :

Question numbers 19 and 20 are Assertion and Reason based questions. Two statements are given, one labelled as Assertion (A) and the other is labelled as Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :

(a) Both, Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(b) Both, Assertion (A) and Reason (R) are true, but Reason (R) is ***not*** the correct explanation of Assertion (A).

(c) Assertion (A) is true, but Reason (R) is false.

(d) Assertion (A) is false, but Reason (R) is true.

19. **Assertion (A) :** Median marks of students in a class test is 16. It means half of the class got marks less than 16.

Reason (R) : Median divides the distribution in two equal parts.

Ans. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). 1

20. **Assertion (A) :** If E is an event such that $P(E) = \frac{1}{999}$, then $P(\overline{E}) = 0.001$.

Reason (R) : $P(E) + P(\overline{E}) = 1$

Ans. (d) Assertion (A) is false, but Reason (R) is true. 1

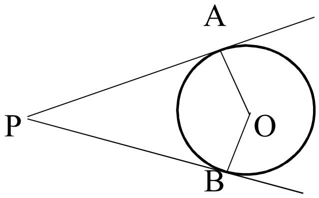
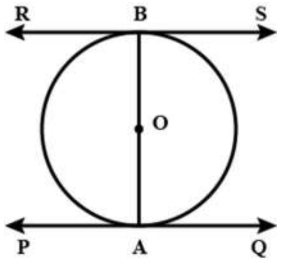
SECTION B

*This section has **5** Very Short Answer (VSA) type questions of **2** marks each.* *5×2=10*

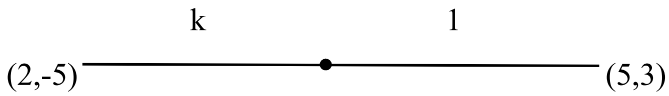
21. **(A)** Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line segment joining the points of contact at the centre.

OR

(B) Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

Solution: (A) 	Correct figure $\frac{1}{2}$
$\angle OAP = \angle OBP = 90^\circ$ (tangent $\perp$ radius)	$\frac{1}{2}$
$\angle APB + \angle PBO + \angle BOA + \angle OAP = 360^\circ$	$\frac{1}{2}$
$\therefore \angle APB + \angle AOB = 180^0$	$\frac{1}{2}$
Hence, $\angle AOB$ and $\angle APB$ are supplementary	
OR	
(B) 	Correct figure $\frac{1}{2}$
Let AB be the diameter of the circle. therefore $\angle OAP = \angle OBR = 90^\circ$ (tangent $\perp$ radius)	$\frac{1}{2}$
$\Rightarrow \angle OAP + \angle OBR = 180^\circ$ $\Rightarrow$ Co-interior angles are supplementary	$\frac{1}{2}$
$\Rightarrow PQ \parallel RS$ Hence tangents at the ends of a diameter of a circle are parallel.	$\frac{1}{2}$

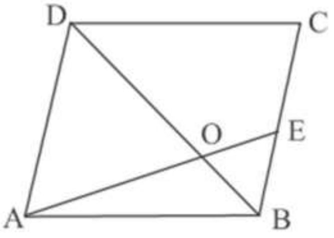
22. Find the ratio in which the segment joining the points (2, –5) and (5, 3) is divided by x-axis. Also, find coordinates of the point on x-axis.

Solution:	
	
Let the required ratio be k:1.	
Since given line segment is divided by x-axis	
therefore $\frac{3k-5}{k+1} = 0 \Rightarrow k = \frac{5}{3}$	1
Hence required ratio is 5 : 3	
$x = \frac{25+6}{8} = \frac{31}{8}$	$\frac{1}{2}$
The required point is $\left(\frac{31}{8}, 0\right)$	$\frac{1}{2}$

23. Show that 45^n can not end with the digit 0, n being a natural number. Write the prime number 'a' which on multiplying with 45^n makes the product end with the digit 0.

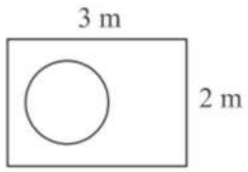
Solution: $45^n = (3\times3)^n \text{ x } 5^n$	1
To end with digit 0, 45^n should have prime factors 2 and 5 both.	
So it cannot end with digit 0.	$\frac{1}{2}$
45^n should be multiplied by 2 ⇒ a = 2	$\frac{1}{2}$

24. The diagonal BD of parallelogram ABCD is divided by segment AE in the ratio 1 : 2. If BE = 1.8 cm, find the length of AD.



Solution: Proving Δ OAD ~ Δ OEB (By AA similarity criterion)	1
Therefore $\frac{OB}{OD} = \frac{EB}{AD} \Rightarrow \frac{1}{2} = \frac{1{\cdot}8}{AD}$	$\frac{1}{2}$
$\Rightarrow$ AD = 3·6 cm	$\frac{1}{2}$

25. **(A)** A coin is dropped at random on the rectangular region shown in the figure. What is the probability that it will land inside the circle with radius 0.7 m ?



OR

(B) A die is thrown twice. What is the probability that (i) difference between two numbers obtained is 3 ? (ii) sum of the numbers obtained is 8 ?

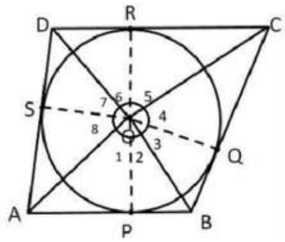
Solution: (A) Area of circle = $\frac{22}{7} \times \frac{7}{10} \times \frac{7}{10} = \frac{154}{100}$ sq m	$\frac{1}{2}$
Area of rectangle = 6 sq m	$\frac{1}{2}$
P(coin lands inside the circle) = $\frac{154}{600}$ or $\frac{77}{300}$	1
OR	
(B) (i) P(difference between two numbers obtained is 3) = $\frac{6}{36}$ or $\frac{1}{6}$	1
(ii) P (sum of numbers obtained is 8) = $\frac{5}{36}$	1

SECTION – C

Question Nos. 26 to 31 are short answer questions of 3 marks each.

26. Prove that the opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.

Solution:



	Correct figure $\frac{1}{2}$
Proof of ΔOAP ≅ ΔOAS (by any congruency criterion)	$\frac{1}{2}$
$\Rightarrow \angle 1 = \angle 8$ (cpct)	
Similarly $\angle 4 = \angle 5$, $\angle 6 = \angle 7$ and $\angle 2 = \angle 3$	1
Also $\angle 1 + \angle 2 + \angle 3 + \angle 4 + \angle 5 + \angle 6 + \angle 7 + \angle 8 = 360°$	$\frac{1}{2}$
$\therefore \angle 1 + \angle 2 + \angle 5 + \angle 6 = 180°$	
$\angle AOB + \angle COD = 180°$	$\frac{1}{2}$

27. (A) If points A(– 5, y), B(2, – 2), C(8, 4) and D(x, 5) taken in order, form a parallelogram ABCD, then find the values of x and y. Hence, find lengths of sides of the parallelogram.

OR

(B) A(6, – 3), B(0, 5) and C(– 2, 1) are vertices of ΔABC. Points P(3, 1) and Q(2, – 1) lie on sides AB and AC respectively. Check whether $\frac{AP}{PB} = \frac{AQ}{QC}$.

Solution: (A) ABCD is a parallelogram	
$\therefore$ Coordinates of mid point of BD = Coordinates of mid point of AC	
$\left(\frac{2+x}{2}, \frac{-2+5}{2}\right) = \left(\frac{8-5}{2}, \frac{4+y}{2}\right)$	1
Getting x = 1 and y = – 1	$\frac{1}{2} + \frac{1}{2}$
$AB = \sqrt{7^2 + (-1)^2} = \sqrt{50}$ or $5\sqrt{2}$	$\frac{1}{2}$
$BC = \sqrt{6^2 + 6^2} = \sqrt{72}$ or $6\sqrt{2}$	$\frac{1}{2}$
OR	
(B) $AP = \sqrt{3^2 + (-4)^2} = 5$	$\frac{1}{2}$

$PB = \sqrt{3^2 + (-4)^2} = 5$ $\frac{1}{2}$

$AQ = \sqrt{4^2 + (-2)^2} = 2\sqrt{5}$ $\frac{1}{2}$

$QC = \sqrt{4^2 + (-2)^2} = 2\sqrt{5}$ $\frac{1}{2}$

So $\frac{AP}{PB} = 1$ and $\frac{AQ}{QC} = 1$ 1

Therefore $\frac{AP}{PB} = \frac{AQ}{QC}$

28. Find the zeroes of the polynomial $p(x) = 9x^2 - 6x - 35$ and verify the relationship between zeroes and its coefficients.

Solution: $p(x) = 9x^2 - 6x - 35 = (3x - 7)(3x + 5)$

Zeroes of p(x) are $\frac{7}{3}$ and $\frac{-5}{3}$ 1

Sum of zeroes $= \frac{7}{3} - \frac{5}{3} = \frac{2}{3} = \frac{-(-6)}{9} = \frac{-coefficient\ of\ x}{coefficient\ of\ x^2}$ 1

Product of zeroes $= \frac{7}{3} \times \frac{-5}{3} = \frac{-35}{9} = \frac{constant\ term}{coefficient\ of\ x^2}$ 1

29. Prove that $\sqrt{2}$ is an irrational number.

Solution: (a) Let $\sqrt{2}$ be a rational number such that

$\sqrt{2} = \frac{p}{q}$ (p and q are co-prime numbers, $q \neq 0$) $\frac{1}{2}$

$\sqrt{2}\, q = p \Rightarrow 2q^2 = p^2$

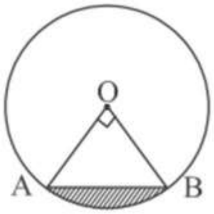
2 divides p^2 $\Rightarrow$ 2 divides p as well 1

$p = 2m$ (for some integer m)

$2q^2 = 4m^2 \Rightarrow q^2 = 2m^2$

2 divides q^2 $\Rightarrow$ 2 divides q as well

p and q have a common factor 2 which is a contradiction as p and q are co-prime. 1

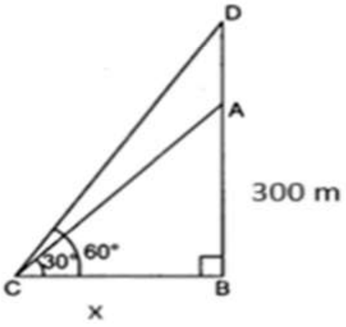
∴ our assumption is wrong	
Hence, $\sqrt{2}$ is an irrational number	$\frac{1}{2}$
30. **(A)** Find the sum of the A.P. $7, 10\frac{1}{2}, 14, ... 84$. **OR** **(B)** If the sum of first n terms of an A.P. is given by $S_n = \frac{n}{2}(2n+8)$. Then, find its first term and common difference. Hence, find its 15th term.	
Solution: (A) $a = 7,\ d = \frac{21}{2} - 7 = \frac{7}{2}$	1
$84 = 7 + (n-1) \times \frac{7}{2} \Rightarrow n = 23$	1
$S_{23} = \frac{23}{2}(7 + 84) = \frac{2093}{2}$	1
OR	
(B) $S_1 = a = 5$	$\frac{1}{2}$
$S_2 = 12$	$\frac{1}{2}$
Therefore $d = 2$	1
Hence $a_{15} = 33$	1
31. A chord of a circle of radius 14 cm subtends an angle of 90° at the centre. Find perimeter of shaded region. (Use $\sqrt{2}$=1.41)  	
Solution: In Δ AOB, $AB = \sqrt{14^2 + 14^2} = 14 \times 1{\cdot}41 = 19{\cdot}74$ cm	1
Length of the arc $AB = \frac{90}{360} \times 2 \times \frac{22}{7} \times 14 = 22$ cm	1
Perimeter of shaded region = 41·74 cm	1

SECTION – D

Question Nos. 32 to 35 are long answer questions of 5 marks each.

32. The angle of elevation of the top of a tower, 300 m high, from a point on the ground is observed as 30°. At an instant a hot air balloon passes vertically above the tower and at that instant its angle of elevation from same point on the ground is 60°. Find height of the balloon from the ground and distance of tower from point of observation. (Use $\sqrt{3} = 1.73$)

Solution:



Correct figure 1

Let AB be the tower, D be the position of balloon and x be the distance of tower from the point of observation.

In Δ ABC, $\tan 30° = \dfrac{300}{x} \Rightarrow x = 300\sqrt{3}$ $1+\frac{1}{2}$

$\Rightarrow x = 519$ $\frac{1}{2}$

In ΔDBC, $\tan 60° = \dfrac{DB}{x} \Rightarrow DB = x\sqrt{3}$ $1+\frac{1}{2}$

$\Rightarrow DB = 897.87$ $\frac{1}{2}$

The distance of the tower from the point of observation is 519 m

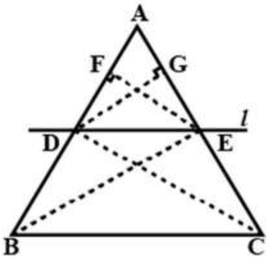
And height of the balloon from the ground is 897.87 m

33. **(A)** If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points then prove that the other two sides are divided in the same ratio.

OR

(B) In a Δ ABC, P and Q are points on AB and AC respectively such that PQ || BC. Prove that the median AD, drawn from A to BC, bisects PQ.

Solution: (A)



Correct figure $\frac{1}{2}$

Given: In Δ ABC, DE || BC

To Prove: $\frac{\text{AD}}{\text{DB}} = \frac{\text{AE}}{\text{EC}}$

Construction: Join BE, DC, Draw DG ⊥ AC and EF ⊥ AB 1

Proof : $\frac{ar(\Delta ADE)}{ar(\Delta BD\ )} = \frac{\frac{1}{2}\times AD\times EF}{\frac{1}{2}\times DB\times EF} \Rightarrow \frac{ar(\Delta ADE)}{ar(\Delta BDE)} = \frac{AD}{DB}$ ……….(i) 1

and $\frac{ar(\Delta ADE)}{ar(\Delta CED)} = \frac{\frac{1}{2}\times AE\times DG}{\frac{1}{2}\times EC\times DG} \Rightarrow \frac{ar(\Delta ADE)}{ar(\Delta CED)} = \frac{AE}{EC}$ ………………….. (ii) 1

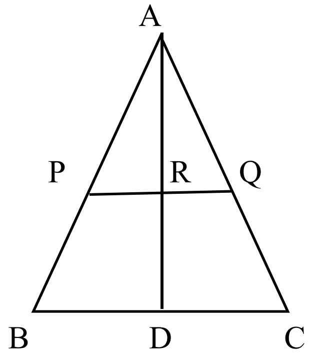
As ΔBDE and ΔCED are on the same base DE and between the same parallels DE and BC.

∴ ar(ΔBDE) = ar(ΔCED) ..……………..(iii) 1

From (i), (ii) and (iii), we get $\frac{\text{AD}}{\text{DB}} = \frac{\text{AE}}{\text{EC}}$ $\frac{1}{2}$

OR

(B)



Correct figure $\frac{1}{2}$

Let AD intersect PQ at point R.

Given PQ ∥ BC ⇒ PR ∥ BD

Therefore in Δ ARP and Δ ADB, ∠ PAR = ∠ BAD

and $\angle APR = \angle ABD$	
$\therefore \Delta ARP \sim \Delta ADB$ (By AA similarity criterion)	1
$\Rightarrow \frac{AR}{AD} = \frac{PR}{BD}$ ———— (i)	$\frac{1}{2}$
Similarly $\Delta ARQ \sim \Delta ADC$	
$\Rightarrow \frac{AR}{AD} = \frac{RQ}{DC}$ ———— (ii)	1
Using (i) and (ii) $\frac{PR}{BD} = \frac{RQ}{DC}$	$\frac{1}{2}$
AD is the median $\therefore BD = DC \Rightarrow PR = RQ$	1
i.e. AD bisects PQ	$\frac{1}{2}$
34. (A) It is given that $p^2x^2 + (p^2 - q^2)x - q^2 = 0$; $(p \neq 0)$ (i) Show that the discriminant (D) of above equation is a perfect square. (ii) Find the roots of the equation. **OR** **(B)** Three consecutive positive integers are such that the sum of the square of smallest and product of other two is 67. Find the numbers, using quadratic equation.	
Solution: (A) (i) Discriminant $= (p^2 - q^2)^2 + 4p^2q^2$	1
$= (p^2 + q^2)^2$	1
(ii) $\therefore x = \frac{-(p^2 - q^2) \pm \sqrt{(p^2 + q^2)^2}}{2p^2}$	1
$= \frac{q^2}{p^2}, -1$	1+ 1
OR	
(B) Let the three consecutive positive integers be x, x + 1 and x + 2	1
A.T.Q. $x^2 + (x + 1)(x + 2) = 67$	1

$\Rightarrow 2x^2 + 3x - 65 = 0$ 1

$\Rightarrow (2x + 13)(x - 5) = 0$

$\Rightarrow x = 5,$ 1

$$x = \frac{-13}{2} \text{ (rejected)}$$

So the three consecutive positive integers are 5, 6 and 7 1

35. Find 'mean' and 'mode' of the following data :

Class	20-25	25-30	30-35	35-40	40-45	45-50
Frequency	9	8	11	13	4	5

Solution:

Class	x_i	f_i	$u_i = \frac{x - 32{\cdot}5}{5}$	$f_i u_i$
20 – 25	22·5	9	– 2	– 18
25 – 30	27·5	8	– 1	– 8
30 – 35	32·5	11	0	0
35 – 40	37·5	13	1	13
40 – 45	42·5	4	2	8
45 – 50	47·5	5	3	15
		$\sum f_i = 50$		$\sum f_i u_i = 10$

Correct table $1\frac{1}{2}$

$$\text{Mean} = 32{\cdot}5 + \frac{10}{50} \times 5$$ 1

$$= 33{\cdot}5$$ $\frac{1}{2}$

Modal class is 35 – 40

$$\text{Mode} = 35 + \frac{13 - 11}{26 - 11 - 4} \times 5$$ $1\frac{1}{2}$

$$= 35{\cdot}91$$ $\frac{1}{2}$

SECTION – E

Question Nos. 36 to 38 are case-based questions of 4 marks each.

36. Playing in a ball pool is good entertainment for kids. Suhana bought 600 new balls of diameter 7 cm to fill in the pool for her kids. The cuboidal box containing 600 balls has dimensions 42 cm × 91 cm × 50 cm ($l \times b \times h$).

Based on above information, answer the following questions :

(i) Find the volume of one ball.

(ii) 10 balls are painted with neon colours. Determine the area of painted surface.

(iii) (a) Find the volume of empty space in the box.

OR

(iii) (b) The lowermost layer of the balls covers the base of the box edge to edge when balls are placed evenly adjacent to each other. (A) How much area is covered by one ball? (B) How many balls are there in lowermost layer?

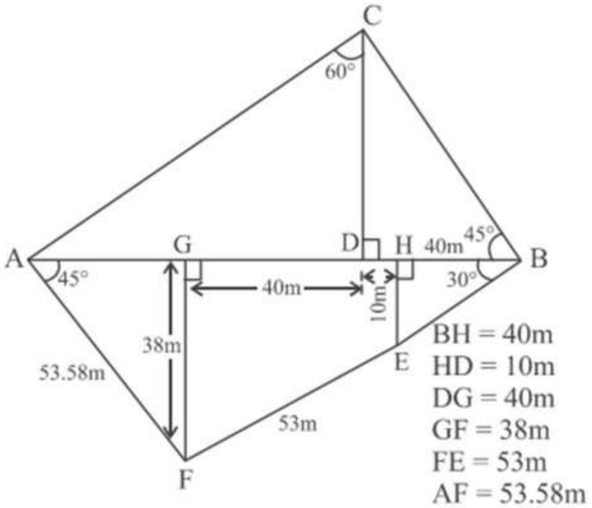
Solution: (i) Volume of one ball = $\frac{4}{3} \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times \frac{7}{2} = \frac{539}{3}$ or 179.67 cu. cm	1
(ii) Area of painted surface = $10 \times 4 \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2}$ = 1540 sq. cm	1
(iii) (a) Volume of box = 42 × 91 × 50 = 191100 cu. cm	$\frac{1}{2}$
Volume of 600 balls = $600 \times \frac{539}{3}$ = 107800 cu. cm	$\frac{1}{2}$
Volume of empty space = 191100 – 107800 = 83300 cu. cm	1
OR	
(iii) (b) (A) Area covered by one ball = 7 × 7 = 49 sq. cm	1
(B) Number of balls in lowermost layer = 78	1

37. Rahim and Nadeem are two friends whose plots are adjacent to each other. Rahim's son made a drawing of the plots with necessary details.

It is decided that Rahim will fence the triangular plot ABC and Nadeem will fence along the sides AF, FE and BE.

Observe the diagram carefully and answer the following questions :

(Use $\sqrt{2} = 1.41$ and $\sqrt{3} = 1.73$)



(i) Find length BC.

(ii) Find length AG.

(iii) (a) Calculate perimeter of ΔABC.

OR

(iii) (b) Calculate length of (AF + FE + EB).

Solution: (i) $\cos 45° = \dfrac{50}{BC} \Rightarrow BC = 50 \times 1{\cdot}41 = 70{\cdot}5$ m	1
(ii) $\tan 45° = \dfrac{38}{AG} \Rightarrow AG = 38$ m	1
(iii) (a) $\sin 60° = \dfrac{78}{AC} \Rightarrow AC = 89{\cdot}96$ m	1
Perimeter of ΔABC = $70{\cdot}5 + 89{\cdot}96 + 38 + 50 + 40 = 288{\cdot}46$ m	1
OR	
(b) $\cos 30° = \dfrac{40}{BE} \Rightarrow BE = 46{\cdot}13$ m	1
$AF + FE + EB = 53{\cdot}58 + 53 + 46{\cdot}13 = 152{\cdot}71$ m	1

38. A telecommunication company came up with two plans– plan A and plan B for its customers. The plans are represented by linear equations where 't' represents the time (in minutes) bought and 'C' represents the cost. The equations are :

Plan A : $3C = 20t$

Plan B : $3C = 10t + 300$

Based on above information, answer the following questions :

(i) If you purchase plan B, how much initial amount you have to pay ?

(ii) Charu purchased plan A. How many minutes she bought for ₹ 250 ?

(iii) (a) At how many minutes, do both the plans charge the same amount? What is that amount?

OR

(iii) (b) Which plan is better if you want to buy 60 minutes? Give reason for your answer.

Solution: (i) At $t = 0$, $3C = 300 \Rightarrow C = 100$	1
₹100 have to be paid initially.	
(ii) $3 \times 250 = 20t \Rightarrow t = 37{\cdot}5$ minutes	1
(iii) (a) $20t = 10t + 300 \Rightarrow t = 30$	1
Both plans charge same amount if a person buys 30 minutes.	
Amount = $\dfrac{20 \times 30}{3}$ = ₹ 200	1
OR	
(iii) (b) At $t = 60$, cost under plan A = ₹ 400	$\frac{1}{2}$
At $t = 60$, cost under plan B = ₹ 300	$\frac{1}{2}$
Plan B is better as ₹ 100 are saved.	1