Education Adda

CLASS 9 • 2019-STYLE PRACTICE RESOURCE

Printable PDF + Answer Guide

Class 9 Mathematics Question Paper 2019 - Practice PDF

Subject	Board / Medium	Time	Maximum Marks
Mathematics	CBSE + State Board adaptable	3 Hours	80

Important authenticity note: This is an original Education Adda practice paper created in a 2019-style annual-exam format. It is **not** an official 2019 board question paper. Class 9 paper formats and prescribed chapters can vary by school, board, medium and academic session. Use it for practice and verify your exact syllabus with your school/board.

General Instructions

1. Attempt all questions unless an internal choice is stated.
2. Show essential steps in numerical questions.
3. Use ruler and compass where construction is required.
4. Calculators are not allowed.

Coverage focus: Number Systems, Polynomials, Linear Equations in Two Variables, Coordinate Geometry, Euclid's Geometry, Lines and Angles, Triangles, Quadrilaterals, Areas, Circles, Constructions, Heron's Formula, Surface Areas and Volumes, Statistics and Probability.

Section A - Very Short Answer

1. Which of the following is irrational? **[1 mark]**

(A) 0.25 (B) 7/11
(C) √7 (D) 0.333...

2. Find the degree of the polynomial $5x^3 - 2x + 9$. **[1 mark]**

3. The point (0, -4) lies on which axis? **[1 mark]**

(A) x-axis (B) y-axis
(C) both axes (D) neither axis

4. If two lines intersect, vertically opposite angles are _____. **[1 mark]**

(A) complementary (B) equal
(C) supplementary only (D) always acute

5. A triangle with sides 5 cm, 5 cm and 8 cm is _____. **[1 mark]**

(A) scalene (B) isosceles
(C) equilateral (D) right-angled only

6. The sum of interior angles of a quadrilateral is _____. [1 mark]

(A) 180° (B) 270°
(C) 360° (D) 540°

7. The radius of a circle is 7 cm. Its diameter is _____ cm. [1 mark]

(A) 3.5 (B) 7
(C) 14 (D) 21

8. Find the semiperimeter of a triangle with sides 6 cm, 8 cm and 10 cm. [1 mark]

9. The mean of 3, 5, 7, 9, 11 is _____. [1 mark]

10. A coin is tossed 50 times and heads occurs 28 times. The empirical probability of a head is _____. [1 mark]

Section A: 10 marks

Section B - Short Answer I

11. Simplify: $3\sqrt{5} + 2\sqrt{5} - \sqrt{5}$. [2 marks]

12. Find the remainder when $p(x) = x^3 - 4x + 5$ is divided by $x - 2$. [2 marks]

13. Write any four ordered pairs satisfying $2x + y = 6$. [2 marks]

14. If one angle formed by two intersecting lines is 68°, find the other three angles. [2 marks]

15. In ΔABC, $AB = AC$ and $\angle B = 52°$. Find $\angle A$ and $\angle C$. [2 marks]

16. Find the area of a triangle whose base is 12 cm and corresponding height is 7 cm. [2 marks]

17. Find the curved surface area of a cylinder of radius 3.5 cm and height 10 cm. Use $\pi = 22/7$. [2 marks]

18. The observations are 4, 7, 7, 9, 10, 7, 12. Find the mode. [2 marks]

Section B: 16 marks

Section C - Short Answer II

19. Rationalise the denominator: $5/(\sqrt{3} + \sqrt{2})$. [3 marks]

20. Factorise completely: $x^3 - 4x^2 - x + 4$. [3 marks]

21. Plot the points A(2, 3), B(-2, 3) and C(-2, -1) on a coordinate plane. State the quadrant of each point. [3 marks]

22. Prove that if two parallel lines are cut by a transversal, alternate interior angles are equal. [3 marks]

23. In parallelogram ABCD, $\angle A = 2x + 10°$ and $\angle B = 3x - 20°$. Find x and all four angles. [3 marks]

24. Using Heron's formula, find the area of a triangle with sides 13 cm, 14 cm and 15 cm. [3 marks]

25. A cuboid is 8 cm long, 5 cm broad and 4 cm high. Find its total surface area and volume. [3 marks]

26. The daily study times (in minutes) of 8 students are 40, 50, 35, 60, 45, 50, 55, 65. Find the mean and median. [3 marks]

Section C: 24 marks

Section D - Long Answer

27. Show that $\sqrt{5}$ is irrational. Clearly state the contradiction used in your proof. [5 marks]

28. For $p(x) = x^3 - 6x^2 + 11x - 6$: (a) verify that $x = 1$ is a zero, (b) factorise $p(x)$, and (c) write all its zeros. **[5 marks]**

29. In ΔABC, D and E are the midpoints of AB and AC respectively. Using congruence or a suitable theorem, establish that $DE \parallel BC$ and $DE = \frac{1}{2} BC$. Then find DE if $BC = 14$ cm. **[5 marks]**

30. Construct a triangle ABC with base $BC = 6$ cm, $\angle B = 60°$, and $AB + AC = 10$ cm. Write the construction steps and justification. **[5 marks]**

31. A cylindrical water tank has radius 3.5 m and height 4 m. Find (a) curved surface area, (b) total surface area if it is closed at both ends, and (c) capacity in litres. Use $\pi = \frac{22}{7}$ and $1\ m^3 = 1000$ L. **[5 marks]**

32. The marks of 40 students are grouped as follows: 0-10: 3, 10-20: 5, 20-30: 9, 30-40: 12, 40-50: 7, 50-60: 4. (a) Prepare a frequency table with cumulative frequency, (b) identify the modal class, (c) state the total number of students, and (d) draw a histogram on graph paper. **[5 marks]**

Section D: 30 marks | Total: 80

Mathematics Answer Key & Marking Hints

> For proof, construction and graph questions, equivalent correct reasoning should receive credit. This key gives concise checkpoints, not the only acceptable method.

1. C - √7.

2. 3.

3. B - y-axis.

4. B - equal.

5. B - isosceles.

6. C - 360°.

7. C - 14 cm.

8. 12 cm.

9. 7.

10. 28/50 = 14/25 = 0.56.

11. 4√5.

12. p(2) = 8 - 8 + 5 = 5.

13. Examples: (0,6), (1,4), (2,2), (3,0).

14. 68°, 112°, 68°, 112°.

15. ∠C = 52°, ∠A = 76°.

16. 42 cm².

17. 2πrh = 220 cm².

18. 7.

19. 5(√3 - √2).

20. Group: $x^2(x-4) - 1(x-4) = (x^2-1)(x-4) = (x-1)(x+1)(x-4)$.

21. A is Quadrant I; B is Quadrant II; C is Quadrant III. Plot accurately.

22. Use corresponding/linear-pair facts to show equality of alternate interior angles. Full logical steps required.

23. Adjacent angles supplementary: (2x+10)+(3x-20)=180 => x=38. ∠A=86°, ∠B=94°, ∠C=86°, ∠D=94°.

24. s=21. Area=√(21×8×7×6)=84 cm².

25. TSA = 2(lb+bh+hl)=184 cm²; Volume = 160 cm³.

26. Mean = 50 min; median = 50 min.

27. Assume $\sqrt{5}=a/b$ in lowest terms. Then $5b^2=a^2$, so 5 divides a; write $a=5k$. This gives b divisible by 5, contradicting lowest terms.

28. $p(1)=0$. Factorisation$=(x-1)(x-2)(x-3)$. Zeros: 1,2,3.

29. Midpoint theorem: DE ∥ BC and $DE=BC/2$. For BC=14 cm, DE=7 cm.

30. Expected construction: draw BC=6 cm; at B draw 60° ray; mark point D on ray with BD=10 cm; join DC; construct perpendicular bisector of DC to meet BD at A; join AC. Accept equivalent standard construction with justification.

31. CSA$=2\pi rh=88$ m²; TSA$=2\pi r(h+r)=165$ m²; volume$=\pi r^2h=154$ m³$=154{,}000$ L.

32. Cumulative frequencies: 3,8,17,29,36,40. Modal class 30-40. Total=40. Histogram must use class intervals and frequencies correctly.

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