



SPARTAN INTERNATIONAL SENIOR SECONDARY SCHOOL
ANNUAL EXAMINATION
MATHEMATICS

CLASS: IX
MAX. MARKS: 80

DATE: 17.02.2023
DURATION: 180 MINUTES

GENERAL INSTRUCTIONS:

1. This Question paper contains - five sections A, B, C, D and E. Each section is compulsory. However, there are internal choices in some questions.
2. Section A has 18 questions and 02 Assertion-Reason based questions of 1 mark each.
3. Section B has 5 Very Short Answer (VSA)-type questions of 2 marks each.
4. Section C has 6 Short Answer (SA)-type questions of 3 marks each.
5. Section D has 4 Long Answer (LA)-type questions of 5 marks each.
6. Section E has 3 source based/case based/passage based/integrated units of assessment (4 marks each) with sub parts.

SECTION A

Each question carries 1 mark

1. Which of the following is a rational number?
(a) π (b) 0 (c) $2\sqrt{3}$ (d) $1 + \sqrt{5}$
2. If $x = 2 + \sqrt{3}$ then $\frac{1}{x} = ?$
3. Find the value of $[(4 - 5(4 - 5))^4]^3$
4. If $x = -1$ is a zero of $x^3 - 2x^2 + 3ax + 5$, then the value of $a = ?$
5. When $p(x) = x^3 - 6x^2 + 2x - 4$ is divided by $x - 2$ then the remainder is?
6. If $x + 2$ is a factor of $x^2 - kx + 14$, then value of k is?
7. The abscissa of a point is the distance of the point from
(a) X - axis (b) Y - axis (c) Origin (d) None of these
8. Point $(a, 0)$ lies in?
9. The angle formed between the coordinate axes is?
10. A linear equation in two variables has maximum Solutions.
11. At what point, the graph of $3x + 2y = 9$ cuts the Y - axis?
12. What is the distance of the point $(3, -7)$ from X -axis?
13. What is the distance of the point $(-5, -7)$ from Y -axis?
14. If an angle is equal to its compliment, then the angle is?
15. Reflex angle of 179°
16. The sides of a triangle are 3cm, 4cm and 5cm. The area of triangle will be?
17. The perimeter of an equilateral triangle is 60m, find its area?
18. The class mark of the class interval 4.7 - 6.3 is

ASSERTION-REASON BASED QUESTIONS

In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

- (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.

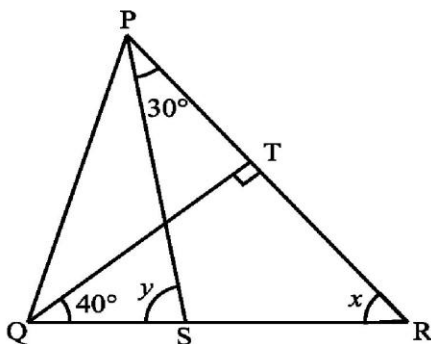
19. **Assertion (A):** The point $(0, -3)$ lies on the y-axis.
Reason (R): The x - coordinate of the point on y-axis is zero.

20. **Assertion (A):** The polynomial $9x^2 - 18x + 9$ has two zeroes.
Reason (R): Quadratic polynomials has at most two zeroes.

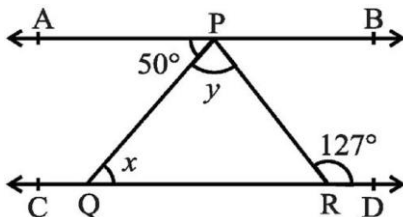
SECTION B

This section comprises of very short answer type-questions (VSA) of 2 marks each

21. The class marks of a distribution are 25, 35, 45, 55, 65. Determine the class size and the class limits.
22. The volume of a sphere is 310.4 cm^3 . Find its radius.
23. If perimeter of a triangle is $x \text{ cm}$ and its sides are p, q and $r \text{ cm}$. What will be the area of this triangle? Use Heron's formula
24. (i) In the below figure, if $QT \perp PR$, $\angle TQR = 40^\circ$ and $\angle SPR = 30^\circ$, find x and y .



- (ii) In the below figure, if $AB \parallel CD$, $\angle APQ = 50^\circ$ and $\angle PRD = 127^\circ$, find x and y .



25. A die is thrown 400 times, the frequency of the outcomes of the events are given as under

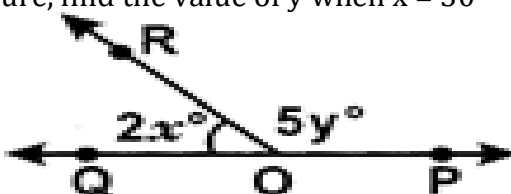
Outcome	1	2	3	4	5	6
Frequency	70	65	60	75	63	67

Find the probability of occurrence of an odd number.

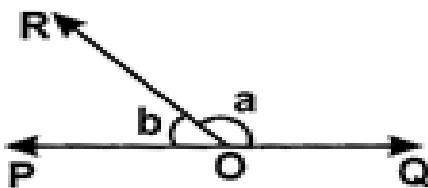
SECTION C

This section comprises of short answer type questions (SA) of 3 marks each

26. (a) A school provides milk to the students daily in a cylindrical glasses of diameter 7cm. If the glass is filled with milk up to height 12cm find how many litres of milk is needed to serve 1600 students
- (b) Johny wants to stitch a cover for his CPU whose length, breadth and height are 20cm, 45cm and 50cm respectively. Find the amount he has to pay if it costs Rs. 50 per sq. m.
27. If $\frac{3+2\sqrt{5}}{3-2\sqrt{5}} = p + q\sqrt{5}$, then the value of $11(p+q)$
28. Find $p(1) + p(-1) + p(10)$ if $p(x) = x^2 - 3x + 2$
29. Plot the points A (-4, 4), B (-8, -1), C (5, -1) and D (1, 4) in the graph sheet. What type of quadrilateral is ABCD? Find its area and perimeter?
30. Prove that if a transversal intersects two parallel lines, then each pair of interior angles on the same side of the transversal is supplementary.
31. (i) From the given figure, find the value of y when $x = 30^\circ$



- (ii) Find the value of a and b separately If $a - b = 40^\circ$



SECTION D

This section comprises of long answer-type questions (LA) of 5 marks each

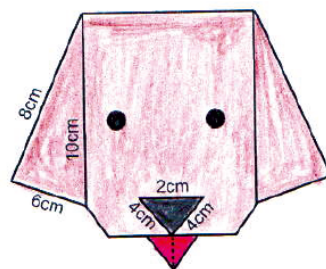
32. (i) Show that $\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}} - \frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}} = 1$
 (ii) Simplify $\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{4}} + \frac{1}{\sqrt{4}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{6}} + \frac{1}{\sqrt{6}+\sqrt{7}} + \frac{1}{\sqrt{7}+\sqrt{8}} + \frac{1}{\sqrt{8}+\sqrt{9}}$
33. Evaluate
 (i) 99^2
 (ii) 999^3
 (iii) If $x + y = 10$ and $xy = 50$ then find the value of $x^2 + y^2$
 (iv) If $x + y = 5$ and $xy = 6$ then find the value of $x^3 + y^3$
 (v) $(25)^2 - (20)^2$
34. (a) Ajay prepared a dish and kept it in a hemi spherical bowl of 30 cm diameter. He distributed the dish in cylinder cups of diameter 15 cm and height 4 cm among his friends and himself. How many friends were with Ajay?
 (b) Three spheres of radii 3cm, 4cm and 5cm are melted to form a new sphere. Find the radius of the new sphere.
35. Sarika distributes chocolates on the occasion of children's day. She gives 5 chocolates to each child and 20 chocolates to adults. If number of children is represented by X and the total distributed chocolates as Y (i) write it in the form of linear equation in two variables (ii) If she distributed 145 chocolates in total, find number of children?

SECTION E

This section comprises of 3 case - study / passage - based questions of 4 marks each.

36.

During summer vacations, Rohit was getting bored due to lockdown in his city. Because of the COVID pandemic, he couldn't go out to play with his friends. His mother suggested him to start making some origami craft material. He learnt origami craft through internet and made a puppy as shown in figure.



Based on the above information and measurement of different parts of the figure, answer the following questions:

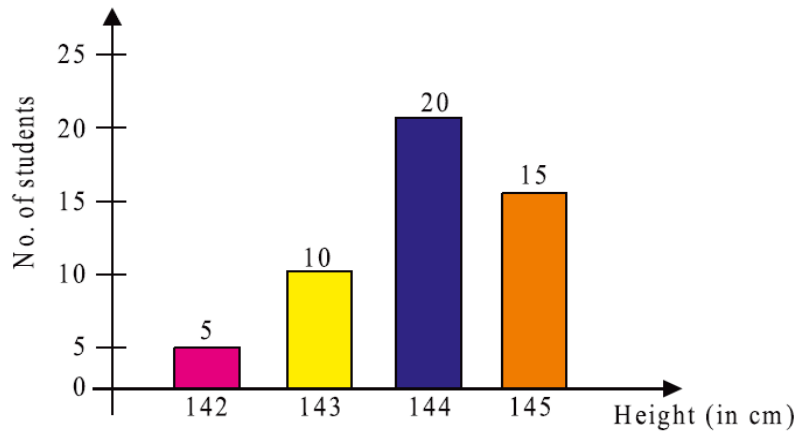
- (i) What is the area of one ears of the puppy? (both ears are similar)
 (ii) What is the area of the paper used to make nose of the puppy?
 (iii) If the tongue of the puppy is in the shape of equilateral triangle, with side 2 cm each, then what is the area of the paper used to make tongue? What will be the length of the middle line of the tongue as shown in figure?

or

If the total area of paper used to make the puppy is 96 cm^2 , then find the area of paper used to make the face (except ears, nose and tongue) of the puppy?

37.

The following bar graph represent the heights (in cm) of 50 students of class IX of a particular school.



- (i) What is the percentage of the total student whose height is more than 142 cm?
- (ii) How many students in the class have maximum height?
- (iii) How many students have their height between 142 cm and 145 cm.

Or

What is the range of the data?

38.

Kaushal a 9th student loves chocolates on his birthday his mother gifts him a chocolate baking tray. The tray has 6 hemispherical cavities each of diameter 8.4 cm. Kaushal prepares the chocolates on his birthday using this tray and share there hemispherical chocolates with him friends.



On the basis above information answer the following question:-

- (i) Find the radius of the hemispherical chocolate.
- (ii) Find the volume of each hemispherical chocolate.
- (iii) Kaushal wants to cover each chocolate with paper. How much paper will be required for whole tray of chocolates?
- (iv) If Neha eats two third of the chocolates (Assuming the tray is full chocolate. How much volume of chocolates does she eat?