Solutions to RMT–DS2/Set-1

1. (*c*) 108, as HCF is a factor of LCM.

2. (*a*)
$$y = (x - 1)(x - 2)$$
$$= x^2 - 3x + 2$$

3. (*d*) If the lines $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are parallel, then $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$. Also, if lines are parallel, then system of equations has no solution.

4. (*a*) We have, $a = 3, b = -5, c = 7$

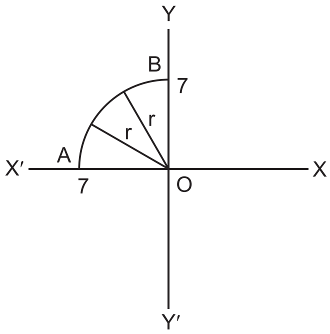
Now, $D = 25 - 4 \times 3 \times 7 = -59 < 0$ $(\because D = b^2 - 4ac)$

$\therefore$ No real roots

5. (*c*) $a_7 + a'_7 = (5 + 12) + (5 - 12) = 10$ $[\because n^{th} \text{ term} = a + (n - 1)d]$

6. (*b*)
$$\text{Distance} = \sqrt{(3-0)^2 + (-4-0)^2}$$
$$= \sqrt{9+16} = \sqrt{25} = 5 \text{ units}$$

7. (*d*) Infinitely many, as any point on arc AB of a circle of radius 7 units will be the required point.



8. (*a*) As, $\Delta ABO \sim \Delta CDO \Rightarrow \frac{AB}{CD} = \frac{BO}{DO}$

$\Rightarrow$ $\frac{9}{3} = \frac{4+x}{x} \Rightarrow 3x = 4 + x$

$\Rightarrow$ $2x = 4 \Rightarrow x = 2$

9. (*d*) As, tangents drawn from an external point to a circle are always equally inclined to line segment joining external point to the centre.

So, $\angle OPA = \frac{1}{2}\angle APB = \frac{1}{2} \times 70° = 35°$

Also, tangent to a circle is $\perp$ to its radius at the point of contact, then $\angle OAP = 90°$.

Now, $\angle AOP = 90° - 35° = 55°$

10. (*a*) Tangents drawn from an external point to a circle are equal. Then,

$$CR = CQ, AR = AP, BQ = BP \quad ...(i)$$

Perimeter of $\Delta ABC = 40$ cm

$\Rightarrow$ $CA + CB + AB = 40$

$\Rightarrow$ $CR - AR + CQ - BQ + AP + BP = 40$

$\Rightarrow$ $CR - AR + CR - BP + AR + BP = 40$

$\Rightarrow$ $CR = 20$ cm

11. (*a*) As, $\sin\theta = \frac{4}{a}$

Now, $\tan\theta = \frac{\sin\theta}{\cos\theta} = \frac{\sin\theta}{\sqrt{1-\sin^2\theta}}$

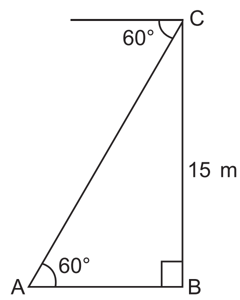
$$= \frac{\frac{4}{a}}{\sqrt{1-\frac{16}{a^2}}} = \frac{4}{\sqrt{a^2-16}}$$

12. (*d*) $x^2 - 9y^2 = 9\sec^2 A - 9\tan^2 A$

$$= 9(\sec^2 A - \tan^2 A) = 9$$

13. (*b*) As, $\frac{AB}{BC} = \cot 60° \Rightarrow \frac{AB}{15} = \cot 60° = \frac{1}{\sqrt{3}}$

$\Rightarrow$ $AB = \frac{15}{\sqrt{3}} = 5\sqrt{3}$ m



14. (*c*) $\pi r^2 = 4 \times 2\pi r \Rightarrow r = 8$

15. (*c*) As, 18 sectors will be formed by 9 diameters of a circle.

Now, central angle of each sector, $\theta = \frac{360°}{18} = 20°$

$\therefore$ Area of each sector $= \frac{\theta}{360°} \times \pi r^2$

$$= \frac{20°}{360°} \times \pi \times (12)^2$$

$$= 8\pi \text{ cm}^2$$

16. (*a*) Probability $= \frac{\frac{1}{2}\pi(5)^2}{16\times 10} = \frac{1}{2}\times\frac{22}{7}\times\frac{25}{160}$

$$= \frac{55}{224}$$

17. (*d*) After reshuffling, 49 cards are left in the deck that includes 2 red queens.

$\therefore$ P(a red queen) $= \frac{2}{49}$

18. (*c*)

C.I.	*f*	*c.f.*
0 – 10	3	3
10 – 20	8	11
20 – 30	11	22 ← Median class and Modal class
30 – 40	9	31
40 – 50	7	38

Upper limit of modal class – Lower limit of median class = 30 – 20 = 10

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

20. (*a*) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

21. Let, if possible, $2 + \sqrt{2}$ is a rational number. Then,

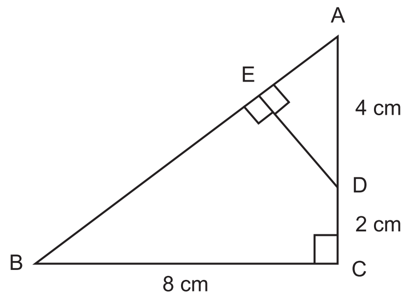
$$2 + \sqrt{2} = \frac{a}{b} \quad \text{(where } a \text{ and } b \text{ are coprime integers and } b \neq 0\text{)}$$

$$\Rightarrow \quad \sqrt{2} = \frac{a}{b} - 2$$

$$\Rightarrow \quad \sqrt{2} = \frac{a-2b}{b} \quad ...(i)$$

Since a and b are integers so, RHS of (i) is a rational number but LHS (i.e. $\sqrt{2}$) is not a rational number. Hence, this is a contradiction. So our supposition is wrong. Hence $2 + \sqrt{2}$ is an irrational number.

22.



Consider triangles ACB and AED,

$$\angle C = \angle AED \quad [90° \text{ each}]$$

$$\angle A = \angle A \quad [\text{common}]$$

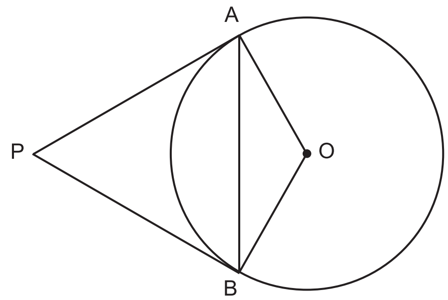
$$\therefore \quad \Delta ACB \sim \Delta AED \quad \text{(AA similarity)}$$

$$\Rightarrow \quad \frac{AC}{AE} = \frac{BC}{DE} = \frac{AB}{AD} \Rightarrow \frac{AE}{AC} = \frac{DE}{BC} = \frac{AD}{AB}$$

$$\Rightarrow \quad \frac{AE}{6} = \frac{DE}{8} = \frac{4}{10} \quad [\because AB = \sqrt{64+36} = 10 \text{ cm}]$$

$$\Rightarrow \quad AE = 2.4 \text{ cm}, DE = 3.2 \text{ cm}$$

23.



We have, $\angle APB = 60°$

Tangents drawn from an external point to a circle are equal.

So, $PB = PA \Rightarrow \angle PAB = \angle PBA = 60°$

Also, $\angle PAO = 90°$ (tangent to circle is $\perp$ to its radius at point of contact)

$\therefore$ $\angle OAB = 90° - 60° = 30°$

Now, $\angle OBA = \angle OAB$ $(\because OA = OB)$

$\Rightarrow$ $\angle OBA = 30°$

24.

$$\sin(A + B - C) = \frac{1}{2}$$

$$\Rightarrow \quad A + B - C = 30° \quad ...(i)$$

and

$$\cos(B + C - A) = \frac{1}{\sqrt{2}}$$

$\Rightarrow \qquad B + C - A = 45°$ ...(*ii*)

Also, $\qquad A + B + C = 180°$ ...(*iii*)

From (*i*), $\qquad A + B = 30° + C$

$\therefore$ from (*iii*), we get

$$30° + 2C = 180° \qquad [\because A + B = 30° + C]$$

$\Rightarrow \qquad C = 75°$

Substituting C = 75° in (*ii*) and (*iii*), we get

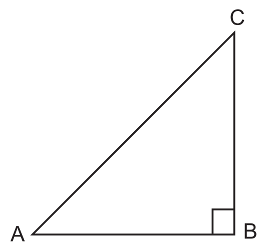
$$-A + B = -30° \qquad ...(iv)$$

$$A + B = 105° \qquad ...(v)$$

Solving (*iv*) and (*v*), we get

$$B = 37.5° \text{ and } A = 67.5°$$

OR



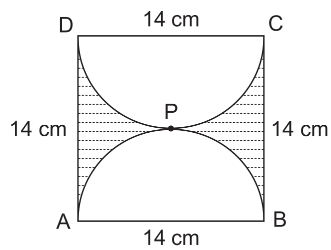
$$AB : AC = 1 : \sqrt{2}$$

$$\frac{AB}{AC} = \frac{1}{\sqrt{2}} = \cos A$$

$\Rightarrow \qquad A = 45°$

$\therefore \qquad \dfrac{2\tan A}{1+\tan^2 A} = \dfrac{2\tan 45°}{1+\tan^2 45°} = \dfrac{2}{2} = 1. \quad (\because \tan 45° = 1)$

25. Perimeter of shaded region = circumference of semicircle on diameter DC + circumference of semicircle on diameter AB + AD + BC

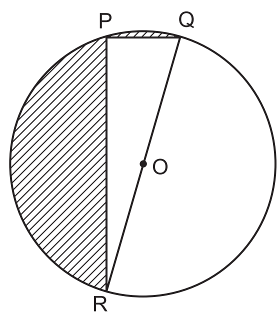


$$= \pi r + \pi r + AD + BC$$
$$= \pi(7) + \pi(7) + 14 + 14$$
$$= 14\pi + 28$$
$$= 14 \times \frac{22}{7} + 28$$
$$= 44 + 28 = 72 \text{ cm.}$$

OR

As, QR is diameter, then $\qquad \angle QPR = 90°$ [Angle in a semicircle is right angle]

Now, $\qquad QR^2 = PR^2 + PQ^2$ (Pythagoras Theorem)



$\Rightarrow \qquad QR^2 = (24)^2 + (7)^2 = 576 + 49 = 625$

$\Rightarrow \qquad QR = 25$ cm

Shaded area = ar(semicircle) – ar(ΔPQR) $= \dfrac{1}{2}\pi r^2 - \dfrac{1}{2} \times PQ \times PR$

$$= \frac{1}{2}\pi\left(\frac{25}{2}\right)^2 - \frac{1}{2} \times 24 \times 7$$

$$= \frac{625}{8}\pi - 84 = \frac{625}{8} \times \frac{22}{7} - 84$$

$$= 245.54 - 84 = 161.54 \text{ cm}^2$$

26.

English	Social Science	Hindi
192	240	168

We find HCF of 192, 240 and 168.

$$192 = 2^6 \times 3$$
$$240 = 2^4 \times 3 \times 5$$
$$168 = 2^3 \times 3 \times 7$$
$$HCF = 2^3 \times 3 = 24$$

$\therefore$ Number of stacks for English $= \frac{192}{24} = 8$

Number of stacks for Social Science $= \frac{240}{24} = 10$

Number of stacks for Hindi $= \frac{168}{24} = 7$

27. α, β are zeroes of polynomial $3x^2 + 2x - 1$.

$$\text{Sum of zeroes} = \alpha + \beta = -\frac{2}{3} \quad ...(i)$$

$$\text{Product of zeroes} = \alpha\beta = -\frac{1}{3} \quad ...(ii)$$

(*a*)
$$\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha} = \frac{\alpha^3 + \beta^3}{\alpha\beta} = \frac{(\alpha+\beta)^3 - 3\alpha\beta(\alpha+\beta)}{\alpha\beta}$$

$$= \frac{\left(-\frac{2}{3}\right)^3 - 3\left(-\frac{1}{3}\right)\left(-\frac{2}{3}\right)}{-\frac{1}{3}}$$

$$= \frac{-\frac{8}{27} - \frac{2}{3}}{-\frac{1}{3}} = \frac{-\frac{26}{27}}{\frac{-1}{3}} = \frac{26}{27} \times \frac{3}{1} = \frac{26}{9}$$

(*b*)
$$\alpha^2\beta + \alpha\beta^2 = \alpha\beta(\alpha + \beta) = \left(-\frac{1}{3}\right)\left(-\frac{2}{3}\right) = \frac{2}{9}$$

28. Given equations are:

$$2x + 3y = 7$$

$$(m - 1)x + (m + 1)y = (3m - 1)$$

For infinitely many solutions, $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

$\Rightarrow$ $\frac{2}{m-1} = \frac{3}{m+1} = \frac{7}{3m-1}$

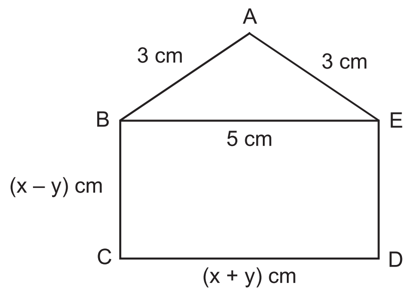
$\Rightarrow$ $\frac{2}{m-1} = \frac{3}{m+1}$ and $\frac{3}{m+1} = \frac{7}{3m-1}$

$\Rightarrow$ $2m + 2 = 3m - 3$ and $9m - 3 = 7m + 7$

$\Rightarrow$ $m = 5$ and $m = 5$

So, $m = 5$

OR



Perimeter = 21 cm

$\Rightarrow$ AE + AB + BC+ ED+ DC = 21 cm

$\Rightarrow$ $3 + 3 + x - y + x - y + x + y = 21$

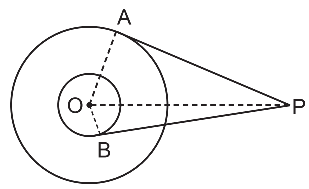
$\Rightarrow$ $3x - y = 15 \quad ...(i)$

and $x + y = 5 \quad ...(ii)$

Solving (*i*) and (*ii*), we get $x = 5, y = 0$

29. Join OA, OB and OP. Now, AP = 24 cm, OA = 10 cm

$\angle OAP = 90°$ [As, tangent is $\perp$ to the radius at the point of contact]



In ΔPAO, $OP^2 = (24)^2 + (10)^2$ [Pythagoras theorem]

$= 576 + 100 = 676$

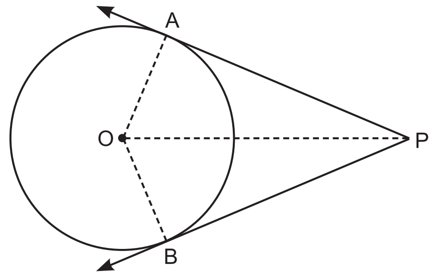
Also PB is tangent to smaller circle, so $\angle OBP = 90°$

In ΔPBO, $OP^2 = OB^2 + PB^2$

$\Rightarrow$ $676 = (4)^2 + PB^2 \Rightarrow PB^2 = 676 - 16$

$\Rightarrow$ $PB^2 = 660 \Rightarrow PB = 2\sqrt{165}$ cm

OR



Given: PA and PB are tangents drawn to a circle with centre O, from an external point P, with points of contact A and B respectively.

To Prove: PA = PB

Construction: Join OA, OB and OP.

Proof: As tangent to a circle is $\perp$ to its radius at the point of contact.

So, $\angle OAP = \angle OBP = 90°$

Now, in ΔOAP and ΔOBP,

$\angle OAP = \angle OBP$ (90° each)

$OP = OP$ (common)

$OA = OB$ (radii)

$\Rightarrow$ $\Delta OAP \cong \Delta OBP$ (RHS)

$\Rightarrow$ $PA = PB$ (CPCT)

30. As, $15\cot^2\theta + 4\text{cosec}^2\theta = 23$

$\Rightarrow$ $15(\text{cosec}^2\theta - 1) + 4\text{cosec}^2\theta = 23$

$\Rightarrow$ $15\text{cosec}^2\theta - 15 + 4\text{cosec}^2\theta = 23$

$\Rightarrow$ $19\text{cosec}^2\theta = 38$

$\Rightarrow$ $\text{cosec}^2\theta = 2$

$\Rightarrow$ $1 + \cot^2\theta = 2$

$\Rightarrow$ $\cot^2\theta = 1$

$\Rightarrow$ $\tan^2\theta = \dfrac{1}{\cot^2\theta} = 1$

Now, $\dfrac{1-\tan^2\theta}{1+\tan^2\theta} = \dfrac{1-1}{1+1} = \dfrac{0}{2} = 0$

31.

% of female Teachers (C.I)	x_i	**No. of States/UT's (f_i)**	$u_i = \dfrac{x_i - A}{h} = \dfrac{x_i - 50}{10}$	$f_i u_i$
15 – 25	20	6	–3	–18
25 – 35	30	11	–2	–22
35 – 45	40	7	–1	–7
45 – 55	$\boxed{50}$ = A	4	0	0
55 – 65	60	4	1	4
65 – 75	70	2	2	4
75 – 85	80	1	3	3
		$\Sigma f_i = 35$		$\Sigma f_i u_i = -36$

We have, A = 50 and h = 10

$$\text{Mean} = A + \frac{\sum f_i u_i}{\sum f_i} \times h = 50 + \frac{(-36)}{35} \times 10$$

$$= 50 - \frac{72}{7} = \frac{278}{7} \approx 39.71$$

Mean percentage of female teachers is 39.71% (approx.).

32. Let the first part = x

Then, the second part = $15 - x$

ATQ, $x^2 + (15 - x)^2 = 197$

$\Rightarrow x^2 + 225 + x^2 - 30x = 197$

$\Rightarrow 2x^2 - 30x + 28 = 0$

$\Rightarrow 2[x^2 - 15x + 14] = 0$

$\Rightarrow x^2 - 15x + 14 = 0$

$\Rightarrow x^2 - 14x - x + 14 = 0$

$\Rightarrow x(x - 14) - 1(x - 14) = 0$

$\Rightarrow (x - 1)(x - 14) = 0$

$\Rightarrow x - 1 = 0$ or $x - 14 = 0$

$\Rightarrow x = 1$ or $x = 14$

when $x = 1$, $15 - x = 14$

when $x = 14$, $15 - x = 1$

So, the required parts are 14 and 1.

OR

Let the width = x cm

Then, the length = $(x + 10)$ cm

Now, area of rectangle = 39 cm^2

$\Rightarrow$ length × breadth = 39

$\Rightarrow (x + 10) \times x = 39$

$\Rightarrow x^2 + 10x - 39 = 0$

$\Rightarrow x^2 + 13x - 3x - 39 = 0$

$\Rightarrow x(x + 13) - 3(x + 13) = 0$

$\Rightarrow (x - 3)(x + 13) = 0$

$\Rightarrow x - 3 = 0$ or $x + 13 = 0$

$\Rightarrow x = 3$ or $x = -13$ (Rejected)

$\therefore$ Width = x cm = 3 cm and length = $(x + 10)$ cm = 13 cm

$$\text{Perimeter} = 2(l + b) = 2(13 + 3) = 2 \times 16 = 32 \text{ cm}$$

33. **Given:** In ΔABC, DE || AB and BD || EF.

To Prove: $DC^2 = CF \times AC$

Proof: In ΔABC, DE || AB, then

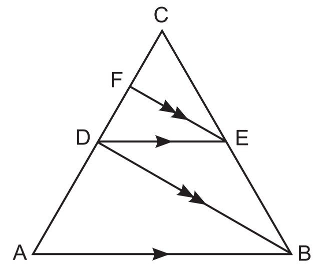
$$\frac{DC}{DA} = \frac{EC}{EB} \quad \text{[BPT]}$$

$$\Rightarrow \frac{DA}{DC} = \frac{EB}{EC}$$

$$\Rightarrow \frac{DA}{DC} + 1 = \frac{EB}{EC} + 1 \quad \text{[Adding ‘1’ on both sides]}$$

$$\Rightarrow \frac{DA + DC}{DC} = \frac{EB + EC}{EC}$$

$$\Rightarrow \frac{AC}{DC} = \frac{BC}{EC} \quad ...(i)$$



In ΔCDB, EF || BD, then

$$\frac{CF}{FD} = \frac{CE}{EB}$$

$$\Rightarrow \frac{FD}{CF} = \frac{EB}{CE}$$

$\Rightarrow$ $$\frac{FD}{CF}+1 = \frac{EB}{CE}+1$$ [Adding '1' on both sides]

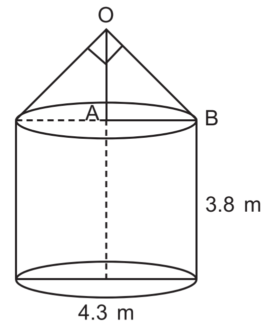
$\Rightarrow$ $$\frac{FD+CF}{CF} = \frac{EB+CE}{CE}$$

$\Rightarrow$ $$\frac{DC}{CF} = \frac{BC}{CE} \qquad ...(ii)$$

$\therefore$ From (*i*) and (*ii*), we get

$$\frac{AC}{DC} = \frac{DC}{CF} \Rightarrow DC^2 = CF \times AC$$

34. For cylinder:



$$\text{diameter of base} = 4.3 \text{ m} \Rightarrow \text{radius, } r = \frac{4.3}{2} \text{ m}$$

$$\text{height, } h = 3.8 \text{ m}$$

For cone:

$$\text{diameter of base} = 4.3 \text{ m} \Rightarrow r = \frac{4.3}{2} \text{ m}$$

In ΔAOB, $\angle AOB = \frac{1}{2}$ of vertical angle of cone $= \frac{1}{2} \times 90° = 45°$

Now, $$\frac{AB}{OA} = \tan 45° \Rightarrow OA = \frac{4.3}{2} \text{ m} = h_1$$

Now, $$\frac{OB}{AB} = \text{cosec } 45° \Rightarrow OB = \sqrt{2} \times \frac{4.3}{2} \text{ m} = l$$

$$\text{Surface area of building} = 2\pi rh + \pi rl$$

$$= 2\pi\left(\frac{4.3}{2}\right) \times 3.8 + \pi \times \left(\frac{4.3}{2}\right) \times \sqrt{2} \times \frac{4.3}{2}$$

$$= 4.3\pi\left[3.8 + \frac{4.3\sqrt{2}}{4}\right]$$

$$= 4.3 \times 3.14\left[3.8 + \frac{4.3 \times 1.41}{4}\right]$$

$$= 13.502 \times \frac{21.263}{4}$$

$$= 71.77 \text{ m}^2$$

$$\text{Volume of building} = \pi r^2 h + \frac{1}{3}\pi r^2 h_1$$

$$= \pi\left(\frac{4.3}{2}\right)^2 \times 3.8 + \frac{1}{3}\pi\left(\frac{4.3}{2}\right)^2 \times \frac{4.3}{2}$$

$$= \pi\left(\frac{4.3}{2}\right)^2\left[3.8 + \frac{4.3}{6}\right]$$

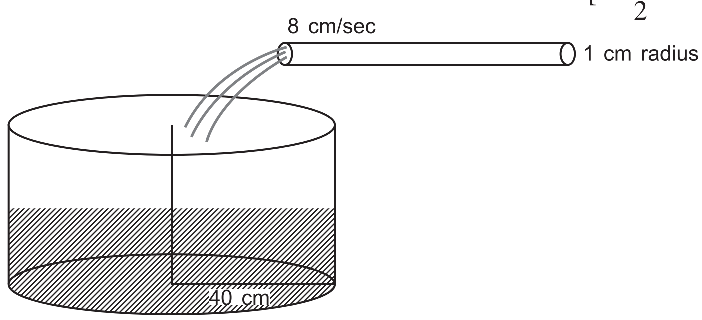
$$= 3.14(2.15)^2\left[3.8 + \frac{4.3}{6}\right] = 65.56 \text{ m}^3 \text{ (approx.)}$$

OR

For Pipe: radius = 1 cm

In 1 sec water flows = 8 cm

In 1800 sec water flows = 8×1800 cm [$\because \frac{1}{2}$ hr = 1800 sec]



For cylinder: Radius of base = 40 cm

Let height raised = h cm

ATQ, Volume of water that flows out in $\frac{1}{2}$ hr from pipe = volume of water raised in cylindrical tank in $\frac{1}{2}$ hr

$$\pi(1)^2 \times 8 \times 1800 = \pi(40)^2 h$$

$$\Rightarrow \quad h = \frac{8 \times 1800}{1600} = 9 \text{ cm}$$

$\therefore$ Height raised = 9 cm

35.

C.I.	f
0 – 10	7
10 – 20	14
20 – 30	13
30 – 40	12
40 – 50	p ← Modal class
50 – 60	18
60 – 70	15
70 – 80	8

Mode = 48

Modal class: 40 – 50

$l = 40, f_1 = p, f_0 = 12, f_2 = 18, h = 10$

$$\text{Mode} = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h$$

$$\Rightarrow \quad 48 = 40 + \frac{p - 12}{2p - 12 - 18} \times 10$$

$$\Rightarrow \quad 8(2p - 30) = 10(p - 12)$$

$$\Rightarrow \quad 16p - 240 = 10p - 120$$

$$\Rightarrow \quad 6p = 120 \quad \Rightarrow \quad p = 20$$

36. We have $a = 50, d = 5$

(*i*) $a_8 = 50 + (8 - 1)5 = 50 + 35 = 85$

(*ii*) $a_n = 80 \quad \Rightarrow \quad a + (n - 1)d = 80$

$\Rightarrow \quad 50 + (n - 1)5 = 80$

$\Rightarrow \quad (n - 1)5 = 30 \Rightarrow n - 1 = 6 \Rightarrow n = 7$

So, she will take 80 push-ups on 7^{th} day.

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

$$\therefore \quad S_{10} = \frac{10}{2}[2 \times 50 + (10 - 1)5]$$

$$= 5[100 + 45] = 5 \times 145 = 725$$

OR

$$a_{15} = 50 + (15 - 1)5 = 50 + 70 = 120$$

37. (*i*) Mid point is $\left(\frac{20+100}{2}, \frac{50+40}{2}\right)$ *i.e.,* (60, 45).

(*ii*) Distance between locations of seating guests G and seating parents Q = $\sqrt{(100-50)^2+(10-10)^2}$

$$= \sqrt{50^2+0} = \sqrt{50^2} = 50 \text{ units}$$

OR

$$BG = \sqrt{(50-60)^2+(10-30)^2} = \sqrt{100+400} = 10\sqrt{5} \text{ units}$$

(*iii*) X(40, 60), Y(70, 60), Z(90, 60) are the given points

Distance between X and Y = $\sqrt{(70-40)^2+(60-60)^2}$ = 30 units

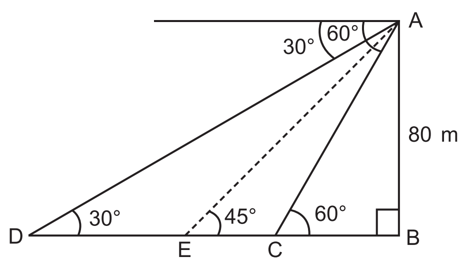
Distance between Y and Z = $\sqrt{(90-70)^2+(60-60)^2}$ = 20 units

Distance between X and Z = $\sqrt{(90-40)^2+(60-60)^2}$ = 50 units

As, $XY + YZ = XZ$

Hence seating place of X, Y, Z are in same straight line.

38. (*i*) In ΔABD, $\frac{BD}{AB} = \cot 30°$



$\Rightarrow$ $BD = 80\sqrt{3}$ m

Distance = $80\sqrt{3}$ m

(*ii*) We have, $\angle ACB = 60°$

In ΔABC, $\frac{BC}{AB} = \cot 60°$

$\Rightarrow$ $BC = 80 \times \frac{1}{\sqrt{3}} = \frac{80}{\sqrt{3}} = \frac{80\sqrt{3}}{3}$ m

$\therefore$ Distance = $\frac{80\sqrt{3}}{3}$ m

OR

$$DC = DB - BC = 80\sqrt{3} - \frac{80}{\sqrt{3}}$$

$$= 80\left(\frac{3-1}{\sqrt{3}}\right) = \frac{160}{\sqrt{3}} = \frac{160\sqrt{3}}{3} \text{ m}$$

So, $\frac{160\sqrt{3}}{3}$ m distance is covered in 5 minutes.

Now, speed = $\frac{\text{distance}}{\text{time}} = \frac{160\sqrt{3}}{3\times 5} = \frac{32\sqrt{3}}{3}$ m/min

(*iii*) When angle of depression is 45°, ship is at E and so $\angle AEB = 45°$

In ΔABE, $\frac{BE}{AB} = \cot 45° \Rightarrow BE = AB = 80$ m [$\because \cot 45° = 1$]

So, distance = 80 m