

LAHORE BOARD

GRADE 10

MATHS

2019 GROUP 1

MCQ's

i) $(x+3)^2 = x^2 + 6x + 9$ is _____.

(Mark 1)

A. A linear equation

B. An equation

C. An identity

D. Fraction

Answer:

C. An identity

ii) A circle has only one _____.

(Mark 1)

A. Secant

B. Chord

C. Diameter

D. Centre

Answer:

D. Centre

iii) If $\tan\theta = \sqrt{3}$ then θ is equal to _____.

(Mark 1)

A. 90°

B. 45°

C. 60°

D. 30°

Answer:

C. 60°

iv) How many common tangents can be drawn for two disjoint circles _____.

(Mark 1)

A. 1

B. 2

C. 3

D. 4

Answer:

D. 4

v) Cube roots of -1 are_____.

(Mark 1)

- A. $-1, \omega, -\omega^2$
- B. $-1, -\omega, -\omega^2$
- C. $-1, -\omega, \omega^2$
- D. $1, -\omega, -\omega^2$

Answer:

- B. $-1, -\omega, -\omega^2$

vi) Point $(-1,4)$ lies in _____ quadrant.

(Mark 1)

- A. I
- B. II
- C. III
- D. IV

Answer:

- B. II

vii) The distance of any point of the circle to its center is called_____.

(Mark 1)

- A. Radius
- B. Diameter
- C. A chord
- D. An arc

Answer:

- A. Radius

viii) If $u \propto v^2$ then _____.

(Mark 1)

- A. $u=v^2$
- B. $u=kv^2$
- C. $uv^2=k$
- D. $uv^2=1$

Answer:

- B. $u=kv^2$

ix) A pair of chords of a circle subtending two congruent central angles is_____.

(Mark 1)

- A. Incongruent
- B. Congruent
- C. Overlapping
- D. Parallel

Answer:

- B. Congruent

x) The number of elements in a power set $\{1, 2, 3\}$ (Mark 1)

- A. 4
- B. 6
- C. 8
- D. 9

Answer:

C. 8

xi) The discriminant of $ax^2+bx+c=0$ is _____. (Mark 1)

- A. $-b^2-4ac$
- B. b^2+4ac
- C. $-b^2+4ac$
- D. b^2-4ac

Answer:

D. b^2-4ac

xiii) A frequency polygon is a many sided _____. (Mark 1)

- A. Closed figure
- B. Rectangle
- C. Square
- D. Circle

Answer:

A. Closed figure

xiv) The number of methods to solve quadratic equation is _____. (Mark 1)

- A. 1
- B. 2
- C. 3
- D. 4

Answer:

C. 3

xv) $\sec\theta \cot\theta =$ _____. (Mark 1)

- A. $\sin\theta$
- B. $1/\cos\theta$
- C. $1/\sin\theta$
- D. $\sin\theta/\cos\theta$

Answer:

C. $1/\sin\theta$

Q.2 i) Define pure quadratic equation. Give an example. (Marks 2)

- Q.2 ii) Solve by factorization $5x^2=30x$. (Marks 2)
- Q.2 iii) Find the discriminant of the following equation $2x^2-7x+1=0$ (Marks 2)
- Q.2 iv) Write the quadratic equation having roots -2, 3 (Marks 2)
- Q.2 v) Discuss the nature of the roots of the equation $x^2+3x+5=0$. (Marks 2)
- Q.2 vii) Find a, if the ratios a+3: 7+a and 4:5 are equal.
(Marks 2)
- Q.2 viii) Define direct variation. (Marks 2)
- Q.2 ix) Find a fourth proportional to 5, 8, 15. (Marks 2)
- Q.3 i) Define identity. (Marks 2)
- Q.3 ii) Define complement of a set. (Marks 2)
- Q.3 iii) Find $A \cap B$ and $A \cup B$ when $A=\{2, 3, 5, 7\}$ and $B=\{3, 5, 8\}$
(Marks 2)
- Q.3 iv) Find $(A-B)$ and $(B-A)$ when $A=N$ and $B=W$. (Marks 2)
- Q.3 v) Write all subset of $A= \{a,b\}$ (Marks 2)
- Q.3 vi) The sugar contents for a random sample of 6 packs of juices of certain brand are found to be 2.3, 2.7, 2.5 2.9, 3.1 and 1.9 milligram. Find the median.
(Marks 2)
- Q.3 vii) Define Variance. (Marks 2)
- Q.3 viii) Find the harmonic mean of a data: 12, 5, 8, 4
(Marks 2)
- Q.3 ix) Define Mode. (Marks 2)
- Q.4 i) Convert $3\pi/4$ into degree. (Marks 2)
- Q.4 ii) Find l, when:
(i) $\theta = 180^\circ$, $r = 4.9\text{cm}$ (Marks 2)
- Q.4 iii) Define projection. (Marks 2)
- Q.4 iv) Define collinear points. (Marks 2)
- Q.4 v) Define Secant. (Marks 2)
- Q.4 vi) Define sector of circle. (Marks 2)
- Q.4 vii) Define chord of a circle. (Marks 2)
- Q.4 viii) Define escribed circle. (Marks 2)
- Q.4 ix) Define vertices. (Marks 2)
- Q.5 a) Solve the equation $2x^4-9x^2+4=0$ (Marks 4)
- Q.5 b) Show that the equation $x^2+(mx+c)^2=a^2$ has equal roots if $c^2=a^2(1+m^2)$.
(Marks 4)
- Q.7 a) If $U=\{1,2, 3, 4, 5, 6, 7, 8,9, 10\}$, $A = \{1,3,5,7,9\}$, $B = \{2, 3, 5, 7\}$, then verify the De-Morgan's Laws i.e., $(A \cap B)' = A' \cup B'$ (Marks 4)
- Q.7 b) The marks of six students in Mathematics are as follows . Determine Variance.
(Marks 4)

Students	1	2	3	4	5	6
Marks	60	70	30	90	80	42

- Q.8b) Inscribe a circle in an equilateral triangle ABC with each side of length 5cm.
(Marks 4)
- Q.9 Prove that perpendicular from the center of a circle on a chord bisects it.
(Marks 8)

Q.9 Prove that the measure of central angle of a minor arc of a circle, is double that of the angle subtended by the corresponding major arc.
(Marks 8)

LAHORE BOARD

GRADE 10

MATHS

2019 GROUP 2

MCQ's

i) A fraction in which the degree of the numerator is less than the degree of the denominator is called: (Mark 1)

- A. An equation
- B. An improper fraction
- C. An identity
- D. A proper fraction.

Answer:

D

ii) A circle has only one _____. (Mark 1)

- A. Secant
- B. Chord
- C. Diameter
- D. Centre

Answer:

D

Answer:A

Answer:

A

iv) How many tangents can be drawn for two touching circles: (Mark 1)

- A. 1
- B. 2
- C. 3
- D. 4

Answer:

B

v) The number of methods to solve a quadratic equation is: (Mark 1)

- A. 1
- B. 2
- C. 3

D. 4

Answer:

C

vi) Power set of an empty set is:

(Mark 1)

A. Φ

B. {a}

C. $\{\Phi, \{a\}\}$

D. $\{\Phi\}$

Answer:

D

vii) The symbol for a triangle is denoted by:

(Mark 1)

A. \angle

B. Δ

C. \perp

D. \odot

Answer:

B

viii) In a ratio $a : b$, a is called:

(Mark 1)

A. Relation

B. Antecedent

C. Consequent

D. Proportion

Answer:

B

ix) The length of a chord and the radial segment of a circle are congruent then the central angle made by the chord will be: (Mark 1)

A. 30°

B. 45°

C. 60°

D. 75°

Answer:

C. 60°

x) If A and B are disjoint sets, then $A \cup B$ is equal to:

(Mark 1)

A. A

B. B

C. Φ

D. BUA

Answer:

D. BUA

xi) Two square roots of unity are:

(Mark 1)

A. 1, -1

B. 1, ω

C. 1, $-\omega$

D. ω , ω^2

Answer:

A

xii) The third proportion of x^2 and y^2 is:

(Mark 1)

A. y^2/x^2

B. x^2y^2

C. y^4/x^2

D. y^2/x^4

Answer:

C. y^4/x^2

xiii) A histogram is a set of adjacent:

(Mark 1)

A. Squares

B. Rectangles

C. Circles

D. Triangles

Answer:

B

xiv) Sum of cube roots of unity is:

(Mark 1)

A. 0

B. 1

C. -1

D. 3

Answer:

A

xv) $3\pi/4$ radians = _____

(Mark 1)

A. 115°

B. 135°

C. 150°

D. 30°

Answer:

B

Q.2 i) Define reciprocal equation. (Marks 2)

Q.2 ii) Solve by factorization: $5x^2 = 15x$ (Marks 2)

Q.2 iii) Find the discriminant of the quadratic equation: (Marks 2)

$$4x^2 - 7x - 2 = 0$$

Q.2 iv) Evaluate: $(9 + 4\omega + 4\omega^2)^3$ (Marks 2)

Q.2 v) Write quadratic equation having roots 4, 9. (Marks 2)

Q.2 vi) Using synthetic division, divide $p(x) = x^4 - x^2 + 15$ by $x+1$

(Marks 2)

Q.2 vii) If $3(4x - 5y) = 2x - 7y$, find the ratio $x : y$. (Marks 2)

Q.2 viii) Find the fourth proportional to: 8, 7, 6 (Marks 2)

Q.2 ix) Define joint Variation: (Marks 2)

Q.3 i) Define fraction: (Marks 2)

Q.3 ii) Define De-Morgan's Laws: (Marks 2)

Q.3 iii) If $A = \{1, 3, 5, 7, 9\}$ and $B = \{1, 4, 7, 10\}$ then find $(A - B)$. (Marks 2)

Q.3 iv) If $A = \{a, b\}$ and $B = \{c, d\}$ then find $A \times B$ and $B \times A$. (Marks 2)

Q.3 v) Find the Domain and Range of $R = \{(1, 1), (2, 3), (3, 4), (4, 3), (5, 4)\}$.

(Marks 2)

Q.3 vi) Define Arithmetic Mean and give an example. (Marks 2)

Q.3 vii) Find the range for the weights of students: 110, 109, 84, 89, 77, 104, 74, 97, 49, 59, 103, 62. (Marks 2)

Q.3 viii) On 5 terms test in mathematics a student has made marks of 82, 93, 86, 92 and 79. Find the median for the marks. (Marks 2)

Q.3 ix) For the following data, find the harmonic mean: (Marks 2)

X	12	5	8	4
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Q.4 i) Define an angle. (Marks 2)

Q.4 ii) Convert $3\pi/4$ to degrees. (Marks 2)

Q.4 iii) Define projection. (Marks 2)

Q.4 iv) Define Circle. (Marks 2)

Q.4 v) Define Secant. (Marks 2)

Q.4 vi) Define circumference of a circle. (Marks 2)

Q.4 vii) Define sector of a circle. (Marks 2)

Q.4 viii) Define radius of a circle. (Marks 2)

Q.4 ix) Define circum circle. (Marks 2)

Q.5 a) Solve the equation by completing square: (Marks 2)

$$7x^2 + 2x - 1 = 0$$

Q.5 b) For what value of k , the expression $k^2x^2 + 2(k + 1)x + 4$ is perfect square. (Marks 2)

Q.6 a) If $a : b = c : d$ ($a, b, c, d \neq 0$) by using k-method, show that: (Marks 4)

Q.6 b) Resolve into partial fraction: (Marks 2)

Q.7 a) If $U = \{1, 2, 3, \dots, 10\}$, $A = \{1, 3, 5, 7, 9\}$ and $B = \{2, 3, 4, 5, 8\}$ then prove that $(B - A)' = B' \cup A$. (Marks 4)

Q.7 b) Find the standard deviation 'S': 9, 3, 8, 8, 9, 8, 9, 18. (Marks 4)

Q.8 b) Two circles are at 8 cm apart. Draw two direct common tangents of this pair of circles. (Marks 4)

Q.9 Prove that two chords of a circle which are equidistant from the center, are congruent. (Marks 8)

Or

Prove that the opposite angles of any quadrilateral inscribed in a circle are supplementary.