PHYSICS

BOOKS - CBSE MODEL PAPER

SAMPLE PAPER (MATHEMATICS STANDARD)

Part A

1. 12 solid spheres of the same radii are made by melting a solid metallic cylinder of base

diameter 2cm and height 16cm. Find the diameter of the each sphere.

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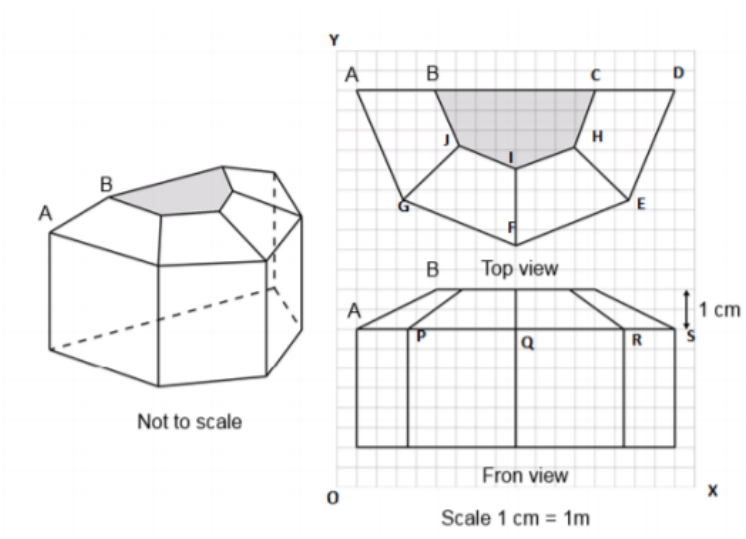
2.



Refer to Top View Find the mid-point of the segment joining the points J (6, 17) and I (9, 16).

(i) $\left(\frac{33}{2}, \frac{15}{2}\right)$ (ii) $\left(\frac{3}{2}, \frac{1}{2}\right)$ (iii) $\left(\frac{15}{2}, \frac{33}{2}\right)$

(iv) $\left(\frac{1}{2}, \frac{3}{2}\right)$

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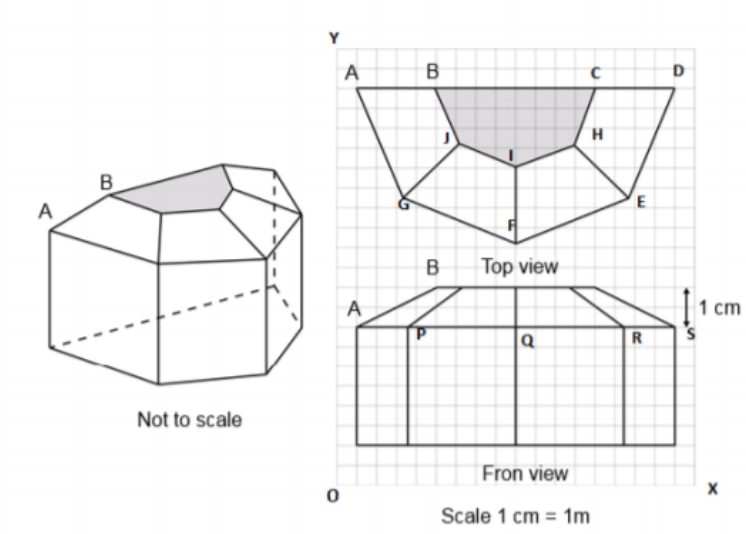
3.



Question : Refer to Top View The distance of

the point P from the y-axis is (i) 4 (ii) 15 (iii) 19 (iv) 25

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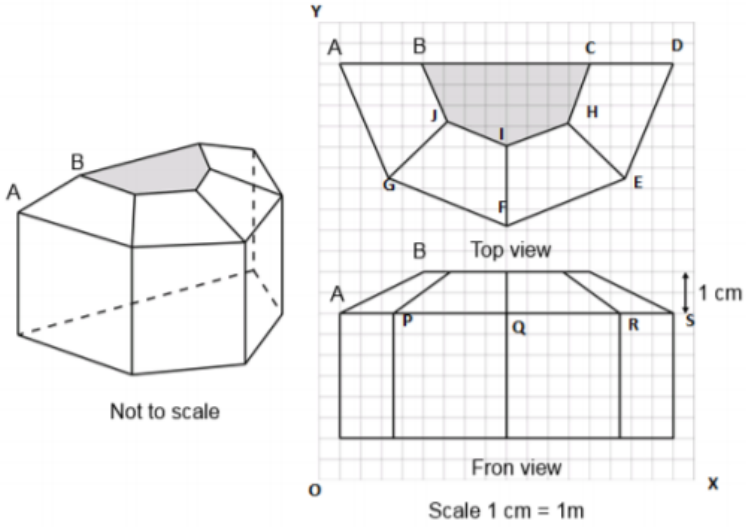
4.



Refer to Front View The distance between the points A and S is (i) 4 (ii) 8 (iii)16 (iv)20

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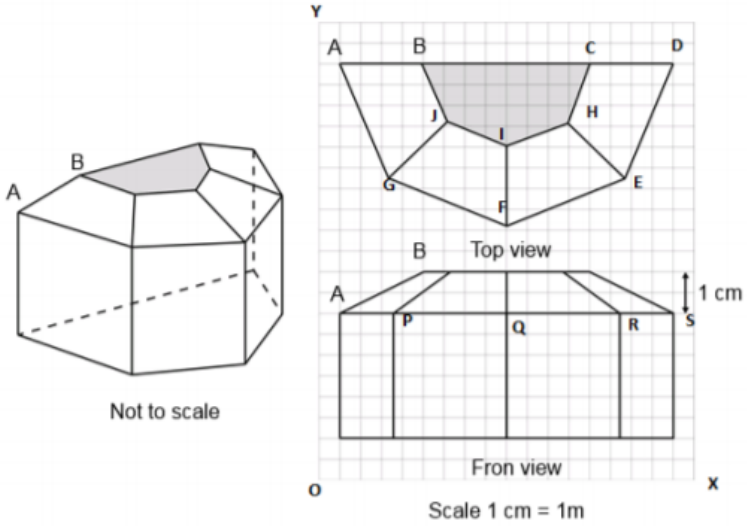

5.

Refer to Front View Find the co-ordinates of the point which divides the line segment joining the points A and B in the ratio 1:3 internally. (i) (9.5,2.0) (ii) (2.0,9.5) (iii) (3.0,7.5) (iv) (2.0,8.5)

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6. If a point (x, y) is equidistant from the $Q(9, 8)$ and $S(17, 8)$,then (i) x+y=13 (ii) x-13=0 (iii) y-13=0 (iv)x-y=13

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7. A model of a boat is made on the scale of $1:4$. The model is 120cm long. The full size of the boat has a width of 60cm. What is the

width of the scale model?

(i) 20 cm

(ii) 25 cm

(iii) 15 cm

(iv)240 cm

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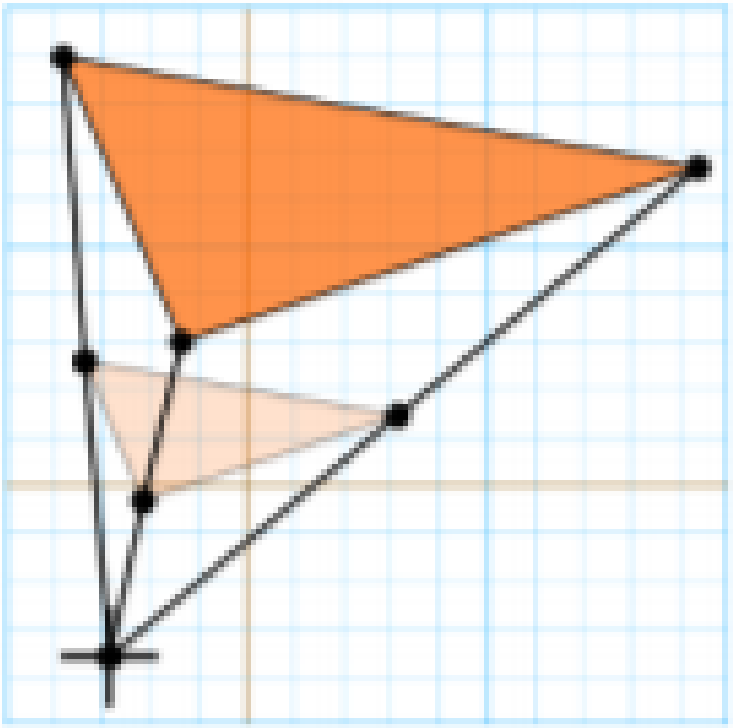
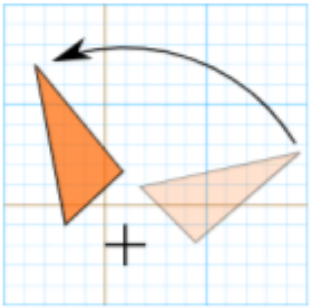
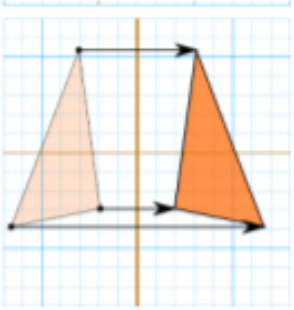


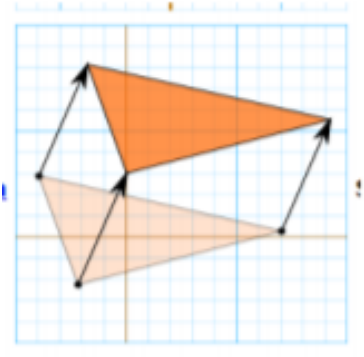
8. _____



Rotation or Turn



Reflection or Flip



Translation or Slide

What will effect the similarity of any two polygons? (i) They are flipped horizontally

(ii)They are dilated by a scale factor

(iii)They are translated down

(iv)They are not the mirror image of one another

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9. If two similar triangles have a scale factor of $a:b$. Which statement regarding the two triangles is true?

(i)The ratio of their perimeters is $3a:b$

(ii)Their altitudes have a ratio $a:b$

(iii)Their medians have a ratio $\frac{a}{2}:b$

(iv)Their angle bisectors have a ratio $a^2:b^2$

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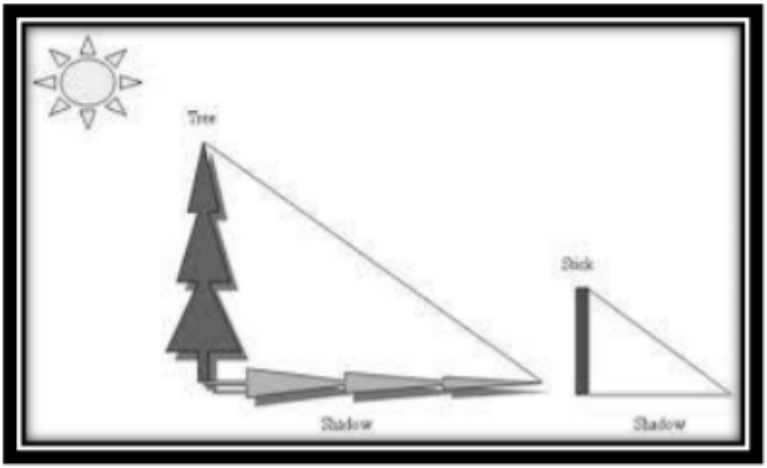
10. The shadow of a stick 5m long is 2m. At the same time the shadow of a tree 12.5m high is



(i)3m

(ii)3.5m

(iii)4.5m

(iv)5m

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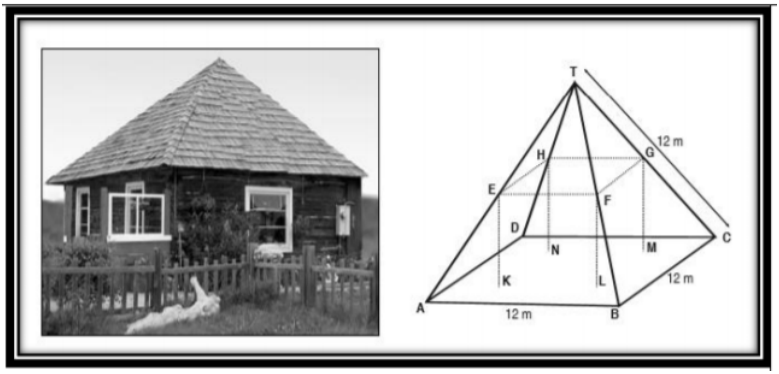
11. Below you see a student's mathematical model of a farmhouse roof with

measurements. The attic floor, ABCD in the model, is a square. The beams that support the roof are the edges of a rectangular prism, EFGHKLMN. E is the middle of AT, F is the middle of BT, G is the middle of CT, and H is the middle of DT. All the edges of the pyramid in the model have length of 12 m.



What is the length of EF, where EF is one of the horizontal edges of the block?

(i)24m

(ii)3m

(iii)6m

(iv)10m

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12. If the highway overpass is represented by $x^2 - 2x - 8$.Then its zeroes are (i) (2,-4) (ii) (4,-2) (iii) (-2,-2) (iv) (-4,-4)

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13. The highway overpass is represented graphically. Zeroes of a polynomial can be expressed graphically. Number of zeroes of polynomial is equal to number of points where the graph of polynomial

(i) Intersects x-axis

(ii) Intersects y-axis

(iii) Intersects y-axis or x-axis

(iv)None of the above

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14. Graph of a quadratic polynomial is a

(i) straight line

(ii) circle

(iii)parabola

(iv)ellipse

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15. The representation of Highway Underpass whose one zero is 6 and sum of the zeroes is 0, is

(i) x^2-6x+2

(ii)x^2-36

(iii)$x^2 - 6$

(iv) $x^2 - 3$

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16. The number of zeroes that polynomial f(x) =

$(x-2)^2 + 4$ can have is : (i)1

(ii) 2

(iii) 0

(iv) 3

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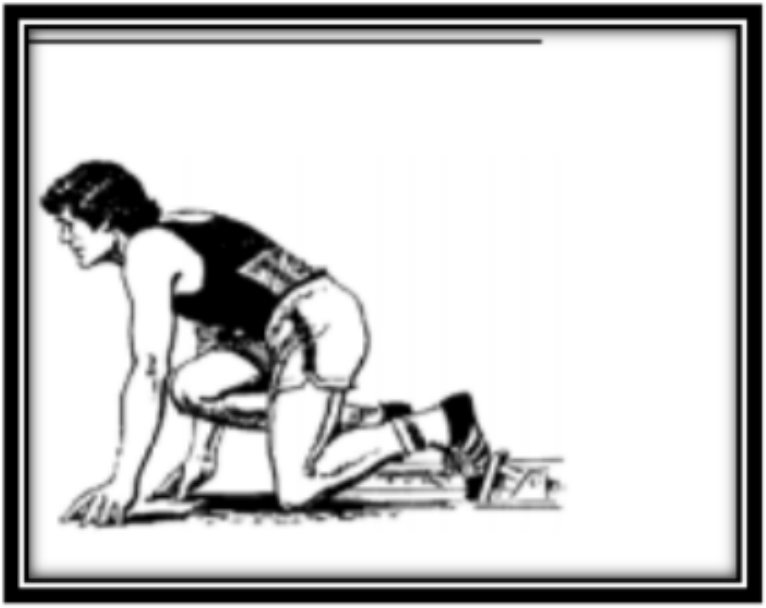
17. Case Study Based- 4



100m

RACE A stopwatch was used to find the time that it took a group of students to run 100 m.

Time (in sec)	0-20	20-40	40-60	60-80	80-100
No. of students	8	10	13	6	3

Estimate the mean time taken by a student to finish the race.

(i)54

(ii)63

(iii)43

(iv)50

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18. What wiil be the upper limit of the modal class ?

(i)20

(ii)40

(iii)60

(iv)80

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19. The construction of cummulative frequency table is useful in determining the

(i)Mean

(ii)Median

(iii)Mode

(iv)All of the above

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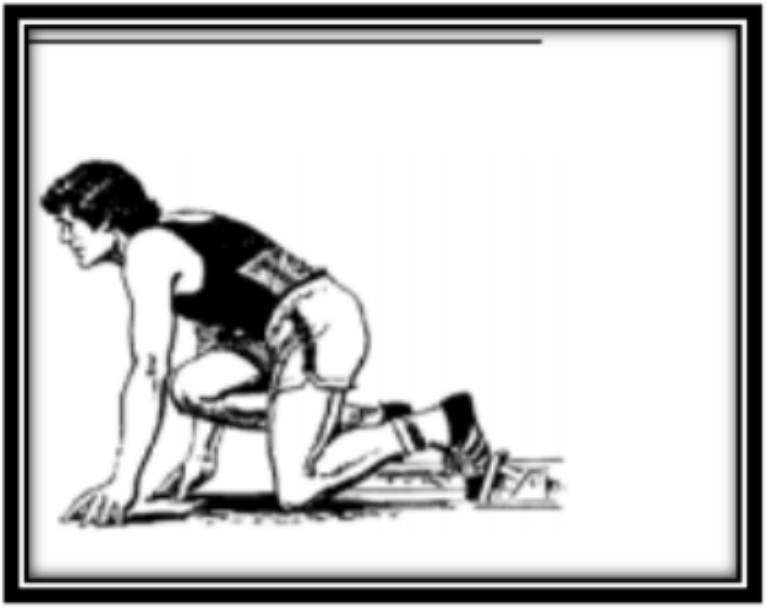
20. Case Study Based- 4



100m

RACE A stopwatch was used to find the time that it took a group of students to run 100 m.

Time (in sec)	0-20	20-40	40-60	60-80	80-100
No. of students	8	10	13	6	3

The sum of lower limits of median class and modal class is

(i)60

(ii)100

(iii)80

(iv)140

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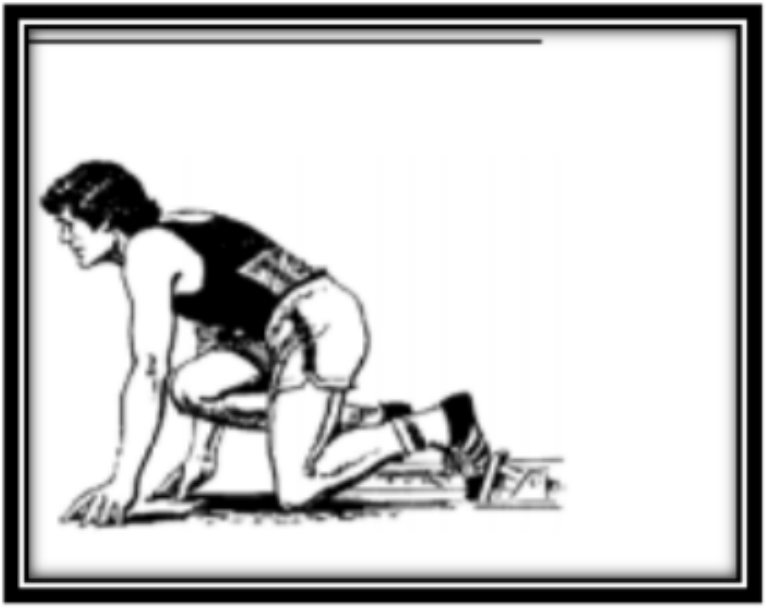
21. Case Study Based- 4



100m

RACE A stopwatch was used to find the time that it took a group of students to run 100 m.

Time (in sec)	0-20	20-40	40-60	60-80	80-100
No. of students	8	10	13	6	3

How many students finished the race within 1

minute?

(i)18

(ii)37

(iii)31

(iv)8

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Part B

1. 3 bells ring at an interval of 4,7 and 14 minutes. All three bell rang at 6 am, when the

three balls will the ring together next?

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2. Find the point on x-axis which is equidistant from the points (2,-2) and (-4,2)

OR

P (-2, 5) and Q (3, 2) are two points. Find the co-ordinates of the point R on PQ such that PR=2QR

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3. Find a quadratic polynomial whose zeroes are $5-3\sqrt{2}$ and $5+3\sqrt{2}$.

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4. Draw a line segment AB of length 9cm. With A and B as centres, draw circles of radius 5cm and 3cm respectively. Construct tangents to each circle from the centre of the other circle.

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5. If tanA=3/4, find the value of 1/sinA+1/cosA

OR

If $\sqrt{3}\sin\theta - \cos\theta = 0$ and $0^\circ < \theta < 90^\circ$,find the value of θ

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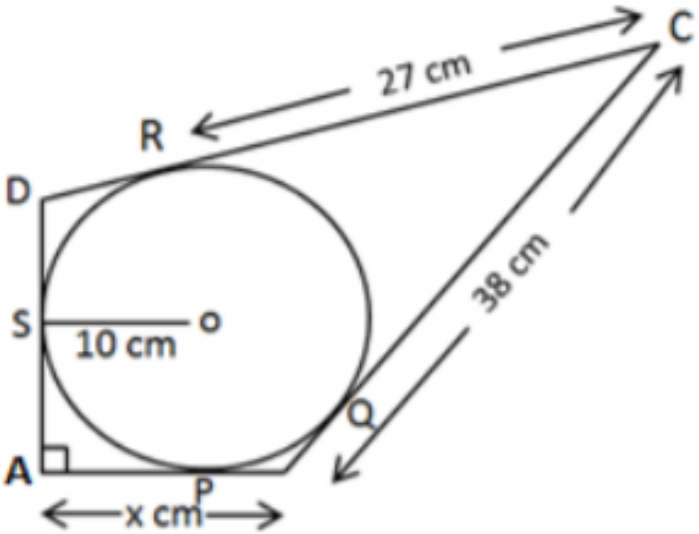
6. In the figure, quadrilateral ABCD is circumscribing a circle with centre O and $AD \perp AB$. If radius of incircle is 10cm, then

the value of x is



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7. Prove that $2-\sqrt{3}$ is irrational, given that $\sqrt{3}$ is irrational

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8. If one root of the quadratic equation $3x^2$ +px+4=0 is $\frac{2}{3}$, then find the value of p and the other root of the equation.

OR

The roots α and β of the quadratic equation x^2 -5x+3(k-1)=0 are such that $\alpha\beta$=1. Find the value k.

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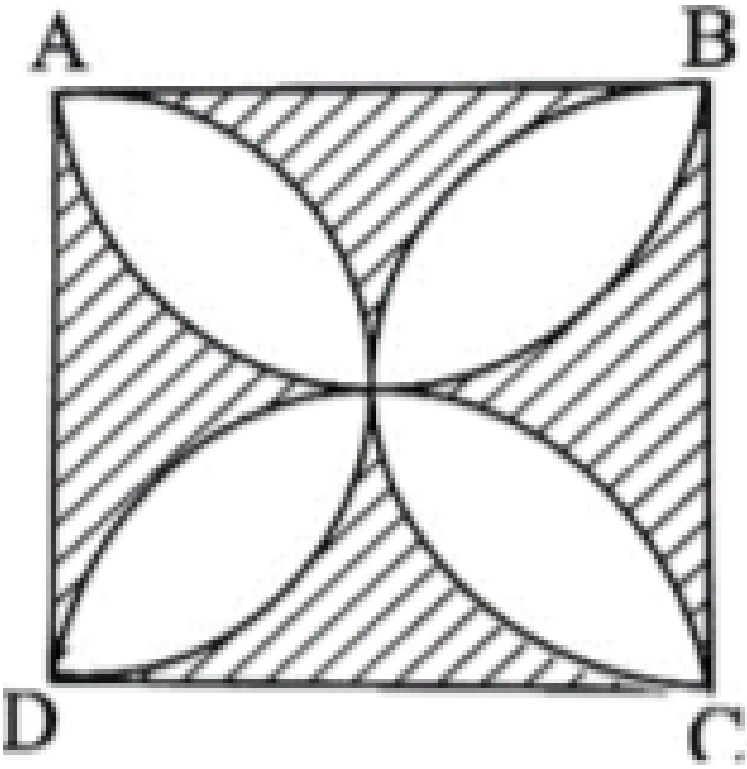
9. In the figure, ABCD is a square of side 14 cm. Semi-circles are drawn with each side of square as diameter. Find the area of the shaded region.



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10. The perimeters of two similar triangles are 25cm and 15cm respectively. If one side of the first triangle is 9cm, find the length of the corresponding side of the second triangle.

OR

In an equilateral triangle ABC, D is a point on side BC such that BD = 1/3 BC. Prove that 9 $AD^2 = 7AB^2$

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11. The median of the following data is 16. Find the missing frequencies a and b, if the total of the frequencies is 70.

Class	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	12	a	12	15	b	6	6	4

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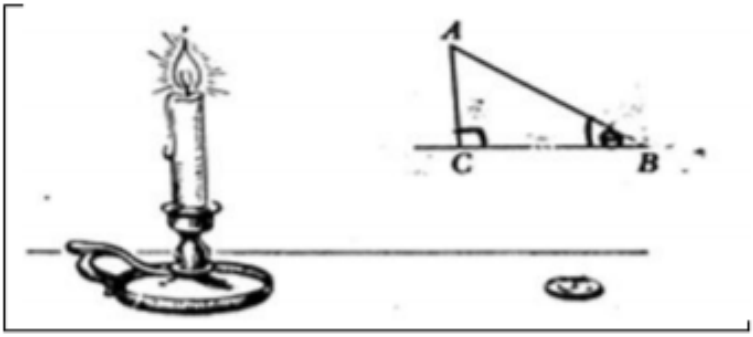
12.



If the angles of elevation of the top of the

candle from two coins distant ‘a’ cm and ‘b’ cm (a $>$ b) from its base and in the same straight line from it are 30° and 60°, then find the height of the candle.

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13. The mode of the following data is 67. Find the missing frequency x.

Class	40-50	50-60	60-70	70-80	80-90
Frequency	5	x	15	12	7

A. 6

B. 7

C. 8

D. 9

Answer: C

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14. The two palm trees are of equal heights and are standing opposite each other on either side of the river, which is 80 m wide. From a point O between them on the river the

angles of elevation of the top of the trees are 60° and 30°, respectively. Find the height of the trees and the distances of the point O from the trees.

OR

The angles of depression of the top and bottom of a building 50 meters high as observed from the top of a tower are 30° and 60° respectively. Find the height of the tower, and also the horizontal distance between the building and the tower.

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15. Water flows through a circular pipe whose internal diameter is 2 cm, at the rate of 0.7 m per second into a cylindrical tank, the radius of whose base is 40 cm. By how much will the level of water rise in the tank in half an hout ?

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16. A boat goes 16 km upstream and 24 km downstream in 6 hrs. Also it covers 12 km upstream and 36 km downstream in the same

time. Find the speed of the boat upstream and downstream

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