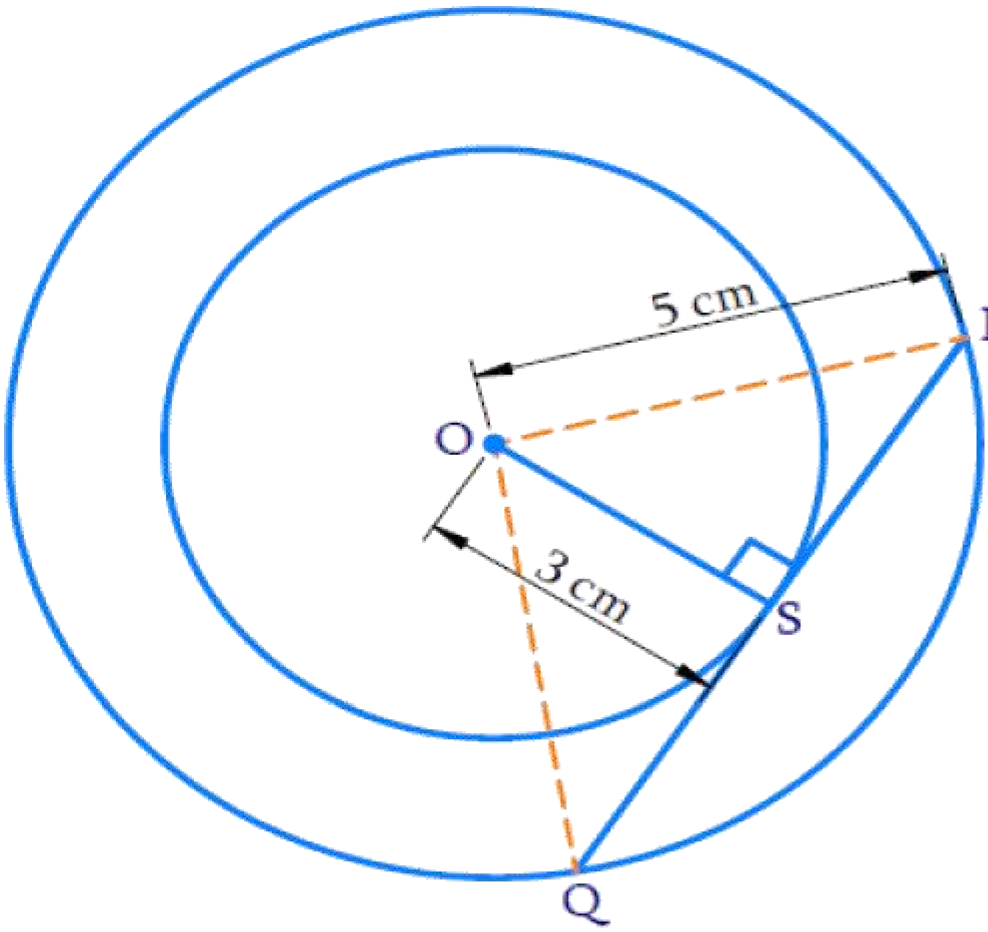
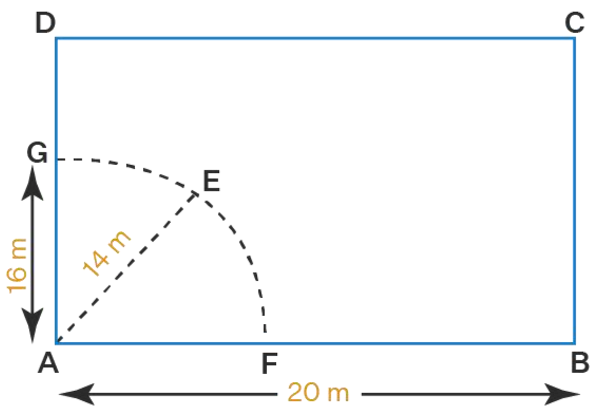
MARKING SCHEME BSEH PRACTICE PAPER 1, 10TH MATHS(Standard) , March2025 (ENGLISH MEDIUM)		
Q. no.	**Expected solutions**	**marks**
	Section-A	
1	(b)500	1
2	(a) both positive	1
3	(a)$x^2 -4x +3\sqrt{2} =0$	1
4	((b)1	1
5	(c)± 4	1
6	(c)7	1
7	(a)30°	1
8	(a)$\frac{5}{2}$	1
9	(c) r^2 sq. units	1
10	(d)$\sqrt{6} : \sqrt{\pi}$	1
11	(b) 8 [use mode= 3median-2mean]	1
12	(b) 14	1
13	a =3	1
14	diameter	1
15	1	1
16	A+B= 90°	1
17	r^2 sq. units	1
18	10+15 = 25	1
19	(a)Both Assertion(A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion(A).	1
20	(d) Assertion(A) is false but Reason(R) is true.	1
	SECTION-B	
21. (a)	From the above question, we have the linear equations as, 2x + y = 23---------------(i) 4x - y = 19----------------(ii) Adding the equation (i) and (ii), 6x = 42 x = 7. …………………………………………………………………………………… Substituting x value in (i), we get,	1/2

	$2(7) + y = 23$ $14 + y = 23$ $y = 23 - 14$ $y = 9$ …………………………………………………………………………………………… Substituting the values of x and y in 5y - 2x and y/ x - 2, we get, $5y - 2x = 5 \times 9 - 2 \times 7$ $= 45 - 14$ $= 31$ …………………………………………………………………………………………… $y/x - 2 = 9/7 - 2$ $= -5/7$.	1/2 1/2 1/2
21. (b)	In the above equation $a_1 = 4$, $a_2 = 2$, $b_1 = p$ and $b_2 = 2$. …………………………………………………………………………………………… If the solution of a pair of linear equations is unique, then $a_1/a_2 \neq b_1/b_2$ …………………………………………………………………………………………… $4/2 \neq p/2$ …………………………………………………………………………………………… $4 \neq p$ Thus, the pair of linear equations has a unique solution for all values of p except 4	1/2 1/2 1/2 1/2
22.	Given, DE||AB We have to find the value of x. From the figure, $CD = x+ 3$ $AD = 3x + 19$ $CE = x$ $BE = 3x + 4$ ∴ By Basic Proportionality Theorem $CD/DA = CE/EB$ …………………………………………………………………………………………… $\Rightarrow (x+3)/(3x+19) = x/(3x+4)$ On cross multiplication,	1/2 1/2

	(x+3)(3x+4) = x(3x+19) ……………………………………………………………………………………………………… By multiplicative and distributive property, $3x^2 + 4x + 9x + 12 = 3x^2 + 19x$ Cancelling out common terms, 13x + 12 = 19x ……………………………………………………………………………………………………… By grouping, 13x - 19x = -12 -6x = -12 x = 12/6 x = 2 Therefore, the value of x is 2.	1/2 1/2
23.	The chord of the larger circle is a tangent to the smaller circle as shown in the figure below.  ……	1/2

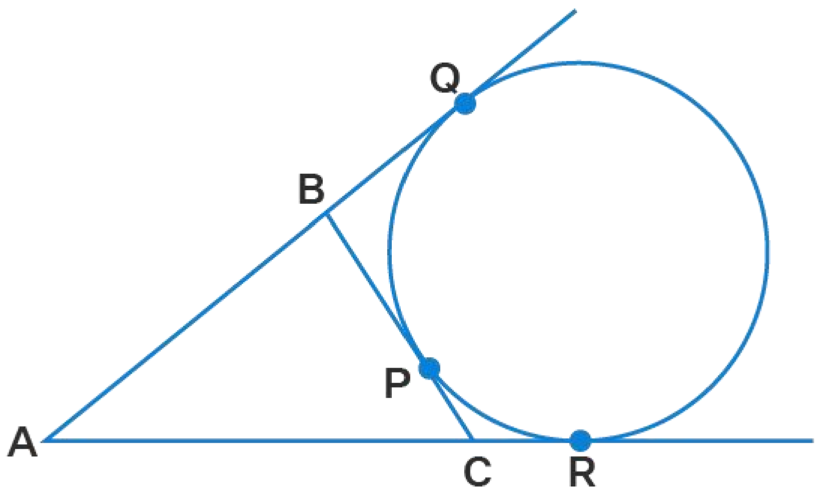
	PQ is a chord of a larger circle and a tangent of a smaller circle. Tangent PQ is perpendicular to the radius at the point of contact S. Therefore, $\angle OSP = 90°$ In ΔOSP (Right-angled triangle) By the Pythagoras Theorem, $OP^2 = OS^2 + SP^2$ $5^2 = 3^2 + SP^2$ $SP^2 = 25 - 9$ $SP^2 = 16$ $SP = \pm 4$ SP is the length of the tangent and cannot be negative Hence, SP = 4 cm. .... QS = SP (Perpendicular from center bisects the chord considering QP to be the larger circle's chord) Therefore, QS = SP = 4cm Length of the chord PQ = QS + SP = 4 + 4 PQ = 8 cm Therefore, the length of the chord of the larger circle is 8 cm.	1 1/2
24. (a)	$\sin(A - B) = 1/2 \Rightarrow \sin(A-B) = \sin(30°) \Rightarrow A - B = 30^o$ ...(1) .... $\cos(A + B) = 1/2 \Rightarrow \cos(A + B) = \cos(60^o) \Rightarrow A + B = 60^o$ ...(2) .... On Adding Eq. (1) and (2), we get $2A = 90^o \Rightarrow A = 45^o$ .... Now, Putting the value of A in Eq.(2), we get $45^o + B = 60^o \Rightarrow B = 15^o$ Hence, $A = 45^o$ and $B = 15^0$	1/2 1/2 1/2 1/2
24. (b)	We have , $a^2/x^2 - b^2/y^2$ $= a^2/a^2\sin^2\theta - b^2/b^2\tan^2\theta$ [$\because x = a\sin\theta, y = b\tan\theta$]	1/2

	……………………………………………………………………………………… $=1/\sin^2\theta-1/\tan^2\theta$ ……………………………………………………………………………………… $=\text{cosec}^2\theta-\cot^2\theta$ ……………………………………………………………………………………… $[\because 1+\cot^2\theta=\text{cosec}^2\theta \therefore \text{cosec}^2\theta-\cot^2\theta=1]$ $=1$	1/2 1/2 1/2
25.	Given, rectangular field of dimension 20m × 16m A cow is tied with a rope of length 14 m at the corner of the rectangular field. We have to find the area of the field in which the cow can graze.  ……………………………………………………………………………………… Let ABCD be the rectangular field. From the figure, We observe that the area that the cow can gaze is in the form of a sector of a circle. So, AGEF is a sector of a circle with radius 14 m. Area of sector = $\pi r^2\theta/360°$ Here, $\theta = 90°$ ……………………………………………………………………………………… Area of sector = $(22/7)(14)^2(90°/360°)$ $= (22)(2)(14)(1/4)$ $= (22)(14)(1/2)$ $= 11(14)$	1/2 1/2 1/2

	………………………………………………………………………………………… = 154 m^2 Therefore, the area in which the cow can gaze is 154 m^2.	1/2
SECTION-C		
26.	Let us assume that $3-2\sqrt{5}$ is rational. ………………………………………………………………………………………… Hence it can be written in the form $\frac{a}{b}$ where a and b are co-prime and $b \neq 0$ Hence $3-2\sqrt{5} = \frac{a}{b}$ ………………………………………………………………………………………… $\Rightarrow 2\sqrt{5} = 3 - \frac{a}{b} = \frac{3b-a}{b}$ ………………………………………………………………………………………… $\Rightarrow \sqrt{5} = \frac{3b-a}{2b}$ ………………………………………………………………………………………… where $\sqrt{5}$ is irrational and $\frac{3b-a}{2b}$ is rational. because irrational number≠ rational number ………………………………………………………………………………………… Therefore the above is a contradiction. So our assumption is wrong. Hence $3-2\sqrt{5}$ is irrational.	1/2 1/2 1/2 1/2 1/2 1/2
27.	since α and β are the zeroes of the polynomial $f(x)=2x^2 - 7x + 3$ $\therefore \alpha + \beta = -\left(\frac{-7}{2}\right) = \frac{7}{2}$ and $\alpha\beta = \frac{3}{2}$ ………………………………………………………… Now $\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta$	1 1

	……………………………………………………………… $= \left(\frac{7}{2}\right)^2 - 2 \times \frac{3}{2} =$ $\frac{49}{4} - \frac{3}{1} = \frac{49-12}{4} = \frac{37}{4}$	1
28. (a)	Let ₹ x is the fixed charge for the first two days and ₹ y is the additional charge for each.	1/2
	……………………………………………………………… From the first condition, Latika paid ₹ 22 for a book kept for six days x + 4y = 22---------(1)	1/2
	……………………………………………………………… According to the second condition, Anand paid ₹16 for a book kept for four days x + 2y = 16------------(2) ………………………………………………………………	1/2
	Now solve equations (1) and (2) Subtracting (2) from (1), we get, 2y = 6 y = 3. ………………………………………………………………	1/2
	Substitute the value of y in (2), we get, x + 2 x 3 = 16 x = 16 - 6 = 10 x = 10. x = 10. ………………………………………………………………	1/2
	Therefore, the fixed charge = ₹ 10 and the charge for each extra day = ₹ 3.	1/2
28. (b)	Let the digits at tens place and units place in the first number be x and y respectively. A number can be expressed in the expanded form as 10(x) + y. On reversing the digits, x is the units digit and y is the tens digit. The expanded notation for the second number be 10(y) + x	1/2

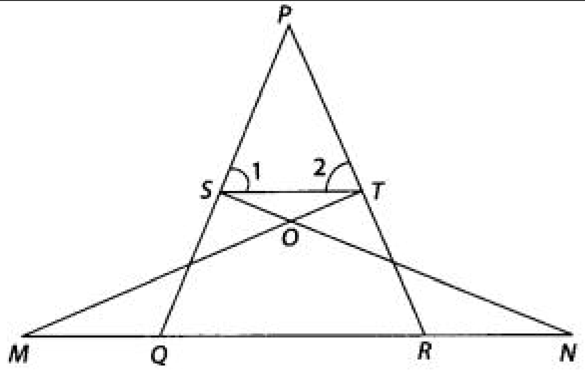
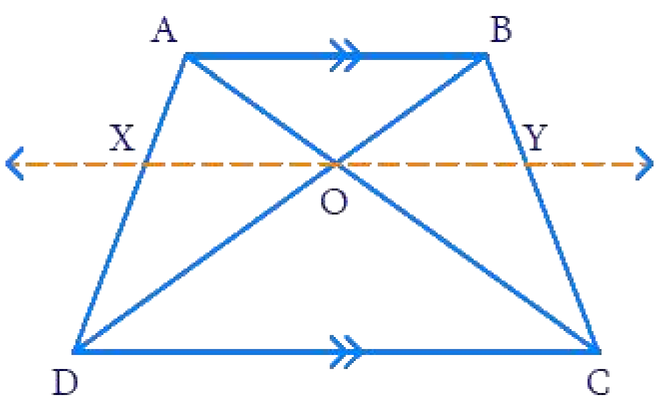
	As per the question, $(10x + y) + (10y + x) = 66$ $\Rightarrow 11(x + y) = 66$ $\Rightarrow x + y = 6$ .... (1)	1/2
	Also, it is given that the difference between the two digits is 2. $x - y = 2$ .... (2)	1/2
	or $y - x = 2$ .... (3) When $x - y = 2$	1/2
	Subtracting equation (2) from equation (1). $(x + y) - (x - y) = = 6-2$ $2y = 4$ $y = 2$ and $x = 4$. $\therefore$ The two digit number is $10x + y = 40 + 2 = 42$.	1/2
	When $y - x = 2$ Subtracting equation (3) from equation (1). $(x + y) - (y - x) = 6- 2$ $2x = 4$ $x = 2$ and $y = 4$ $\therefore$ The two digit number is $10y + x = 20 + 4 = 24$ Thus, the two digits are 42 and 24	1/2

29.		1/2
	.... Given: A circle touching the side BC of ΔABC at P and AB, AC produced at Q and R respectively. To Prove: AQ=1/2(Perimeter of ΔABC)	1/2
	.... Proof: Lengths of tangents drawn from an external point to a circle are equal. ⇒AQ = AR, BQ = BP, CP = CR.	1/2
	.... Perimeter of Δ ABC = AB + BC + CA = AB + (BP + PC) + (AR - CR)	1/2
	.... = (AB + BQ) + (PC) + (AQ - PC) [∵AQ = AR, BQ = BP, CP = CR]	1/2
	.... = AQ + AQ = 2AQ ⇒AQ=1/2 (Perimeter of ΔABC) ∴AQ is the half of the perimeter of ΔABC.	1/2
30.	sinθ+cosθ= $\sqrt{3}$	

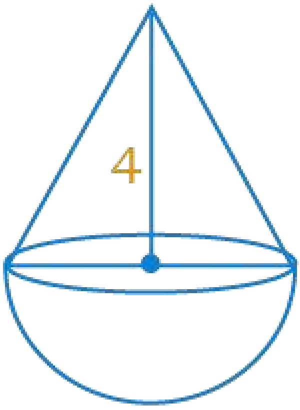
(a)	$\Rightarrow(\sin\theta+\cos\theta)^2=3$ $\Rightarrow\sin^2\theta+\cos^2\theta+2\sin\theta\cos\theta=3$ …………………………………………………………………………… $\Rightarrow 1+2\sin\theta\cos\theta=3$ $\Rightarrow 2\sin\theta\cos\theta=2$ $\Rightarrow\sin\theta\cos\theta=1$ …………………………………………………………………………… $\Rightarrow\sin\theta\cos\theta=\sin^2\theta+\cos^2\theta$ $\Rightarrow 1=\frac{\sin^2\theta+\cos^2\theta}{\sin\theta\cos\theta}$ …………………………………………………………………………… $\Rightarrow\tan\theta+\cot\theta=1$	1 1/2 1 1/2
30. (b)	LHS= $\frac{\cot A-\cos A}{\cot A+\cos A}$ $=\frac{\frac{\cos A}{\sin A}-\cos A}{\frac{\cos A}{\sin A}+\cos A}$ …………………………………………………………………………… $=\frac{\cos A(\frac{1}{\sin A}-1)}{\cos A(\frac{1}{\sin A}+1)}$ …………………………………………………………………………… $=\frac{\operatorname{cosec} A-1}{\operatorname{cosec} A+1}=\text{RHS}$	1 1 1

31.	Given, a bag contains 24 balls of which x are red, 2x are white and 3x are blue. A ball is selected at random. Given, x + 2x + 3x = 24 6x = 24 x = 24/6 x = 4 …………………………………………………………………………………………… Number of red balls = x = 4 Number of white balls = 2x = 2(4) = 8 Number of blue balls = 3x = 3(4) = 12 …………………………………………………………………………………………… (i)The probability of selecting a ball that is not red is given by Favourable outcomes = balls other than red = white balls + blue balls Number of favourable outcomes = 8 + 12 = 20 Number of possible outcomes = 24 The probability of selecting a ball that is not red = number of favourable outcomes / number of possible outcomes Probability = 20/24= 10/12= 5/6 …………………………………………………………………………………………… (ii)The probability of selecting a white ball = number of favourable outcomes / number of possible outcomes Probability = 8/24= 1/3	1/2 1/2 1 1
SECTION-D		
32. (a)	We have to find the marks Sunita scored in the test. Let the actual marks be x Total marks = 30 …………………………………………………………………………………………… Given, $9(x + 10) = x^2$ …………………………………………………………………………………………… $9x + 90 = x^2$ $x^2 - 9x - 90 = 0$	1/2 1 1

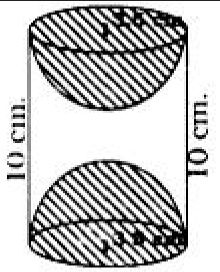
	…………………………………………………………………………………………………… On factoring, $x^2 - 15x + 6x - 90 = 0$ $x(x - 15) + 6(x - 15) = 0$ $(x + 6)(x - 15) = 0$ Now, $x + 6 = 0$ $x = -6$ Also, $x - 15 = 0$ $x = 15$ …………………………………………………………………………………………………… Negative term $x = -6$ is neglected. So, $x = 15$ Therefore, Sunita scored 15 marks in the examination.	1+1 1/2
32. (b)	Let the first integer be x. The next consecutive positive integer will be x + 1. According to the given question, the sum of squares of x and x + 1 is 365. …………………………………………………………………………………………………… $x^2 + (x + 1)^2 = 365$ $x^2 + (x^2 + 2x + 1) = 365$ [$\because (a + b)^2 = a^2 + 2ab + b^2$] $2x^2 + 2x + 1 = 365$ $2x^2 + 2x + 1 - 365 = 0$ …………………………………………………………………………………………………… $2x^2 + 2x - 364 = 0$ $2(x^2 + x - 182) = 0$ $x^2 + x - 182 = 0$ …………………………………………………………………………………………………… $x^2 + 14x - 13x - 182 = 0$ $x(x + 14) - 13(x + 14) = 0$ $(x - 13)(x + 14) = 0$ $x - 13 = 0$ and $x + 14 = 0$ $x = 13$ and $x = -14$ …………………………………………………………………………………………………… The value of x cannot be negative (because it is given that the integers are positive). Thus, we ignore $x = -14$. $\therefore x = 13$ and $x + 1 = 14$	1/2 1 1 1+1 1/2

33. (a)	 Given ΔNSQ ≅ ΔMTR and ∠1 = ∠2 To prove : ΔPTS ~ ΔPRQ	1/2
	.... Proof : Since, ΔNSQ ≅ ΔMTR So, SQ = TR .... (i) Also, ∠1 = ∠2 ⇒ PT = PS .... (ii) [since, sides opposite to equal angles are also equal]	$1\frac{1}{2}$
	.... From Eqs.(i) and (ii), PS/SQ=PT/TR ⇒ ST || QR [by converse of basic proportionality theorem] ∴ ∠1 = ∠PQR [Corresponding angles] and ∠2 = ∠PRQ	$1\frac{1}{2}$
	.... In ΔPTS and ΔPRQ, ∠P = ∠P [common angles] ∠1 = ∠PQR ∠2 = ∠PRQ ∴ ΔPTS ~ ΔPRQ [by AAA similarity criterion]	$1\frac{1}{2}$
33. (b)	Consider the trapezium ABCD as shown below.  	1

	In trapezium ABCD, AB || CD Also, AC and BD intersect at point O. Construct XY parallel to AB and CD (XY || AB, XY || CD) through point O	1
	In ΔABC OY || AB (construction) According to Basic Proportionality Theorem BY/CY = AO/OC................ (1)	1
	In ΔBCD OY || CD (construction) According to Basic Proportionality Theorem BY/CY = OB/OD................ (2)	1
	From equations (1) and (2) OA/OC = OB/OD	1/2
	⇒ OA/OB = OC/OD Hence proved.	1/2
34 (a)	The height and diameter of the base of the cone is 4 cm and 8 cm. We have to find the volume of the toy. We have to find the difference of the volumes of the cube and the toy and total surface area of the toy.	

		1/2 1/2
	Diameter of base of cone = diameter of hemisphere = 8 cm Radius = 8/2 = 4 cm	
	Volume of hemisphere = $(2/3)\pi r^3$ = $(2/3)(22/7)(4)^3$ = 134.095 cm^3	1/2
	Volume of the cone = $(1/3)\pi r^2 h$ = $(1/3)(22/7)(4)^2(4)$ = 67.047 cm^3	1/2
	Volume of the toy = volume of hemisphere + volume of cone = 134.095 + 67.047 = 201.142 cm^3 Therefore, the volume of the toy is 201.42 cm^3	1/2
	Given, a cube circumscribes the toy So, the edge of the cube = diameter of the hemisphere = 8 cm Volume of cube = a^3	1/2

	$= (8)^3$ $= 512\ cm^3$ …………………………………………………………………………………………………… Difference in volume of cube and toy = volume of cube - volume of toy = 512 - 201.142 $= 310.858\ cm^3$ …………………………………………………………………………………………………… Curved surface area of the cone = πrl Slant height, l = $\sqrt{h^2 + r^2} = \sqrt{4^2 + 4^2} = \sqrt{32} = 5.657$ cm …………………………………………………………………………………………………… Curved surface area of the cone = (22/7)(4)(5.657) $= 71.117\ cm^2$ …………………………………………………………………………………………………… Curved surface area of hemisphere = $2\pi r^2$ $= 2(22/7)(4)^2$ = (44/7)(16) $= 100.571\ cm^2$ …………………………………………………………………………………………………… Total surface area of the toy = curved surface area of the cone + curved surface area of hemisphere. = 71.117 + 100.571 $= 171.688\ cm^2$ Therefore, the total surface area of the toy is $171.688\ cm^2$.	1/2 1/2 1/2 1/2

34. (b)		1
	Radius of base of cylinder, r= 3.5 cm Height, h = 10 cm.	
	………………………………………………………………………………………	
	Total area of article = Curved Surface area of Cylinder + 2 × Curved Surface area of Hemisphere=	1
	………………………………………………………………………………………	
	$= 2\pi rh + 2 \times 2\pi r^2$	1
	………………………………………………………………………………………	
	$= 2\times \frac{22}{7} \times 3.5 \times 10 + 2 \times 2 \times \frac{22}{7} \times (3.5)^2$	1
	………………………………………………………………………………………	
	$= 2\times \frac{22}{7} \times 3.5 \times (10 + 7)$	1/2
	………………………………………………………………………………………	
	$= 7\times \frac{22}{7} \times (17)$	
	$= 374\ cm^2$	1/2

35. (a)

Class Intervals	Frequency	Cumulative Frequency
0-100	2	2
100-200	5	7
200-300	x	7+x
300-400	12	19+x
400-500	17	36+x
500-600	20	56+x
600-700	y	56+x+y
700-800	9	65+x+y
800-900	7	72+x+y
900-1000	4	76+x+y

1

……….

It is given that n=100

So , 76 +x+y = 100 or x+y = 24………….(1) 1

……….

The median is 525 which lies in the class 500-600

So, l = 500, f= 20, cf =36 +x, h= 100 1

……….

Using the formula: Median = l + $\left(\frac{\frac{n}{2}-cf}{f}\right) \times h$ 1/2

……….

525 = 500 +$\left(\frac{50-36-x}{20}\right)\times 100$ 1/2

	…………………………………………………………………………………………………	
	525-500= (14-x)× 5	1/2
	25=70- 5x	
	5x= 70-25=45 x=9	
	…………………………………………………………………………………………………	
	Therefore, from (1),we get 9+y =24 y=15	1/2
35. (b)	(table below)	$2\frac{1}{2}$

Daily Wages(C.I.)	Class Mark (x_i)	No. of workers (f_i)	$f_i x_i$
100-120	110	12	1320
120-140	130	14	1820
140-160	150	8	1200
160-180	170	6	1020
180-200	190	10	1900
		$\sum f_i = 50$	$\sum f_i x_i$ =7260

…………………………………………………………………………………………………

Mean daily wages = $\frac{\sum f_i x_i}{\sum f_i}$ — 1

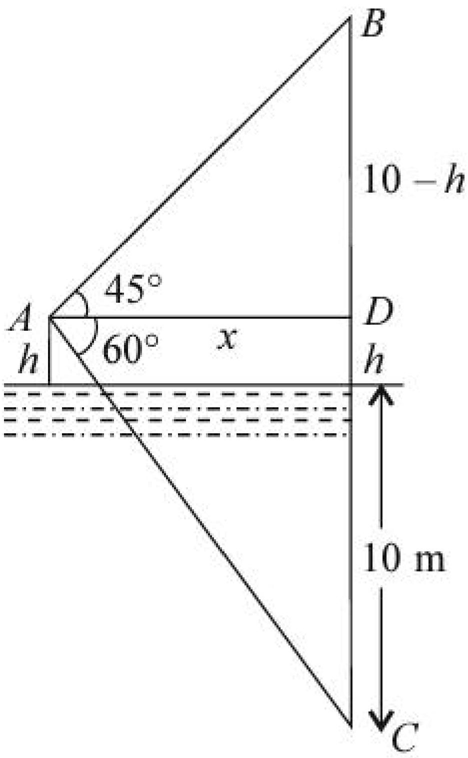
…………………………………………………………………………………………………

$= \frac{7260}{50}$ — 1

…………………………………………………………………………………………………

	= ₹ 145.2	1/2
	SECTION-E	
36.	(i)A.P.= 4,7,10,13,............. d=7-4=3 a_n= a +(n-1)d a_{15}=4 +(15-1)3 = 4 +42= 46 .... (ii)A.P.= 4,7,10,13,............. d = 7-4=3 a_n= a +(n-1)d 136= 4 +(n-1)3 136= 4 + 3n - 3 136 - 1 = 3n $\frac{135}{3} = n$ n = 45 .... (iii)(a)A.P.= 4,7,10,13,............. d = 7-4=3 a = 4 n=30 .... $S_{30}= \frac{30}{2}[2 \times 4 + (30-1)3]$ $S_{30}= 15\,[8 + 29 \times 3]$	1 1 1 1

	S_{30}= 15 × 95=1425 …………………………………………………………………………… (iii)(b)A.P.= 4,7,10,13,…………. d = 7-4=3 a=4 …………………………………………………………………………… a_n= a +(n-1)d a_{20}= 4+(20-1)3=4 +19× 3= 4 +57=61	1 1
37.	(i)The coordinates of the vertices of ΔPQR are P(4,6), Q(3,2) and R(6,5) …………………………………………………………………………… (ii)(a) PQ= $\sqrt{(3-4)^2 + (2-6)^2} = \sqrt{(-1)^2 + (-4)^2} = \sqrt{17}$ m QR= $\sqrt{(6-3)^2 + (5-2)^2} = \sqrt{(3)^2 + (3)^2} = \sqrt{18}$ m = $3\sqrt{2}$ m …………………………………………………………………………… (ii) (b) Let S(x,y) be the point which divides the line segment joining points P(4,6) and R(6,5) In the ratio 2 :1 internally. By section formula S(x,y)= S $\left(\frac{2\times6+1\times4}{2+1}, \frac{2\times5+1\times6}{2+1}\right)$ …………………………………………………………………………… = S $\left(\frac{12+4}{3}, \frac{10+6}{3}\right)$ = = S$\left(\frac{16}{3}, \frac{16}{3}\right)$	1 2 1 1

	…… (iii)PQ= $\sqrt{(3-4)^2 \quad + (2-6)^2}$ = $\sqrt{(-1)^2+(-4)}^2$ =$\sqrt{17}$ m QR= $\sqrt{(6-3)^2 \quad + (5-2)^2}$ = $\sqrt{(3)^2+(3)}^2$ = $\sqrt{18}$ m = $3\sqrt{2}$ m PR= $\sqrt{(6-4)^2 \quad + (5-6)^2}$ = $\sqrt{(2)^2+(-1)}^2$ = $\sqrt{5}$ m PQ$\neq$ QR $\neq$ PR ∴ ΔPQR is not an isosceles triangle but a scalene triangle.	1
38.	(i)  ……… (ii)In right Δ ADB, tan 45° = BD/AD ∴ AD = BD/tan 45° AD= BD = OB - OD = (10 - h) m	2 1/2

	…… In right ΔADC tan 60° = CD/AD = (10 + h)/(10 − h) …… ⇒ (10 + h)/(10 − h) = √3 ⇒ 10 + h = 10√3 - √3h ⇒ (√3 + 1)h = 10(√3 - 1) …… ∴ h = 10 (√ 3 − 1)/(√ 3 + 1) h = 10(√ 3 − 1)(√ 3 - 1)/(√ 3 + 1)(√ 3 - 1) h = 10(√ 3 - 1)^2/ 2 ⇒ h = 2.67 m using $\sqrt{3}$ = 1.73	1/2 1/2 1/2