SAGAR PUBLIC SCHOOL

SAMPLE PAPER-1
CLASS –IX

| TIME ALLOWED: 3 HOURS | SUBJECT MATHS | MAX. MARKS : 80 |

General Instructions:

1. This Question Paper has 5 Sections A-E.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated units of assessment carrying 04 marks each.
7. All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.
8. Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

Section - A

1. The point which lies on x-axis at a distance of 3 units in the positive direction of x-axis is

   (a) (0, -3)   (b) (0, 3)   (c) (3, 0)   (d) (-3, 0)

2. The length of the sides of a triangle are 5 cm, 7 cm and 8 cm. Area of the triangle is:

   (a) $100\sqrt{3}cm^2$ (b) $10\sqrt{3}cm^2$

   (c) $300cm^2$ (d) $50\sqrt{3}cm^2$

3. In the figure, O is the centre of the circle. If $\angle ABC = 20°$, then $\angle AOC$ is equal to:
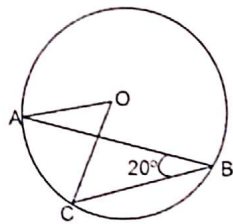
   (a) 60°   (b) 10°   (c) 40°   (d) 20°

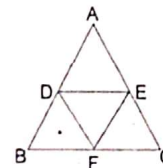4. In a trapezium ABCD, E and F be the midpoints of the diagonals AC and BD respectively. Then, EF = ?
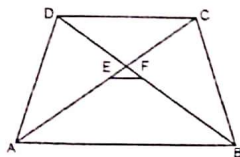
   (a) $\frac{1}{2}AB$ (b) $\frac{1}{2}(AB+CD)$

   (c) $\frac{1}{2}(AB-CD)$ (d) $\frac{1}{2}CD$

5. The value of $x^{p-q}x^{q-r}x^{r-p}$ is equal to

   (a) x^{pqr} (b) 0   (c) x (d) 1

6. D, E and F are the mid points of sides AB, BC and CA of $\triangle ABC$. If perimeter of $\triangle ABC$ is 16 cm, then perimeter of $\triangle DEF$.

   (a) 32 cm   (b) 8 cm   (c) 28 cm   (d) 4 cm

7. x = 2, y = -1 is a solution of the linear equation

   (a) $2x+y=0$ (b) $x+2y=0$

   (c) $x+2y=4$ (d) $2x+y=5$

8. If $x-3$ is a factor of $x^2 - ax - 15$, then a =

   (a) 5   (b) -2   (c) -5   (d) 3

9. The value of $15\sqrt{15} \div 3\sqrt{5}$ is

   (a) $5\sqrt{3}$ (b) $3\sqrt{5}$ (c) 3   (d) 5

10. ABCD is a parallelogram. If AB is produced to E such that ED bisects BC at O. Then which of the following is correct?

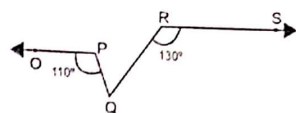   (a) OC = BE   (b) OE = OC

    (c) AB = OE   (d) AB = BE

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11. An irrational number between $\frac{1}{7}$ and $\frac{2}{7}$ is

(a) $\sqrt{\frac{1}{7} \times \frac{2}{7}}$

(b) $\frac{1}{2}\left(\frac{1}{7} - \frac{2}{7}\right)$

(c) $\left(\frac{1}{7} \times \frac{2}{7}\right)$

(d) $\frac{1}{2}\left(\frac{1}{7} + \frac{2}{7}\right)$

12. How many linear equation in 'x' and 'y' can be satisfied by $x = 1, y = 2$?

(a) Infinitely many   (b) Two

(c) Only one   (d) three

13. In a figure, if $OP \parallel RS$, $\angle OPQ = 110°$ and $\angle QRS = 130°$, then $\angle PQR$ is equal to
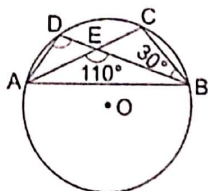

(a) 40°   (b) 50°   (c) 70°   (d) 60°

14. After rationalising the denominator of $\frac{7}{3\sqrt{3} - 2\sqrt{2}}$, we get the denominator as

(a) 5   (b) 35   (c) 19   (d) 13

15. In the given figure, O is the centre of a circle and chords AC and BD intersect at E. If $\angle AEB = 110°$ and $\angle CBE = 30°$, then $\angle ADB = ?$

(a) 80°   (b) 60°   (c) 90°   (d) 70°

16. x co-ordinate is known as

(a) Origin   (b) Points

(c) Abscissa   (d) Ordinate

17. If (-2, 5) is a solution of $2x + my = 11$, then the value of 'm' is

(a) -2   (b) 2   (c) 3   (d) -3

18. The value of $\dfrac{(a^2 - b^2)^3 + (b^2 - c^2)^3 + (c^2 - a^2)^3}{(a-b)^3 + (b-c)^3 + (c-a)^3}$ is

(a) $3(a-b)(b-c)(c-a)$

(b) $(a+b)(b+c)(c+a)$

(c) $3(a+b)(b+c)(c+a)(a-b)(b-c)(c-a)$

(d) $2(a-b)(b-c)(c-a)$

19. **Assertion (A):** If the diagonals of a parallelogram ABCD are equal, then $\angle ABC = 90°$

Reason (R): If the diagonals of a parallelogram are equal, it becomes a rectangle.

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

20. **Assertion (A):** $2 + \sqrt{6}$ is an irrational number.

Reason (R): Sum of a rational number and an irrational number is always an irrational number.

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

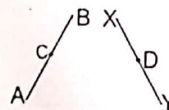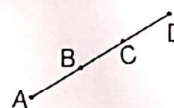(c) A is true but R is false.

(d) A is false but R is true.

Section B   28

21. In fig. AC = XD, C is the mid-point of AB and D is the mid-point of XY. Using a Euclid's axiom, show that AB = XY.

22. In fig., If AC = BD, then prove that AB = CD

           29.

23. Name the quadrants in which the following points lie:

(i) p(4, 4)   (ii) Q(-4, 4)

(iii) R(-4, -4)   (iv) S(4, -4)   30.

23. If $x = 3 + 2\sqrt{2}$, find the value of $\left(x^2 + \frac{1}{x^2}\right)$.

OR

Prove that

$$\frac{1}{3 + \sqrt{7}} + \frac{1}{\sqrt{7} + \sqrt{5}} + \frac{1}{\sqrt{5} + \sqrt{3}} + \frac{1}{\sqrt{3} + 1} = 1$$

25. The radii of two cones are in the ratio 2 : 1 and their volumes are equal. What is the ratio of their heights?

OR

A hollow spherical shell is made of a metal of density 4.5 g per cm³. Its internal & external radii are 8 cm and 9 cm respectively, find the weight of the shell.

Section - C

26. Locate $\sqrt{10}$ on the number line.

27. A random survey of the number of children of various age groups playing in a park was found as follows:

Marks	Number of children
1-2	5
2-3	3
3-5	6
5-7	12
7-10	9
10-15	10
15-17	4

Draw a histogram to represent the data above.

28. In Fig. X and Y are respectively the mid-points of the opposite sides AD and BC of a parallelogram ABCD. Also, BX and DY intersect AC at P and Q, respectively. Show that $AP = PQ = QC$.
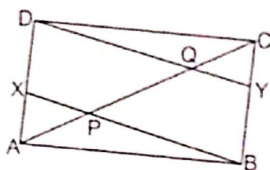

29. Find the solution of the linear equation $x + 2y = 8$ which represents a point on

    i. The x-axis

    ii. The y-axis

30. The marks scored by 750 students in an examination are given in the form of a frequency distribution table.

Marks	Number of Students
600-640	16
640-680	45
680-720	156
720-760	156
760-800	172
800-840	59
840-880	18

Represent this data in the form of a histogram and construct a frequency polygon.

OR

Read the bar graph given in Figure and answer the following questions:
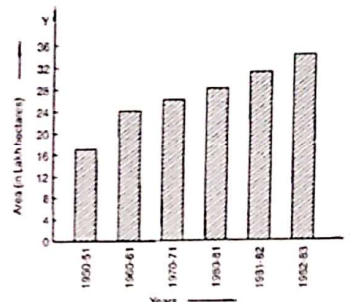
(i) What information is given by the bar graph?

(ii) In which years the areas under the sugarcane crop were maximum and the minimum?

(iii) State whether true or false:

The area under the sugarcane crop in the year 1982-83 is three times of the year 1950-51.

31. If both $(x - 2)$ and $\left(x - \dfrac{1}{2}\right)$ are factors of $px^2 + 5x + r$, show that $p = r$.

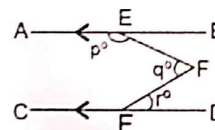### Section D

32. In the given figure, $AB \parallel CD, \angle ABO = 40°$, $\angle CDO = 35°$. Find the value of the reflex $\angle BOD$ and hence the value of x.
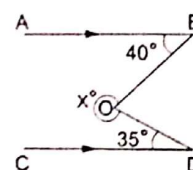
OR

In the given figure, $AB \parallel CD$. Prove that $p + q - r = 180$.

33. What length tarpaulin 3 m wide be required to make conical tent of height 8 m and base radius 6 m?

Assume that the extra length of material that will be required for stitching margins and wastage in cutting is approximately 20 cm. (Use $\pi = 3.14$)

34. The length of the sides of a triangle are in the ratio $3:4:5$ and its perimeter is 144 cm. Find the are of the triangle and the height corresponding to the longest side

OR

Two sides of a triangular field are 85 m and 154 m in length and its perimeter is 324 m. Find the area of the field.

35. Using factor theorem, factorize the polynomial:
$x^3 - 6x^2 + 3x + 10$

Section E

36. **Read the following test carefully and answer the questions that follow:**

Peter, Kevin James, Reeta and Veena were students of Class 9th B at Govt Sr Sec School, Sector 5, Gurgaon. Once the teacher told Perter to think a number x and to Kevin to think another number y so that the difference of the numbers is $10(x > y)$

Now the teacher asked James to add double of Peter's number and that three times of Kevin's the total was found 120.

Reeta just entered in the class, she did not know any number.

The teacher said Reeta to form the 1st equation with two variables x and y.

Now veena just entered the class so the teacher told her to form 2nd equation with two variables x and y.

Now teacher Told Reeta to find the value of x and y. Peter and Kevin were told to verify the numbers x and y.
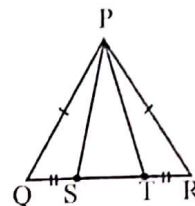
(i). What are the equation formed by Reeta and Veena? (1)

(ii) What was the equation formed by Veena? (1)

(iii) Which number did Peter think? (2)

OR

Which number did Kevin think? (2)

37. **Read the following text carefully and answer the questions that follow:**

A children's park is in the shape of isosceles triangle said PQR with $PQ = PR$, S and T are points on QR such that $QT = RS$.

(i) Which rule is applied to prove that congruency of $\triangle PQS$ and $\triangle PRT$.

(ii) Name the type of $\triangle PST$.

(iii) If PQ = 6 cm and QR = 7 cm, them find perimeter of $\triangle PQR$.

OR

If $\angle QPR = 80°$ find $\angle PQR$?

38. **Read the following text carefully and answer the questions that follow:**

Rohan draws a circle of radius 10 cm with the help of a compass and scale. He also draws two chords, AB and CD in such a way that the perpendicular distance from the center to AB and CD are 6 cm and 8 cm respectively. Now, he has some doubts that are given below.
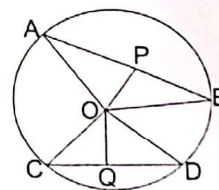
(i) Show that the perpendicular drawn from the Centre of a circle to a chord bisects the chord.

(ii) What is the length of CD?

(iii) What is the length of AB?

OR

How many circles can be drawn from given three non-collinear points? (2)