

CBSE Class 9 Maths Sample Paper

SUBJECT: MATHEMATICS

CLASS : IX

MAX. MARKS : 80

DURATION : 3 HRS

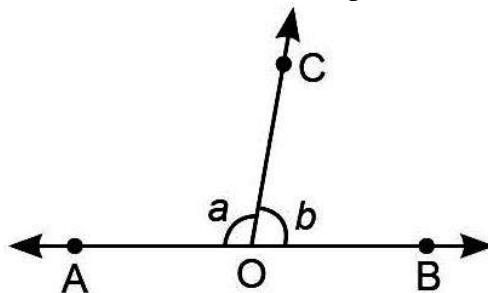
General Instruction:

- (i) All questions are compulsory.
 - (ii) This question paper contains **30** questions divided into four Sections A, B, C and D.
 - (iii) **Section A** comprises of 6 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 8 questions of **4 marks** each.
 - (iv) There is no overall choice. However, an internal choice has been provided in two questions in 1 mark each, two questions in 2 marks each, four questions of 3 marks each and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
 - (v) Use of Calculators is not permitted
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SECTION – A

Questions 1 to 6 carry 1 mark each.

- 1. The point P(a, b) lies in the IVth quadrant. Which is smaller: a or b?
- 2. In the given figure, $\angle AOC$ and $\angle BOC$ form a linear pair. If $b = 80^\circ$. Find the value of a.



- 3. Simplify: $16^{\frac{1}{2}} \cdot 25^{\frac{1}{2}}$
- 4. Find the value of the polynomial $p(y) = y^2 - 5y + 6$ at $y = 2$
OR
Write the coefficient of y in the expansion of $(5 - y)^2$.
- 5. Find the area of the parallelogram whose one diagonal is 8.4 cm and the perpendicular distance from an opposite vertex is 8 cm.
- 6. Find the median of 8, 15, 23, 14, 6, 8, 3, 16, 15 and 18.
OR
The mean of x_1 and x_2 is 6 and mean of x_1, x_2, x_3 is 7. Find the value of x_3 .

SECTION – B

Questions 6 to 12 carry 2 marks each.

- 7. If the altitudes drawn from two vertices of a triangle to opposite sides are equal, prove that triangle is isosceles.
 - 8. The curved surface area of a cylinder is 4620 cm^2 . Find its radius if height is 35 cm.
OR
Find the height of cone, if its slant height is 34 cm and base diameter is 32 cm.
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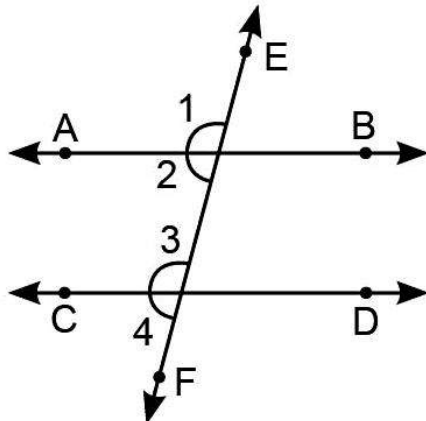
9. In a cricket match a batsman hits a boundary 10 times out of 36 balls he plays. Find the probability that he does not hit the boundary.

OR

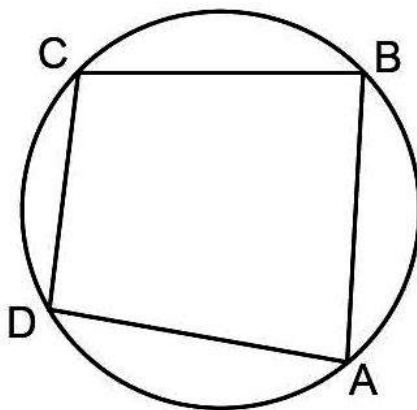
In an experiment, a coin is tossed 600 times. if the tail turns up 240 times, find the experimental probability of getting (i) a head. (ii) a tail.

10. If $(x - 3)$ is a factor of $p(x) = x^3 - kx^2 + (k + 1)x - 12$, find the value of k .

11. In the given figure, $AB \parallel CD$, find the value of $\angle 1 + \angle 4$.



12. In the given figure, $\angle ABC = 95^\circ$. Find $\angle ADC$.



SECTION – C

Questions 13 to 22 carry 3 marks each.

13. Draw the graph of the equation $x + 3y = 15$. Find the coordinates of the point where the graph intersects the x-axis.

14. Factorise: $4(x - y)^2 - 12(x - y)(x + y) + 9(x + y)^2$

15. Find the values of a and b if $\frac{\sqrt{7}-1}{\sqrt{7}+1} - \frac{\sqrt{7}+1}{\sqrt{7}-1} = a + b\sqrt{7}$

OR

Express $1.4191919\dots$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

16. Plot the following pairs of numbers as points (x, y) in the Cartesian plane.

x	-3	-2	8	4	3
y	5	0	3	8	4

17. Prove that the line segment joining the mid-points of the hypotenuse of a right-angled triangle to its opposite vertex is half of the hypotenuse.

18. If the medians of a ΔABC intersect at G show that: $\text{ar}(\Delta AGB) = \text{ar}(\Delta AGC) = \text{ar}(\Delta BGC) = \frac{1}{3} \text{ar}(\Delta ABC)$

OR

ABCD is a parallelogram. E is a point on BA such that $BE = 2EA$ and F is a point on DC such that $DF = 2FC$. Prove that AECF is a parallelogram whose area is one-third of the area of parallelogram ABCD.

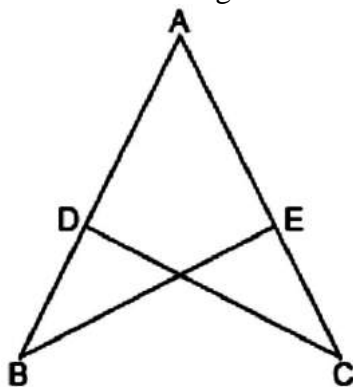
19. Sides of a triangle are in the ratio 5 : 3 : 3. Perimeter of the triangle is 110 cm. Find the area of the triangle.

OR

A field is in the shape of a trapezium whose parallel sides are 25 m and 10 m. The non-parallel sides are 14 m and 13 m. Find the area of the field.

20. Prove that a cyclic parallelogram is always a rectangle.

21. In the given figure, $AB = AC$ and $AD = AE$. Using Euclid's axiom, prove that $BE = DC$



22. A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8. What is the probability that it will point at
(i) 8 ?
(ii) an odd number?
(iii) a number greater than 2?

OR

A purse contains a number of Rs. 1, Rs. 2 and Rs. 5 coins as given below:

Rs. 1	Rs. 2	Rs. 5
10	14	14

If from the purse a coin is taken out at random, then find the probability that the coin

- (i) is not a Rs. 1 coin
(ii) is a Rs. 3 coin

SECTION – D

Questions 23 to 30 carry 4 marks each.

23. If $x = \frac{\sqrt{5}-2}{\sqrt{5}+2}$ and $y = \frac{\sqrt{5}+2}{\sqrt{5}-2}$, then find the value of $x^2 + y^2 - xy$.

24. Find the zeroes of the polynomial $6x^3 - 7x^2 - 11x + 12$, if $x - 1$ is a factor of the polynomial.

OR

Find the value of a and b so that $x + 1$ and $x - 1$ are factors of $x^4 + ax^3 + 2x^2 - 3x + b$.

25. Water is flowing into a water tank at the rate of 20 cubic cm/sec. If the volume of water collected in x seconds is y cubic cm.

(a) write a linear equation and draw its graph.

(b) write the volume of water after 5 seconds.

OR

Show that the points $A(1, 2)$, $B(-1, -16)$ and $C(0, -7)$ lie on the linear equation $y = 9x - 7$.

26. A classroom is 7 m long, 6.5 m wide and 4 m high. It has one door measuring 3 m x 1.4 m and three windows, each measuring 2 m x 1 m. The interior walls are to be white washed. The contractor charges Rs. 7.25 per sq. m. Find the cost of white washing the interior walls of a classroom.

27. A cylindrical tub of radius 12 cm contains water to a depth of 20 cm. A spherical ball is dropped into the tub and thus the level of water is raised by 6.75 cm. What is the radius of the ball?

28. Construct a $\triangle ABC$ in which $BC = 4.7$ cm, $\angle B = 60^\circ$ and $AB + AC = 8.2$ cm.

29. On a square plot of land a farmer wants to grow five different crops at a time. On half area he wants to grow wheat but in rest four equal parts, he wants to grow four different crops. How can he divide the area, suggest diagrammatically?

30. Given below are the seats won by different political parties in the polling outcomes of a state assembly election.

Political Parties	A	B	C	D	E	F
Seats won	75	55	37	29	10	37

(i) Draw a suitable graph to represent the polling result.

(ii) Which political party Won the maximum number of seats?

OR

Mean of 50 observations was found to be 80.4. But later on, it was discovered that 96 was misread as 69 at one place. Find the correct mean. If in each observation a constant value ' k ' is added, how is the mean affected?

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