



REVISION SHEET

SUBJECT: MATHEMATICS

CLASS-IX

TERM 1

1-MARK QUESTION

Q1 In which quadrant can both coordinates never be positive?

- a.I b.II c.III d.IV

Q2 A point lies on the x-axis if its ordinate is _____

- a. 2 b.0 c. 1 d.-1

Q3 Find the value of $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$

- a. 4 b. 2 c. 8 d. $\sqrt{6}$

Q4 Insert a rational number and an irrational number between $\sqrt{2}$ and $\sqrt{3}$

Find the distance between the following points: (Q5 to Q7)

Q5 (-2,5) and (3,1)

Q6 (a,0) and (0,b)

Q7 (4,6) and (0,0)

Q8 A sector of a circle of radius 8 cm contains an angle of 135° . Find the area of the minor sector.

- a. 75.42 cm^2 b. 87.19 cm^2 c. 18.8 cm^2 d. 125.71 cm^2

Q9 What is the difference between theoretical and experimental probability?

Q10 When a coin is tossed twice, find the probability of getting one head?

- a. $\frac{1}{4}$ b. $\frac{1}{2}$ c. $\frac{3}{4}$ d. 1

Q11 A bag contains 10 red and 15 black balls. Find the probability of getting a (i) red ball (ii) green ball

Q12 Give example of sure event and impossible event.

Q13 Check whether the following sequence is an AP: 3,10,17,24,...

Q14 Write the formula for finding n^{th} term of an AP.

Q15 Find the area of parallelogram with base 14cm and height 10cm.

- a. 70cm^2 b. 140 cm^2 c. 280 cm^2 d. 180 cm^2

Q16 Find the area of quadrant of a circle with perimeter 132cm.

- a. 501 cm^2 b. 1386 cm^2 c. 693 cm^2 d. 346.5 cm^2

Q17 Write $14.71111\dots$ in p/q form.

Q18 Find the area of equilateral triangle with side 24m.

- a. 144 m^2 b. $288\sqrt{3}\text{ m}^2$ c. $144\sqrt{3}\text{ m}^2$ d. $72\sqrt{3}\text{ m}^2$

Q19 If the angle subtended by an arc at the centre of the circle is 75° . find the angle subtended by that arc on the boundary of the circle

- a. 150° b. 100° c. 37.5° d. 75°

Q20 Plot the following points on a graph paper: $(4,5), (-3,2), (-1,0)$

2-MARK QUESTION

Evaluate each of the following question using appropriate identities: (Q21 to Q25)

Q21. $(1.5x^2 - 0.3y^2)(1.5x^2 + 0.3y^2)$

Q22. $322 \times 322 - 2 \times 322 \times 22 + 22 \times 22$

Q23. $(x+3)^3 + (x-3)^3$

Q24. 991×1009

Q25. $(0.98)^2$

Q26. Write the first terms of each of the following sequences whose n^{th} term is

(i) $a_n = 3n + 2$

(ii) $a_n = (n - 2)/3$

Q27 Which term of the AP 84, 80, 76, ... is 0?

Q28 Plot $\sqrt{5}$ on number line

Q29 Find 6 rational numbers between $\frac{3}{5}$ and $\frac{5}{6}$

Factorise: (Q30 to 35)

Q30 $(a - b + c)^2 + (b - c + a)^2 + 2(a - b + c)(b - c + a)$

Q31 $64a^3 - b^3$

Q32 $8x^3y^3 + 27a^3$

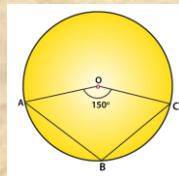
Q33 $\frac{1}{27}x^3 - y^3 + 125z^3 + 5xyz$

Q34 $(3x-2y)^3 + (2y-4z)^3 + (4z-3x)^3$

Q35 The circumference of two circles is in the ratio of 2:3. Find the ratio of their areas.

Q36 Find the value of x for which $(8x + 4)$, $(6x - 2)$ and $(2x + 7)$ are in A.P

Q37 The radius of a circle is 8 cm and the length of one of its chords is 12 cm. Find the distance of the chord from the centre.



Q38 Find the $\angle ABC$

3-MARK QUESTION

Q39 . In a cricket match, a batsman hits a boundary 6 times out of 30 balls he plays. Find the probability that on a ball played: (i) He hits a boundary (ii) He does not hit a boundary.

Q40 . Two chords AB, CD of lengths 5 cm, 11 cm respectively of a circle are parallel. If the distance between AB and CD is 3 cm, find the radius of the circle.

Q41 . Prove that a diameter of a circle which bisects a chord of the circle also bisects the angle subtended by the chord at the centre of the circle.

Q42 . If $x + \frac{1}{x} = 6$ then find $x^3 + \frac{1}{x^3}$.

Q43. If $2x + 3y = 13$ and $xy = 6$, find the value of $8x^3 + 27y^3$

Q44 . If $a + b + c = 9$ and $ab + bc + ca = 26$, find the value of $a^3 + b^3 + c^3 - 3abc$.

Q45 . Find the area of a triangle two sides of which are 18 cm and 10 cm and the perimeter is 42 cm.

Q46 .In a triangle ABC, $AB = 15\text{cm}$, $BC = 13\text{cm}$ and $AC = 14\text{cm}$. Find the area of triangle ABC and hence its altitude on AC.

Q47 . Prove $\sqrt{13}$ is irrational

Q48 . If $f(x) = 2x^3 - 13x^2 + 17x + 12$, find $f(2)$

Q49 Prove that the points $(3, 0)$, $(6, 4)$ and $(-1, 3)$ are vertices of a right-angled isosceles

triangle.

Q50 The three vertices of a parallelogram are (3, 4), (3, 8) and (9, 8). Find the fourth vertex.

Q51 The area of a circular playground is 22176 m^2 . Find the cost of fencing this ground at the rate of ₹50 per metre.

Q52 A chord of a circle of radius 14 cm makes a right angle at the centre. Find the areas of the minor and major sectors of the circle.

Q53 Draw the graphs of the following sets of lines:

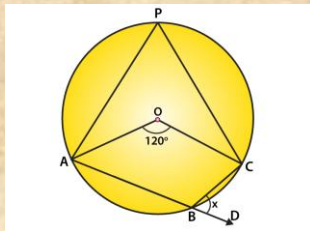
(i) $y=5x-2$, $y=-3x$, $y=x+2$

(ii) $y=5$, $y=x$, $y=-x$

Q54 A wheel has diameter 84cm. Find how many complete revolutions must it make to cover 792 metres.

Q55 In a cyclic quadrilateral ABCD, if $\angle A = 3(\angle C)$. Find $\angle A$

Q56 If O is the centre of the circle, find the value of x



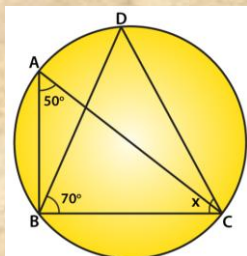
Q57 The 10th and 18th terms of an A.P. are 41 and 73, respectively. Find the 26th term

Q58 How many three digit numbers are divisible by 5?

Q59 Find the sum of first 35 positive integers

Q60 In a lottery of 50 tickets numbered 1 to 50, one ticket is drawn. (i) Find the probability that the drawn ticket bears a prime number. (ii) Find the probability that the drawn ticket bears a multiple of 4.

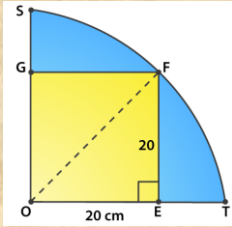
Q61 If O is the centre of the circle, find the value of x



Q62 A field which is in the shape of a trapezium in which the parallel sides are 25m and 10m. If the non-parallel sides are 14m and 13m, find their area.

Q63 The triangular side walls of a given flyover have been used for advertisements. The measurements of the sides of the walls are 13 m, 14 m, and 15 m. The advertisements bring in Rs 2000 per m^2 per year. A company hired one of the walls for a term of 6 months. How much rent did it pay for it?

Q64 $OE = 20$ cm. In sector OSFT, square OEFG is inscribed. Find the area of the blue shaded region.



Q65 The perimeter of a certain sector of a circle of radius is 5.6 m and 27.2 m. Find the area of the sector.

Q66 Find the area of a quadrilateral whose three sides are 16cm, 13cm, 9cm and perimeter is 46cm.

Q67 The auto-rickshaw fare in a city is charged ₹ 10 for the first kilometer and ₹ 4 per kilometer for subsequent distances covered. Write the linear equation to express the above statement and find 3 solutions to the equation.

Q68 ABCD is a cyclic quadrilateral in which $AB \parallel CD$. If $\angle D = 70^\circ$, find all the remaining angles.

Q69 In which quadrant or on which axis does each of the following points lie $(-5, 3)$, $(4, -3)$, $(5, 0)$, $(6, 6)$, $(-5, -4)$, $(0, -8)$?

Q70 The letters of the word “MISSISSIPPI” are placed on cards. Ram draws a card without looking.

- (i) What is the probability that it is a “S”?
- (ii) What is the probability that it is not an “I”?
- (iii) What is the probability that it is either a “P”, “I” or “S”?

5-MARK QUESTION

Q71 . Prove that $\sqrt{10}$ is irrational and then using that prove that $\sqrt{2} + \sqrt{5}$ is irrational.

Q72 . A candle is 30 cm long. It burns uniformly at the rate of 2 cm per hour.

- a. Write a linear equation representing the height of the candle after x hours.
- b. Find the height of the candle after 7 hours.

c. After how many hours will the candle be 8 cm tall?

Q73 A die is thrown. Find the probability of getting:

(i) a prime number (ii) 2 or 4

(iii) a multiple of 2 or 3 (iv) an even prime number

(v) a number greater than 5 (vi) a number lying between 2 and 6

Q74 . Riya has ₹2,000 in her savings account. She deposits ₹350 every month.

a. Form a linear equation representing the total savings after x months.

b. Find the amount after 8 months.

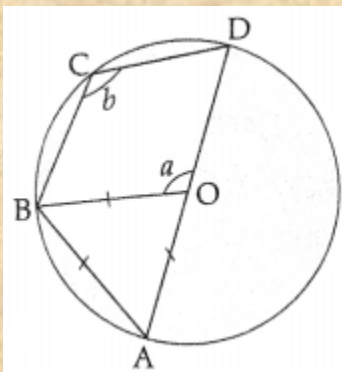
c. After how many months will her savings become ₹5,500?

Q75 . Three coins are tossed together. Find the probability of getting:

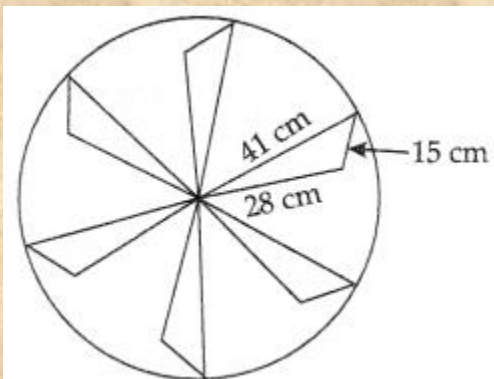
(i) exactly two heads (ii) at most two heads

(iii) at least one head and one tail (iv) no tails (v) exactly one tail

Q76 In the given figure, AB is a chord equal to the radius of the given circle with centre O. Find the values of a



Q77 Two identical circles with the same inside design as shown in the figure are to be made at the entrance. The identical triangular leaves are to be painted red and the remaining are to be painted green. Find the total area to be painted red. Also, find the total area to be painted green.



ASSERTION REASON QUESTIONS(Q78 to Q90)

DIRECTION: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

- a. Both assertion(A) and reason(R) are true and reason (R) is the correct explanation of assertion (A).**
- b. Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).**
- c. Assertion (A) is true but reason (R) is false.**
- d. Assertion (A) is false but reason (R) is true.**

Q78 Assertion (A): The sum of two irrational numbers $3-\sqrt{5}$ and $5+\sqrt{5}$ is a rational number.

Reason (R): The sum of two irrational numbers is always an irrational number.

Q79 The simplified form of $7^4 \times 7^5 = 7^9$

Reason (R): If $a > 0$ be a real number and p and q be rational numbers. Then $a^p + a^q = a^{p+q}$

Q80 Assertion (A): Equal chords of the same circle are equidistant from the centre.

Reason (R): Chords nearer to the centre are longer than chords farther from the centre.

Q81 Assertion (A): $3x^2 - 5x + 8$ is a polynomial of degree 2.

Reason (R): The degree of a polynomial is the highest power of the variable with a non-zero coefficient.

Q82 Assertion (A): $5x^{-2} + 3x + 15$ is a polynomial.

Reason (R): The exponents of the variables in a polynomial must be non-negative integers.

Q83 Assertion (A): If a candle burns at a constant rate of 3 cm per hour, then its height after every hour decreases linearly.

Reason (R): Constant decrease over equal intervals is called linear decay.

Q84 A number is selected from 1 to 100.

Assertion (A): The probability of selecting a multiple of both 2 and 5 is $1/10$.

Reason (R): Every multiple of 10 is divisible by both 2 and 5.

Q85 Assertion (A): If four numbers are in AP, then the sum of the first and fourth terms equals the sum of the second and third terms.

Reason (R): The common difference between consecutive terms is constant

Q86 Assertion (A): If $a+b=15$, $ab=56$, then $a^2+b^2=113$.

Reason (R): $a^2+b^2=(a+b)^2-2ab$.

Q87 Assertion(A): The points $(5,0)$ and $(-5,0)$ are equidistant from the origin.

Reason (R): Their x-coordinates have equal magnitudes but opposite signs.

Q88 Assertion (A): The point $(a,0)$ can never lie in any quadrant if $a \neq 0$.

Reason (R): Points on the axes do not belong to any quadrant.

Q89 Assertion (A): If one angle of a cyclic quadrilateral is 68° , then its opposite angle is 112° .

Reason (R): Opposite angles of a cyclic quadrilateral add up to 180° .

Q90 Two fair coins are tossed.

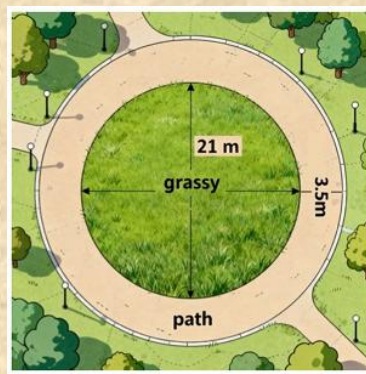
Assertion (A): The event "at least one head" and the event "at least one tail" are equally likely.

Reason (R): Each event has probability $\frac{3}{4}$.

CASE BASED QUESTIONS (Q91 to Q100)

Q91 . CASE STUDY BASED QUESTION: A circular park has a radius of 21m. A concrete path of width 3.5 m is built around the park along its boundary. Many children from nearby localities play inside the grassy part of the park (without the path). Based on the above information, answer the following questions using $\pi=22/7$

- Find the area of the grassy part (without the path).
- Find the area of the concrete path.
- If the path is to be covered with tiles costing 120 per sq m? find the total cost.
- If a circular fountain of radius 3.5 m is built at the centre of the grassy part, then find the remaining area of grass.



Q92 Beti Bachao, Beti Padhao (BBBP) is a personal campaign of the Government of India that aims to generate awareness and improve the efficiency of welfare services intended for girls.

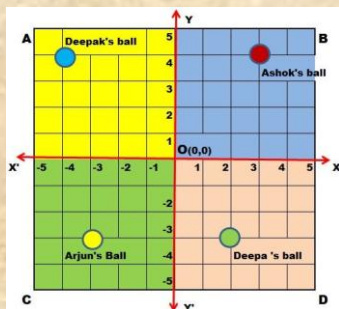
In a school, a group of $(x + y)$ teachers, $(x^2 + y^2)$ girls, and $(x^3 + y^3)$ boys organized a campaign on Beti Bachao, Beti Padhao.

- Which mathematical concept is used here?
- Write the correct identities to be used here.
- If in the group, there are 10 teachers and 58 girls, then what is the number of boys?
- Find $(x^2 - y^2)$, if $(x - y) = 23$ and number of teachers are 10?

Q93 The force applied to a body is directly proportional to the acceleration produced in the body. Assume x be acceleration produced in the body and y is the force. Take the constant as 10. (S. I unit of force is Newton and S.I. unit of acceleration is m/s^2 .)

- Write an equation to express the above situation.
- Find acceleration produced in the body, if the force applied is 10 newtons.
- Find the force applied if the acceleration produced is 2.5 m/sec^2 .

Q94



There is a square park ABCD in the middle of Saket colony in Delhi. Four children Deepak, Ashok, Arjun and Deepa went to play with their balls. The colour of the ball of Ashok, Deepak, Arjun and Deepa are red, blue, yellow and green respectively. All four children roll their ball from centre point O in the direction of XOY , $X'OY$, $X'OY'$ and XOY' . Their balls stopped as shown in the above image.

- What are the coordinates of the ball of Ashok?
- What are the coordinates of the ball of Deepa?
- What the line XOX' is called?
- What is the ordinate of the ball of Arjun?

Q95 India is competitive manufacturing location due to the low cost of manpower and strong technical and engineering capabilities contributing to higher quality production runs. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.

- In which year, the production is Rs 29,200.
- Find the production during first year

(iii) Find the production during 8th year

Q96 During a school fair, a game stall offers a coin tossing game for students. The stall has two activities. In the first activity, one fair coin is tossed and a student wins a prize if they get heads. In the second activity, two fair coins are tossed simultaneously and a student wins a bigger prize if both coins show the same face (both heads or both tails).

- (i) What is the sample space when one coin is tossed?
- (ii) What is the probability of winning the first activity (getting heads on one coin)?
- (iii) What is the sample space when two coins are tossed simultaneously?
- (iv) What is the probability of winning the second activity (both coins showing the same face)?
- (v) What is the probability of NOT winning the second activity?

Q97 In a maths class, the teacher uses a wall clock to explain the concepts of arc length and sector area. The minute hand of the clock is 7 cm long. In 60 minutes, it completes one full revolution, with its tip tracing the complete circumference of a circle. The teacher asks the class to calculate how much distance the tip covers and how much area it sweeps for different time intervals. (Use $\pi = 22/7$)

- (i) In 60 minutes, the minute hand sweeps through an angle of:
(a) 90° (b) 180° (c) 270° (d) 360°
- (ii) What angle does the minute hand sweep in 5 minutes?
- (iii) Find the length of the arc traced by the tip of the minute hand in 15 minutes.
- (iv) Find the area swept by the minute hand in 10 minutes.

Q98 A city planner is mapping key locations in a town on a coordinate grid, where each unit represents 1 kilometre. The Town Hall is at the origin (0, 0). A School is located at (2, 3), a Hospital is at (-3, 4), a Market is at (4, -2), and a Park is at (-1, -3). The planner needs to find distances between these locations for planning a transport route.

- (i) In which quadrant does the Hospital lie?
- (ii) Find the distance between the School and the Hospital.
- (iii) Find the distance of the Market from the Town Hall (origin).

Q99 A group of Class 10 students are playing a popular board game during their lunch break. The game requires players to roll a single standard six-faced dice on each turn. Player A needs to roll a number greater than 4 to move to the winning square. Player B needs to roll a prime number to avoid going back three spaces. Player C needs to roll an odd number to collect a bonus token.

- (i) Write the sample space for rolling one standard dice.

- (i) What is the probability that Player A rolls a number greater than 4?
- (iii) What is the probability that Player B rolls a prime number?
- (iv) What is the probability that Player C rolls an odd number?
- (v) What is the probability of rolling either a 1 or a 6?

Q100 Ankur and Ranjan start a new business together. The amount invested by both partners together is given by the polynomial $p(x) = 4x^2 + 12x + 5$, which is the product of their individual shares.

- (i) Find the coefficient of x^2 in the given polynomial.
- (ii) Find total amount invested by both, if $x = 1000$.
- (iii) Find the shares of Ankur and Ranjan invested individually
- (iv) Name the polynomial of amounts invested by each partner.