SA-II- MATHS - QUESTION BANK- CLASS-9		
Name-	Roll No	Class-IX-

MULTIPLE CHOICE QUESTIONS

Chapter - 1

1. How many rational numbers can be found between two distinct rational numbers?
a. Two b. Ten c. Zero d. Infinite

2. The value of $(2+\sqrt{3})(2-\sqrt{3})$ in
a. 1 b. -1 c. 2 d. none of these

3. $(27)^{-2/3}$ is equal to
a. 9 b. 1/9 c. 3 d. none of these

4. Every natural number is
a. not an integer b. always a whole number c. an irrational number
d. not a fraction

Chapter - 2

1. $\sqrt{2}$ is a polynomial of degree
a. 2 b. 0 c. 1 d. ½

2. Which of the following is quadratic polynomial
a. x + 2 b. $x^2 + 2$ c. . $x^3 + 2$ d. 2x + 2

3. The zero of the polynomial P(X) = 2x + 5 is
a. 2/5 b. 5/2 c. 0 d. -5/2

4 If $P(x) = x^2 - 2\sqrt{2}x + 1$, then $P(2\sqrt{2})$ is =
a. **0** **b.** 1 c. $4\sqrt{2}$ d. $8\sqrt{2}$ +1

5. If x+1 is a factor of the polynomial $2x^2$ + kx, then the value of k is
a. -3 b. 4 c. 2 d. -2

6 The value of $249^2 - 248^2$ is
a. 1 b. 477 c. 487 d. 497

7. If $x^2 + 1/x^2 = 7$, then the value of If $x^3 + 1/x^3$ is
a. 27 b. 9 c. 18 d. 36

8. If a + b + c = 9 and ab+ bc + ca = 40, then the value of $a^2 + b^2 + c^2$ is
a. 1 b. 2 c. 3 d. 4

9. Zero of the polynomial P(x) = c x +d is
a. -d b. -c c. –d/c d. -7

Chapter -3

1. The point of intersection of X and Y axes is called
a. zero point b. origin c. null point d. none of these

2. The distance of the point (-3, -2) from x-axis is
a. 2 units b. 3 units c. 5 units d. $\sqrt{13}$ units
b. Ans. (a) 2 units

3. . The distance of the point (-6, -2) from y-axis is

a. 6 units b. $\sqrt{38}$ units c. 2 units d. 8 units

c. Ans. (a) 6 units

4. The abscissa and ordinate of the point with Co-ordinates (8, 12) is

a. abscissa 12 and ordinate 8 b. abscissa 8 and ordinate 12

d. abscissa 0 and ordinate 20 c. none of these

Chapter – 6

1. Measurement of reflex angle is

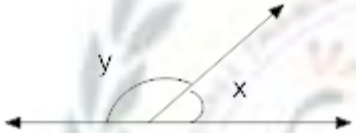
a. 90° c. between 0° and 90°

b. between 90° and 180° d. . between 180° and 360°

2. The sum of angle of a triangle is

a. 0° b. 90° c. 180° d. none of these

3. In fig if x= 30° then y=



a. 90° b. 180° c. 150° d. 210°

4. If two lines intersect each other then

a. vertically opposite angles are equal c. corresponding angle are equal

b. alternate interior angle are equal d. none of these

5. The measure of Complementary angle of 63° is

a. 30° b. 36° c. 27° d. none of there

Chapter- 7

1. What is the sum of the angles of a quadrilateral:

a. 260^0 b. 360^0 c. 180^0 d. 90^0

2. The sum of the angles of a triangle will be:

a. 360^0 b. 270^0 c. 180^0 d. 90^0

3. An angle is 14° more than its complement. Find its measure.

a. 42 b. 32 c. 52 d. 62

4. An angle is 4 time its complement. Find measure.

a. 62 b. 72 c. 52 d. 42

5. Find the measure of angles which is equal to its supplementary.

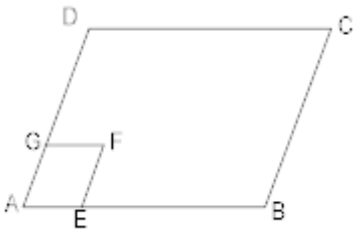
a. 120° b. 60° c. 45° d. 90°

Chapter – 8

1. A quadrilateral ABCD is a parallelogram if

a. AB = CD b. AB $\parallel$ BC c. $\angle A = 60^0, \angle C = 60^0, \angle B = 120^0$ d. AB = AD

2. In figure, ABCD and AEFG are both parallelogram if $\angle C = 80^0, then \angle DGF$ *is*



a. 100^0 b. 60^0 c. 80^0 d. 120^0

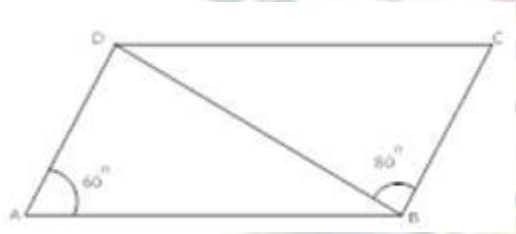
3. In a square ABCD, the diagonals AC and BD bisects at O. Then ΔAOB is

a. acute angled b. obtuse angled c. equilateral d. right angled

4. ABCD is a rhombus. If $\angle ACB = 30^0$, *then* $\angle ADB$ *is*

a. 30^0 b. 120^0 c. 60^0 d. 45^0

5. In fig ABCD is a parallelogram. If $\angle DAB = 60°$ and $\angle DBC = 80°$ then $\angle CDB$ is



a.80^0 b. 60^0 c. 20^0 d. 40^0

CHAPTER -10

1. An angle in the semicircle is

a Right angle b. $180°$ c. $360°$ d. none of these

2. If the angles subtended by two chords of a circle at the centre are equal then the chords are

a not equal **b equal** c angle equal d line equals

Ans. (b) equal

3. How many circle passing through three non-collinear points

a. one b two c three d. four

4. The constant distance is called

a. diameter **b radius** c. centre d. circle

5. PS and RS are two chord's of a circle such that PQ=10cm and RS= 24cm and PQ||RS. The distance between PQ and RS is 17cm. Find the radius of circle

a. 10cm **b 13cm** c 15cm d. none of these

6. A circle is drawn. It divides the plane into

a. 3 Parts b. 4 Parts c. 5 Parts d. No Parts

7. The relation between diameter and radius of a circle is

a. r = 2d b. d = r **c. d = 2 r** d. d= $2\pi r$

8. If P and Q are any two Points on a circle then PQ is called a

a. diameter b. secant **c. chord** d. radius

9. The whole arc of a circle is called

a. circumference b. semi-circle c. sector d. segment

*Short Answer [2 marks each]

1. Give one example each of a binomial of degree35, and of a monomial of degree 100.

2. Classify the following as linear, quadratic and cubic polynomials:

(i) x^2+x (ii) $x- x^3$ (iii) $y + y^2 +4$ (iv) $1 + x$

(v) $3t$ (vi) r^2 (vii) $7x^3$ (viii) $3x+5$

3. Find the value of the polynomial $5x – 4x^2 + 3$ at

(i) x = 0 (ii) x = -1 (iii) x = 2 (iv) x = ½

4. Find the zero of the polynomials:

(i) P(x) = 3x - 2 (ii) P(x) = x - 5 (iii) P(x) =2x +7 (iv) P(x) = ax + b

5. Find the remainder when $x^3 +3x^2 +3x +1$ is divided by

(i) x + 1 (ii) x – ½ (iii) x + π (iv) 2x + 5

6. Expand, Using suitable identities:

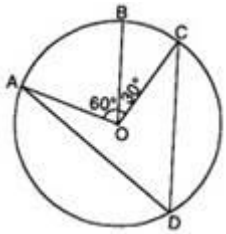
(i) $(x+2y+4z)^2$ (ii) $(2x-y+z)^2$

7. Using factor theorem to determine g(x) is factor of p(x)

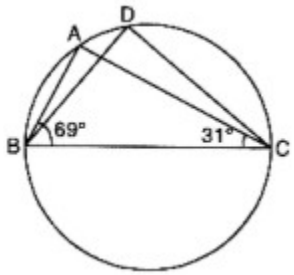
$P(x) = x^3 - 4x^2 + x + 6$, $g(x) = x - 2$

8. Recall that two circles are congruent if they have a same radii. Prove that equal chords of congruent circles subtend equal angles at their centres.

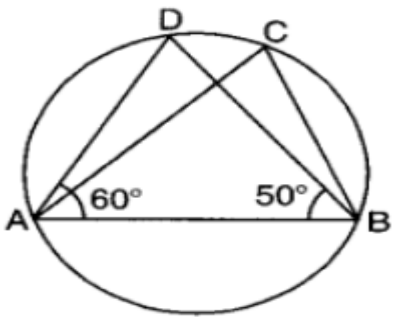
9. In figure, A, B, C are three points on a circle with centre O such that ∠BOC = 30°, ∠AOB = 60°. If D is a point on the circle other than the arc ABC, find ∠ADC.



10. In given figure, ∠ABC = 69°, ∠ACB = 31°, find ∠BDC.



11. In figure, if ∠DAB = 60° , find ∠ACB



12. Find six rational numbers between 3 and 4.

13. Find the value of the polynomial $5x - 4x^2 + 3$ at x = 0, x = 1 and x= 2

14. **FACTORISE**

1. $x^2+13x+30$ 2 . $x^2 +33x+260$ 3 . $x^2 + 17x +30$ 4 . $x^2 +18x + 77$

5. $x^2 – 19x +90$ 6. $x^2 -7x +12$ 7 .$x^2 + 7x – 60$ 8 . $x^2 -8x -48$

9. $x^2 - 9x - 36$ 10. $x^2 – 2x + 120$ 11. $x^2 – 3x - 70$ 12. $x^2 - 5x - 150$

15. If the polynomial $x^4 – 6x^3 + 16x^2 – 25x + 10$ divided by $x^2 – 2x + k$, the remainder come out to be x + a. Find k and a

16. Find whether 2 is a zero of the polynomial $x^3 + 4x^2 – 3x – 18$ or not.

17. The angles of a quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all angles of the quadrilateral.

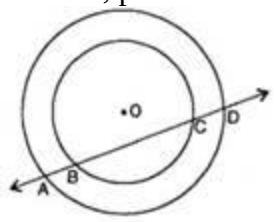
18. Recall that two circles are congruent if they have a same radii. Prove that equal chords of congruent circles subtend equal angles at their centres.

19.

Draw different pairs of circles. How many points does each pair have in common? What is a maximum number of common points?

20.

If a line intersects two concentric circles (circles with the same centre) with centre O at A, B, C and D, prove that AB = CD.



*Short Answer [3 marks each]

1). Divide the polynomials:-

i. $3x^4 - 4x^3 - 3x - 1$ by $x - 1$
ii. $X^3 + 1$ by $x + 1$

2). Factorise :

i. $49a^2 + 70ab + 25b^2$
ii. $25/4x^2 - y^2/9$
iii. $12x^2 - 7x + 1$
iv. $6x^2 + 5x - 6$
v. $X^3 + 13x^2 + 32x + 20$

3) Find the value of K, if x-1 is a factor of p(x) in each of the following cases:

i. $P(x)=x^2 + x + k$
ii. $P(x)= kx^2 - 3x + k$
iii. $P(x)= kx^2 - \sqrt{2}x + 1$

4) Expand using suitable identity:

(i) $(x + 2y + 4z)^2$ (ii) $(2x - y + z)^2$ (iii) $(3a - 7b - c)^2$ (iv) $(-2x + 5y - 3z)^2$

5) Factorise: (i) $2x^2 + 7x + 3$ (ii) $12x^2 - 7x + 1$ (iii) $3x^2 - x - 4$

6) Factorise: $27x^3 + y^3 + z^3 - 9xyz$

7) Given below are the seats won by different political parties in the polling outcome of a state assembly elections:

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

i. Draw a bar graph to represent the polling results.

Which political party won the maximum number of seats?

8) The following data on the number of girls (to the nearest ten) per thousand boys in different sections of the society is given below :

Section	Number of girls per thousand boys
Scheduled caste	940
scheduled tribe	970
Non SC/ST	920
Backward districts	950
Non-backward districts	920
Rural	930
Urban	910

i. Represent the information above by a bar graph.

In the classroom discuss what conclusion can be arrived at from the graph.

9) A family with a monthly income of ₹ 20,000 had planned the following expenditures per month under various heads:

Heads	Expenditure (in thousand rupees)
Grocery	4
Rent	5
Education of children	5
Medicine	5
Fuel	2
Entertainment	1
Miscellaneous	1

Draw a bar graph for the data above.

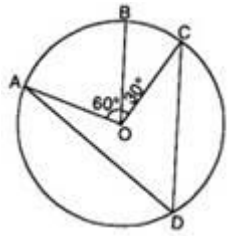
10) If two equal chords of a circle intersect within the circle, prove that the line joining the point of intersection to the centre makes equal angles with the chords.

11) If two equal chords of a circle intersect within a circle, prove that the segments of one chord are equal to corresponding segments of the other chord.

12.

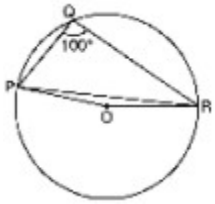
If two equal chords of a circle intersect within a circle, prove that the segments of one chord are equal to corresponding segments of the other chord.

13. In figure, A, B, C are three points on a circle with centre O such that ∠BOC = 30°, ∠AOB = 60°. If D is a point on the circle other than the arc ABC, find ∠ADC.



14.

In figure, ∠PQR=100∘, where P, Q and R are points on a circle with centre O. Find ∠OPR



15.

The diameter of the base of a cone is 10.5 cm and its slant height is 10 cm. Find its curved surface area.

16.

Curved surface area of a cone is 308 cm^2 and its slant height is 14 cm. Find the radius of the base

17.

Find the capacity in litres of a conical vessel with radius 7 cm, slant height 25 cm.

*Long Answer [4 marks each]

1). Factorise:

i. $8x^3 + 27y^3 + 36x^2y + 54xy^2$
ii. $8x^3 + y^3 + 27z^3 – 18xyz$

2). Verify:

i. $X^3 + y^3 = (x + y)(x^2 – xy + y^2)$
ii. $X^3 - y^3 = (x - y)(x^2 + xy + y^2)$

3). Give possible expressions for the length and breadth of each of the following rectangles, in which their areas are given:

i. Area : $25a^2 – 35a + 12$
ii. Area : $35y^2 + 13y – 12$

4). What are the possible expressions for the dimensions of the cuboids whose volumes are given below?

i. Volume : $3x^2 - 12x$
ii. Volume : $12ky^2 + 8ky - 20k$

5) between the ages 15-44 (in years) worldwide, found the following figures (in %) :

S.No.	Causes	Female fatality rate (%)
1	Reproductive health conditions	31.8
2	Neuropsychiatric conditions	25.4
3	Injuries	12.4
4	Cardiovascular conditions	4.3
5	Respiratory conditions	4.1
6	Other causes	22.0

i. Represent the information given above graphically.
ii. Which condition is the major cause of women's ill health and death worldwide?

Try to find out, with the help of your teacher, any two factors which play a major role in the cause in (ii) above being the major cause.

6) A teacher wanted to analyse the performance of two sections of students in a mathematics test of 100 marks. Looking at their performances, she found that a few students got under 20 marks and a few got 70 marks or above. So she decided to group them into intervals of varying sizes as follows: 0 - 20, 20 - 30, . . ., 60 - 70, 70 - 100. Then she formed the following table:

Marks	Number of students
0 – 20	7
20 – 30	10
30 – 40	10
40 – 50	20
50 – 60	20
60 – 70	15
70 – above	8
Total	90

Draw a histogram for this table?

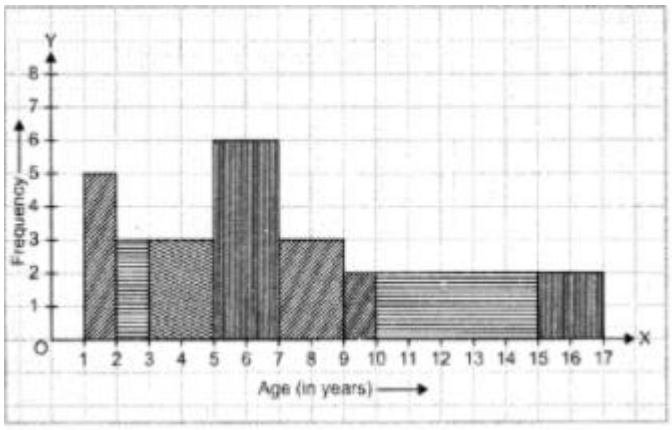
7. The volume of a right circular cone is 9856 cm3. If the diameter of the base if 28 cm, find:

i. Height of the cone
ii. Slant height of the cone
iii. Curved surface area of the cone.

8.The diameter of the moon is approximately one-fourth the diameter of the earth. What fraction is the volume of the moon of the volume of the earth?

Case Study Questions [5 marks]

(i)Read the Source/Text given below and answer any four questions:
In an effort to provide high-quality and safe playgrounds for kids, our reputable manufacturers adhere to the playground safety guidelines set forth by the Indian Consumer Product Safety Commission (CPSC) and the Indian Society for Advancement of Materials and Processing Engineering (ISAMPE). These organizations set the guidelines for determining the types of playground equipment that is appropriate for kids within specific age groups: 2-3 years, 3-5 years, 5-7 years, 7-10 years, 10-15 years, and 15-17 years. A random survey of the number of children of various age groups playing in a park was found as follows:



Age (in years)	Number of children
1 – 2	5
2 – 3	3
3 – 5	6
5 – 7	12
7 – 10	9
10 – 15	10
15 – 17	4

the histogram is as given below:

1. In this question, the class sizes are different. So, calculate the adjusted frequency for each class by using the following formula:
   Frequency density or adjusted frequency for class =
   a. **Minimum class size /Class size of this class × Its Frequency**
   b. Minimum class mark /Class size of this class × Its Frequency
   c. Minimum Frequency /Class size of this class × Its class size
   d. Minimum class mark /Class mark of this class
2. In this question the minimum class size is

   a. 0 **b. 1** c. 2 d. 3
3. The class limits of third class interval 3-5

   a. lower limit =5, upper limit = 3 b. lower limit =5, upper limit = 7

   c **lower limit = 3, upper limit = 5** d. lower limit =7, upper limit = 5

4. Adjusted Frequency for class interval 5-7 and 7-10

a. 3, 6 b. 3, 3 c. 6, 6 **d. 6, 3**

5. Find the class mark of class 15 - 17

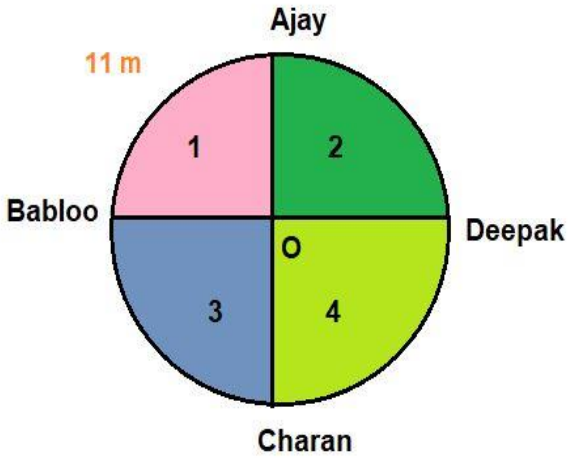
a. **16** b. 12 c. 25 d. 2

2. **Read the Source/Text given below and answer the questions:**

Four students of class IX B with names Ajay, Babloo, Charan and Deepak are playing a game in a circular playground.

All four students are holding radios with speaker and mic. These radios are connected by a wire of equal length that is 11 m (for each radio). Ajay Asks a question to Babloo. If Babloo gives the correct answer he gets 10 points and asks a new question to Charan, If he can not answer then he passes the same question to Charan and gets no points.

These conditions apply to all four players. After 10 rounds who gets maximum points, he becomes the winner.



i. What is the radius of the field?
   a. 7 m b. 14 m c. 11 m d. 22 m

ii. What is the area of the field?
   a. 70 m^2 b. 154 m^2 c. 110 m^2 d. 220 m^2

iii. What is the area of the part marked with 1 on the field?
   a. 50 m^2 b. 154 m^2 c. 76 m^2 d. 38.5 m^2

iv. What is the circumference of the field?
   a. 22 m b. 14 m c. 44 m d. 28 m

v. What is the direct distance from Ajay to Charan?
   a. 7 m b. 28 m c. 15 m d. 14 m

Answer Key:

i. (a) 7 m
ii. (b) 154 m^2
iii. (d) 38.5 m^2
iv. (c) 44 m
v. (d) 14 m

3. **Read the passage given below and answer any four questions:**

Once four friends Rahul, Arun, Ajay and Vijay went for a picnic at a hill station. Due to peak

season, they did not get a proper hotel in the city. The weather was fine so they decided to make a conical tent at a park. They were carrying 300 m² cloth with them. As shown in the figure they made the tent with height 10 m and diameter 14 m. The remaining cloth was used for the floor.

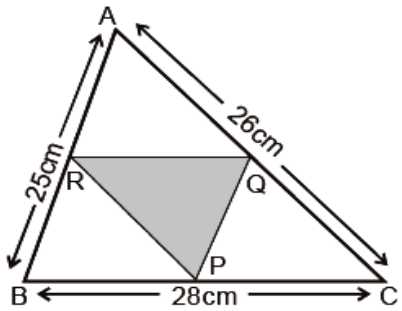
i. How much Cloth was used for the floor?
   a. 31.6 m² b.16 m² c. 10 m² d. 20 m²
ii. What was the volume of the tent?
   a. 300 m³ b. 160 m³ c. 513.3 m³ d. 500 m³
iii. What was the area of the floor?
   a. 50 m² b. 100 m² c. 150 m² d. 154 m²
iv. What was the total surface area of the tent?
   a. 400 m² b. 422.4 m² c. 300 m² d. 400 m²
v. What was the latent height of the tent?
   a. 12 m b. 12.2 m c. 15 m d. 17 m

Answer Key:

i. (a) 31.6 m²
ii. (c) 513.3 m³
iii. (d) 154 m²
iv. (b) 422.4 m²
v. (b) 12.2 m

4. **Read the Source/Text given below and answer any four questions:**

There is a Diwali celebration in the DPS school Janakpuri New Delhi. Girls are asked to prepare Rangoli in a triangular shape. They made a rangoli in the shape of triangle ABC. Dimensions of △ABC are 26 cm, 28 cm, 25 cm.



i. In fig, R is mid-point of AB and RQ || BC then AQ is equal to
   a. BC
   b. RB
   c. QC
   d. AD

ii. In fig R and Q are mid-points of AB and AC respectively. The length of RQ is:
   a. 14
   b. 13
   c. 12.5
   d. 13.5

iii. If Garland is to be placed along the side of △QPR which is formed by joining midpoint, what is the length of garland
   a. 79 cm
   b. 39.5 cm
   c. 35 cm
   d. 79.5 cm

iv. In the following figure R, P and Q are the mid-points of AB, BC, and AC respectively. Which of the following is the area of ΔPQR?
   a. 12ar(ABC)
   b. 13ar(ABC)
   c. 14ar(ABC)
   d. 16ar(ABC)

v. R, P, Q are the mid-points of corresponding sides AB, BC, CA in ΔABC, the figure so obtained BPQR will be:
   a. parallelogram
   b. trapezium
   c. quadrilateral
   d. none of these

Answer Key:

i. (c) QC
ii. (a) 14
iii. (b) 39.5
iv. (c) 1/4ar(ABC)
v. (a) parallelogram