CBSE
Class IX Mathematics
Term II
Sample Paper - 2 Solution

(SECTION – A)

1. B

The co-ordinates (0, 1) and (1/2, 0) satisfy the equation 2x + y = 1. So the solutions are (0, 1) and (1/2, 0).

2. B

area(ΔPTQ) = $\frac{1}{2}$(area parallelogram PQRS) = $\frac{1}{2}\times 6 \times 6 = 18\ m^2$

3. A

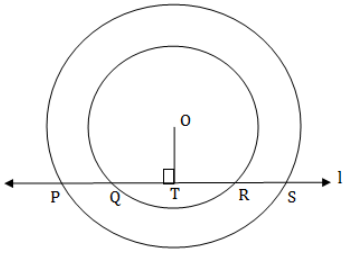
The perpendicular from the centre of circle to the chord bisects the chord.

PT = TS

TQ = TR

$\Rightarrow$ PT – QT = TS – TR

$\Rightarrow$ PQ = RS



4. C

20 is concluded in the lower limit.

Hence 20 is considered to be in class 20 – 30.

5. A

Let base of radius of cylinder = r units

Then diameter of sphere is = 2 × radius = 2r units

Height of the cylinder is equal to the diameter of sphere.

∴ Height of the cylinder = 2r units

Surface area of sphere = $4\pi r^2$ sq units. ...(1)

Lateral surface area of cylinder = $2\pi r\cdot(2r) = 4\pi r^2$ ...(2)

From (1) and (2)

We get,

The surface area of a sphere and the lateral surface area of a right circular cylinder that just encloses the sphere are equal.

6. B

Given r = 1.4 m and h = 6 m

Capacity of the tank = $\frac{1}{3}\pi r^2 h = \frac{1}{3}\times\frac{22}{7}\times(1.4)^2\times 6 = 12.32m^3$

7. B

A rhombus is a parallelogram with all sides equal. A rectangle is a parallelogram with opposite sides equal and all angles right angles. Every rectangle is not a square because in a square all sides are equal. A parallelogram is a trapezium because it has at least one pair of parallel sides.

8. Correct Answer: B

Area of rhombus = $\frac{1}{2} \times$ Product of diagonals

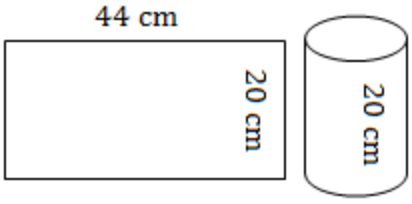
$= \frac{1}{2} \times 16 \times 24$

$= 192 cm^2$

(SECTION – B)

9. Height of the cylinder (h) = 20 cm

Let, the radius of the cylinder be r cm.

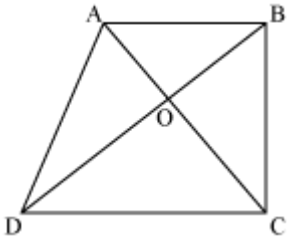


$\Rightarrow 2\pi r = 44$

$\Rightarrow r = \frac{44}{2\pi} = \frac{44}{2} \times \frac{7}{22} = 7\ cm$

The volume of cylinder = $\pi r^2 h = \frac{22}{7} \times 7 \times 7 \times 20 = 3080\ cm^3$

10. Here, ΔDAC and ΔDBC lie on same base DC and between same parallels AB and CD.



$\therefore$ area (ΔDAC) = area (ΔDBC)

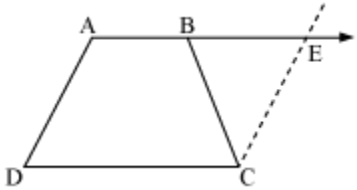
$\Rightarrow$ area (ΔDAC) – area (ΔDOC) = area (ΔDBC) – area (ΔDOC)

$\Rightarrow$ area (ΔAOD) = area (ΔBOC)

11. A probability of '0' means that an event is impossible and a probability of '1' means that an event is certain.
Therefore, the sum of the probabilities of the happening and not happening of an event = 1

12. Extend AB. Draw a line through C, which is parallel to AD, intersecting AE at point E.

Now, AECD is a parallelogram.



AD = CE (opposite sides of parallelogram AECD)
But AD = BC (given)
So, BC = CE
$\angle CEB = \angle CBE$ (angle opposite to equal sides are also equal)
Now consider parallel lines AD and CE. AE is transversal line between them
$m\angle A + m\angle CEB = 180°$ (angles on the same side of transversal)
$m\angle A + m\angle CBE = 180°$ (using the relation $\angle CEB = \angle CBE$) ... (1)
But $m\angle B + m\angle CBE = 180°$ (linear pair angles) ... (2)
From equations (1) and (2), we have
$\angle A = \angle B$

13. Linear equation that converts Fahrenheit to Celsius:

$$F = \left(\frac{9}{5}\right)C + 32$$

i. Temperature = 30° C

$$F = \left(\frac{9}{5}\right)C + 32$$

$$\Rightarrow F = \left(\frac{9}{5}\right)30 + 32 = 54 + 32 = 86$$

So, temperature is Fahrenheit is 86° F.

ii. Temperature = 95° F

$$F = \left(\frac{9}{5}\right)C + 32a$$

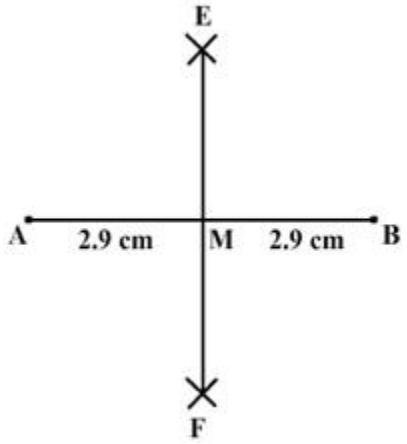
$$\Rightarrow 95 = \left(\frac{9}{5}\right)C + 32$$

$$\Rightarrow 63 = \left(\frac{9}{5}\right)C$$

$$\Rightarrow C = 35$$

So, temperature in Celsius is 35° C.

14.



Steps of construction:

1. Draw a line segment AB = 5.8 cm.
2. With A as centre and radius more than half of AB, draw two arcs above and below AB.
3. With B as centre and same radius, draw two arcs cutting the arcs drawn in step 2 at E and F respectively.
4. Join EF.
5. EF is the bisector of AB, and M is the point of bisection.

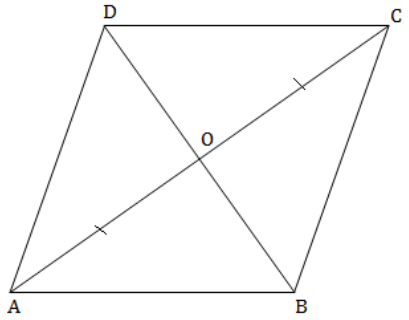
(SECTION – C)

15. Consider the rhombus ABCD.

The sides of a rhombus are all congruent (same length).

∴ AB = BC = CD = DA ...(i)

Now in Δ AOD and Δ COD,



OA = OC [∵Diagonals of parallelogram bisect each other.]

OD = OD [Common]

AD = CD [from (i)

∴ Δ AOD ≅ Δ COD [SSS congruence rule]

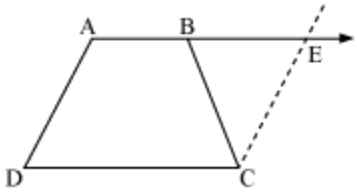
∠ AOD = ∠COD [CPCT]

∴ m∠AOD + m∠COD = 180°

∴ 2m∠AOD = 180°
∴ m∠AOD = 90°
Thus, the diagonals of a rhombus are perpendicular to each other.

OR

Extend AB. Draw a line through C, which is parallel to AD, intersecting AE at point E.
Now, AECD is a parallelogram.



i. AD = CE (opposite sides of parallelogram AECD)
But AD = BC (given)
So, BC = CE
∠CEB = ∠CBE (angle opposite to equal sides are also equal)
Now consider parallel lines AD and CE. AE is transversal line between them
m∠A + m∠CEB = 180° (angles on the same side of transversal)
m∠A +m ∠CBE = 180° (using the relation∠CEB = ∠CBE) ... (1)
But m∠B + m∠CBE = 180° (linear pair angles) ... (2)
From equations (1) and (2), we have
∠A = ∠B

ii. AB || CD
m∠A + m∠D = 180° (angles on the same side of transversal)
Also m∠C + m∠B = 180° (angles on the same side of transversal)
∴ ∠A + ∠D = ∠C + ∠B
But ∠A = ∠B [using the result obtained proved in (i)]
∴ ∠C = ∠D

iii. In ΔABC and ΔBAD
AB = BA (common side)
∠B = ∠A [using the result obtained proved in (i)]
BC = AD (given)
∴ ΔABC ≅ ΔBAD (SAS congruence rule)

iv. ΔABC ≅ ΔBAD
The corresponding parts of the congruent triangles are congruent.
∴ AC = BD (by CPCT)

16. Given, Length (l) = 4 m, Breadth (b) = 3 m, Height (h) = 2.5 m
Area of Tarpaulin required = 2(lh + bh) + lb
= [2(4 × 2.5 + 3 × 2.5) + 4 × 3] m^2
= [2(10 + 7.5) + 12] m^2
= 47 m^2
Hence, 47 m^2 tarpaulin will be required.

17.

(X_i)	(f_i)	f_iX_i
3	6	18
5	8	40
7	15	105
9	P	9P
11	8	88
13	4	52
	$\sum f_i = 41 + P$	$\sum f_i x_i = 303 + 9P$

$$\text{Mean} = \frac{\sum f_i x_i}{\sum f_i} = \frac{303 + 9P}{41 + P}$$

But mean = 8 (given)

$$\frac{303 + 9P}{41 + p} = 8$$

⇒ 303 + 9P = 8(41 + P)
⇒ 303 + 9P = 328 + 8P
⇒ 9P – 8P = 328 – 303
⇒ P = 25
The value of P = 25

18. Total number of engineers = 40

i. Number of engineers living at a distance of less than 7 km from their place of work = 9

Required probability $= \frac{9}{40}$

ii. Number of engineers living at a distance of more than or equal to 7 km from their place of work = 40 – 9 = 31

Required probability $= \frac{31}{40}$

iii. Number of engineers living within a distance of $\frac{1}{2}$ km from their place of work is 0.

Required probability $= \frac{0}{40} = 0$

19.

i. Taking x = 0, we get 3y = 12 i.e. y = 4.
So, (0, 4) is a solution of the given equation.
Similarly, by talking y = 0, we get x = 3.
Thus, (3, 0) is also solution.

ii. Taking x = 0, we get 5y = 0 i.e. y = 0
So (0, 0) is a solution of the given equation.
To get another solution, take x = 1, say. Then you can check that the corresponding value of y is $-\frac{2}{5}$.

$\left(1, -\frac{2}{5}\right)$ is another solution of 2x + 5y = 0.

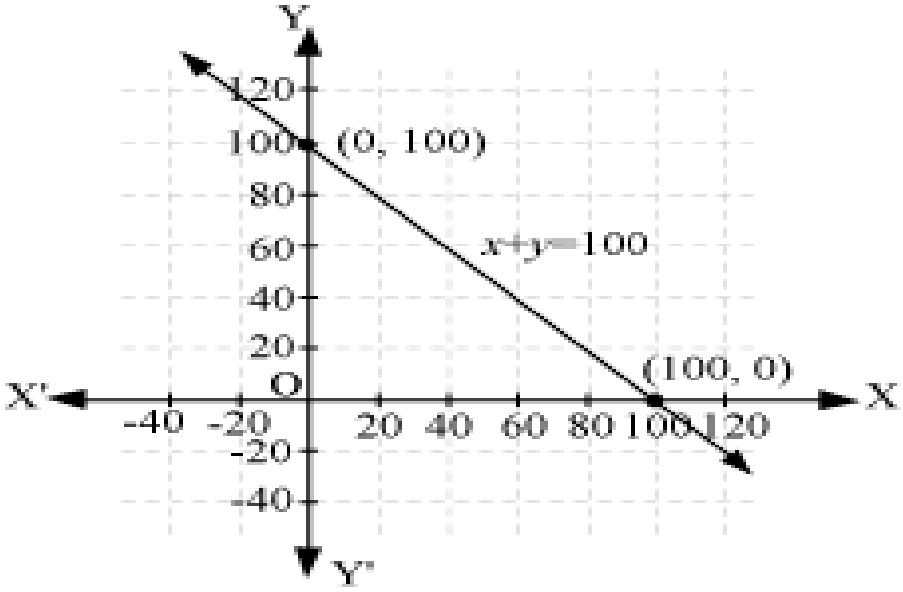
iii. Writing the equation 3y + 4 = 0 as 0·x + 3y + 4 = 0.
We get $y = -\frac{4}{3}$ for any value of x.

Thus, two solutions can be given as $\left(0, -\frac{4}{3}\right)$ and $\left(1, -\frac{4}{3}\right)$.

OR

Let Yamini and Fatima contributed *x* and *y* respectively towards the Prime Minister's Relief fund.

Amount contributed by Yamini + amount contributed by Fatima = 100
x + y = 100
Now we observe that (100, 0) and (0, 100) satisfy the above equation.
So, (100, 0) and (0, 100) are solutions of above equation.
The graph of equation x + y = 100 can be drawn as follows:



Here we may find that variable x and y are representing the amount contributed by Yamini and Fatima respectively and these quantities may not be negative. Hence we will consider only those values of x and y which are lying in 1st quadrant.

20.

i. Inner radius (r_1) of cylindrical pipe = 2 cm
Outer radius (r_2) of cylindrical pipe = 2.2 cm
Height (h) of cylindrical pipe = length of cylindrical pipe = 77 cm

C.S.A. of the inner surface of pipe = $2\pi r_1 h = \left(2 \times \frac{22}{7} \times 2 \times 77\right)\ \text{cm}^2 = 968\ \text{cm}^2$

ii. C.S.A. of outer surface of pipe = $2\pi r_2 h$

$$= \left(2 \times \frac{22}{7} \times 2.2 \times 77\right)\ \text{cm}^2$$
$$= (22 \times 22 \times 2.2)\ \text{cm}^2$$
$$= 1064.8\ \text{cm}^2$$

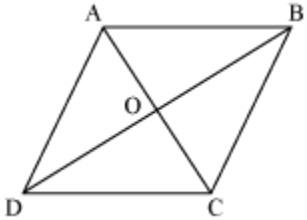
iii. Total surface area of pipe = C.S.A. of inner surface + C.S.A. of outer surface + area of both circular ends of pipe

$$= 2\pi r_1 h + 2\pi r_2 h + 2\pi\left(r_2^2 - r_1^2\right)$$
$$= \left[968 + 1064.8 + 2\pi\left\{(2.2)^2 - (2)^2\right\}\right]\ \text{cm}^2$$
$$= \left(2032.8 + 2 \times \frac{22}{7} \times 0.84\right)\ \text{cm}^2$$
$$= (2032.8 + 5.28)\ \text{cm}^2$$
$$= 2038.08\ \text{cm}^2$$

Thus, the total surface area of cylindrical pipe is 2038.08 cm^2.

21. Let ABCD be a quadrilateral, whose diagonals AC and BD bisect each other at right
angle i.e. OA = OC, OB = OD and m∠AOB = m∠BOC = m∠COD = m∠AOD = 90°
To prove that ABCD is a rhombus, we need to prove that ABCD is a parallelogram and all sides of ABCD are equal.
Now, in ΔAOD and ΔCOD

OA = OC	(Diagonal bisects each other)
∠AOD = ∠COD	(given)
OD = OD	(common)



$\therefore \Delta AOD \cong \Delta COD$ (by SAS congruence rule)

$\therefore AD = CD$ (1)

Similarly we can prove that

$AD = AB$ and $CD = BC$ (2)

From equations (1) and (2), we can say that

$AB = BC = CD = AD$

Since opposite sides of quadrilateral ABCD are equal, so, we can say that ABCD is a parallelogram. Since all sides of a parallelogram ABCD are equal, so we can say that ABCD is a rhombus.

22. Number of families surveyed = 2400

i. Number of families earning Rs. 10000 – Rs. 13000 per month and owning exactly 2 vehicles = 29

Required probability $= \frac{29}{2400}$

ii. Number of families earning Rs. 16000 or more per month and owning exactly 1 vehicle = 579

Required probability $= \frac{579}{2400}$

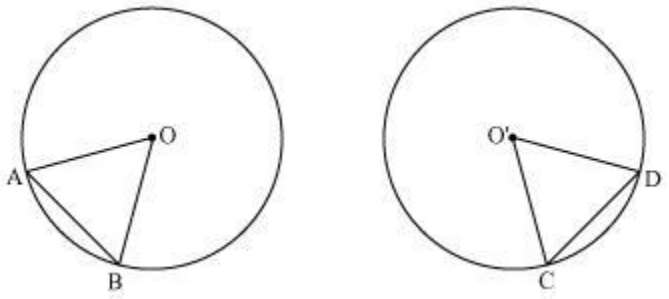
iii. Number of families earning less than Rs. 7000 per month and not owning any vehicle = 10

Required probability $= \frac{10}{2400} = \frac{1}{240}$

23. A circle is a collection of points which are equidistant from a fixed point. This fixed point is called the centre of the circle and this equal distance is called the radius of the circle. And thus shape of a circle depends on the radius of the circle.

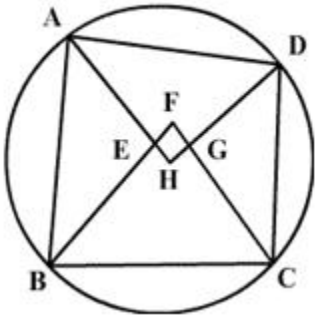
So, if we try to superimpose two circles of equal radius on each other, both circles will cover each other. Hence two circles are congruent if they have equal radius.

Now consider two congruent circles having centres O and O' and two chords AB and CD of equal lengths.



Now in ΔAOB and ΔCO'D
AB = CD (chords of same length)
OA = O'C (radii of congruent circles)
OB = O'D (radii of congruent circles)
$\therefore \Delta AOB \cong \Delta CO'D (SSS\,Congruence\,Rule)$
The corresponding parts of the congruent triangles are congruent.
$\Rightarrow \angle AOB = \angle CO'D (by\,CPCT)$
Hence equal chords of congruent circles subtend equal angles at their centres.

24.



In the given figure ABCD is a cyclic quadrilateral.
AH, BF, CF and DH are the angle bisectors of $\angle A$, $\angle B$, $\angle C$ and $\angle D$
To prove EFGH is also a cyclic quadrilateral.

Proof : $\angle FEH \cong \angle AEB$.....(i) (vertically opposite angles)

$\angle FGH \cong \angle DGC$.....(ii) (vertically opposite angles)

$\Rightarrow \angle FEH + \angle FGH = \angle AEB + \angle DGC$ (Adding (i) and (ii))

Now, by angle sum property

$$\angle AEB = 180^\circ - \left(\frac{1}{2}\angle A + \frac{1}{2}\angle B\right)$$

and $\angle DGC = 180^\circ - \left(\frac{1}{2}\angle D + \frac{1}{2}\angle C\right)$

$$\Rightarrow \angle FEH + \angle FGH = 180^\circ - \left(\frac{1}{2}\angle A + \frac{1}{2}\angle B\right) + 180^\circ - \left(\frac{1}{2}\angle D + \frac{1}{2}\angle C\right)$$

$$\Rightarrow \angle FEH + \angle FGH = 360^\circ - \frac{1}{2}(\angle A + \angle B + \angle C + \angle D)$$

$$\Rightarrow \angle FEH + \angle FGH = 360^\circ - \frac{1}{2} \times 360^\circ$$

$$\Rightarrow \angle FEH + \angle FGH = 360^\circ - 180^\circ = 180^\circ$$

$$\Rightarrow \angle EFG + \angle EFG = 360^\circ - 180^\circ = 180^\circ \quad \left[\begin{array}{l}\because \text{Sum of the angles} \\ \text{in a quadrilateral is } 360^\circ\end{array}\right]$$

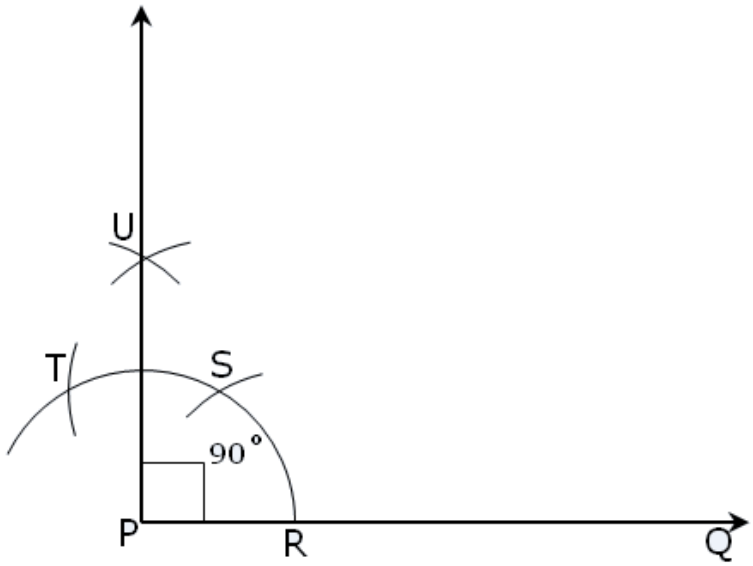
Thus the sum of opposite angles of quadrilateral EFGH is 180°.
Therefore, EFGH is a cyclic quadrilateral.

(SECTION – D)

25. Construct an angle of 90° at the initial point of a given ray and justify the construction.

Following are the steps of construction:

i. Take a ray PQ. Draw an arc of some radius taking point P as its centre, which intersect PQ at R.
ii. Taking R as centre and with the same radius as before, draw an arc intersecting the previously drawn arc at S.
iii. Taking S as centre and with the same radius as before, drawn an arc intersecting the arc at T (see figure)
iv. Taking S and T as centre, draw arc of same radius to intersect each other at U.
v. Join PU, which is the required ray making 90° with given ray PQ.



Justification of Construction:

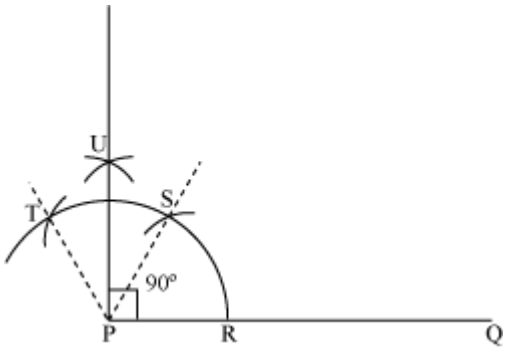
We can justify the construction, if we can prove m∠UPQ = 90°.

For this let us join PS and PT

We have m∠SPQ = m∠TPS = 60°. In (iii) and (iv) steps of this construction, we have drawn PU as the bisector of ∠TPS.

$\therefore$ m ∠UPS = $\frac{1}{2}$ m∠ TPS $= \frac{1}{2} \times 60° = 30°$

Now, m∠UPQ = m∠SPQ + m∠UPS = 60° + 30° = 90°



OR

We know that all sides of an equilateral triangle are equal. So, all sides of this equilateral triangle will be 5 cm.

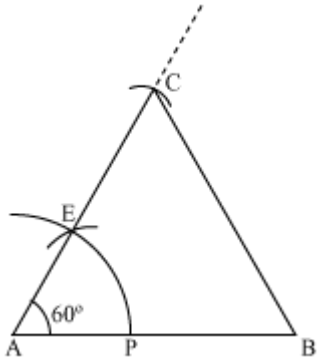
Also, each angle of an equilateral triangle is 60°.

The steps of construction are as follows:

Step I: Draw a line segment AB of length 5 cm. Draw an arc of some radius, while taking A as its centre. Let it intersect AB at P.

Step II: Now taking P as centre draw an arc to intersect the previous arc at E. Join AE.

Step III: Taking A as centre draw an arc of 5 cm radius, which intersects extended line segment AE at C. Join AC and BC. ∆ABC is the required equilateral triangle of side 5 cm.



Justification of Construction:

To justify the construction, we have to prove that ABC is an equilateral triangle i.e. AB = BC = AC = 5 cm and m∠A = m∠B = m∠C = 60°.

Now, in ∆ABC, we have AC = AB = 5 cm and m∠A = 60°.

Since, AC = AB, we have

∠B = ∠C (angles opposite to equal sides of a triangle)

Now, in ∆ABC

m∠A + m∠B + m∠C = 180° (angle sum property of a triangle)

⇒ 60° + m∠C + m∠C = 180°

⇒ 60° + 2 m∠C = 180°

⇒ 2 m∠C = 180° – 60° = 120°

⇒ m∠C = 60°

∴ ∠B = ∠C = 60°

Now, we have m∠A = m∠B = m∠C = 60° ... (1)

⇒ ∠A = ∠B and ∠A = ∠C

⇒ BC = AC and BC = AB (sides opposite to equal angles of a triangle)

⇒ AB = BC = AC = 5 cm ... (2)

Thus, ∆ABC is an equilateral triangle. [Equations (1) and (2)]

26. 2x + y = 7

For x = 0

⇒2 (0) + y = 7

⇒ y = 7

So, (0, 7) is a solution of this equation.

For x = 1

⇒ 2 (1) + y = 7

⇒ y = 5

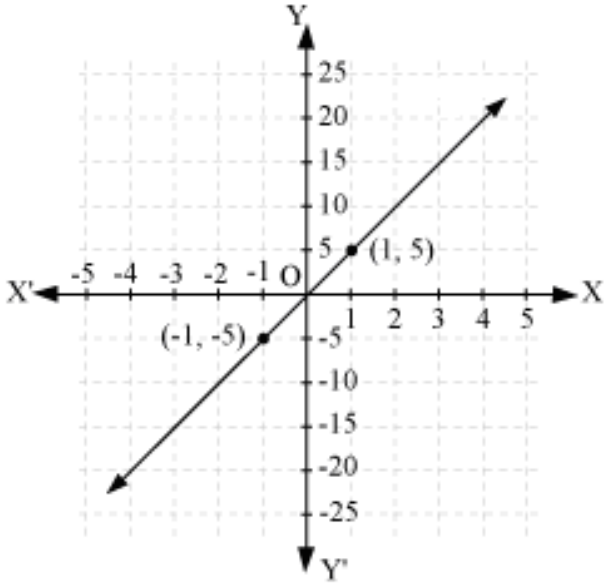
So, (1, 5) is a solution of this equation

For x = –1

⇒2 (– 1) + y = 7
⇒ y = 9
Hence, (– 1, 9) is a solution of this equation
For x = 2
2(2) + y = 7
⇒ y = 3
So (2, 3) is a solution of this equation.

OR

Let distance travelled by the body and work done by it be 'd' and 'w' respectively.
Work done ∝ distance traveled
w ∝ d
w = kd
where k is a constant
If constant force is 5 units, work done w = 5d
Now we observe that points (1, 5) and (–1, –5) satisfy the above equation.
So (1, 5) and (–1, –5) are solutions of this equation.



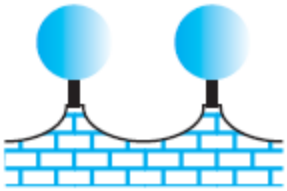
The graph can be drawn as follows:

i. From the graph we can observe that the value of y corresponding to x = 2 is 10. Thus the work done by the body is 10 units when the distance traveled by it is 2 units.

ii. From the graph we can observe that the value of *y* corresponding to x = 0 is 0. Thus the work done by the body is 0 units when the distance traveled by it is 0 units.

27. Radius (r) of a wooden sphere = $\left(\frac{21}{2}\right)$ cm $= 10.5$ cm

Surface area of a wooden sphere = 4 πr^2 $= \left[4 \times \frac{22}{7} \times (10.5)^2\right]$ cm^2 $= 1386$ cm^2

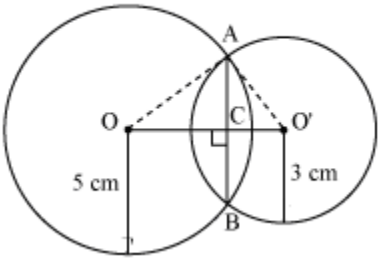


Radius (r_1) of cylindrical support = 1.5 cm
Height (h) of cylindrical support = 7 cm
C.S.A. of cylindrical support = $2\pi rh$
$= \left[2 \times \frac{22}{7} \times (1.5) \times 7\right]$ cm^2 $= 66$ cm^2

Area of circular end of cylindrical support = πr^2 $= \left[\frac{22}{7} \times (1.5)^2\right]$ cm^2 $= 7.07$cm^2

Area to be painted silver = [8 × (1386 – 7.07)] cm^2
Area to be painted silver = (8 × 1378.93) cm^2 = 11031.44 cm^2
Cost occurred in painting silver colour = Rs. (11031.44 × 0.25)
= Rs. 2757.86
Area to painted black = (8 × 66) cm^2 = 528 cm^2
Cost occurred in painting black colour = Rs. (528 × 0.05) = Rs. 26.40
∴ Total cost occurred in painting = Rs. (2757.86 + 26.4) = Rs. 2784.26

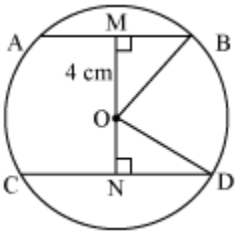
28. Let radius of circles with centres O and O' be 5 cm and 3 cm respectively.
OA = OB = 5 cm
O'A = O'B = 3 cm
OO' will be the perpendicular bisector of chord AB.



∴ AC = CB
Given that OO' = 4 cm
Let OC be x. so, O'C will be 4 – x
In ΔOAC
$OA^2 = AC^2 + OC^2$
$\Rightarrow 5^2 = AC^2 + x^2$
$\Rightarrow 25 - x^2 = AC^2$ ... (1)
In ΔO'AC
$O'A^2 = AC^2 + O'C^2$
$\Rightarrow 3^2 = AC^2 + (4 - x)^2$
$\Rightarrow 9 = AC^2 + 16 + x^2 - 8x$
$\Rightarrow AC^2 = -x^2 - 7 + 8x$ ... (2)
From equations (1) and (2), we have

$25 - x^2 = -x^2 - 7 + 8x$
$\therefore 8x = 32$
$\therefore x = 4$
So, the common chord will pass through the centre of the smaller circle i.e. O' and hence it will be diameter of the smaller circle.
Now, $AC^2 = 25 - x^2 = 25 - 4^2 = 25 - 16 = 9$
$\therefore AC = 3$ m
The length of the common chord AB = 2 AC = (2 × 3) m = 6 m

29. Let AB and CD be two parallel chords in a circle centered at O. Join OB and OD
Distance of smaller chord AB from centre of the circle = 4 cm.



OM = 4 cm

$MB = \frac{AB}{2} = \frac{6}{2} = 3$ cm

In ΔOMB

$OM^2 + MB^2 = OB^2$

$(4)^2 + (3)^2 = OB^2$

$16 + 9 = OB^2$

$OB = \sqrt{25}$

$OB = 5$ cm

In ΔOND

$OD = OB = 5$ cm (radii of same circle)

$ND = \frac{CD}{2} = \frac{8}{2} = 4$ cm

$ON^2 + ND^2 = OD^2$

$ON^2 + (4)^2 = (5)^2$

$ON^2 = 25 - 16 = 9$

$ON = 3$

So, the distance of the bigger chord from the centre is 3 cm.

30.

i. Edge of cube = 10 cm
Length (l) = 12.5 cm, Breadth (b) = 10 cm, Height (h) = 8 cm

Lateral surface area of cubical box = $4(\text{edge})^2 = 4(10\text{ cm})^2 = 400\text{ cm}^2$

Lateral surface area of cuboidal box = $2[lh + bh]$

$= [2(12.5 \times 8 + 10 \times 8)]\text{ cm}^2$

$= (2 \times 180)\text{ cm}^2$

$= 360\text{ cm}^2$

Clearly, the lateral surface area of the cubical box is greater than the lateral surface area of the cuboidal box.

Lateral surface area of cubical box – Lateral surface area of cuboidal box = $400\text{ cm}^2 - 360\text{ cm}^2 = 40\text{ cm}^2$

Therefore, the lateral surface area of the cubical box is greater than the lateral surface area of the cuboidal box by 40 cm^2.

ii. Total surface area of cubical box = $6(\text{edge})^2 = 6(10\text{ cm})^2 = 600\text{ cm}^2$

Total surface area of cuboidal box = $2[lh + bh + lb]$

$= [2(12.5 \times 8 + 10 \times 8 + 12.5 \times 100]\text{ cm}^2$

$= 610\text{ cm}^2$

Clearly, the total surface area of the cubical box is smaller than that of the cuboidal box.

Total surface area of cuboidal box – Total surface area of cubical box = $610\text{ cm}^2 - 600\text{ cm}^2 = 10\text{ cm}^2$.

Therefore, the total surface area of the cubical box is smaller than that of the cuboidal box by 10 cm^2.

31. This table has inclusive class intervals and so these are to be converted into exclusive class intervals (i.e true class limits). The class intervals are (0.5-10.5), (10.5-20.5), (20.5-30.5), (30.5-40.5), (40.5-50.5), and (50.5-60.5)
In order to draw a frequency polygon, we need to determine the class marks.

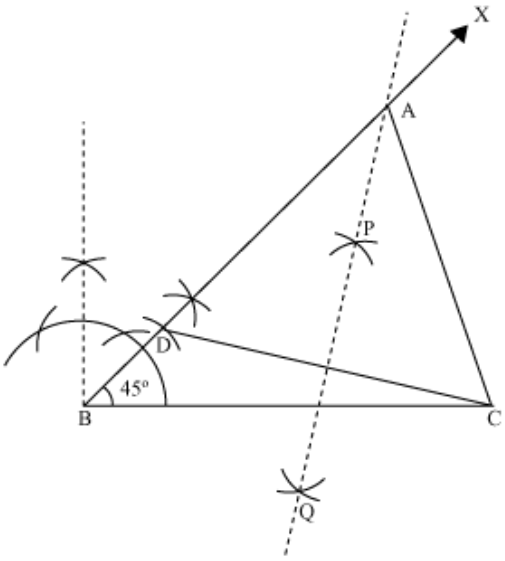
$$\text{Class marks of a class interval} = \frac{\text{lower limit + upper limit}}{2}$$

Let us prepare the following frequency table

Class intervals	True class intervals	Class marks	Frequency
1-10	0.5-10.5	5.5	8
11-20	10.5-20.5	15.5	3
21-30	20.5-30.5	25.5	6
31-40	30.5-40.5	35.5	12
41-50	40.5-50.5	45.5	2
51-60	50.5-60.5	55.5	7

Now, take class intervals along the x-axis and their corresponding frequencies along the y-axis, plot the points and join them.

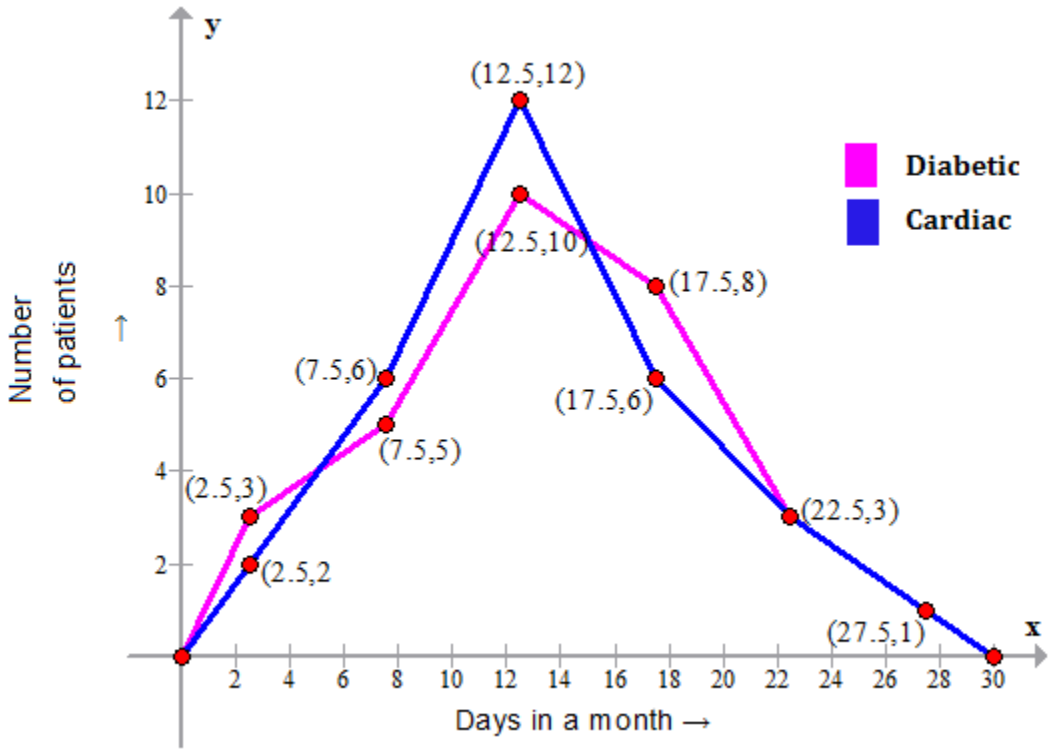
32. The steps of construction for the required triangle are as follows:
Step I: Draw the line segment BC = 8 cm and at point B make an angle of 45° say ∠XBC.
Step II: Cut the line segment BD = 3.5 cm (equal to AB – AC) on ray BX.
Step III: Join DC and draw the perpendicular bisector PQ of DC.
Step IV: Let it intersect BX at point A. Join AC. ΔABC is the required triangle.



33. Radius (r) of cone $= \frac{40}{2}$ cm $=$ 20 cm=0.2m
Height (h) of cone = 1 m
Slant height (l) of cone = $\sqrt{h^2 + r^2} = \left[\sqrt{(1)^2 + (0.2)^2}\right]$ m $= \left(\sqrt{1.04}\right)$ m $= 1.02$ m
C.S.A. of each cone = πrl = (3.14 × 0.2 × 1.02) m^2 = 0.64056 m^2
C.S.A. of 50 such cones = (50 × 0.64056) m^2 = 32.028 m^2
Cost of painting 1 m^2 area = Rs. 12
Cost of painting 32.028 m^2 area = Rs. (32.028 × 12) = Rs. 384.336
Thus, it will cost Rs. 384.34 (approximately) in painting the 50 hollow cones.

34. Class mark of each interval can be found by using formula,
$$\text{Class mark} = \frac{\text{lower class limit + upper class limit}}{2}$$
Now continuous data with class mark of each class interval can be represented as following

Class intervals	Class Marks	Diabetic patients	Cardiac patients

0-5	2.5	3	2
5-10	7.5	5	6
10-15	12.5	10	12
15-20	17.5	8	6
20-25	22.5	3	3
25-30	27.5	1	1

Now, take class marks along the x-axis and number of patients on y-axis, plot the points and join them.