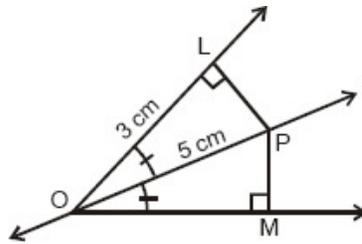
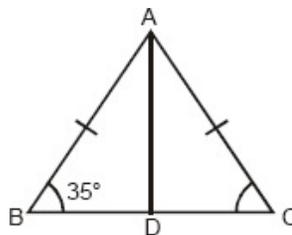


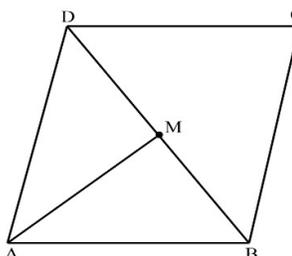
- Q.8 What is the minimum number of lines required to make a closed figure?
 a. 1 b. 2 c. 3 d. 4
- Q.9 What is the measure of an angle whose measure is 32° less than its supplement?
 a. 148° b. 60° c. 74° d. 55°
- Q.10 In the given figure, find PM



- a. 3 cm b. 5 cm c. 4 cm d. 2 cm
- Q.11 In the given figure, AD is the median then $\angle BAD$ is

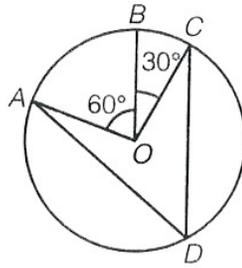


- a. 35° b. 70° c. 110° d. 55°
- Q.12 Choose the correct statement
 a) a triangle has two right angles
 b) all the angles of a triangle are more than 60°
 c) sum of all the angles of a triangle is 180°
 d) all the angles of a triangle are less than 60°
- Q.13 The quadrilateral formed by joining the mid-points of the sides of a quadrilateral ABCD taken in order is a square only if
 a) ABCD is a rhombus
 b) Diagonals of ABCD are equal
 c) Diagonals of ABCD are equal and perpendicular
 d) Diagonals of ABCD are perpendicular
- Q.14 In the given fig, ABCD is a parallelogram, M is the midpoint of BD and BD bisects $\angle B$ as well as $\angle D$. Then $\angle AMB =$



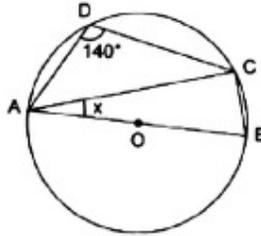
- a. 45° b. 60° c. 90° d. 30°

Q.15 In the given figure, if O is the center of the circle, then what is the measure of $\angle ADC$?



- a. 45° b. 60° c. 90° d. 110°

Q.16 In the figure, O is the center of the circle. If $\angle ADC = 140^\circ$, then what is the value of x?



- a. 45° b. 55° c. 60° d. 50°

Q.17 If a right circular cone has radius 4 cm and slant height 5 cm then what is its volume?

- a. $26 \pi \text{ cm}^3$ b. $16 \pi \text{ cm}^3$ c. $6 \pi \text{ cm}^3$ d. $60 \pi \text{ cm}^3$

Q.18 Each of the two equal sides of an isosceles right triangle is 10cm long. its area is

- a. $5\sqrt{10} \text{ cm}^2$ b. 50 cm^2 c. $10\sqrt{3} \text{ cm}^2$ d. 75 cm^2

Q.19 In the class interval 10-20, 20-30, the number 20 is included in

- a. 10-20 b. 20-30
c. in both of 10-20 and 20-30 d. in none of 10-20 and 20-30

Q.20 The mid-value of a class interval is 42 and the class size is 10. The lower and upper limits are

- a. 37-47 b. 37.5-47.5 c. 36.5-47.5 d. 36.5-46.5

SECTION-B

Q.21 Express $\sqrt[4]{1230}$ in its simplest form.

Q.22 Express $0.5\bar{4}$ in $\frac{p}{q}$ form.

Q.23 If the point (3,4) lies on the graph of the equation $4y = ax + 7$, then find the value of a.

Q.24 Prove that a cyclic parallelogram is a rectangle.

OR

Find the length of a chord which is at a distance of 8cm from the center of a circle of radius 17cm.

Q.25 The surface area of a sphere is $576\pi \text{ cm}^2$. Find its radius.

OR

A right angled $\triangle ABC$ with sides 5cm, 12 cm and 13cm is revolved about the side 12 cm. Find the volume of the solid so obtained.

SECTION-C

- Q.26 If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to corresponding segments of the other chord.
- Q.27 In an isosceles triangle ABC with $AB = AC$, D and E are points on BC such that $BE = CD$. Show that $AD = AE$.
- Q.28 Find the distance of the point (8, 6) from the origin also find out the image of this point along x-axis.
- Q.29 The linear equation that converts Fahrenheit to Celsius is given by

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

- i) If the temperature is 30°C , what is the temperature in Fahrenheit?
- ii) Is there a temperature which is numerically the same in both Fahrenheit and Celsius? If yes, find it.

OR

Write three solutions of the linear equation $2x + y = 7$.

- Q.30 Find the value of x , if $2^{7x} \div 2^{2x} = \sqrt[3]{2^{15}}$.
- Q.31 If $x = (2 + \sqrt{3})$, find the value of $\left(x - \frac{1}{x}\right)$

OR

Find the value of a and b .

$$\frac{5 - \sqrt{6}}{5 + \sqrt{6}} = a - b\sqrt{6}$$

SECTION-D

- Q.32 A dome of a building is in the form of a hemisphere. From inside, it was white-washed at the cost of Rs 498.96. If the cost of white-washing is Rs 2.00 per square meter, find the volume of the air inside the dome.
- Q.33 Show that the diagonals of a rhombus are perpendicular to each other.

OR

Show that the line segments joining the mid-points of the opposite sides of a quadrilateral bisect each other.

- Q.34 If the polynomials $(2x^3 + ax^2 + 3x - 5)$ and $(x^3 + x^2 - 2x + a)$ leave the same remainder when divided by $(x - 2)$, find the value of a . Also find the remainder in each case.

OR

If $(x^3 + ax^2 + bx + 6)$ has $(x - 2)$ as a factor and leaves a remainder 3 when divided by $(x - 3)$, find the values of a and b .

- Q.35 The cost of a table is 100 more than half the cost of a chair. Write this statement as a linear equation in two variables. Write the equation in standard form and find the values of a , b and c .

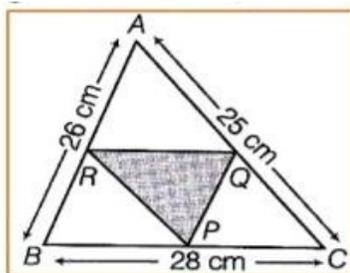
SECTION-E

Case study based questions are compulsory.

Q.36 CASE STUDY-1

Read the Source/Text given below and answer the questions:

There is a Diwali celebration in DPS School Janakpuri, New Delhi. Girls are asked to prepare Rangoli in a triangular shape. They made a rangoli in the shape of triangle ABC. Dimensions of $\triangle ABC$ are 26 cm, 28 cm, 25 cm.



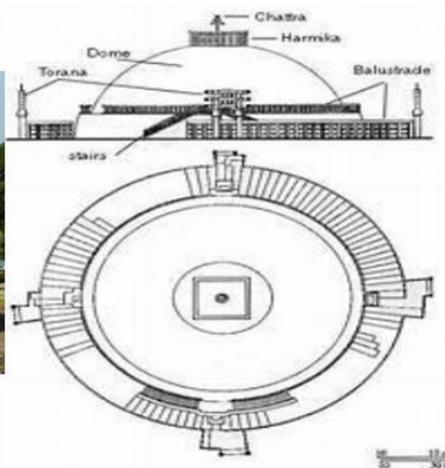
1. In the fig, R is mid-point of AB and $RQ \parallel BC$ then AQ is equal to
a. QC b. RB c. BC d. AD (1)
2. In the fig R and Q are mid-points of AB and AC respectively. The length of RQ is:
a. 14 b. 13 c. 12.5 d. 13.5 (2)

OR

If Garland is to be placed along the side of $\triangle QPR$ which is formed by joining the mid points of AC, BC and BA, what is the length of the garland?

- a. 39.5 cm b. 49.5 cm c. 35 cm d. 79.5 cm (2)
3. R, P, Q are the mid-points of corresponding sides AB, BC, CA in $\triangle ABC$, the figure so obtained BPQR will be:
a. Parallelogram b. trapezium c. kite d. triangle (1)

Q.37 CASE STUDY-2



The Great Stupa at Sanchi is one of the oldest stone structures in India, and an important monument of Indian Architecture. It was originally commissioned by the emperor Ashoka in the 3rd century BC. Its nucleus was a simple hemispherical brick structure built over the relics of the Buddha. It is a perfect example of combination of solid figures with a big hemispherical dome with a cuboidal structure mounted on it. (Take $\pi = 22/7$)

- 1 Calculate the volume of the hemispherical dome if the height of the dome is 21 m
 a. 19404 m^3 b. 2000 m^3 c. 15000 m^3 d. 19000 m^3 (2)

OR

Calculate the surface area of the hemispherical dome if the height of the dome is 21m.

- a. 2772 m^2 b. 2777 m^2 c. 2909 m^2 d. 4000 m^2 (2)
- 2 The formula to find the Volume of a Sphere is –
 a. $\frac{4}{3} \pi r^3$ b. $\frac{2}{3} \pi r^2$ c. $\frac{2}{3} \pi r^3$ d. $\frac{4}{3} \pi r^2$ (1)

- 3 Total surface area of a hemisphere is
 a. $4\pi r^2$ b. $4\pi r$ c. $3\pi r^2$ d. πr^2 (1)

Q.38 CASE STUDY-3

The COVID-19 pandemic, also known as the corona virus pandemic, is an ongoing pandemic of corona virus disease 2019 (COVID-19) caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). It was first identified in December 2019 in Wuhan, China.

During a survey, the ages of 80 patients infected by COVID and admitted in one of the City hospital were recorded and the collected data is represented by the following distribution table.



Based on the information, answer the following questions:

Age (in yrs)	No. of patients
5-15	6
15-25	11
25-35	21
35-45	23
45-55	14
55-65	5

- Q.1 The class interval with highest frequency is:
 a. 45-55 b. 35-45 c. 25-35 d. 15-25 (1)
- Q.2 What is the difference in the frequencies of class interval 35-45 and 5-15
 a. 17 b. 18 c. 20 d. 21 (1)
- Q.3 How many patients of the age 45 years and above were admitted?
 a. 61 b. 19 c. 14 d. 23 (2)

OR

How many patients of the age 34 years and less were admitted?

- a. 17 b. 38 c. 61 d. 41 (2)

