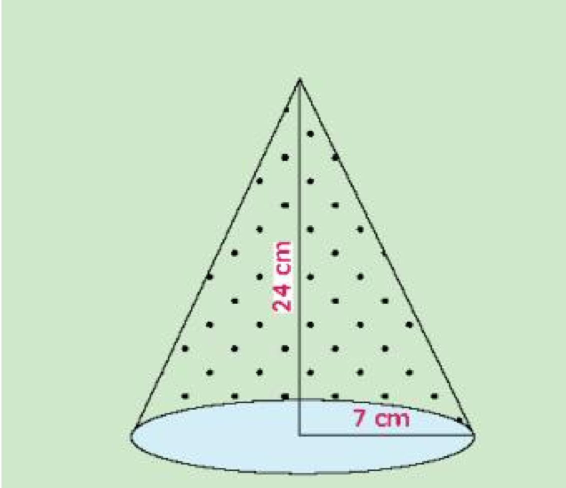
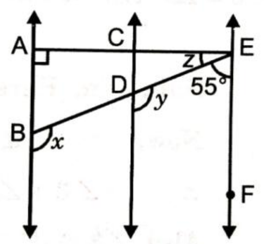
MARKING SCHEME, BSEH SAMPLE PAPER ,9TH MATHS , (2025-26)(ENGLISH MEDIUM)		
Q. no.	**Expected solutions**	**marks**
	Section-A	
1	(d)0.4014001400014…………	1
2	(a) $\frac{1}{9}$	1
3	(d)not defined	1
4	(d)27	1
5	(d)(0,2)	1
6	(c)Infinitely many solutions	1
7	(b)1	1
8	(d)3	1
9	Equal	1
10	(c)108°	1
11	(b)AC= DE	1
12	(c)opposite angles are bisected by the diagonals	1
13	(d)45°	1
14	Side of equilateral angle=6 cm [using area of equilateral triangle $= \frac{\sqrt{3}}{4} \times (side)^2$]	1
15	Volume of sphere= $\frac{4\pi}{3} \times (radius)^3 = \frac{4\pi}{3} \times (2r)^3 = \frac{32\pi r^3}{3}$	1
16	TSA of cone $=\pi \times radius(slantheight + radius) =$ $= \pi \times \frac{r}{2}\left(2\ell + \frac{r}{2}\right) = \pi r\left(\ell + \frac{r}{4}\right)$	1
17	TSA of hemisphere = 27 π cm^2	1
18	class mark = $\frac{120+90}{2} = \frac{210}{2} = 105$	1
19	(b)Both Assertion(A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion(A).	1
20	(d) Assertion(A) is false but Reason(R) is true.	1
	Section B	
21.(a)	$(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$ …………………………………………………………………………… $= 250+2\times3$ $= 256$ ……………………………………………………………………………	1/2 1/2

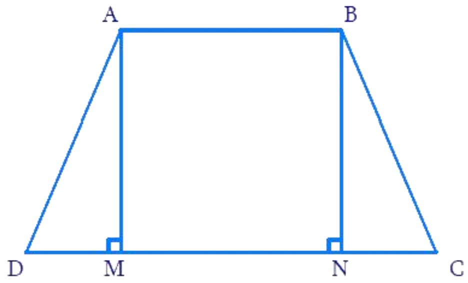
	$\Rightarrow a + b + c = \pm\sqrt{256} = \pm 16$	1
OR 21.(b)	Let $p(x) = x^3 - x^2 - (2 + \sqrt{2})x + \sqrt{2}$ $\therefore p(-1) = (-1)^3 - (-1)^2 - (2 + \sqrt{2})(-1) + \sqrt{2}$ ………………………………………………………………………….. $= -1 - 1 + 2 + \sqrt{2} + \sqrt{2}$ $= 2\sqrt{2} \neq 0$ ………………………………………………………………………… Since the remainder of $p(-1) \neq 0$, $x + 1$ is not a factor of $x^3 - x^2 - (2 + \sqrt{2})x + \sqrt{2}$.	1/2 1/2 1
22.	Coordinates of point B are B(4,3) ……………………………………………………………………………………… Coordinates of point M are M(-3,4) ……………………………………………………………………………………… Coordinates of point L are L(-5,- 4) ……………………………………………………………………………………… Coordinates of point S are S(3,- 4)	1/2 1/2 1/2 1/2
23.	AC = BD (given) $\Rightarrow$ AB+BC = BC+C D [$\because$ Point B lies between A and C and point C lies between B and D] …………………………………………………………………………….. $\Rightarrow$ AB= CD [Subtracting equals from equals]	1/2+1/2 1/2+1/2

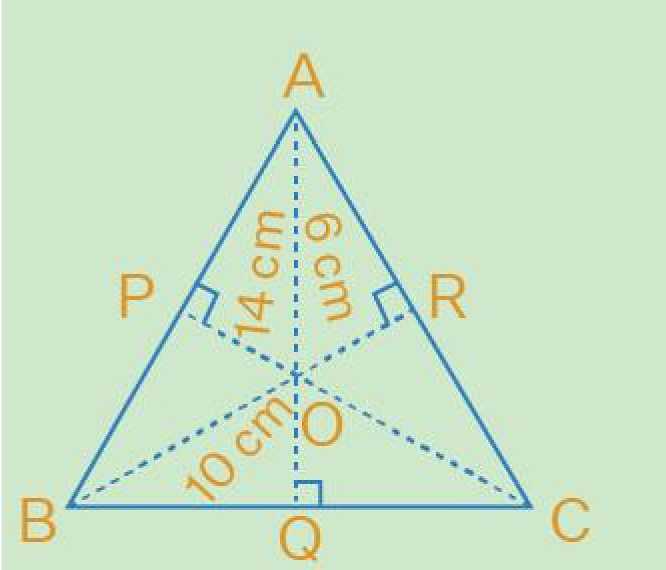
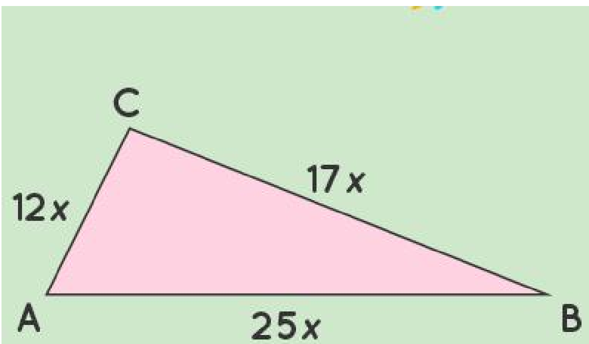
24.	Let the sides of triangle be a = 41m,b = 40 m and c = 9m. ∴ semi-perimeter $s = \frac{a+b+c}{2} = \frac{41+40+9}{2} = \frac{90}{2} = 45$ …………………………………………………………………………………… Heron's formula,Area of triangle = $\sqrt{s(s-a)(s-b)(s-c)}$ …………………………………………………………………………………… $= \sqrt{45(45-41)(45-40)(45-9)}$ $= \sqrt{45 \times 4 \times 5 \times 36}$ $= \sqrt{3 \times 3 \times 5 \times 2 \times 2 \times 5 \times 2 \times 2 \times 3 \times 3}$ …………………………………………………………………………………… $=3\times 5 \times 2 \times 2 \times 3 = 180\ m^2$	1/2 1/2 1/2 1/2
25.(a)	Surface area of sphere $S_1 = 4\pi r^2$ Decrease in diameter = 25% of 2r $= \frac{25}{100} \times 2r = \frac{r}{2}$ Decreased diameter= $2r - \frac{r}{2} = \frac{3r}{2}$ $\Rightarrow$ Decreased radius $= \frac{3r}{4}$ …………………………………………………………………………………… New surface area $S_2 = 4\pi\left(\frac{3r}{4}\right)^2 = \frac{9\pi(r)^2}{4}$ …………………………………………………………………………………… %Decrease in surface area $= \frac{S_2 - S_1}{S_1} \times 100$ $= \frac{4\pi r^2 - \frac{9\pi(r)^2}{4}}{4\pi r^2} \times 100$ …………………………………………………………………………………… $= \frac{7}{16} \times 100 = 43.75\%$	1/2 1/2 1/2 1/2

OR 25.(b)	 Slant height, $l = \sqrt{r^2 + h^2}$ $= \sqrt{(7)^2 + (24)^2}$ $= \sqrt{49 + 576}$ $= \sqrt{625}$ = 25 cm ………………………………………………………………………… Area of the sheet required to make each cap = πrl = 22/7 × 7 cm × 25 cm = 550 cm^2 ………………………………………………………………………… Area of the sheet required to make 10 such caps = 10 × 550 cm^2 = 5500 cm^2	1/2 1/2+1/2 1/2
	Section C	
26.	$\frac{5}{\sqrt{3}-\sqrt{5}} = \frac{5}{\sqrt{3}-\sqrt{5}} \times \frac{\sqrt{3}+\sqrt{5}}{\sqrt{3}+\sqrt{5}}$ ………………………………………………………………………… $= \frac{5(\sqrt{3}+\sqrt{5})}{(\sqrt{3})^2-(\sqrt{5})^2}$ ………………………………………………………………………… $= \frac{5(\sqrt{3}+\sqrt{5})}{3-5}$ ………………………………………………………………………… $= \frac{-5(\sqrt{3}+\sqrt{5})}{2}$	1 1 1/2 1/2

27.	$64a^3 - 27b^3 - 144a^2b + 108ab^2$ $=(4a)^3 - (3b)^3 - 3(4a)^2(3b) + 3(4a)(3b)^2$ ………………………………………………………… which is of the form $(x - y)^3 = x^3 - y^3 - 3x^2y + 3xy^2$ ………………………………………………………… Here, $x = 4a$, $y = 3b$ ………………………………………………………… Hence $64a^3 - 27b^3 - 144a^2b + 108ab^2 = (4a - 3b)^3$ $= (4a - 3b)(4a - 3b)(4a - 3b)$ ……………………………………………………………	1 1/2 1/2 1
28.	Rewrite the equation y-2=0 as 0x+1y-2=0 ……………………………………………………………………… The equation in the form ax+ by+ c=0 is 0x+1y-2=0 ……………………………………………………………………….. with a=0, b=1 and c= -2.	1 1/2 $1\frac{1}{2}$
29.	In the adjoining figure, AB∥CD and CD∥EF. Also,EA⊥ AB. If ∠BEF=55°,find the values of x,y and z. 	

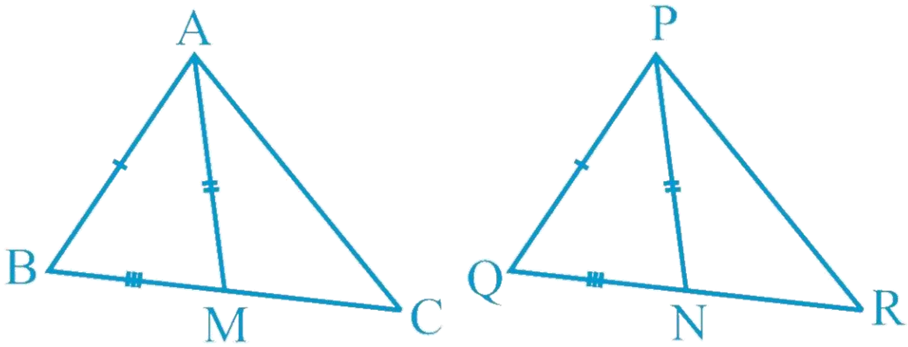
	Since for parallel lines , corresponding angles are equal. ⇒x = y ………………………………………………………………………………. For parallel lines, sum of interior angles on the same side of transversal is 180° ⇒ y +55° = 180° ⇒ y = 125° …………………………………………………………………………… ⇒x = y = 125° …………………………………………………………………………………… Since AB‖CD and CD‖EF ⇒AB‖EF ∠EAB + ∠FEA = 180° [For parallel lines, sum of interior angles on the same side of transversal is 180°] …………………………………………………………………………………… ⇒90° + z +55° = 180° ⇒z= 35° ………………………………………………………………………………………	1/2 1/2 1/2 1/2 1
30.(a)	(i)As A,B and C are equidistant from each other. ∴ AB = BC = CA ⇒ ΔABC is equilateral triangle ⇒ all angles are equal to 60°. Therefore, ∠ BAC=60°. …………………………………………………………………………………… (ii)We know that the angle subtended by the arc at the centre of the circle is twice the angle subtended at any point on the	1 1/2

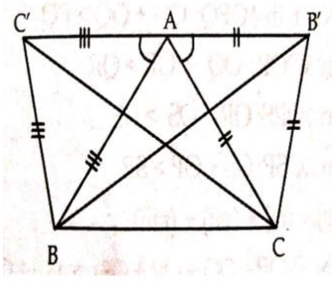
	remaining part of the circle, …………………………………………………………………………………… $\therefore \angle BOC = 2\angle BAC = 2 \times 60° = 120°$ …………………………………………………………………………………… (iii)Area of equilateral triangle ABC= $\frac{\sqrt{3}}{4} \times (side)^2$= $= \frac{\sqrt{3}}{4} \times (2)^2 = \sqrt{3}\ m^2$	1/2 1/2+1/2
OR 30.(b)	Draw AM ⊥ CD and BN ⊥ CD.  …………………………………………………………………………… Consider ΔAMD and ΔBNC AD = BC (Given) ∠AMD = ∠BNC (90°) AM = BN (Perpendicular distance between two parallel lines is same) By RHS congruence, ΔAMD ≅ ΔBNC. …………………………………………………………………………… Using CPCT, ∠ADC = ∠BCD.....(1) ……………………………………………………………………. ∠BAD and ∠ADC are on the same side of transversal AD. ∠BAD + ∠ADC = 180° ∠BAD + ∠BCD = 180° [From equation(1)] ……………………………………………………………………………… This equation proves that the sum of opposite angles is supplementary. Hence, ABCD is a cyclic quadrilateral.	1/2 1 1/2 1/2 1/2

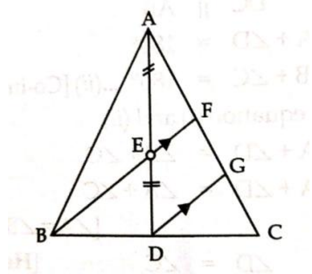
31.(a)		1/2
	Let the sides of an equilateral triangleABC be a cm.	
	…………………………………………………………………… Area of equilateral triangleABC= Area of triangle OAB+Area of triangle OBC +Area of triangle OAC	1/2
	…………………………………………………………………… $\Rightarrow \frac{\sqrt{3}}{4} \times (a)^2$= 1/2 × a × 14+ 1/2 × a × 10+1/2 × a × 6	1/2
	…………………………………………………………………… $\Rightarrow \frac{\sqrt{3}}{4} \times (a)^2$ = 7a+5a+3a=15 a	1/2
	…………………………………………………………………… $\Rightarrow a = \frac{15\times4}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = 20\sqrt{3}$ cm	1/2
	…………………………………………………………………… $\Rightarrow$ Area of triangle ABC = $\frac{\sqrt{3}}{4} \times \left(20\sqrt{3}\right)^2 = 300\sqrt{3}$ cm²	1/2
OR 31(b)		

	So the perimeter of the triangle will be Perimeter = 12x + 17x + 25x 12x + 17x + 25x = 540 (given) 54x = 540 x = 540/54 x = 10 cm …………………………………………………………………… Therefore, the sides of the triangle: 12x = 12 × 10 = 120 cm, 17x = 17 × 10 = 170 cm, 25x = 25 × 10 = 250 cm a = 120cm, b = 170 cm, c = 250 cm Semi-perimeter(s) = 540/2 = 270 cm ………………………………………………………………………….. By using Heron's formula, Area of a triangle = $\sqrt{s(s-a)(s-b)(s-c)}$ $= \sqrt{270(270-120)(270-170)(270-250)}$ $= \sqrt{270 \times 150 \times 100 \times 20}$ = $\sqrt{81000000}$ = 9000 cm^2	1/2 1 $1\frac{1}{2}$
	SECTION D	
32.(b)	Given: Linear Equation x - 2y = 4 --- Equation (1) i) Consider (0, 2) By Substituting x = 0 and y = 2 in the given Equation (1) x - 2y = 4 0 - 2(2) = 4 0 - 4 = 4 - 4 ≠ 4 L.H .S ≠ R.H .S Therefore, (0, 2) is not a solution to this equation. …………………………………………………………………… ii) Consider (2, 0) By Substituting, x = 2 and y = 0 in the given Equation (1),	1

	x - 2y = 4 2 - 2(0) = 4 2 - 0 = 4 2 ≠ 4 L.H .S ≠ R.H .S Therefore, (2, 0) is not a solution to this equation. ……………………………………………………………………. iii) (4, 0) By Substituting, x = 4 and y = 0 in the given Equation (1) x - 2y = 4 4 - 2(0) = 4 4 - 0 = 4 4 = 4 L.H .S = R.H .S Therefore, (4, 0) is a solution to this equation. …………………………………………………………………….. iv) (√2, 4√2) By Substituting, x = √2 and y = 4√2 in the given Equation (1) x - 2y = 4 √2 - 8√2 = 4 -7√2 ≠ 4 L.H .S ≠ R.H .S Therefore, (√2, 4√2) is not a solution to this equation. …………………………………………………………………… v) (1, 1) By Substituting, x = 1 and y = 1 in the given Equation (1) x - 2y = 4 1- 2 (1) = 4 1 - 2 = 4 -1 ≠ 4 L.H .S ≠ R.H .S Therefore, (1, 1) is not a solution to this equation.	1 1 1 1
OR 32.(a)	x = k^2 and y = k is a solution of the equation x-5y +6 = 0 ⇒ k^2-5k+6=0 …………………………………………………………………… ⇒ k^2-3k-2k+6=0 …………………………………………………………………… ⇒k(k-3)-2(k-3)=0	1 1 1

	……………………………………………………………………………………… ⇒ (k-3)(k-2)=0 ……………………………………………………………………………………… ⇒k-2=0 or k-3=0 ⇒k=2, k=3	1 1
33.(a)	Given: AB = PQ, AM = PN, BM = QN  (i) In ΔABC, AM is the median to BC. ∴ BM = 1/2 BC In ΔPQR, PN is the median to QR. ∴ QN = 1/2 QR It is given that BC = QR ∴ 1/2 BC = 1/2 QR ∴ BM = QN … (1) …………………………………………………………………… In ΔABM and ΔPQN, AB = PQ (Given) BM = QN [From equation (1)] AM = PN (Given) ∴ ΔABM ≅ ΔPQN (Using SSS congruence criterion) …………………………………………………………………… ⇒ ∠ABM = ∠PQN (By CPCT) ⇒ ∠ABC = ∠PQR … (2) …………………………………………………………………… (ii) In Δ ABC and Δ PQR , AB = PQ (Given) ∠ABC = ∠PQR [From Equation (2)] BC = QR (Given)	1 $1\frac{1}{2}$ 1 $1\frac{1}{2}$

	∴ ΔABC ≅ ΔPQR (By SAS congruence rule)	
OR33.(b)	 We have ∠BAC′ = ∠CAB′ [each60°] …………………………………………………… ⇒ ∠BAC′ + ∠BAC = ∠CAB′ + ∠BAC ⇒ ∠CAC′ = ∠B′AB ……………,(i)	1 1
	…………………………………………………………………………… Now, in ΔACC′and ΔAB′B AC′= AB [sides of equilateral ΔABC′] ∠CAC′ = ∠B′AB [From(i)] AC = AB′ [sides of equilateral ΔACB′]	$1\frac{1}{2}$
	…………………………………………………………………………… ∴ ΔACC′ ≅ ΔAB′B [SAS congruence]	1
	…………………………………………………………………………… ⇒CC′= BB′ [CPCT]	1/2
34.(a)	Given: ABCD is a parallelogram and DP = BQ (i) In ΔAPD and ΔCQB, ∠ADP = ∠CBQ (Alternate interior angles for BC ∥ AD) AD = CB (Opposite sides of parallelogram ABCD) DP = BQ (Given) ∴ ΔAPD ≅ ΔCQB (Using SAS congruence rule)	1
	…………………………………………………………………….. (ii) Since ΔAPD ≅ ΔCQB, ∴ AP = CQ (By CPCT)	1
	……………………………………………………………………… (iii) In ΔAQB and ΔCPD, AB = CD (Opposite sides of parallelogram ABCD) ∠ABQ = ∠CDP (Alternate interior angles for AB ∥ CD) BQ = DP (Given) ∴ ΔAQB ≅ ΔCPD (Using SAS congruence rule)	1

	…………………………………………………………………….. (iv) Since ΔAQB ≅ ΔCPD, ∴ AQ = CP (CPCT) …………………………………………………………………….. (v) From the result obtained in (ii) and (iv), AQ = CP and AP = CQ Since opposite sides in quadrilateral APCQ are equal to each other, thus APCQ is a parallelogram. …………………………………………………………………………	1 1
OR 34.(b)	Given:ABC is a triangle in which AD is median and E is mid-point of the median AD,E is produced to meet AC at F.  To prove:AF= $\frac{1}{3}$ AC ……………………………………………………………………………………… Constuction:DG∥ BF intersecting AC at G. ……………………………………………………………………………………… Proof:In ΔADG E is mid point of AD and EF∥ DG. ∴ AF = FG …….(i) [converse of mid-point theorem] ……………………………………………………………………………………… Similarly,In ΔFBC D is mid point of BC and DG∥ BF. ∴ FG = GC…….(ii) ………………………………………………………………………………… From (i) and (ii) AF = FG = GC ……..(iii)	1/2 1/2 1 1 1/2

	…………………………………………………………………………	
	But AC= AF + FG + GC	1/2
	…………………………………………………………………………	
	= AF +AF + AF = 3AF	1/2
	…………………………………………………………………………	
	⇒AF= $\frac{1}{3}$ AC	1/2
	.	
35.(a)	Frequency distribution table :	

Cost of living index	Class marks	Number of weeks
140 - 150	145	5
150 - 160	155	10
160 - 170	165	20
170 - 180	175	9
180 - 190	185	6
190 - 200	195	2

Steps to draw frequency polygon :

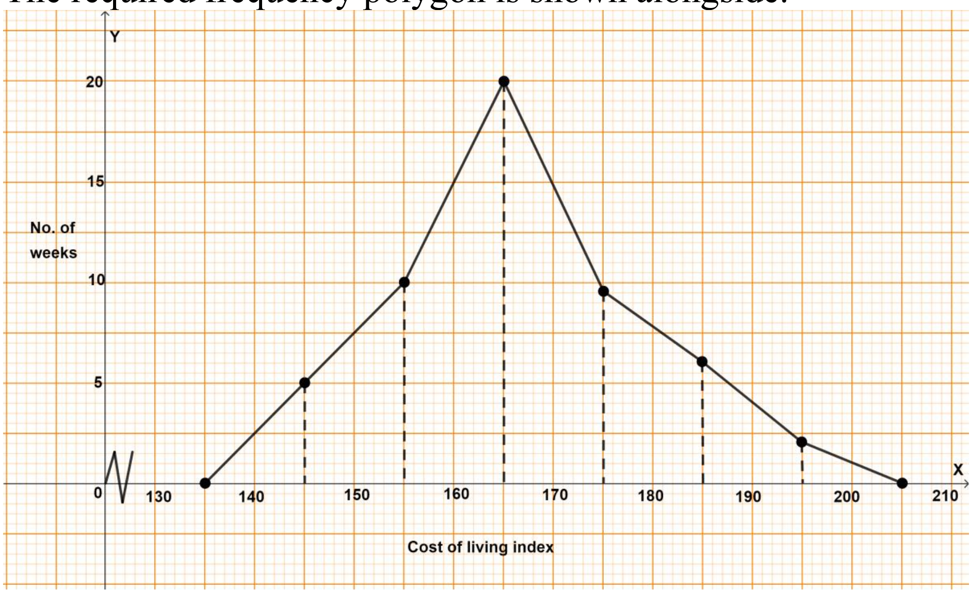
Since, the scale on x-axis starts at 130, a kink is shown near the origin on x-axis to indicate that the graph is drawn to scale beginning at 130. 1/2

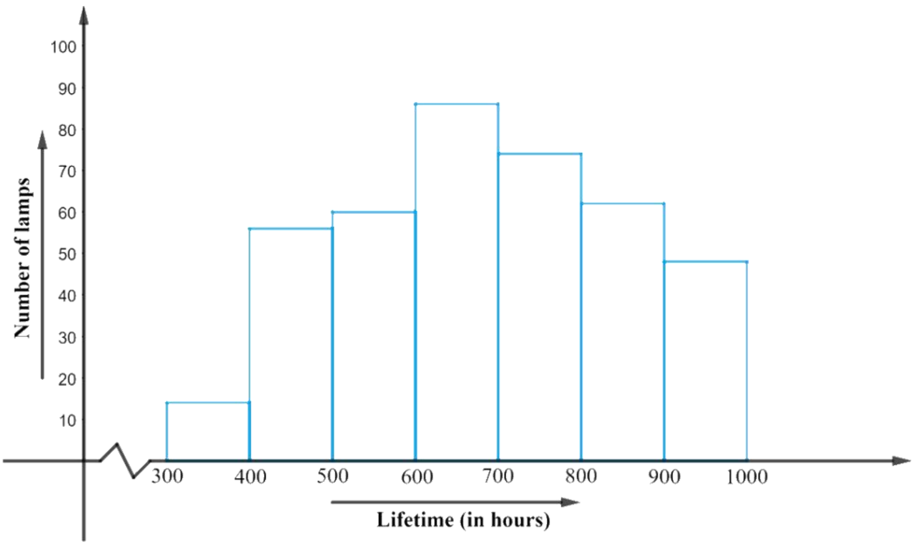
…………………………………………………………………

Take 2 cm along x-axis = 10 units (cost of living index).

Take 2 cm along y-axis = 5 weeks. 1/2+1/2

…………………………………………………………………

	The mid-points of given class-intervals are 145,155,165,175,185,195 ………………………………………………………………. The points corresponding to the mid-points of class-intervals and given frequencies of classes are (145,5),(155,10),(165,20).(175,9),(185,6),(195,2) …………………………………………………………………	1/2 1/2
	Plot them on graph paper and join consecutive points by line segments Also,Join first end point with mid-point of class 130 - 140 with zero frequency and join the other end with mid-point of class 200 - 210 with zero frequency. The required frequency polygon is shown alongside.  	$2\frac{1}{2}$
OR 35.(b)	From the data given we plot the histogram as: Represent the lifetime (in hours) in x-axis. Represent the number of lamps in y-axis. Class intervals are from 300-400 till 900-1000 Take “1 unit = 10 lamps” on y–axis as the lowest value of frequency is 14 and the highest is 86. ……………………………………………………………… Also, since the first interval is starting from 300 and not ‘0’, we show	1/2+1/2 1/2

	it by marking a ‘kink’ or a break on the x-axis. ………………………………………………………………………  ………………………………………………………………… It can be seen from the above graph that: (ii) The number of neon lamps having their lifetime of more than 700 hours lies in the class intervals 700 – 800, 800 – 900, 900 – 1000. Hence, their corresponding frequencies when added up will be (74 + 62 + 48) = 184 lamps.	$2\frac{1}{2}$ 1
	SECTION E	
36.	(i)$\frac{2}{11} = 0.1818\ldots\ldots = 0.\overline{18}$ ………………………………………………………………………………… (ii)Let x= $0.3\overline{8}$ = 0.38888………… ⇒10x= 3.8888…………and 100x= 38.888………… ⇒100x-10x= 38.888……- 3.888………. ⇒90x= 35 ⇒ x = $\frac{35}{90} = \frac{7}{18}$ ………………………………………………………………………………… (iii)Non-terminating repeating ………………………………………………………………………………… (iv) $0.3\overline{8} = \frac{7}{18} = \frac{m}{n}$ ∴m+n = 7+18=25	1 1 1 1

37.	(i) Given: Temperature = 30°C To find: F = ? We know that, F = (9/5)C + 32 By Substituting the value of C = 30° C in the equation above, F = (9/5)C + 32 = (9/5)30 + 32 = 54 + 32 = 86 Therefore, the temperature in Fahrenheit is 86° F . ………………………………………………………………….. (ii) Given, Temperature = 95° F To find, C = ? We know that, F = (9/5)C + 32 By Substituting the value of temperature in the above equation, 95 = (9/5)C + 32 95 - 32 = (9/5)C 63 = (9/5)C C = (63 × 5)/9 C = 35 Therefore, the temperature in Celsius is 35° C. ………………………………………………………………….. (iii) We know that, F = (9/5)C + 32 If C = 100°, then by substituting this value in the above equation, F = (9/5)100 + 32 F = 180 + 32 F = 212 Therefore, if C = 100°, then F = 212° …………………………………………………………………. (iv) We know that, F = (9/5)C + 32 Let us consider, F = C By Substituting this value in the equation above, F = (9/5)C + 32 (9/5 - 1)F + 32 = 0 (4/5)F = - 32 F = (- 32 × 5)/4 Hence, F = - 40 Yes, there is a temperature, -40°, which is numerically the same for both Fahrenheit and Celsius.	1 1 1 1
38.		

38.	(i)Volume of air stored in a conical tent = Volume of cone= $=\frac{1}{3}\pi r^2 h=\frac{1}{3}\times\frac{22}{7}\times(7)^2\times 22$ cm^3= 1129.33cm^3 …………………………………………………………..	1
	(ii)The base area covered by the conical tent = πr^2 = $\frac{22}{7}\times(7)^2$ = 154cm^2 ……	1
	(iii)Slant height of cone = $\sqrt{(7)^2+(22)^2}$ =$\sqrt{533}$ = 23.09cm ……………………………………………………………………………	1/2
	CSA of conical tent= πrl = $\frac{22}{7}\times 7\times 23.09$= 507.98$cm^2$ ……	1
	1cm^2 is painted for 50 paise or ₹0.5. ∴ 507.98cm^2 is painted for ₹507.98$\times$ 0.5 = ₹254	1/2