SAMPLE PAPER 7

CLASS 9

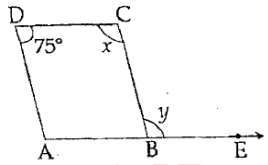
General Instructions:

a. All questions are compulsory.
b. The question paper consists of 32 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 10 questions of 3 marks each and Section – D comprises of 11 questions of 4 marks each. Section – E comprises of one question from Open Text theme of 10 marks.
c. There is no overall choice.
d. Use of calculator is not permitted.

SECTION – A

Question numbers 1 to 4 carry one mark each.

1. If line $3x + ky = 9$, passes through the point (1, -2), find k.
2. Find a, if linear equation $3x - ay = 6$ has one solution as (4, 3).
3. ABCD is a parallelogram in which $\angle ADC = 75^0$ and side AB is produced to point E as shown in the figure. Find $(x + y)$.

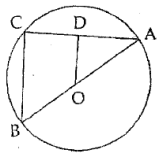


4. The radius and the lateral surface area of a right circular cone are 8 cm and 10 cm^2 respectively. Find its slant height.

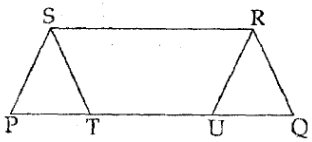
SECTION – B

Question numbers 5 to 10 carry two marks each.

5. In the given figure, OD is perpendicular to chord AC of a circle whose centre is O. If AB is a diameter of the circle, prove that BC = 2OD.



6. Draw an angle of 45^0 using protractor. Bisect it. Measure them. Are they equal?
7. For the given figure, check whether the following statement is true or false. Also justify your answer.
   PQRS is a trapezium with PQ||SR, PS||RU and ST||RQ, then ar(PURS)=ar(QTRS).

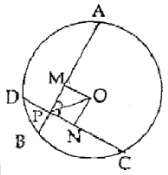


8. Calculate the surface area of a cubical tank without lid whose volume is 1331 cm^3.
9. Out of 12 observations arranged in an ascending order, the 6^{th} and 7^{th} observations are 14 and 15 respectively. Find the median of all the 12 observations.
10. There are 13 girls and 15 boys in a line. If one student is chosen at random, then find the probability that he is a boy.

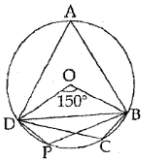
SECTION – C

Question numbers 11 to 20 carry three marks each.

11. Weight of a table is two and half times the weight of a chair. Represent this situation as a linear equation in two variables and draw its graph.
12. Write the equation of a line which is parallel to x – axis and is at a distance of 3 units below origin. Also draw its graph.
13. In the given figure, AB and CD are two chords of a circle whose centre is O. If OM⊥AB, ON⊥CD and ∠OPM=∠OPN, prove that MB = ND.



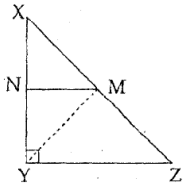
14. If QS and PR are the diagonals of quadrilateral PQRS intersecting at O such that ar(ΔPOQ)=ar(ΔSOR), show that PS||RQ.
15. In the given figure, points A, D, P, C and B lie on a circle with centre O. If ∠BOD = 150^0, find the measures of ∠BPD, ∠BCD and ∠BAD.



16. In the figure, XYZ is a triangle, right angled at Y. A line is drawn through the mid – point M of hypotenuse XZ and parallel to YZ to intersect XY at N. Show that:

a. N is the mid – point of XY.

b. YM = XM = $\frac{1}{2}$XZ



17. Draw a linear pair of angles. Construct angle bisectors of the angles. What type of angle is formed by bisecting the rays?
18. The length of an iron pipe is 20 m and its external radius is 12.5 cm. If the thickness of the pipe is 1 cm, find the total surface area of the pipe.
19. The class marks of a distribution are 11, 15, 19, 23, 27, 31 and 35. Find the class size and the class boundaries.
20. A die is thrown 600 times and the frequencies for the outcomes 1, 2, 3, 4, 5 and 6 are given in the following table:

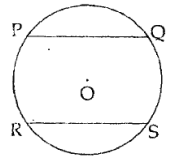
Outcome	1	2	3	4	5	6
Frequency	60	90	175	68	50	157

Verify the sum of the probabilities of these events is 1.

SECTION – D

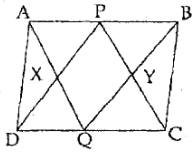
Question numbers 21 to 31 carry four marks each.

21. Draw the graphs of the following equations on the same graph sheet:
$x - y = 0, x + y = 0, x + 2 = 0$
Also, find the area enclosed between these lines.
22. A part of the monthly hostel charges is fixed and the remaining depends on the number of days one has taken food in the mess. A student has to pay Rs. 900 if she takes food for 10 days. Write a linear equation which satisfies this data. Draw the graph for the same.
23. Students are made to sit in two parallel rows PQ and RS in a circular field to be instructed before visiting an old age home (see figure). Show that the line joining the mid – point of these two parallel rows passes through the centre O of the field. Which value is depicted through the question?

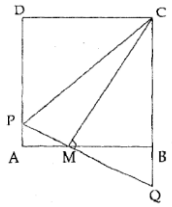


24. In the given figure, APCQ and PBQD are parallelograms. Show that if AD||BC, then:

a. Quadrilateral ABCD is a parallelogram.
b. ar (PXQ) = ar (PYQ)



25. ABCD is a square. M is the mid – point of AB and CM ⊥ PQ as shown in the figure. Show that CP = CQ.



26. a. State Angle Sum property of a triangle.
b. Is it possible to construct ΔABC, if perimeter of the triangle is 11 cm, base angles $\angle A=60^0$ and $\angle B=70^0$.
c. Is it possible to construct ΔEFG, if EF + FG + GE = 11 cm, $\angle E = 105^0$ and $\angle F = 90^0$.
d. Is it possible to construct ΔXYZ if perimeter is 12.5 cm, $\angle X = 75^0$ and $\angle Y = 30^0$.
27. A right triangle ABC with sides 5 cm, 12 cm and 13 cm is revolved about the side5 cm. Find the volume of the solid so obtained. If it is now revolved about the side 12 cm, then what would be the ratio of the volumes of the two solids obtained in two cases?
28. A hemispherical bowl of internal radius 9 cm is full of rose water. This rose water is to be filled in cylindrical bottles of diameter 9 cm and height 4 cm. Find the number of bottles needed to empty the rose water of the bowl. (take $\pi = \frac{22}{7}$)
29. A right angled ΔABC with sides 3 cm, 4 cm and 5 cm is revolved about the fixed side of 4 cm. Find the volume of the solid so generated. Also find the total surface area of the solid.
30. A die is tossed 120 times and the outcomes are recorded as follows:

Outcomes	1	Even no. < 6	Odd no. > 1	6
Frequency	25	40	35	20

Find the probability of getting:
a. An even number.
b. Find an odd number greater than 1.
31. The given frequency table shows the rate at which the heart beats of an athlete running on a treadmill at a constant speed:

Time (in sec.)	Heart beat rate
0 – 60	85
60 – 120	100
120 – 180	120
180 – 240	110
240 – 300	110

Draw a frequency polygon and histogram.

SECTION – D

(Open Text)

Theme – I (Planning a garden) (3 + 3 + 3 + 1)

32. a. Find the cost of the compost fertilizer required for the smallest circle.
b. Give the coordinates of the pots which are shown parallel to $x - axis$ in layout plan of the garden.
c. Esha is standing on a footpath. Find the probability that she is standing on a footpath which is (i) parallel to $x - axis$ (ii) parallel to $y - axis$
d. How can you ensure healthy herbs growth?