



A Unit of Soundarya Educational Trust (R)
SOUNDARYA CENTRAL SCHOOL
Affiliated to CBSE – New Delhi

ANNUAL EXAMINATION 2018 – 2019

SUBJECT: MATHEMATICS

Grade: IX

Marks: 80
Time: 3 hrs.

General Instructions:-

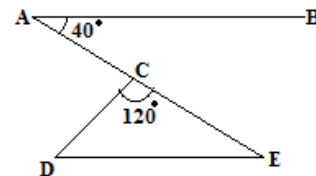
- All questions are compulsory.
- The question paper consists of 30 questions divided into four sections A, B, C and D. Section A comprises of 6 questions of 1 mark each, Section B comprises 6 questions of 2 marks each, Section C comprises of 10 questions of 3 marks each and Section D comprises of 8 questions of 4 marks.
- Internal choice is provided for 3 & 4 marks questions.
- Use of calculator is not permitted.

SECTION A

- 1) Simplify: $(-2 - \sqrt{3})(-2 + \sqrt{3})$
- 2) Cost of three chairs and one table is ₹1350. Represent this situation as a linear equation in two variables.
- 3) Find the median of the distribution: 5, 9, 8, 6, 3, 5, 7, 12, 15
- 4) Find the remainder when $x^3 + 2x^2 + 3x + 1$ is divided by $x + 1$.
- 5) If ACB is a straight line and $x : y = 2 : 1$, find the values of x and y.
- 6) Find the lateral surface area of cube whose edge is 11cm.

SECTION B

- 7) In the fig. $AB \parallel DE$, $\angle A = 40^\circ$ and $\angle DCE = 120^\circ$. Find $\angle CDE$.



- 8) A dice is rolled 200 times and its outcomes are recorded as below.

Outcome	1	2	3	4	5	6
Frequency	25	35	40	28	42	30

Find the probability of getting: (i) an even number
(ii) a multiple of 3

- 9) Factorise: $\frac{16}{9}x^2 - \frac{1}{4}y^2$
- 10) Construct an angle of 45° , using ruler and compass.
- 11) If mean of 5, 9, A, 17 and 21 is 13, then find the value of A.
- 12) If the curved surface area of a right circular cylinder of height is 14cm is 88cm^2 . Find the diameter of the base of the cylinder.

SECTION C

13) Express $18.\overline{48}$ in the form $\frac{p}{q}$, where p and q are integers $q \neq 0$.

OR

Represent $\sqrt{9.3}$ on the number line.

14) Find the area of a triangular park, two sides are 18m and 10m and the perimeter is 42m.

15) If both $(x + 2)$ and $(2x + 1)$ are factors of $ax^2 + 2x + b$, prove that $a - b = 0$.

OR

If $a^2 + b^2 + c^2 = 90$ and $a + b + c = 20$, then find the value of $ab + bc + ca$.

16) Plot the point A $(-5, 3)$, B $(3, 3)$, C $(3, 0)$ and D $(-5, 0)$ in the Cartesian plane. Name the figure so formed.

17) In a rhombus, lengths of diagonals are 400m and 410m. Find the area and side of the rhombus.

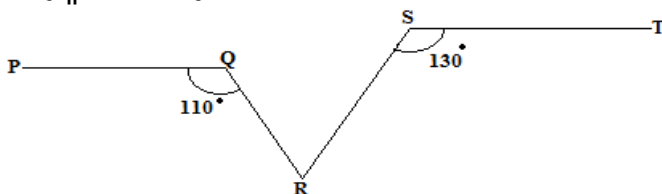
18) "Equal chords of a circle subtend equal angles at the centre." Prove the given statement.

19) Construct a triangle ABC in which $\overline{BC} = 7\text{cm}$, $\angle B = 75^\circ$ and $AB + AC = 13\text{cm}$.

OR

Construct a triangle PQR in which $\overline{QR} = 6\text{cm}$, $\angle Q = 60^\circ$ and $\overline{PR} - \overline{PQ} = 2\text{cm}$.

20) In the fig, $PQ \parallel ST$, $\angle PQR = 110^\circ$ and $\angle RST = 130^\circ$, find $\angle QRS$.



OR

Prove that sum of the angles of a triangle is 180° .

21) Simplify: $\frac{1}{\sqrt{3} + \sqrt{2}} - \frac{2}{\sqrt{5} - \sqrt{3}} - \frac{3}{\sqrt{2} - \sqrt{6}}$

OR

$$\frac{(25)^{3/2} \times (343)^{3/5}}{16^{5/4} \times 8^{4/3} \times 7^{3/5}}$$

22) Find the values of a and b, if $\frac{\sqrt{3}-1}{\sqrt{3}+1} = a + b\sqrt{3}$

SECTION D

23) POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2} [\angle QOS - \angle POS]$

24) Prove that, "the line segment joining the mid-points of two sides of a triangle is parallel to the third side."

OR

Prove that, "in a right angles triangle, the hypotenuse is the longest side."

25) Construct a triangle whose base angles are 60° and 90° and perimeter is 11cm.

26) In a city, the weekly observation made in a study on the cost of living index are given in the following table:

Cost of living index	140 – 150	150 – 160	160 – 170	170 – 180	180 – 190	190 – 200	Total
	5	10	20	9	6	2	52

Draw a frequency polygon for the above data.

27) Meena had ₹ 800 in the form of ₹ 50 and ₹ 100 notes only. Write a linear equation which satisfies this data. Also, draw the graph for the equation.

28) The table shows the use of various modes of transport by people to reach their offices in a day.

Mode of transport	No. of people
Car and Metro	1800
Bus and Metro	2200
Only Metro	2500
Only Car	1500
Only Bus	1000

Find the probability that the person chosen at random uses:

- (a) bus and metro to reach office
- (b) only car to reach office
- (c) only metro to reach office
- (d) only bus to reach office

29) Show that $(x + 1)(x - 2)(x + 2)$ are the factors of $x^3 + x^2 - 4x - 4$

30) Factorise: $x^3 + 13x^2 + 32x + 20$