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SAMPLE PAPER 15
CLASS 9

## General Instructions:

1. All questions are compulsory.
2. The question paper consists of 31 questions divided into five sections $A, B, C, D$ and $E$. Section - A comprises of 4 questions of 1 mark each, Section - B comprises of 6 questions of 2 marks each, Section - C comprises of 8 questions of 3 marks each and Section - D comprises of 10 questions of 4 marks each. Section - E comprises of two questions of 3 marks each and 1 question of 4 marks from Open Text theme.
3. There is no overall choice.
4. Use of calculator is not permitted.

## SECTION - A

## Question numbers 1 to 4 carry one mark each.

1. If the graph of $2 x+k y=10 k$, intersects $x$ - axis at $(2,0)$, find $k$.
2. Write any linear equation in two variables which will pass from the origin.
3. In the figure, $O$ is the centre of the circle passing through $A, D$ and $B$. If $\angle A D B=110^{0}$, find the measure of $\angle \mathrm{AOB}$, corresponding to arc ADB.

4. Write the edge of cube in terms of its volume.

## SECTION - B

Question numbers 5 to $\mathbf{1 0}$ carry two marks each.
5. MNOP is a parallelogram. U is any point on side OP . Show that $\operatorname{ar}(\triangle \mathrm{MUN})=\operatorname{ar}(\Delta \mathrm{PUM})$ $+\operatorname{ar}(\Delta \mathrm{UNO})$.

6. In the given figure, ABCD is a cyclic quadrilateral. If $\angle \mathrm{BCD}=110^{\circ}$ and $\angle \mathrm{ABD}=60^{\circ}$, find the measures of $\angle \mathrm{DAE}$ and $\angle \mathrm{ADB}$.

7. In a quadrilateral, three angles are in the ratio of $3: 3: 1$ and the fourth angle is $80^{\circ}$. Find the measure of equal angles.
8. The length, breadth and height of a cuboidal tank are $16 \mathrm{~m}, 13.5 \mathrm{~m}$ and 5 m respectively. Find the amount of water in litres it can hold.
9. To know the opinion of the students about the subject statistics, a survey on some students was conducted. The data recorded is as given below:

| Opinion | Number of students |
| :---: | :---: |
| Like | 247 |
| Dislike | 503 |

Find the probability that a student chosen at random:
a. Likes statistics
b. Dislikes statistics
10. Some families with 2 children were selected randomly and the following data were recorded:

| Number of girls in a family | 0 | 1 | 2 |
| :---: | :---: | :---: | :---: |
| Number of families | 184 | 714 | 425 |

If a family is chosen at random, compute the probability that it has:
a. Exactly 1 girl
b. Exactly 2 boys.

## SECTION - C

Question numbers 11 to $\mathbf{1 8}$ carry three marks each.
11. Identify the points whose co - ordinates are given in the following table which lie on the graph $2 x-y=0$

| $x$ | -1 | 0 | 1 | 4 | 3 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $y$ | -2 | 0 | -2 | 2 | 6 |

Draw the graph of the equation.
12. Circle with radius $r$ and centre O is drawn. Write coordinates of points where it meets the axes. Also write the equations AC and BD. Find its radius also

13. In $\triangle \mathrm{DEG}, \mathrm{G}$ is any point on side EF such that $\mathrm{EF}: \mathrm{GF}=x: y$. Find the ratio ar $(\mathrm{DEG})=$ ar (DGF).
14. In the given figure, $A B C D$ is a parallelogram. A circle through $A, B$ and $C$ intersects $C D$ produced to E . Prove that $\mathrm{AD}=\mathrm{AE}$.

15. Draw lines PQ and RS intersecting at point K. Measure a pair of vertically opposite angles. Bisect them. Are the bisecting rays forming a straight line?
16. In the figure, $A B C D$ is a trapezium with $A B \| C D$ and $A D=B C$. Prove that $\angle A=\angle B$.

17. Construct an isosceles triangle whose two equal sides measure 6 cm and whose base is 5 cm . Draw the perpendicular bisector of its base and show that it passes through the opposite vertex.
18. The diameter of the moon is approximately one - fourth of the diameter of earth.

Compare their volumes and curved surface areas.

## SECTION - D

## Question numbers 19 to 28 carry four marks each.

19. If the work done by a body on application of a constant force is directly proportional to the distance travelled by the body, express this in the form of an equation in two variables and draw the graph of the same taking force as 15 units. Also, read from the graph the distance travelled when work done by the body is 45 units.
20. Write the equations of the lines drawn in the following graph. Also, find the area enclosed between them.

21. ABCD is a rectangle. $\mathrm{E}, \mathrm{F}, \mathrm{G}$ and H are the mid - points of sides $\mathrm{AB}, \mathrm{BC}, \mathrm{CD}$ and DA respectively. If $\operatorname{ar}(E F G H)=16 \mathrm{~cm}^{2}$, find $\operatorname{ar}(\mathrm{ABCD})$.

22. Prove that the quadrilateral formed by the bisectors of the interior angles of a cyclic quadrilateral is also cyclic.
23. Construct a triangle $A B C$ in which base $B C$ is of length 4 cm , base angle $\angle B=25^{\circ}$ and sum of the other two sides $\mathrm{AB}+\mathrm{BC}$ is 9 cm .
24. Prove that the bisectors of a parallelogram form a rectangle.
25. The diameter of 1.5 m long roller is 84 cm . If it takes 100 revolutions to level a playground of rectangular shape measuring $26.4 \mathrm{~m} \times 15 \mathrm{~m}$, find the cost of levelling this ground at the rate of 50 paise per square metre.
The student A used, " Curved surface area x 100 " rounds to find the area and the student $B$ used, length $x$ breadth to find the area of playground.
a. Which students is correct students A or student B or both? If both then, why?
b. By stating different views to calculate the value, which value is depicted by the student?
26. A rectangular water reservoir is 7.2 m by 2.5 m at the base. Water flows into it through a pipe whose cross section is $5 \mathrm{~cm} \times 9 \mathrm{~cm}$ at the rate of 20 m per second. Find the height to which the water will rise in the reservoir in 40 minutes?
27. 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 rate of white washing is Rs. 4 per square metre, find the:
a. Inside surface area of the dome.
b. Volume of the air inside the dome.
28. A box contains some balls whose total weight is 40 kg . There are 10 balls of weight 1 kg each, 5 balls each of weight $2 \mathrm{~kg}, 5$ balls each of weight 2.5 kg and rest of the balls weight 1.5 kg each. A ball is drawn at random from the box, find the probability that the weight of the ball drawn from the box is:
a. 2.5 kg
b. Neither 2.5 kg nor 1 kg .
c. Not 1.5 kg .

## SECTION - E

## Open Text

## Theme: Empower to learn

29. Study figure -3 and answer the following questions:
a. Which subject shows that $23 \%$ of students were benefitted?
b. Which subject shows that $13 \%$ of students were benefitted?
c. How many students were benefitted in Science?
30. Draw the bar graph of users of different languages used on LEARNOUT.
31. Number of question asked at different hours of the day on Trouble Bubble are given. Find mean and median for the number of questions.
