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## SAMPLE PAPER 2 <br> CLASS 9

## SECTION - A

Question numbers 1 to 8 carry one mark each. For each question, four alternative choices have been provided of which only one is correct. You have to select the correct choice.

1. The graph of the equation $x+a=0$ is a line parallel to $y$-axis and to the left of the $y$ axis if:
a. $\quad a<0$
b. $a=0$
c. $a>0$
d. for any real value of $a$
2. If $x=2, y=3$ is a solution of $4 x-3 y+\sqrt{k}=0$, then the value of $k$ is:
a. -1
b. 2
c. 1
d. $\sqrt{2}$
3. For the construction of a triangle ABC in which $A B-A C=3 \mathrm{~cm}$, then BC

a. 7.5 cm
b. 5.7 cm
c. 7.3 cm
d. 3.7 cm
4. In the given figure, if $\mathrm{BD}=\mathrm{DC}$ and $\angle \mathrm{DBC}=25^{\circ}$, then $\angle \mathrm{ACB}$ is equal to:

a. $80^{0}$
b. $40^{0}$
c. $100^{0}$
d. $50^{\circ}$
5. Total surface area of a cylinder whose radius is equal to height is:
a. $2 \pi r^{2}$
b. $3 \pi r^{2}$
c. $4 \pi r^{2}$
d. $6 \pi r^{2}$
6. Three cubes are joined end to end forming a cuboid. If each side of the cube is 2 cm then the volume of cuboid is:
a. $8 \mathrm{~cm}^{3}$
b. $6 \mathrm{~cm}^{3}$
c. $24 \mathrm{~cm}^{3}$
d. $32 \mathrm{~cm}^{3}$
7. The class marks of frequency distribution are $10,20,30,40$, $\qquad$ The class representing the class mark 30 is
a. 20-40
b. $30-40$
c. $25-30$
d. $25-35$
8. $144,145,147,148,149,151,152,154,155,160$

Median of the given data is:
a. 149
b. 150
c. 151
d. 152

## SECTION - B

## Question numbers 9 to 14 carry 2 marks each.

9. In the figure, if O is the centre of the circle and $\angle \mathrm{ABC}=45^{\circ}$, then prove that $\mathrm{OA} \perp \mathrm{OC}$.

10. Two opposite angles of a parallelogram are $(3 x-2)^{0}$ and $(50-x)^{0}$. Find the measure of each angle of the parallelogram.
11. Find the curved surface area of a hemisphere of diameter 7 cm .
12. Find the median of the following data: $95,65,75,70,75,100,50,40$
13. Find the mean of the data:

| $x$ | 20 | 25 | 32 | 40 | 50 | 100 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $f$ | 5 | 4 | 10 | 2 | 1 | 3 |

14. A survey of 500 families was conducted to know their opinion about a particular detergent powder. If 375 families liked the detergent powder and the remaining families disliked it, find the probability that a family chosen at random
a. Likes the detergent powder
b. Does not like it.

## SECTION - C

## Question numbers 15 to $\mathbf{2 4}$ carry three marks each.

15. If the points $(-1, a),(b, 15)$ and $(c,-20)$ lie on the graph of linear equation $5 x-y=$ 0 . Find the value of $a, b$ and $c$.
16. Find any two linear equations passing through the point $\left(-1,-\frac{1}{2}\right)$. How many such equations are possible?
17. In a $\triangle A B C, \angle B$ is a right angle. $D$ and $E$ are the mid - points of the sides $A B$ and $A C$ respectively. If $A B=6 \mathrm{~cm}$ and $A C=10 \mathrm{~cm}$, then find the length of $D E$.
18. In figure circles with centres $C$ and $D$ intersect at points $P$ and $Q$. If $A B \| C D$, then prove that $\mathrm{AB}=2 \mathrm{CD}$.

19. In the given figure $A B C D$ is a parallelogram. $P, Q$ are mid points of $A B$ and $D C$. Show that
a. APCQ is a parallelogram.
b. DPBQ is a parallelogram.
c. PSQR is a parallelogram.

20. Construct a $\triangle \mathrm{ABC}$ in which base $\mathrm{AB}=5 \mathrm{~cm}, \mathrm{AC}-\mathrm{BC}=2.5 \mathrm{~cm}$ and $\angle \mathrm{B}=45^{\circ}$.
21. The base radii of two right circular cones of the same height are in the ratio 3:5. Find the ratio of their volumes.
22. Curved surface area of cylinder is $4400 \mathrm{~cm}^{2}$ and circumference of its base is 110 cm . Find the height and volume of the cylinder.
23. The mean marks of a class of 40 students are 50 . If the mean marks of first 20 students is 56 and the last 20 is 48 , find the marks of the $20^{\text {th }}$ student.
24. Given below are the seats won by different political parties in the polling outcome of a state assembly election.

| Political <br> Party | A | B | C | D | E |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Seats won | 75 | 55 | 37 | 29 | 10 |

Represent the data in the form of a bar graph.

## SECTION - D

## Question numbers 25 to 34 carry four marks each.

25. The auto fare in a city is charged as per the rates stated below:

Rate for the first km of journey is Rs. 8 and for the subsequent distance it is Rs. 5 per km. Taking the distance covered as $x \mathrm{~km}$ and total fare as Rs. $y$, write a linear equation for the above and draw its graph.
26. A book lending library, lends books on the following charges. For the first two days rent is Rs. 20, and for every subsequent day, Rs. 5 is charged. Taking $x$ as number of days and $y$ as rent paid, write a linear equation for this information and draw its graph.
27. 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.
28. In triangle $\mathrm{ABC}, \mathrm{D}$ is a point on BC such that it divides BC in the ratio 3:5 i.e. $\mathrm{BD}: \mathrm{DC}=$ 3:5. Find $\operatorname{ar}(A D C): \operatorname{ar}(A B C)$.
29. Construct a parallelogram whose adjacent sides are 3 cm and 4 cm and one base angle is $105^{0}$.
30. AC and BD are two chords of a circle which bisect each other. Prove that
a. AC and BD are diameters.
b. ABCD is a rectangle.
31. A farmer has a plot of land in the shape of an equilateral triangle of side $300 \mathrm{~m} . \mathrm{He}$ decides to give a part of his land which also is in the shape of an equilateral triangle of
side 100 m to his friend who is poor. But his friend refuses. So he takes a small amount as rent for the land but lets his friend take the produce.
Answer the following questions:
a. How could this be done? Explain with figure. Calculate the area of equilateral field with side 300 m .
b. What part of the field has the farmer given to his friend in respect of area?
c. Why did the friend refused but agreed afterwards?
32. A cuboid has total surface area of $40 \mathrm{~m}^{2}$ and lateral surface area $26 \mathrm{~m}^{2}$. Find the area of its base. Also find its volume if its height is 7 cm .
33. Find the mass of 300 steel spherical ball bearings each of which has radius 0.7 cm gives the density of steel is $8 \mathrm{~g} / \mathrm{cm}^{3}$.
34. The following table gives the performance of 90 students in a mathematics test of 100 marks.

| Marks | Number of <br> students |
| :---: | :---: |
| $0-20$ | 07 |
| $20-30$ | 10 |
| $30-40$ | 10 |
| $40-50$ | 20 |
| $50-60$ | 20 |
| $60-70$ | 15 |
| $70-$ above | 08 |
| Total | 90 |

