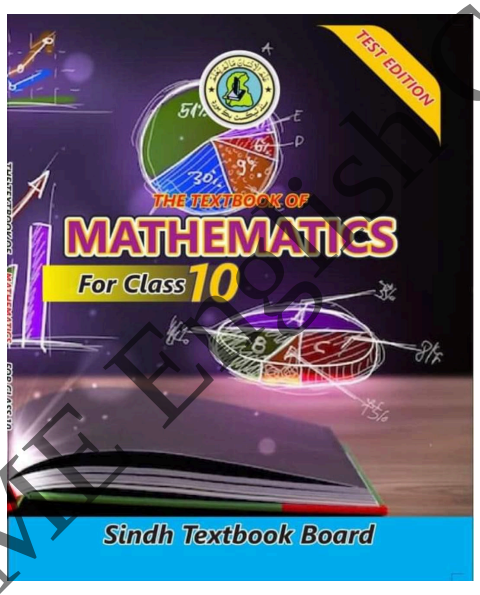
ME English Center

New Guess Paper

2025 Board Exam

Class 10th Mathematics



(According to new book and past papers)

If you are needed for other classes guess papers contact on this number 03408057780

___ Prepared by | Sir Usama Ur Rehman

Unit 17: SETS AND FUNCTIONS

MCQ's:

1. A well defined collection of distinct objects is called

(a) Relation (b) Sets (c) Function (d) None of these

2. $\{x|x\ \varepsilon\ N\ \hat{}\ x\ <\ 1\}$ is _____.

(a) Singleton (b) Infinite set (c) Empty set (d) Super set

3. Which operation is not commutative

(a) Symmetric difference (b) Union (c) Difference (d) Intersection

4. $\big((A')'\big)' =$ _____

(a) (A')' (b) A' (c) A (d) B

5. If A is a subset of B then A = B then we say that A is an

(a) Proper subset of B (b) Empty set (c) Improper subset of B (d) None of these

6. If every element of a set A is also element of set B, then

(a) $A \cap B = \emptyset$ (b) A = B (c) $B \subseteq A$ (d) $A \subseteq B$

7. If $S = \{a\}$, then $P(S) =$ _____.

(a) {a} (b) {∅, a} (c) {∅, {a}} (d) {∅}

8. Let $A = \{0,1\}$, $B = \{1,2\}$, $C = \{2,3\}$, then $A \times (B \cap C)$:

(a) {(1,3), (0,1)} (b) {(0,2), (1,2)} (c) {(2,3), (1:1)} (d) {∅}

9. If $A = \{2,3\}$ and $B = \{1,2\}$, then $A - B$ is equal to:

(a) {1, 1} (b) {0, 3} (c) {3} (d) {2}

10. Universal set is a

(a) Subset of every set (b) Equivalent to every set

(c) Super set of every set (d) None of these

KEY

1. b	2. c	3. c	4. b	5. c
6. d	7. c	8. b	9. c	10. c

Short Questions:

1. If $U = \{x|x \varepsilon Z \wedge -4 < x < 6\}$, $P = \{p|p \varepsilon E \wedge -4 < p < 6\}$ and $Q = \{q|q \varepsilon P \wedge q < 6\}$ then show that:

i. $(P \cap Q)' = P' \cup Q'$

2. Verify commutative property of union and intersection using Venn diagram if

i. $A = \{a, b, c, d, e\}$ and $B = \{a, e, i, o, u\}$
ii. $P = \{1, 2, 3, \ldots, 10\}$ and $Q = \{2, 4, 6, 8, 10\}$

3. Prove following De Morgan's laws if $A = \{1, 3, 5, 7, 9\}$, $B = \{5, 6, 7, 8\}$ and $U = \{1, 2, 3, \ldots, 10\}$.

i. $(A \cup B)' = A' \cap B'$
ii. $(A \cap B)' = A' \cup B'$

4. Find the values of x and y if:

i. $(5x + 8, 5y - 4) = (3x + 10, 2y + 2)$
ii. $(2x - 3y, 5x + y) = (3, 16)$

5. If $P = \{a, b, c\}$, $Q = \{x, y, z\}$ and $R = \{p, q, r, s\}$ then find:

i. a function f from P into Q.
ii. a function g from R onto P.
iii. a function h from P to R which is injective.
iv. a function k from Q to P which is bijective.

Long Questions:

There is no important Long Question in this chapter.

Unit 18: VARIATIONS

MCQ's:

1. If $a:b = c:d$ then $a:c = b:d$ this property of proportion is called

(a) invertendo (b) Dividendo (c) Alternando (d) Componendo

2. The mean proportional between a^2 and b^2 is _____.

(a) $\sqrt{ab}$ (b) ab (c) $\frac{a}{b}$ (d) $-ab$

3. If $x + 5 : x + 7 = 5 : 7$ then x is equal to _____.

(a) 2 (b) -1 (c) 0 (d) 1

4. The fourth proportional to 3,5,12 is

(a) 20 (b) 15 (c) 60 (d) 36

5. If $a:b::B:C$ then B is called:

(a) 1st Proportion (b) Mean Proportion (c) 4th Proportion (d) None of these

6. The duplicate ratio of $2a : 3b$ is:

(a) $4a^2 : 9b^2$ (b) $8a^3 : 27b^3$ (c) $4\sqrt{2}a:\sqrt{3}b$ (d) None of these

7. The third proportion to 6 and 18 is:

(a) 12 (b) 54 (c) 324 (d) 36

8. If a, b, c are in continued proportion, then:

(a) $ab = c^2$ (b) $a^2 = bc$ (c) $ac = b^2$ (d) none of these

9. Equality of two ratios is called:

(a) Ratio (b) Compound (c) Quantity (d) Proportion

10. The sub-duplicate ratio of $49:25$ is:

(a) 7:5 (b) 7:25 (c) 49:5 (d) None of these

KEY

1. d	2. b	3. c	4. a	5. b
6. a	7. b	8. c	9. d	10. a

Short Questions:

1. Solve the following equation by using componendo – dividend theorem

$$\frac{\sqrt{x+1}+\sqrt{x-1}}{\sqrt{x+1}-\sqrt{x-1}} = \frac{1}{2}$$

OR

$$\frac{\sqrt{x+5}-\sqrt{x-5}}{\sqrt{x-5}+\sqrt{x-5}} = \frac{1}{10}$$

2. If $a : b = c : d = e : f$ then slow that

$$\frac{a^2b + c^2d + e^2f}{ab^2 + cd^2 + ef^2} = \frac{a+c+e}{b+d+f}$$

OR

$$\frac{ac}{bd} + \frac{ce}{df} + \frac{ea}{fb} = \frac{a^2}{b^2} + \frac{c^2}{d^2} + \frac{e^2}{f^2}$$

3. If $p: q = r: s$ then show that

i. $\frac{8p-3q}{8p+3q} = \frac{8r-3s}{8r+3s}$

OR

$$\sqrt[3]{\frac{p^3+r^3}{q^3+s^3}} = \frac{p}{q}$$

ii. $(p^2+q^2): \frac{p^3}{p+q} = (r^2+s^2): \frac{r^3}{r+s}$

OR

$p^5 + r^5: q^5 + s^5 = p^3 r^2: q^3 s^2$

iii. $\frac{p-q}{p} : \frac{q}{p+q} = \frac{r-s}{r} : \frac{s}{r+s}$

Long Questions:

There is no important long question in this chapter.

Unit 19: MATRICES AND DETERMINANTS

MCQ's:

1. The additive inverse of matrix $\begin{bmatrix} -2 & 4 \\ 3 & -6 \end{bmatrix}$

(a) $\begin{bmatrix} -2 & 4 \\ -3 & 6 \end{bmatrix}$ (b) $\begin{bmatrix} 2 & -4 \\ -3 & 6 \end{bmatrix}$ (c) $\begin{bmatrix} -2 & 4 \\ 3 & -6 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

2. If $A = \begin{bmatrix} i & 0 \\ 0 & -i \end{bmatrix}$, then A^2 is

(a) I_2 (b) I_3 (c) $-I_2$ (d) 0

3. If A is any square matrix such that $A^t = -A$, then A is said to be:

(a) Diagonal matrix (b) Scalar matrix (c) Symmetric matrix (d) Skew Symmetric matrix

4. If $A = \begin{bmatrix} i & 0 \\ 0 & -i \end{bmatrix}$, $B = \begin{bmatrix} 0 & i^2 \\ -i^2 & 0 \end{bmatrix}$, $C = \begin{bmatrix} 0 & i \\ i & 0 \end{bmatrix}$ then

(a) $A^2 = -I$ (b) $B^2 = -I$ (c) $C_2 = -I$ (d) All of them

5. If $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$, then ad-bc is called:

(a) Singular matrix (b) Scalar matrix (c) Determinant matrix (d) Zero Matrix

6. If $2\begin{bmatrix} x \\ 3 \\ 4 \end{bmatrix} + 3\begin{bmatrix} -1 \\ y \\ 0 \end{bmatrix} = 4\begin{bmatrix} 0 \\ 4 \\ z \end{bmatrix}$ then the values of , y and z are _____.

(a) $2, \frac{3}{2}, \frac{10}{3}$ (b) $\frac{3}{2}, 2, \frac{10}{3}$ (c) $\frac{3}{2}, \frac{10}{3}, 2$ (d) 1,2,3

7. Find x if $\begin{vmatrix} 5 & 1 \\ 2 & x \end{vmatrix} = x + 4$

(a) $\frac{3}{2}$ (b) $\frac{2}{3}$ (c) 0 (d) None of them

8. Order of $[a + b \quad c]$

(a) 1×2 (b) 3×1 (c) 2×1 (d) 1×3

9. If $\begin{bmatrix} 2 & 2 \\ 3 & P \end{bmatrix}$ is a singular matrix then the value of P is:

(a) 3 (b) 5 (c) 6 (d) 7

10. For any two non-singular n-square matrices A and B, $(AB)^{-1}$:

(a) AB (b) $B^{-1}A^{-1}$ (c) $A^{-1}B^{-1}$ (d) $A^{-1}B$

KEY

1. b	2. c	3. c	4. d	5. c
6. c	7. a	8. a	9. a	10. b

Short Questions:

There is no important short question in this chapter.

Long Questions:

1. Find the inverse of the following matrices by adjoint method if exist

i. $D = \begin{bmatrix} 1 & 0 & 1 \\ -4 & 1 & -1 \\ 6 & -2 & 1 \end{bmatrix}$

ii. $E = \begin{bmatrix} 1 & -1 & 3 \\ 2 & 1 & 2 \\ -2 & -2 & 1 \end{bmatrix}$

iii. $A = \begin{bmatrix} 1 & 4 & 2 \\ 7 & 0 & 9 \\ 0 & 2 & -3 \end{bmatrix}$

iv. $A = \begin{bmatrix} 9 & 2 & 1 \\ 5 & -1 & 6 \\ 4 & 0 & -2 \end{bmatrix}$

2. Find the solution by cramer's rule:

i. $2x + 3y = 14$
$-4 + y = 28$

OR

ii. $2x - 4y = -12$
$2y + 3x = 0$

Unit 20: THEORY OF QUADRATIC EQUATIONS

MCQ's:

1. If p, q are the roots of $2x^2 + 5x + 3 = 0$ then $p + q =$ _____

(a) $\frac{5}{3}$ (b) $\frac{3}{5}$ (c) $\frac{5}{2}$ (d) $-\frac{5}{2}$

2. If $\frac{1}{\alpha}, \frac{1}{\beta}$ are the roots of the $ax^2 + bx + c = 0$, a≠0, then $\alpha + \beta =$ _____

(a) $-\frac{b}{a}$ (b) $\frac{b}{c}$ (c) $-\frac{b}{c}$ (d) $-\frac{c}{b}$

3. The nature of the roots of $ax^2 + bx + c = 0, a \neq 0$ is determined by

(a) sum of the roots (b) product of the roots (c) discriminant (d) none of these

4. If sum of the roots of a quadratic equation is $\frac{b}{a}$ and the product of the roots is $\frac{c}{a}$, then equation is

(a) $ax^2 + bx + c = 0$ (b) $ax^2 + bx - c = 0$

(c) $ax^2 - bx + c = 0$ (d) $ax^2 - bx - c = 0$

5. The required equation whose roots are the reciprocal of the root of $ax^2 + bx + c = 0$ is

(a) $ax^2 + bx + c = 0$ (b) $cx^2 + bx + a = 0$

(c) $cx^2 + ax + b = 0$ (d) $cx^2 - bx - a = 0$

6. If $\Delta = b^2 - 4ac$ of a quadratic equation with real coefficient is perfect square, then roots are

(a) real and equal (b) real, rational and unequal

(c) real, irrational and unequal (d) imaginary

7. If one root of quadratic equation is $2 + \sqrt{5}$, then other root will be

(a) 2 (b) $-2 + \sqrt{3}$ (c) $2 - \sqrt{3}$ (d) $-2 - \sqrt{3}$

8. Another name for a quadratic equation in x is

(a) 2nd degree (b) Linear (c) Cubic (d) None of these

9. Number of basic techniques for solving a quadratic equation are

(a) Two (b) Three (c) Four (d) None of these

10. If the sum of the roots of $(p + 1)x^2 + (2p + 3)x + (3p + 4) = 0$ is -1, then product of the root is

(a) 0 (b) 1 (c) 2 (d) 3

KEY

1. d	2. c	3. c	4. c	5. b
6. c	7. c	8. a	9. b	10. b

Short Questions:

1. Find all the cube roots of 64 or 216.

2. Find the value of m and remaining two roots of the equation $2x^3 - 3mx^2 + 9 = 0$, if its one root is 3.

3. Find the value of k, if the roots of the equation on $3x^2 - 2x + 7k + 2 = 0$ satisfy the relation $7\alpha - 3\beta = 18$.

4. Find the remaining two roots of the biquadratic equations, when its two roots are given:

$$x^4 + 2x^3 - 13x^2 - 14x + 24 = 0; \; and \; x = 3, -4$$

5. The length of the prayer hall is 5 meters more than its width. If the area of the hall is $36m^2$, find the length and width of hall.

Long Questions:

1. If α, β are the roots of the equation $2x^2 - 3x + 7 = 0$, find the value of the symmetric function: $\frac{1}{\alpha\alpha+1} + \frac{1}{\alpha\beta+1}$.

OR

If α, β are the roots of the equation $px^2 + qx + q = 0, p \neq 0, find \; the \; value \; of \; \sqrt{\frac{\alpha}{\beta}} + \sqrt{\frac{\beta}{\alpha}}$.

2. If α and β are the roots of the equation $6x^2 - 3x + 1 = 0$. Form the equation whose roots are: $\alpha + \beta, \frac{1}{\alpha} + \frac{1}{\beta}$

3. Solve the following system of equations:

$$x^2 + y^2 = 25 \; and \; (4x - 3y)(x - y - 5) = 0$$

Unit 21: PARTIAL FRACTION

MCQ's:

1. An improper fraction can be reduced into proper fraction by

(a) addition (b) multiplication (c) subtraction (d) division

2. Partial fractions of $\frac{x}{(x-a)(x-b)(x-c)}$ can have a form

(a) $\frac{A}{x+a}+\frac{B}{x+b}+\frac{C}{x+c}$ (b) $\frac{A}{x-a}+\frac{B}{x-b}+\frac{C}{x-c}$ (c) $\frac{A}{x+a}+\frac{B}{x-b}+\frac{C}{x+c}$ (d) None of these

3. Find the partial fractions of $\frac{x-3}{x^3+3x}$ are _____.

(a) $\frac{-1}{x}-\frac{x-1}{x^2+3x}$ (b) $\frac{1}{x}+\frac{x+1}{x^2+3x}$ (c) $\frac{1}{x}-\frac{x+1}{x^2+3x}$ (d) $\frac{-1}{x}+\frac{x+1}{x^2+3x}$

4. $\frac{x^3+1}{(x-1)(x+2)}$ is

(a) Proper fraction (b) An improper fraction (c) An identity (d) A constant term

5. The fraction $\frac{2x+5}{x^2+5x+6}$ is known as:

(a) Proper (b) Improper (c) Both proper and improper (d) None of these

6. $(x-4)^2 = x^2 - 8x + 16$ is

(a) Cubic equation (b) A transcendental equation (c) An equation (d) An identity

7. A fraction in which the degree of the numerator is less than the degree of the denominator is called

(a) A proper fraction (b) Equation (c) An improper fraction (d) Algebraic relation

8. To resolve a combined fraction into its parts is called

(a) Partial fraction (b) Combined fraction (c) Rational fraction (d) None of these

9. A relation in which the equality is true for any value of unknowns is called an

(a) Identity (b)Algebraic equation (c) Equation (d) Algebraic relation

10. Partial fractions of $\frac{1}{x^3+1}$ will be of the form

(a) $A_1x+\frac{A_2}{x+1}+\frac{A_3}{x^2-x+1}$ (b) $\frac{A_1}{x-1}-\frac{A_2}{x^2-x+1}$ (c) $\frac{A_1}{x+1}-\frac{A_2}{x^2-x+1}$ (d) $\frac{A_1}{x+1}+\frac{A_2x+A_3}{x^2-x+1}$

KEY

1. d	2. b	3. d	4. b	5. a
6. d	7. a	8. a	9. a	10. d

Short Questions:

1. Resolve the following into partial fractions:

i. $\frac{4(x-4)}{x^2-2x-3}$

ii. $\frac{2x+3}{(x-2)^2}$

iii. $\frac{5x+8}{(x-1)(x+2)}$

iv. $\frac{x^2-3x+6}{x(x-2)(x-1)}$

OR

$$\frac{3(2x^2-8x-1)}{(x+4)(x+1)(2x-1)}$$

v. $\frac{x^2+7x+3}{x^2(x+3)}$

OR

$$\frac{5x^2-30x+44}{(x-2)^3}$$

vi. $\frac{18+21x-x^2}{(x-5)(x+2)^2}$

OR

$$\frac{x^2-x+3}{(x-1)^3}$$

Long Questions:

There is no important long question in this chapter.

Unit 22: BASIC STATISTICS

MCQ's:

1. If data has outliers, then _____ is misleading.

(a) A.M. (b) Range (c) Median (d) Mode

2. The ungrouped data must be ordered first to find _____.

(a) A.M. (b) Mode (c) Median (d) Range

3. The number of classes in a continuous frequency table lies between 5 and _____.

(a) 10 (b) 15 (c) 20 (d) 25

4. Mode of grouped data is obtained graphically using

(a) Histogram (b) Polygon (c) Ogive (d) Bar chart

5. Median and quartiles are _____ in nature.

(a) Mathematical (b) Positional (c) Logical (d) None of these

6. Upper quartile divides data in ratio.

(a) 50%-50% (b) 25%-25% (c) 75%-25% (d) 40%-60%

7. If all numbers in data are equal, then:

(a) A.M.=G.M.=H.M. (b) Range = 0 (c) S.D.=0 (d) All of these

8. What is the arithmetic mean of the data set: 4, 5, 0, 10, 8, and 3?

(a) 4 (b) 5 (c) 6 (d) 7

9. What is the geometric mean of: 1, 2, 8, and 16?

(a) 4 (b) 5 (c) 6 (d) 7

10. If data contain a number equal to 0, then _____ cannot be computed.

(a) A.M. (b) G.M. (c) H.M. (d) Median

KEY

1. a	2. c	3. b	4. a	5. b
6. c	7. d	8. b	9. a	10. c

Short Questions:

1. The sizes of shoe sold at a store on a 50% off price are listed. Calculate A.M., G.M., H.M., median, Q_1, Q_3 and modal shoe size sold that day.

Shoe size	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5
Number of pairs sold	2	5	15	30	60	40	23	11	4	1

2. Daily wages (in Rs. 100) for thousand employees in a factory are given. Find A.M., G.M., H.M., median, quartiles and modal wages.

Daily wages (in Rs.100)	22	24	26	28	30	32	34	36	38	40	42	44
Number of pairs sold	3	13	43	102	175	220	204	139	69	25	6	1

3. The profits earned by a company for a period of last 50 days are summarized below. Find the A.M. profit using shortcut and coding methods with

a) A = 9000, h=2000
b) A = 11000, h=2000

Profits (Rs.)	4000-6000	6000-8000	8000-10000	10000-12000	12000-14000
Number of days	5	7	11	21	6

OR

The marks obtained by students in a subject (out of 50) are given in the following grouped table. Find A.M., G.M. (using direct and logarithmic methods), H.M., median and mode.

Marks	25-29	30-34	35-39	40-44	45-49
Number of days	9	18	35	17	5

4. Find range, variance, mean deviation and standard deviation of number of absentees in a class for last seven days: 3, 5, 3, 2, 4, 1, 8.

5. Find range, variance, standard deviation and mean deviation in mass of 50 blocks of metal as distributed in the following data:

Mass of block(in Kg)	7.1-7.3	7.4-7.6	7.7 – 7.9	8.0-8.2	8.3-8.5	8.6-8.8	8.9-9.1
Number of blocks	3	5	9	14	11	6	2

Long Questions:

There is no important long question in this chapter.

Unit 23: PYTHAGORAS THEOREM

MCQ's:

1. The soccer field is a rectangle 81 meters wide and 105 meters long. The coach asks players to run from one corner to another corner diagonally. What is this distance?

(a) 48.00 (b) 132.61 (c) 186.00 (d) 66.81

2. Which of the following are the sides of a right angled triangle?

(a) 3,4,5 (b) 2,3,4 (c) 5,6,7 (d) 4,5,6

3. In a right angled triangle the greatest angle is

(a) 100° (b) 90° (c) 80° (d) 110°

4. In a right angled triangle hypotenuse is opposite side to

(a) Acute angle (b) Right angle (c) Obtuse angle (d) None

5. The heights of two vertical lamp posts are 33 m and 24 m high. If the distance between them is 40 m, then what will be the distance between their tops?

(a) 47.89m (b) 56.56m (c) 32.81m (d) 41m

6. If 5cm and 12cm are two sides of a right angled triangle. The hypotenuse is

(a) 16 (b) 15 (c) 14 (d) 13

7. If hypotenuse of an isosceles right angled triangle is $3\sqrt{2}$ cm, then each of other side is of length

(a) 2cm (b) 5cm (c) 3 cm (d) 1cm

8. Find whether following can be the sides of a right triangle, 2 cm, 2 cm, 5 cm

(a) Cannot determine (b) No (c) Yes (d) None of these

9. What will be the distance of the foot of ladder from the building, if the ladder of 12 m high reaches the top of a building 35 m high from the ground?

(a) 32.87 m (b) 31.87 m (c) 32.85 m (d) 32.65 m

10. If the side of rhombus is 13 cm and one of its diagonals is 24 cm, then what will be length of the other diagonal?

(a) 8.4 cm (b) 4 cm (c) 11 cm (d) 10 cm

KEY

1. b	2. a	3. b	4. b	5. d
6. d	7. c	8. b	9. a	10. d

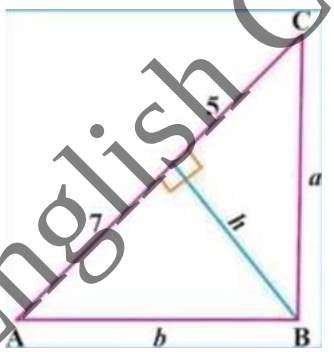
Short Questions:

1. In a right angled triangle, the square of the length of hypotenuse is equal to sum of the squares of the length of the other two sides. Prove it.

2. The three sides of a triangle are of measure $9.5cm$, $7.5cm$ and $x\ cm$. For what value of x will the side represent right triangle.

3. The foot of a ladder is placed 6 feet from a wall. If the top of the ladder rests 8 feet up on the wall. How long is the ladder?

4. In the ΔABC as $\angle ADB$ is right angle as shown in the adjacent figure. Find the lengths a, h and b if $m\overline{CD} = 5\ units$ and $m\overline{AD} = 7\ units$.



Long Questions:

1. The sides of a triangle have lengths x, $x + 4$ and 20. If the length of the longest side is 20. What values of x make the right triangle?

2. In the rectangle $ABCD$, $m\overline{BC} + m\overline{CD} = 17cm$ and $m\overline{BD} + m\overline{AC} = 26cm$, calculate the length and breadth of the rectangle.

Unit 24: RATIO AND PROPORTION

MCQ's:

1. The symbol of similarity of triangles is _____.

(a) = (b) ≅ (c) ~ (d) ↔

2. _____ triangles are always similar.

(a) right (b) scalene (c) acute angled (d) equilateral

3. If a line parallel to base of a triangle and divides one side in 2:3 then it will divide other side in _____.

(a) 3:2 (b) 2:3 (c) 2:6 (d) 3:3

4. If a line intersects two sides of a mangle in same ratio then it is _____ to other side.

(a) parallel (b) non-parallel (c) coincident (d) all of these

5. In ΔABC, the bisector of $\angle A$ divides $\overline{BC}$ in ratio _____ if $m\overline{AB} = 6cm$ and $m\overline{AC} = 8cm$.

(a) 5:8 (b) 3:4 (c) 1:1 (d) 5:7

6. If the ratio of two corresponding sides of similar triangle is 5:7 then ratio of their areas is equal to _____.

(a) 5:7 (b) 7:5 (c) 25:7 (d) 25:49

7. If the ratio of areas of two similar triangles is 36:121 then the ratio of its corresponding sides will be

(a) 6:10 (b) 6:11 (c) 11:6 (d) 10:6

8. Length and width of a field are in the ratio 5:3. If the width of the field is 42 m then its length is:

(a) 100 m (b) 80 m (c) 50 m (d) 70 m

9. If x, y and z are in proportion, then:

(a) x: y :: z : x (b) x : y :: y : z (c) x : y :: z : y (d) x : z :: y : z

10. The corresponding sides of two similar triangles are _____.

(a) equal (b) un equal (c) proportional (d) None of these

KEY

1. c	2. d	3. b	4. a	5. b
6. d	7. b	8. d	9. b	10. c

Short Questions:

There is no important short question in this chapter.

Long Questions:

1. If a line segment intersects the two sides of a triangle in the same ratio then it is parallel to the third side. Prove it.

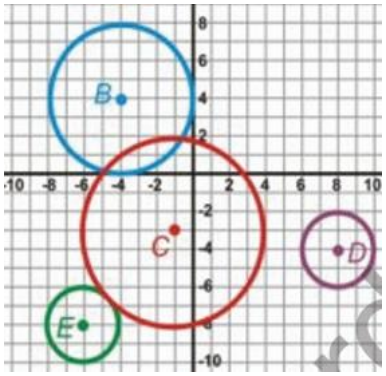
2. The internal bisector of an angle of a triangle divides the side opposite to it in the ratio of the sides containing the angle. Prove it.

3. If two triangles are similar, the measures of their corresponding sides are proportional. Prove it.

Unit 25: CHORDS OF A CIRCLE

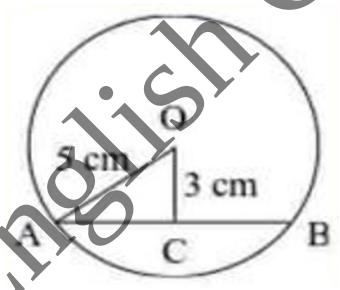
MCQ's:

1. In the following figure, circles centred at D and E are _____.



(a) congruent (b) similar (c) both (a) and (b) (d) none of these

2. In the given figure, the length of the chord $\overline{AB}$ is _____.



(a) 4cm (b) 6cm (c) 8cm (d) 15cm

3. One and only one circle passes through three _____ points.

(a) collinear (b) non-collinear (c) disjoint (d) none of these

4. The conclusion of the enunciation "If two chords of a circle are congruent, then they are equidistant from the center" is:

(a) two chords of the circle are equidistant from the center

(b) two chords of a circle are congruent

(c) a circle has two chords.

(d) the center of circle is equidistant from chords

5. The hypothesis of the enunciation "If two chords of a circle are congruent, then they are equidistant from the centre." is:

(a) two chords of a circle are equidistant from the centre.

(b) two chords of a circle are congruent.

(c) a circle has two chords.

(d) the centre of circle is equidistant from chords.

6. The conclusion of the enunciation “One and only one three non-collinear points” is circle can pass through

(a) three points are non-collinear

(b) one and only one circle passes through three points

(c) two circles pass through three points

(d) three points are collinear

7. A circle is an example of a _____curve.

(a) simple and closed (b) simple and open

(c) non-simple and closed (d) non-simple and open

8. A chord which passes through the center of the circle, is called:

(a) diameter (b) radius (c) tangent (d) none of these

9. The center of the circle lies in _____ of the circle.

(a) Interior (b) Exterior (c) Circumference (d) None of these

10. Equal _____ of the congruent circles subtend equal angles at the centers.

(a) Segments (b) Radii (c) Arcs (d) Chords

KEY

1. c	2. c	3. b	4. a	5. b
6. b	7. a	8. a	9. a	10. d

Short Questions:

1. One and only one circle can pass through three non-collinear points. Prove it.

2. Perpendicular from the centre of a circle to a chord bisects it. Prove it.

3. If two chords of a circle are congruent then they will be equidistant from the centre. Prove it.

4. Two chords of a circle which are equidistant from the centre are congruent. Prove it.

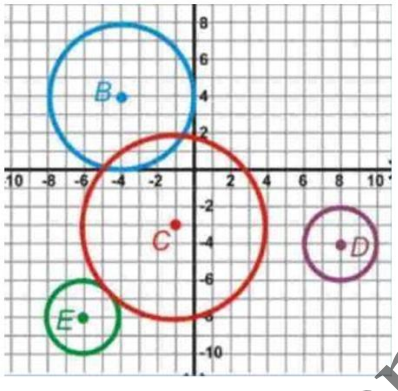
Long Questions:

There is no important long question in this chapter.

Unit 26: TANGENTS OF A CIRCLE

MCQ's:

1. In the following figure, circles with centres B and C have _____ point(s) of contact.

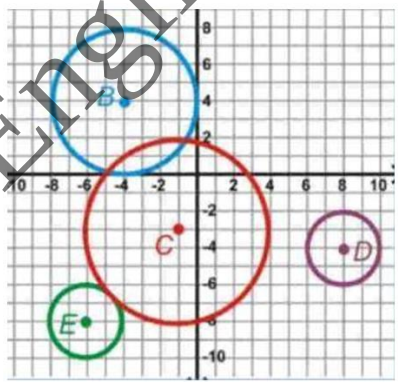


(a) no (b) one (c) two (d) none of these

2. Angle between the radial segment and tangent at its outer end point is _____.

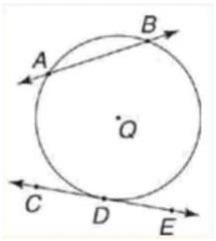
(a) 45° (b) 60° (c) 90° (d) 120°

3. In the following figure, circles with centers E and C _____.



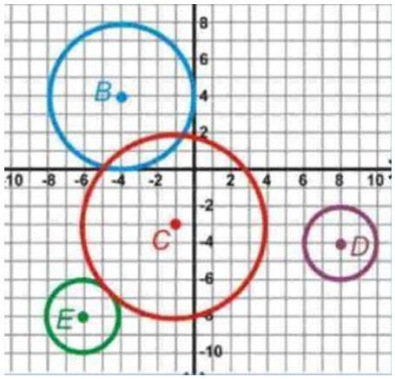
(a) touch internally (b) touch externally (c) do not touch (d) are congruent

4. In the adjacent figure, AB is_____.



(a) tangent (b) secant (c) chord (d) none of these

5. In following figure, circles with centres E and C have _____ point(s) of contact.



(a) no (b) one (c) two (d) none of these

6. The maximum number of common tangents between two circles touching internally is ____.

(a) 0 (b) 1 (c) 2 (d) 3

7. The maximum number of common tangents between two circles touching externally is ____.

(a) 0 (b) 1 (c) 2 (d) 3

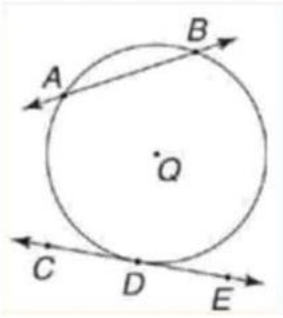
8. A tangent intersects the circle at:

(a) One point (b) Two distinct point (c) At the circle (d) None of the

9. If the angle between two radii of a circle is 110º, then the angle between the tangents at the ends of the radii is:

(a) 90° (b) 50° (c) 70° (d) 40°

10. In the following figure, CDE is _____.



(a) tangont (b) secant (c) chord (d) none of these

KEY

1. c	2. c	3. b	4. b	5. b
6. b	7. d	8. a	9. c	10. a

Short Questions:

There is no important short question in this chapter.

Long Questions:

1. If a line is drawn perpendicular to a radial segment of a circle at its outer end point, it is tangent to the circle at that point. Prove it.

2. The tangent to a circle and the radial segment joining the point of contact and the cetitre are perpendicular to each other. Prove it.

3. The two tangents, drawn to a circle from a point outside it, are equal in length.

4. If two circles touch internally, the distance between their centres is equal to the difference of their radii.

Unit 27: CHORDS AND ARCS

MCQ's:

1. A pair of chords of a circle subtending two congruent central angle are.

(a) Perpendicular (b) Non congruent (c) Congruent (d) None of these

2. An arc subtends a central angle of 45^o then the corresponding chords will subtend a central angle of ?

(a) 15° (b) 30° (c) 45° (d) 60°

3. The arcs opposite to congruent central angles of a circle are always

(a) Parallel (b) Congruent (c) Perpendicular (d) None of these

4. A 6cm long chord subtends a central angle of 60°. The radial segment of this circle is

(a) 4cm (b) 6cm (c) 5cm (d) 8 cm

5. The angle in a semi-circle is _____.

(a) 90° (b) 180° (c) 0^o (d) 360°

6. Out of two congruent arcs of a circle, if one arc makes a central angle of 30° then the other arc will subtend the central angle:

(a) 60^o (b) 90° (c) 75° (d) 30°

7. Diameter divides the circle into _____ parts.

(a) Two (b) Three (c) Four (d) All of these

8. The chord length of a circle subtending a central angle of 180° is always

(a) equal to the radial segment (b) less than radial segment

(c) double of radial segment (d) half of the radial segment

9. The center of the circle lies _____ in of the circle.

(a) Interior (b) exterior (c) circumference (d) None of the above

10. The longest chord of the circle is:

(a) Radius (b) Arc (c) Diameter (d) Segment

KEY

1. c	2. c	3. b	4. b	5. b
6. d	7. a	8. c	9. a	10. c

Short Questions:

1. If two arcs of a circle (or congruent circles) are congruent then the corresponding chords are equal. Prove it.

2. Equal chords of a circle (or of congruent circles) subtend equal angles at the center (at the corresponding centers). Prove it.

3. If the angles subtended by two chords of a circle (or congruent circles) at the centres (corresponding centres) are equal, the chord are equal. Prove it.

Long Questions:

There is no important long questions in this chapter.

Unit 28: ANGLES IN A SEGMENT OF A CIRCLE

MCQ's:

1. _____ is the circular region bounded by arc and its chord.

(a) Sector (b) Segment (c) Major arc (d) Circumference

2. If $2x$ is the measure of inscribed angle of minor are then the central angle of corresponding major arc is _____.

(a) x (b) 2x (c) 3x (d) 4x

3. If $2x$ and 60° are the measures of inscribed angles of same segment then x = _____.

(a) 120° (b) 60° (c) 20° (d) 30°

4. The inscribed angle of major arc of circle is _____ angle.

(a) acute (b) obtuse (c) right (d) reflex

5. A parallelogram inscribed in a circle is _____.

(a) kite (b) trapezium (c) rectangle (d) rhombus

6. The central angle of an arc is _____ than inscribed angle of corresponding arc.

(a) less (b) greater (c) less or equal (d) greater or equal

7. The sum of central angles of all the arcs of a circle is _____.

(a) 90° (b) 180° (c) 360° (d) 1000°

8. Any two angles in the same _____ are equal.

(a) sector (b) segment (c) chord (d) area

9. If a circle passes through three or more points then these points are called:

(a) Bicyclic (b) circum-cyclic (c) concyclic (d) incyclic

10. A quadrilateral is called cyclic when a circle can be drown through its _____ vertices.

(a) two (b) five (c) three (d) four

KEY

1. b	2. d	3. d	4. b	5. c
6. b	7. c	8. b	9. c	10. d

Short Questions:

1. The measure of a central angle of a minor arc of a circle is double that of the angle subtended by the corresponding major arc.

OR

The central angle of a minor arc is double in measure of the inscribed angle of the corresponding major arc.

2. The angle in a semi-circle is a right angle.

OR

The angle inscribed in a semi-circle is right angle.

3. The angle in a segment greater than the semi-circle is less than a right angle.

OR

The angle inscribed in a major arc is acute.

4. The angle in a segment less than a semi-circle is greater than a right angle.

OR

The angle inscribed in a minor arc is obtuse.

Long Questions:

There is no important long question in this chapter.

Unit 29: PRACTICLE GEOMETRY CIRCLES

MCQ's:

1. _____ circles can pass through three non-collinear points.

(a) One (b) Two (c) Three (d) Infinite

2. _____ circles can pass through a single point.

(a) One (b) Two (c) Three (d) Infinite

3. Each interior angle of regular hexagon is equal to _____.

(a) 90° (b) 108° (c) 120° (d) 135°

4. A circle which touches one side of triangle externally and two produced sides internally is called _____.

(a) excircle (b) circumcircle (c) incircle (d) tricircle

5. _____ angles of regular polygon are equal in measure.

(a) Interior (b) Exterior (c) both a and b (d) none of these

6. _____ common tangents of two equal circles intersect at the midpoint of the line segment joining the centers of the circles.

(a) direct (b) transverse (c) external (d) parallel

7. If two circles of radii 5cm and 2cm touch each other externally then the distance between their centers is _____.

(a) 5 cm (b) 10cm (c)3cm (d) 7cm

8. To construct a parallelogram we need to know:

(a) Length of its parallel sides (b) Measure of interior angles

(c) Two adjacent sides and one angle (d) Two adjacent sides and two angles

9. If two diagonals are given, then we can construct a

(a) Rhombus (b) Rectangle (c) Kite (d) Parallelogram

10. A circle which touches all the sides of triangle is called _____.

(a) circumcircle (b) incircle (c) excircle (d) tricircle

KEY

1. a	2. d	3. c	4. c	5. c
6. b	7. d	8. c	9. a	10. b

Short Questions:

There is no important short question in this chapter.

Long Questions:

1. Construct the ΔPQR and draw its incircle in following case

i. $m\overline{PQ} = 5cm, m\overline{QR} = 6.5cm$ and $m\overline{RP} = 5.5cm.$

OR

ii. $m\overline{PQ} = 6cm\,, m\angle P = 60^o$ and $m\angle Q = 50^o$

2. Construct the ΔXYZ and draw its escribed circle opposite to $\angle Y$ in following case.

i. $m\overline{XY} = 4.5cm\,, m\overline{YZ} = 5cm$ and $m\angle Y = 30^o$

OR

ii. $m\overline{XY} = 5.5cm\,, m\overline{YZ} = 5cm$ and $m\overline{XZ} = 2.5cm$

3. Draw an equilateral triangle inscribed in ΔPQR where $m\overline{PQ} = 4.5cm$, $m\overline{QR} = 5.5cm$ and $m\overline{PR} = 8cm.$

4. Draw a circle of radius $3.2cm$ with centre P. Draw tangent to the circle from a point Q which is at a distance of $8cm$ from P.

OR

Draw two tangents to a circle of radius $3.5cm$ with centre C meeting each other at an angle of measure

i. 50^o

OR

ii. 63^o

5. Draw two equal circles each of radius $3.3cm$ with centres at points A and B such that $m\overline{AB} = 78cm$.

i. Draw direct common tangents to these circles.

OR

ii. Draw transverse common tangents to these circles.

OR

Draw two unequal circles of radii 3.3cm and 2.1cm with centres, A and B respectively such that $m\overline{AB} = 8cm$.

i. Draw direct common tangents to these circles.

OR

ii. Draw transverse common tangents to these circles.

6. Draw a tangent to two unequal circles of radii $3.8cm$ and $2.2cm$ with centres A and B respectively whereas

i. circle touch internally

OR

ii. circles touch externally

OR

iii. circles intersect each other and $m\overline{AB} = 5.6cm$.

Unit 30: INTRODUCTION TO TRIGONOMETRY

MCQ's:

1. The union of two non-collinear rays at common vertex is called

(a) an angle (b) a degree (c) a minute (d) radian

2. 10° = _____.

(a) 600" (b) 3600" (c) 600' (d) 600

3. $5\frac{\pi}{4}$ radians = _____.

(a) 115° (b) 225° (c) 135° (d) 45°

4. $cosec\theta \, . sin\theta \; =$ _____.

(a) 1 (b) 0 (c) -1 (d) 0.5

5. $\frac{1}{2}\sec 45° \; =$ _____.

(a) $\sqrt{2}$ (b) $\frac{\sqrt{2}}{2}$ (c) $\frac{2}{\sqrt{2}}$ (d) $\frac{1}{\sqrt{2}}$

6. In unit circle for point $(x, y), sin\ \theta$ = _____.

(a) x (b) –x (c) y (d) –y

7. If $sin\ \theta \; = -\frac{1}{\sqrt{2}}$ and θ lies in the 3 quadrant, then tan $\theta \; =$?

(a) -1 (b) 1 (c) ±1 (d) $\frac{1}{\sqrt{2}}$

8. The value of sec 45° is

(a) $\frac{1}{2}$ (b) $\sqrt{2}$ (c) $\sqrt{3}$ (d) $\frac{1}{\sqrt{2}}$

9. $\frac{\cot\theta}{\cos\theta} =$ _____.

(a) cos θ (b) sin θ (c) cosec θ (d) sec θ

10. If an object is above the level of an observer then angle formed between the horizontal line and observer's line of sight is called:

(a) An angle of depression (b) An angle of elevation

(c) An obtuse angle (d) None of these

KEY

1. a	2. c	3. b	4. b	5. b
6. c	7. 1	8. b	9. c	10. b

Short Questions:

1. If a point on the rim of a 21cm diameter fly wheel travels 5040 meters per minute through, bow many radian does the wheel turn in a second?

2. Find remaining trigonometric functions/ratios, if:

i. $cos\ \theta = \frac{2}{3}$ and θ lies in fourth quadrant.

OR

$tan\ \theta = -\frac{1}{2}$ and θ lies in second quadrant.

ii. $sec\ \theta = cosec\ \theta = \sqrt{2}$ and θ lies in first quadrant.

OR

$cos\ \theta = \frac{1}{2}$ and $tan\ \theta$ is positive.

3. Prove the following trigonometric identities:

i. $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}} = \frac{\sin\theta}{1-\cos\theta}$

OR

ii. $\sqrt{\frac{\sec\theta+1}{\sec\theta-1}} = \frac{\sec\theta+1}{\tan\theta}$

iii. $\frac{\sin^2\theta}{\cos\theta} + \cos\theta = \sec\theta$

OR

$\sec\theta - \cos\theta = (\cot\theta + \cos\theta)(\tan\theta - \sin\theta)$

iv. $\cos^2\theta = \frac{\cot^2\theta}{1+\cot^2\theta}$

v. $\sin\theta\cos\theta\ \tan\theta + \sin\theta\cos\theta\cot\theta = 1$

4. From the top of a light house 102 meters high, measure of the angle of depression of a ship is 18°30'. How far is the ship from the light house.

OR

Find the angle of elevation when a 6m high bamboo makes a shadow of length $2\sqrt{3}m$.

5. An angle of elevation of the top of cliff is 30°. Walking 210 meter from the point towards the cliff, the angle of elevation is 45°. Find the height of cliff.

OR

An observation balloon is 4280m above the ground and 9613m away from a farm house. Find angle of depression of the farm house as observed from t the balloon.

Long Questions:

There is no important long question in this chapter.