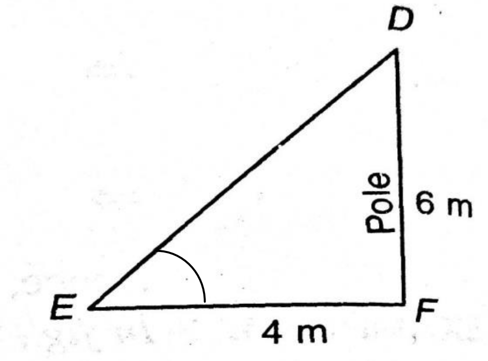
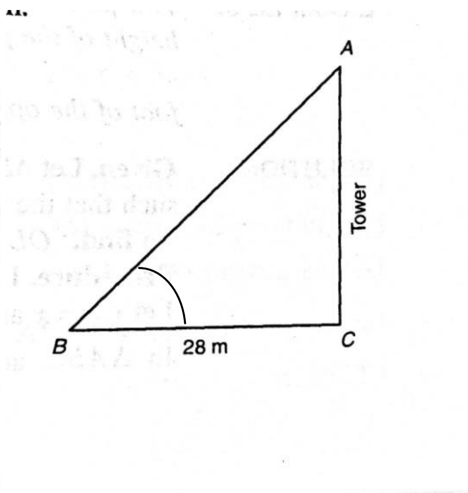
	Marking Scheme Class X, Mathematics (Standard) , 2025-26	
Q. no.	**Expected solutions**	**marks**
	Section-A	
1	LCM(p, q)=a^3 b^2	1
2	(a) always irrational	1
3	2-√3	1
4	A_5 =37	
5	(d) 0,8	1
6	6 units	1
7	(b) similar but not congruent	1
8	(b) 70^0	1
9	(c) 50^0	1
10	(b) 0	1
11	tanA= $\frac{\sqrt{q2-p2}}{p}$	1
12	(c) $\frac{1}{2}$	1
13	132 cm	1
14	(c) $\frac{1}{8}\pi d^2$	1
15	(d) 16:9	1
16	Mode = 3Median – 2Mean Mean = 8	1
17	(b) 25	1
18	(a) p+q=1	1
19	(d) Assertion(A) is false but Reason(R) is true.	1

20	(b) Both Assertion(A) and Reason (R) are true but Reason (R) is the not correct explanation of Assertion(A).	1
Q. no.	**solution**	**marks**
	Section-B	
21	Solve the following pair of linear equations: $\frac{2x}{a} + \frac{y}{b} = 2$ and $\frac{x}{a} - \frac{y}{b} = 4$ **Solution**: $\frac{2x}{a} + \frac{y}{b} = 2 \Rightarrow 2bx - ay = 2ab$ ....(1) $\frac{x}{a} - \frac{y}{b} = 4 \Rightarrow bx - ay = 4ab$................(2) --- Adding (1) and (2) $3bx=6ab$ --- $\Rightarrow x = 2a$ --- Putting value of $x = 2a$ in eq (1) , we get $y= -2b$	 ½ ½ ½ ½
22(a)	**A vertical pole of length 6 m casts a shadow 4 m long on the ground and at the same time a tower casts a shadow 28 m long. Find the height of the tower.** **Solution:**  Let x be the height of the Tower	 ½

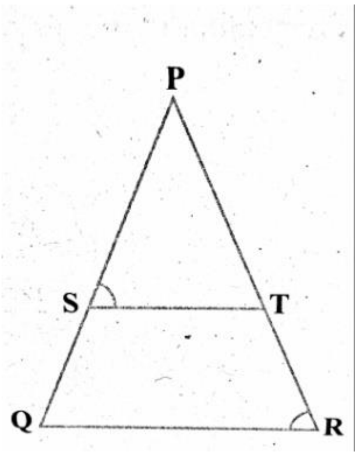
Two Triangles are similar as at the same time ∠E = ∠B

$\therefore \frac{6}{4} = \frac{x}{28}$ ½

Or x = 42 m ½

OR

22(b) ½



In the fig., $\frac{\mathbf{PS}}{\mathbf{SQ}} = \frac{\mathbf{PT}}{\mathbf{TR}}$ $\boldsymbol{and}$ $\angle \mathbf{PST} = \angle \mathbf{PRQ}$. Prove that PQR is an isosceles triangle.

Solution:

$\frac{\text{PS}}{\text{SQ}} = \frac{\text{PT}}{\text{TR}}$ (Given)

So, ST ∥ QR (Converse of BPT)

$\therefore \angle PST = \angle PQR$ ....(1) (Corresponding Angles) ½

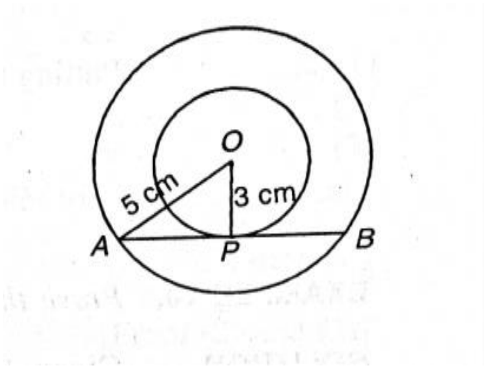
Also $\angle PST = \angle PRQ$ ....(2) (Given) ½

$\therefore\ \angle PRQ = \angle PQR$ [From (1) and (2)]

So PQ = PR (sides opposite to equal angles) ½

Hence PQR is an isosceles Triangle

½

23	**Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.** **Solution:**  OA=5cm,OP=3cm -- OT ⊥ AB -- Therefore AP =$\sqrt{5^2 - 3^2}$ = $\sqrt{16}$ = 4 -- ∴ AB= 2AP	1/2 1/2 1/2 1/2
24	**Evaluate the following:** . If $8\cot\alpha = 7$, *then* evaluate : $\frac{(1+\cos\alpha)(1-\cos\alpha)}{(1+\sin\alpha)(1-\sin\alpha)}$ **Solution:** : $\frac{(1+\cos\alpha)(1-\cos\alpha)}{(1+\sin\alpha)(1-\sin\alpha)} = \frac{(1-\cos^2\alpha)}{(1-\sin^2\alpha)}$ $= \frac{(\sin^2\alpha)}{(\cos^2\alpha)}$ -- $\Rightarrow \tan^2\alpha$	1 ½

	--- $= \frac{(8)^2}{(7)^2} = \frac{64}{49}$	½
25(a)	**A chord of a circle of radius 15 cm subtends an angle of 60^0 at the centre. Find the areas of the corresponding minor and major segments of the circle.** **(Use $\pi = 3.14$ *and* $\sqrt{3}$ =1.73)** **Solution:** Area of minor segment= $\frac{\theta}{360°} \times \pi r^2 - \frac{1}{2} \times r^2 \sin\theta$ --- $= \frac{60}{360} \times 3.14 \times (15)^2 - \frac{1}{2} \times (15)^2 \sin 60°$ $= 3.14 \times 225 \times 6 - \frac{1}{2} \times 225 \times \frac{\sqrt{3}}{2}$ --- =117.75 - 97.312 = 20.4375 cm^2 --- Area of major segment = Area of circle – Area of minor segment = 3.14 x $(15)^2$ – 20.4375 = 706.5- 20.4375 = 686.0625 cm^2 **OR**	½ ½ ½ ½

	25(b) The minute hand of clock is 28 cm long. Find the area swept by the minute hand in 15 minutes. **Solution:** In 60 minutes, minutes hand covers angle = 360^0 In 15 minutes, minutes hand covers angle = 90^0	½
	--- $\Rightarrow Area\ swept\ by\ minute\ hand = \frac{\theta}{360^0} \times \pi r^2$	½
	--- $\therefore \quad Area\ swept\ by\ minute\ hand = \frac{1}{4} \times \frac{22}{7} \times 28 \times 28$	½
	--- $= 616\ cm^2$	½
	Section-C	
26.	**Prove that $\sqrt{5}$ is irrational**. **Solution:** Let, if possible,5 be a rational number	½
	--- $\therefore \sqrt{5} = \frac{p}{q}$, where p and q are co-prime integers and q$\neq$ 0.	½
	--- $\Rightarrow 5 = \frac{p^2}{q^2}$ $\Rightarrow p^2 = 5q^2$ ....(i) $\Rightarrow$ 5 divides p^2 *, but* 5 *is prime number* $\Rightarrow$ 5 divides p also.	½
	--- Let p = 5m,................................(ii) where m is any integer. $\Rightarrow p^2 = 25m^2$................................(iii)	½
	--- From (i) and (iii) $5q^2 = 25m^2$	

	$\Rightarrow q^2 = 5m^2$ $\Rightarrow$ 5 divides q^2 , *but* 5 *is prime number* $\Rightarrow$ 5 divides q also. $\Rightarrow$ q = 5n......................................(iv) where n is any integer --- From (i) and (iv) , p and q have 5 as common factor. ∴ p and q are not co-prime. Hence our supposition is wrong. ∴ $\sqrt{5}$ is an irrational number.	½ ½
27	**If zeroes of the quadratic polynomial $x^2+(a+1)x+b$ are 2 and -3, then find the value of a and b.** **Solution:** Sum of zeroes $= \frac{-\,coefficient\ of\ x}{coefficient\ of\ x^2} = -\frac{(a+1)}{1} = 2+(-3)$ --- $\Rightarrow -a-1 = -1 \quad \Rightarrow a = 0$ --- Product of zeroes $= \frac{constant\ term}{coefficient\ of\ x^2} = \frac{b}{1} = 2 \times (-3)$ --- $\Rightarrow b = -6$	1 ½ 1 ½
28(a)	Find the value(s) of K for which the following pair of linear equations have infinite number of solutions. 2x+3y-7=0 and (K+1)x + (2K-1)y =4K+1 **Solution:** ---	

	linear equations have infinite number of solutions given $$\Rightarrow \frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$	½	
	-- $$\Rightarrow \frac{2}{K+1} = \frac{3}{2K-1} = \frac{7}{4K+1}$$	½	
	-- From (i) and (ii) ⇒ 2(2K-1)= 3(K+1)	½	
	-- ⇒ 4K-2 = 3K+3 ⇒ K=5	½	
	-- From (ii) and (iii) $\Rightarrow \frac{3}{2K-1} = \frac{7}{4K+1}$ ⇒ 3(4K+1)= 7(2K-1)	½	
	-- ⇒ 12K+3= 14K-7 ⇒ K=5	½	
	OR		

28(b)

The age of the father is twice the sum of the ages of his two children. After 20 years , his age will be equal to the sum of the ages of his children. Find the present ages of the father and each son.

Solution :

Let father's present age be x years and his son's ages be y years each. 1

A.T.Q $x = 2(y + y) \Rightarrow x - 4y = 0$ ……………….(1)

After 20 years

$x + 20 = (y + 20 + y + 20)$ 1

$\Rightarrow x - 2y = 20$ ………….(2)

Subtracting equation (1) from (2), we get

$x - 2y - (x - 4y) = 20$

$\Rightarrow 2y = 20$ ½

$\therefore y = 10$

Put y = 10 in eq. (1), we get

$\Rightarrow x - 4(10) = 0$

$\Rightarrow x = 40$ ½

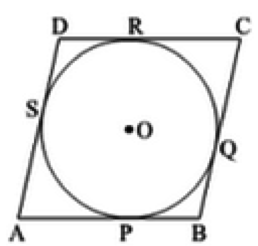
Thus, present age of father = x = 40 years and

present age of each son = y =10 years.

29

Prove that a parallelogram circumscribing a circle is a rhombus.

Solution:



½

	--- **Given** :- ABCD be a parallelogram circumscribing a circle with centre O. **To Prove** :- ABCD is a rhombus. --- **Proof**:- We know that the tangents drawn to a circle from an exterior point are equal is length. ∴ AP = AS, BP = BQ, CR = CQ and DR = DS. --- AP+BP+CR+DR = AS+BQ+CQ+DS (AP+BP) + (CR+DR) = (AS+DS) + (BQ+CQ) ∴ AB+CD=AD+BC --- or 2AB = 2AD (since AB = DC and AD=BC of parallelogram ABCD) --- ∴ AB = BC = DC = AD Therefore, ABCD is a rhombus.	½ ½ ½ ½ ½
30(a)	**If sin θ + cos θ = √3, then prove that tan θ + cot θ = 1** **Solution:** $\sin\theta + \cos\theta = \sqrt{3}$ squaring on both sides $\Rightarrow (\sin\theta + \cos\theta)^2 = 3$ --- $\Rightarrow \sin^2\theta + \cos^2\theta + 2\sin\theta\cos\theta = 3$ --- $\Rightarrow 1 + 2\sin\theta\cos\theta = 3$ ($\because \sin^2\theta + \cos^2\theta = 1$) $2\sin\theta\cos\theta = 3 - 1$	1/2 1/2

	$2\sin\theta\cos\theta = 2$	1/2
	Divide both sides by 2	
	$\sin\theta\cos\theta = 1 = \sin^2\theta + \cos^2\theta$	1/2
	$1 = (\sin^2\theta + \cos^2\theta)/\sin\theta\cos\theta$	1/2
	$= \tan\theta + \cot\theta = 1$	1/2
	OR	
	30(b) Prove that $\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1} = \operatorname{cosec} A + \cot A$	
	LHS= $\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1}$	
	Divide the numerator and denominator by sin A	
	$= \frac{\cot A - 1 + \operatorname{cosec} A}{\cot A + 1 - \operatorname{cosec} A}$	1
	$= \frac{\operatorname{cosec} A + \cot A - 1}{\cot A + 1 - \operatorname{cosec} A}$ [$\because = \operatorname{cosec}^2 A - \cot^2 A = 1$]	
	$= \frac{\operatorname{cosec} A + \cot A - (\operatorname{cosec}^2 A - \cot^2 A)}{\cot A + 1 - \operatorname{cosec} A}$	1
	$= \frac{\operatorname{cosec} A + \cot A - (\operatorname{cosec} A + \cot A)(\operatorname{cosec} A - \cot A)}{\cot A + 1 - \operatorname{cosec} A}$	
	Taking (Cosec A + Cot A) as common	1
	$= \frac{(\operatorname{cosec} A + \cot A)(1 - \operatorname{cosec} A + \cot A)}{\cot A + 1 - \operatorname{cosec} A}$	

	= Cosec A + Cot A = RHS Hence proved	
31	**A box contains 4 red marbles , 5 white marbles and 8 blue marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be** **(i) blue ? (ii) not red ? (iii) white?** **Solution:** Number of Red Marbles= 4 Number of White Marbles= 5 Number of Blue Marbles= 8 Total Number of Marbles= 4+5+8=17 P(E) = $\frac{\text{no.of favourable outcomes to the event}}{\text{Total no.of possible outcomes}} =$ (i) Probability of Blue Marble = P(Blue Marble) = $\frac{8}{17}$ -- (ii) Probability of Not Red Marble = P(Not Red Marble) = $\frac{13}{17}$ .... (iii) Probability of White Marble = P(White Marble) = $\frac{5}{17}$	1 1 1
32(a)	**SECTION-D** A train travelling at a uniform speed for 360 km, would have taken 48 minutes less to travel same distance if its speed were 5 km/h more. Find the original speed of the train. Solution : Let original speed of the train be x km/h. Then, time taken to travel 360 km with speed x km/h = 360/x hours	1

New speed = (x + 5) km/hr

Time taken to travel 360 km with speed (x + 5) km/hr = 360/(x + 5) hours 1

ATQ $\frac{360}{x} - \frac{360}{x+5} = \frac{48}{60}$ 1

$360\ \left(\frac{1}{x} - \frac{1}{x+5}\right) = \frac{4}{5}$

$360\ \left(\frac{x+5-x}{x(x+5)}\right) = \frac{4}{5}$ 1

$x^2 + 5x - 2250 = 0$

$x^2 + 50x - 45x - 2250 = 0$

$x(x+50) - 45(x+50) = 0$

$(x+50)(x-45) = 0$

x = -50 or x = 45 1

As the speed cannot be negative, x = 45

Thus, the original speed of the train is 45 km/hr.

OR

32(b) A plane left 30 minutes later than the scheduled time and in order to reach the destination 1500 km away in time, it has to increase the speed by 250 km/h from the usual speed. Find its usual speed.

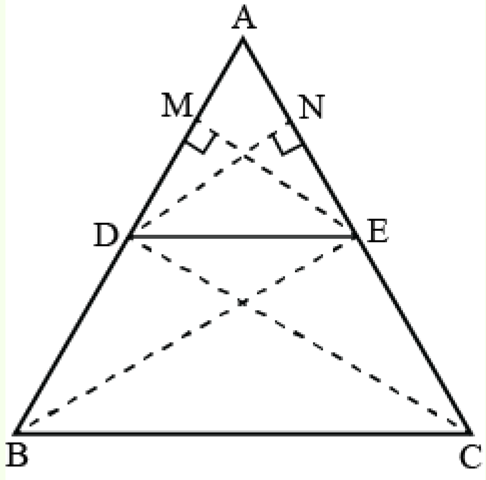
Solution

Let the usual speed of the plane be x km/h.

We know that time = distance/speed

⇒ Time taken by plane with speed x km/h = $\frac{1500}{x}$ hours 1

	∴ The increased speed of the plane = (x+250) km/h Also, time taken by plane with speed (x+250) km/h = $\frac{1500}{x+250}$ hours -- ATQ $$\frac{1500}{x} - \frac{1500}{x+250} = \frac{30}{60}$$ $1500(\frac{1}{x} - \frac{1}{x+250}) = \frac{1}{2}$ -- $1500(\frac{x+250-x}{x(x+250)}) = \frac{1}{2}$ ⇒ $x^2 + 250x – 750000 = 0$ -- ⇒ $x^2 + 1000x - 750x – 750000 = 0$ X (x+1000) -750 (x+1000) = 0 (x+1000)(x-750)=0 x = -1000 or x = 750 Since x is the speed of the plane, it cannot be negative. ∴ x = 750 gives the speed of the plane as 750 km/h.	1 1 1 1
33(a)	**Prove that if a line is drawn parallel to one side of a triangle intersecting the other two sides in distinct points, then the other two sides are divided in the same ratio.** **Solution:** **Given:** In ΔABC, DE||BC	½



½

½

To prove: $\frac{\mathbf{AD}}{\mathbf{DB}} = \frac{\mathbf{AE}}{\mathbf{EC}}$

--- ½

Construction : Draw EM⊥AB and DN⊥AC. Join B to E and C to D

Proof: In ΔADE and ΔBDE

½

$$\frac{\textbf{Area of}\Delta\textbf{ADE}}{\textbf{Area of }\Delta\textbf{BDE}} = \frac{\frac{1}{2}\times\textbf{AD}\times\textbf{EM}}{\frac{1}{2}\times\textbf{DB}\times\textbf{EM}} = \frac{\textbf{AD}}{\textbf{DB}}$$ --------------(i)

In ΔADE and ΔCDE

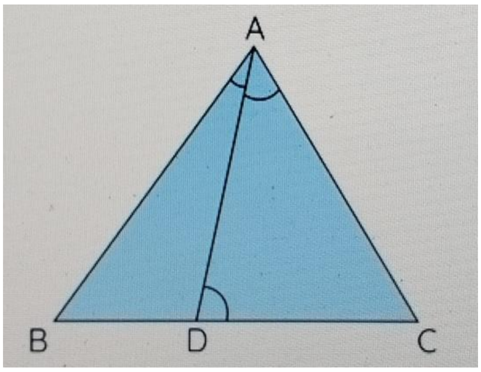
½

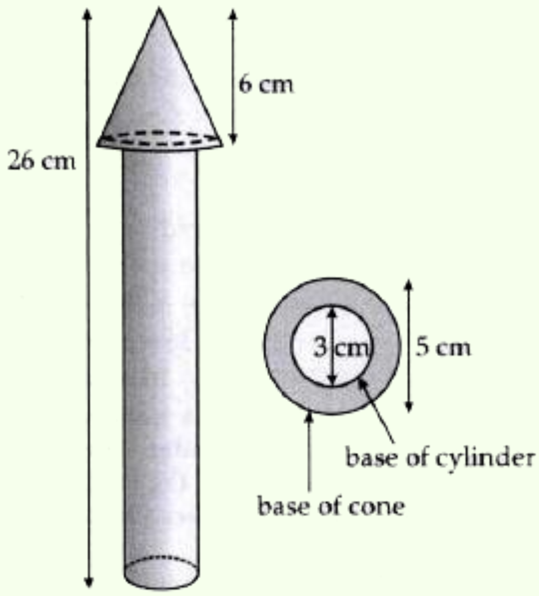
$$\frac{\textbf{Area of}\Delta\textbf{ADE}}{\textbf{Area of }\Delta\textbf{CDE}} = \frac{\frac{1}{2}\times\textbf{AE}\times\textbf{DN}}{\frac{1}{2}\times\textbf{EC}\times\textbf{DN}} = \frac{\textbf{AE}}{\textbf{EC}}$$ -----------------(ii)

Since, DE||BC [Given] 1

∴ ar(ΔBDE) = ar(ΔCDE) --------------------------------------- (iii)

[Δs on the same base and between the same parallel sides are equal in area]

	From eq. (i), (ii) and (iii) : $\frac{\mathbf{AD}}{\mathbf{DB}} = \frac{\mathbf{AE}}{\mathbf{EC}}$ Hence proved. --- OR 33(b) D is a point on the side BC of a triangle ABC such that $\angle ADC = \angle BAC$. Show that $CA^2 = CB.CD$. Solution:  Given: In ΔABC ,∠ADC=∠BAC To Prove: CA^2 = CB. --- Proof: In ΔABC and ΔADC ∠BAC = ∠ADC (Given) ∠ACB = ∠ACD (Common) ⇒ ΔABC ~ ΔADC (AA criterion) --- If two triangles are similar, then their corresponding sides are proportional	1

	$\Rightarrow \frac{CA}{CD} = \frac{CB}{CA}$ $\Rightarrow CA^2 = CB \times CD$ Hence, proved.	
34(a)	 **Solution:** Radius of the conical part, r= 5/2 cm. Height of the conical part, h= 6 cm Radius of the cylindrical part, R=3/2cm Height of cylindrical part , H =(26 -6) cm -- Slant height of the conical part, l = $\sqrt{r^2 + h^2} = \sqrt{(\frac{5}{2})^2 + 6^2}$ $=\sqrt{25/4 + 36} = \sqrt{169/4}$ =13/2cm -- Area to be painted orange = curved suface area of the cone + base area of the cone - base area of the cylinder $\pi rl + \pi r^2 - \pi R^2 = \pi (rl + r^2 - R^2)$ -- =[3.14×(5/2×13/2+5/2×5/2-3/2×3/2)]cm^2	½ ½ 1

$=[3.14\times(65/4+25/4-9/4)]cm^2=(3.14\times81/4)cm^2$

$=(3.14\times20.25)cm^2=63.585cm^2$ 1

Area to the painted yellow

= curved surface area of the cylinder + base area of the cylinder 1

$=2\pi RH+\pi R^2=\pi R(2H+R)$

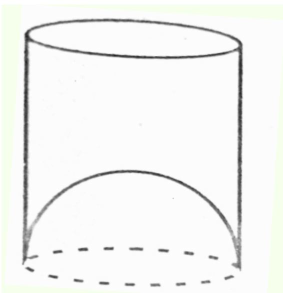
$=[3.14\times3/2\times(2\times20+3/2)]cm^2$

$=(3.14\times3/2\times83/2)cm^2=(781.864)cm^2$

$=195.465cm^2$

OR 1

34(b).A juice seller was serving his customer using glasses as shown in the figure. The inner diameter of the cylindrical glass was 5 cm but bottom of the glass had a hemispherical raised portion which reduced the capacity of the glass . If the height of the glass was 10cm, find the apparent and actual capacity of the glass.
[Use $\pi = 3.14$]



Solution:

The inner radius of the glass = $\frac{5}{2}$ cm = 2.5 cm

Height of the glass = 10 cm ½

The apparent capacity of the glass = $\pi r^2 h$

$=3.14\times2.5\times2.5\times10\ cm^3=196.25\ cm^3$ $1\frac{1}{2}$

Volume of hemisphere = $\frac{2}{3}\pi r^3=\frac{2}{3}\times3.14\times2.5\times2.5\times2.5\ cm^3=32.71\ cm^3$

	--	$1\frac{1}{2}$
	The actual capacity of the glass = apparent capacity of glass - volume of the hemisphere $=(196.25-32.71)$ cm^3 $=163.54$ cm^3	$1\frac{1}{2}$
35(a)	see table below	1 1 1

Daily Pocket Allowance (Rs)	Number of children (f_i)	(x_i) mid values	$u_i = \frac{x_i - a}{h}$	$f_i.u_i$
11-13	7	12	-3	-21
13-15	6	14	-2	-12
15-17	9	16	-1	-9
17-19	13	18=a	0	0
19-21	f	20	1	f
21-23	5	22	2	10
23-25	4	24	3	12
	$\sum f_i = 44+f$			$\sum f_i.u_i = -20+f$

Mean= $\bar{x} = a + \frac{\sum fi.ui}{\sum fi.} \times h$ — 1

$18=18+\frac{-20+f}{44+f} \times 2$

$0= 2(-20+f) \Rightarrow f = 20$ — 1

OR

35(b) The median of the following data is 525.find the values of x and y, if total frequency is 100.

Class Interval वर्ग अंतराल	Frequency बारंबारता
0-100	2
100-200	5
200-300	x
300-400	12
400-500	17
500-600	20
600-700	y
700-800	9
800-900	7
900-1000	4

Solution:

Class Interval वर्ग अंतराल	Frequency बारंबारता	Cummulative 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

$n = 100 \Rightarrow \frac{n}{2} = 50$ 1

So, 76 + x + y = 100 ⇒ x + y = 24--------------------------(1)

Median = 525 ∴ Median class = 500 - 600

	So, l = 500, f = 20, c f = 36 + x, h = 100 -- Median = l + $\left(\frac{\frac{n}{2}-cf}{f}\right) \times h$ $\Rightarrow 525 = 500 + \left(\frac{50-36-x}{20}\right) \times 100$ -- $\Rightarrow 525-500 = (14-x) \times 5$ $\Rightarrow 25 = 70-5x$ $\Rightarrow 5x = 70-25 = 45 \Rightarrow x = 9$ -- From (1), we get 9 + y = 24 y = 24 - 9= 15	1 1 ½ ½
	SECTION-E	
36	36. In April 2025, some new animals were added to a zoo. As a result the number of visitors to the zoo, increased daily by 10. A total of 6150 people visited zoo during that month. Based on the above information, answer the following questions: (i) How many visitors visited the zoo on Ist April? (ii) On which day of the month did 250 visitors visit the zoo? (iii) How many persons visited the zoo in the last 5 days of the month of April? OR How much collection (in rupees) from sale of tickets was done in the zoo on 15th April, if each entry ticket costs Rs.50? **SOLUTION** (i) The number of visitors forms an A.P. where d=10, n=30 and	

$S_{30}=6150$

$S_n = \frac{n}{2}[2a+(n-1)d]$ 1

$\Rightarrow 6150 = \frac{30}{2}[2a + (30-1)10]$

$410=2a + 290 \quad \Rightarrow a=60$

(ii) $a_n= 250 \quad d= 10$

$a_n= a + (n-1)\, d$

$250= 60+ (n-1)10 \quad \Rightarrow n=20$

$\therefore$ 250 visitors visited the zoo on 20th April. 1

(iii) No. of visitors on the last 5 days of April = Total No. of visitors in April- No. of visitors on first 25 days of April 1

$= 6150 - \frac{25}{2}[2x60 + (25-1)10]$ 1

$=6150 – 25 \text{ x } 180 = 6150- 4500$

$=1500$

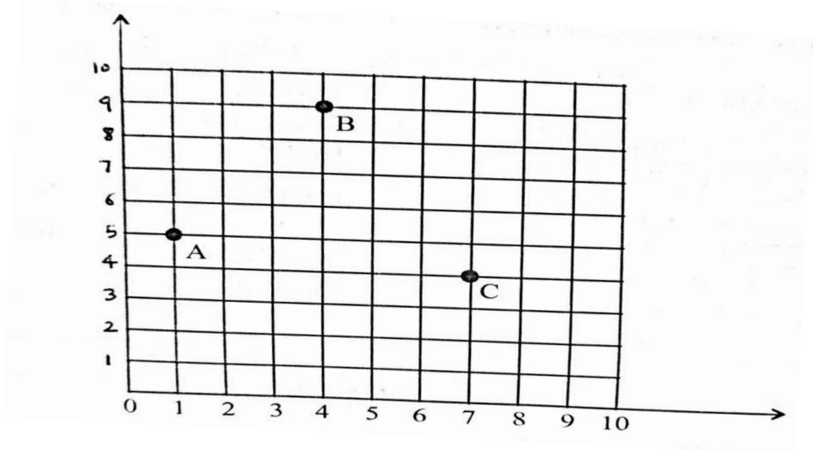
OR

No. of visitors on 15th April = 60 + (15- 1)x10 =200 1

Collection from sale of tickets on 15th April = 200x50 = Rs. 10000 1

37

Resident welfare Association (RWA) of a society put up three electric poles A,B and C in a society's park. Despite these three poles, some parts of the park are still in dark. So, RWA decides to have one more electric pole D in the park.



Based on the above information ,answer the following questions:
(i) Find the position of the pole C.
(ii) Find the distance of the pole B from corner O of the park.
(iii) Find the position of the fourth pole D so that four points A,B,C and D form a parallelogram.

OR

Find the distance between poles A and C.

SOLUTION

(i) Position of point C(7,4) 1

1

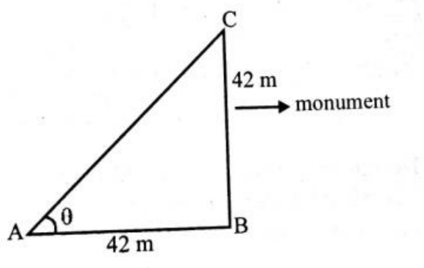
(ii) Distance of pole B(4,9) from corner O(0,0)

$$= \sqrt{(4-0)^2 + (9-0)^2} = \sqrt{97} \text{ units}$$

(iii) A(1,5),B(4,9) ,C(7,4) are three vertices of parallelogram ABCD and let D(x,y) be the fourth vertex 1

Mid-point of diagonal AC = Mid-point of BD

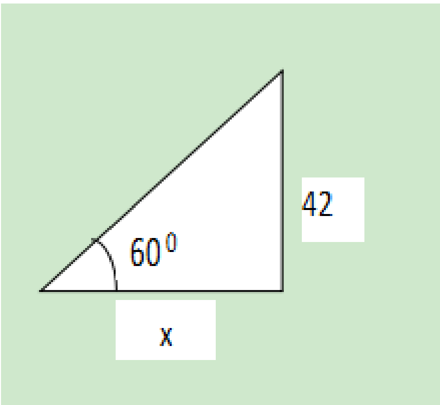
	$(\frac{7+1}{2}, \frac{5+4}{2}) = (\frac{x+4}{2}, \frac{9+y}{2})$ $\Rightarrow$ x=4 ,y=0 $\therefore$ D(4,0) -- OR Distance between Pole A and C = $\sqrt{(7-1)^2+(4-5)^2}$ $= \sqrt{36+1} = \sqrt{37}$	1 1 1
38.	**A group of students of class X visited India Gate on an educational trip. The teacher and students had interest in history as well. The teacher narrated that India Gate , official name Delhi Memorial, originally called All-India War Memorial, monumental sandstone arch in New Delhi,dedicated to the troops of British India who died in wars fought between 1914 and 1919.The teacher also said that India Gate ,which is located at the eastern end of the Rajpath(formely called the Kingsway),is about 138 feet (42 metres) in height.** **Based on the above information answer the following questions:** **(i)What is the angle of elevation if they are standing at a distance of 42 m away from the monument?** **(ii) They want to see the tower at an angle of 60^0.So, they want to know the distance where they should stand and hence find the distance.** **(iii)If the altitude of the Sun is at 60^0, then find the height of the vertical tower that will cast a shadow of length 20m.** **OR** **The ratio of the length of a rod and its shadow is 1:1. Find the angle of elevation of the Sun .** **SOLUTION:**	



(i) $\tan\theta = \frac{42}{42} = 1$ 1/2

$\Rightarrow \theta = 45°$ 1/2

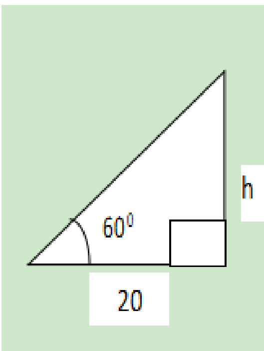
(ii)

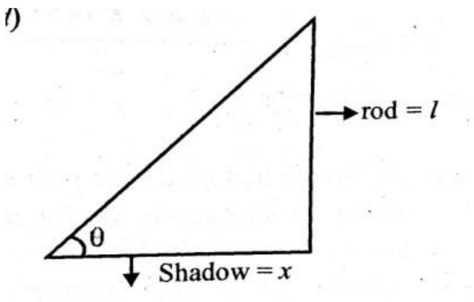


$\tan 60° = \frac{42}{x}$ ½

$\sqrt{3} = \frac{42}{x} \Rightarrow x = \frac{42}{\sqrt{3}} \Rightarrow x = 14\sqrt{3}$ m ½

(iii)



	$\frac{h}{20} = \tan 60°$ --- $\Rightarrow h = 20\sqrt{3}\ m$ OR  $\tan\theta = \frac{l}{x}$ --- $\Rightarrow \tan\theta = 1 \Rightarrow \theta = 45°$	1 1 1 1