

LAHORE BOARD

GRADE 10

MATHS

2018 GROUP 1

MCQ's

i) $(2x+1) / (x+1)(x-1)$ is:

(Mark 1)

- A. An improper fraction
- B. An equation
- C. A Proper fraction
- D. Inequation

Answer:

C. A Proper fraction

ii) Point $(-1, 4)$ lies in the quadrant:

(Mark 1)

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

Answer:

B. II

iii) A complete circle is divided into:

(Mark 1)

- A. 90°
- B. 180°
- C. 270°
- D. 360°

Answer:

D. 360°

iv) The measure of the external angle of a regular octagon is: (Mark 1)

- A. $\pi/10$
- B. $\pi/6$
- C. $\pi/8$
- D. $\pi/4$

Answer:

D. $\pi/4$

v) Two tangents drawn to a circle from a point outside. It are ofin length.
(Mark 1)

- A. Half
 - B. Equal
 - C. Double
 - D. Triple
- Answer:
B. Equal

vi) The solution set of equation $4x^2-16=0$ is: (Mark 1)

- A. $\{\pm 4\}$
 - B. $\{4\}$
 - C. $\{\pm 2\}$
 - D. ± 2
- Answer:
C. $\{\pm 2\}$

vii) $(1/\alpha + 1/\beta)$ is equal to: (Mark 1)

- A. $1/\alpha$
 - B. $(1/\alpha - 1/\beta)$
 - C. $(\alpha - \beta) / \alpha\beta$
 - D. $(\alpha + \beta) / \alpha\beta$
- Answer:
D. $(\alpha + \beta) / \alpha\beta$

viii) If $u/v = v/w = k$, then: (Mark 1)

- A. $u = wk^2$
 - B. $u = vk^2$
 - C. $u = w^2k$
 - D. $u = v^2k$
- Answer:
A. $u = wk^2$

ix) The extent of variation between two extreme observations of a data set is measured by:
(Mark 1)

- A. Average
 - B. Range
 - C. Quartiles
 - D. Median
- Answer:
B. Range

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

- A. 60°
- B. 45°
- C. 30°
- D. 75°

Answer:

- A. 60°

xi) $\operatorname{cosec}^2 \theta - \cot^2 \theta = \dots\dots\dots$ (Mark 1)

- A. 1
- B. -1
- C. 0
- D. $\tan^2 \theta$

Answer:

- A. 1

xii) Product of cube roots of unity is: (Mark 1)

- A. 0
- B. 1
- C. -1
- D. 3

Answer:

- B. 1

xiii) A line intersecting a circle is called: (Mark 1)

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

Answer:

- A. Tangent

xiv) In a proportion $a : b :: c : d$ b and c are called: (Mark 1)

- A. Means
- B. Extremes
- C. Fourth Proportional
- D. Third proportional

Answer:

- A. Means

xv) A collection of well-defined objects is called: (Mark 1)

- A. Subset
- B. Power set
- C. Set
- D. Super set

Answer:

C. Set

Q.2 i) Solve by factorization: $x^2 - x - 20 = 0$

(Marks 2)

Q.2 ii) Define Radical Equation.

(Marks 2) Q.2 iii) Find

the discriminant of the following equation:

$$6x^2 - 8x + 3 = 0$$

(Marks 2)

Q.2 iv) Evaluate: $(1 - \omega - \omega^2)^7$

(Marks 2)

Q.2 v) Without solving, find the sum and the product of the roots of the quadratic equation:

$$x^2 - 5x + 3 = 0$$

(Marks 2)

Q.2 vi) Use synthetic division to find the quotient and the remainder when: $(4x^3 - 5x + 15)$

$$\square (x+3).$$

(Marks 2)

Q.2 vii) Find the value of p if the ratios $2p+5:3p+4$ and $3:4$ are equal.

(Marks 2)

Q.2 viii) Define joint variation.

(Marks 2)

Q.2 ix) Find a third proportional to : $a^2 - b^2, a - b$

(Marks 2)

Q.3 i) Define improper fraction.

(Marks 2)

Q.3 ii) Define rational fraction.

(Marks 2)

Q.3 iii) If $X = \{1, 4, 7, 9\}$ $Y = \{2, 4, 5, 9\}$ then find $X \cup Y$?

(Marks 2)

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

(Marks 2)

Q.3 v) Define domain set of relation.

(Marks 2)

Q.3 vi) Find a and b if $(a-4, b-2) = (2, 1)$

(Marks 2)

Q.3 vii) Define arithmetic mean.

(Marks 2)

Q.3 viii) Find the arithmetic mean:

12, 14, 17, 20, 24, 29, 35, 45.

(Marks 2)

Q.3 ix) The salaries of five teachers in rupees are as:

11500, 12400, 15000, 14500, 14800 find range.

(Marks 2)

Q.4 i) Define degree.

(Marks 2)

Q.4 ii) Convert $25^\circ 30'$ to decimal degree.

(Marks 2)

Q.4 iii) Find 'l' when $\theta = 180^\circ$, $r = 4.9$ cm.

(Marks 2)

Q.4 iv) Define obtuse angle.

(Marks 2)

Q.4 v) Define circular area.

(Marks 2)

Q.4 vi) Define length of the tangent.

(Marks 2)

Q.4 vii) Define an arc of the circle.

(Marks 2)

Q.4 viii) What is meant by sector of a circle?

(Marks 2)

Q.4 ix) Define circumcircle.

(Marks 2)

Q.5 a) Solve the equation: $x^4 - 13x^2 + 36 = 0$

(Marks 4)

Q.5 b) Prove that: $x^3 + y^3 = (x+y)(x+\omega y)(x+\omega^2 y)$

(Marks 4)

Q.6 a) Find the value of $\frac{x+2y}{x-2y} + \frac{x+2z}{x-2z}$ by using theorem of

Componendo-dividendo if $x = \frac{4yz}{y+z}$

(Marks 4)

Q.6 b) Resolve into partial fractions: $\frac{9}{(x-1)(x+2)^2}$ (Marks 4)

Q.7 a) If $A=\{1,2,3,4,5,6\}$, $B=\{2,4,6,8\}$, $C=\{1,4,8\}$ then prove that $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ (Marks 4)

Q.7 b) Find the standard deviation 'S' for the set of numbers 12,6,7,3,15,10,18,5 (Marks 4)

Q.8 a) Prove that: $\frac{1+\sin\theta}{1-\sin\theta} - \frac{1-\sin\theta}{1+\sin\theta} = 4\tan\theta\sec\theta$ (Marks 4)

Q.8 b) Draw two circles with radii 2.5cm and 3cm. If their centres are 6.5cm apart, then draw two direct common tangents? (Marks 4)

Q.9 a) Prove that perpendicular from the centre of a circle on a chord bisects it. (Marks 4)

Q.9 b) Prove that any two angles in the same segment of a circle are equal. (Marks 8)

LAHORE BOARD

GRADE 10

MATHS

2018 GROUP 2

MCQ's

i) 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. $u = kv^2$

ii) A set with no element is called:

(Mark 1)

- A. Subset
- B. Empty set
- C. Singleton set
- D. Superset

Answer:

- B. Empty set

iii) The number of terms in a standard quadratic equation $ax^2+bx+c=0$ is:

(Mark 1)

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

Answer:

- C. 3

iv) A frequency polygon is a many sided

(Mark 1)

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

Answer:

- A. Closed figure

v) $\sec\theta \cot\theta$

(Mark 1)

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

Answer:

C. $1/\sin\theta$

vi) The arcs opposite to incongruent central angles of a circle are always:

(Mark 1)

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

Answer:

D. Incongruent

vii) The symbol for a triangle is denoted by:

(Mark 1)

- A. \sphericalangle
- B. \triangle
- C. \perp
- D. \square

Answer:

B. \triangle

viii) The length of the diameter of a circle is how many times the radius of the circle:

(Mark 1)

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

Answer:

C. 2 Times

ix. If $a/b=c/d$ then componendo property is:

(Mark 1)

Answer:

x) A circle has only one

(Mark 1)

A. Secant

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

Answer:

- D. Centre

xi) How many common tangents can be drawn for two Touching circles:
(Mark 1)

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

Answer:

- C. 3

xii) If $A \subseteq B$ then $A \cap B$ is equal to: (Mark 1)

- A. A
- B. B
- C. ϕ
- D. $A \cup B$

Answer:

- A. A

xiii) 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:

- A. b^2-4ac

xiv) 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 improper fraction
- D. A proper fraction

Answer:

- D. A proper fraction

xv) Product of cube roots of unity is: (Mark 1)

- A. 0

B. 1

C. -1

D. 3

Answer:

B. 1

Q.2 i) Write the quadratic equation $\frac{x}{x+1} + \frac{x+1}{x} = 6$ (Marks 2)

Q.2 ii) Write the standard quadratic equation and also write quadratic formula to solve it. (Marks 2)

Q.2 iii) Find the sum and product of the roots of the equation $2px^2 + 3qx - 4r=0$ without solving. (Marks 2)

Q.2 iv) Form a quadratic equation whose roots are: (Marks 2)

Q.2 v) Evaluate $(1 - 3\omega - 3\omega^2)^5$. (Marks 2)

Q.2 vi) Define synthetic division. (Marks 2)

Q.2 vii) Find p if 12, p and 3 are in continued proportion. (Marks 2)

Q.2 viii) Find the ratio $x : y$, if $3(4x-5y)=2x-7y$. (Marks 2)

Q.2 ix) Find the fourth proportion to 5, 8 and 15.

Q.3 i) What is an improper fraction? (Marks 2)

Q.3 ii) Find partial fraction of $\frac{3}{(x+1)(x-1)}$ (Marks 2)

Q.3 iii) If $X=\{1,4,7,9\}$ and $Y=\{2,4,5,9\}$ then find $Y \cap X$. (Marks 2)

Q.3 iv) If $X=\{1,3,5,7,\dots,19\}$, $Y=\{0,2,4,6,8,\dots,20\}$ and $Z=\{2,3,5,7,11,13,17,19,23\}$, then find the following: $(X \cap Y) \cap Z$. (Marks 2)

Q.3 v) Find a and b if $(2a+5,3)=(7,b-4)$. (Marks 2)

Q.3 vi) Define an onto function. (Marks 2)

Q.3 vii) Define a frequency distribution. (Marks 2)

Q.3 viii) Find the arithmetic mean by direct method:
200,225,350,375,270,320,290 (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) Verify the identity:

$(1-\sin\theta)(1+\sin\theta)=\cos^2\theta$ (Marks 2) Q.4 ii)

How many minutes are there in two right angles? (Marks 2)

Q.4 iii) Find 'r', when $l=52\text{cm}$, $\theta=45^\circ$. (Marks 2)

Q.4 iv) What is meant by zero dimension? (Marks 2)

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

Q.4 vi) Define secant. (Marks 2)

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

Q.4 viii) Define cyclic quadrilateral. (Marks 2)

Q.4 ix) Define an arc. (Marks 2)

Q.5 a) Solve the equation: $5x^{1/2} = 7x^{1/4} - 2$ (Marks 4)

Q.5 b) Find the value of h using synthetic division, if 3 is the zero of the polynomial $2x^3 - 3hx^2 + 9$. (Marks 4)

Q.6 a) Using componendo-dividendo theorem, solve the

equation $\frac{\sqrt{x+3} + \sqrt{x-3}}{\sqrt{x+3} - \sqrt{x-3}} = \frac{4}{3}$ (Marks 4)

Q.6 b) Resolve into partial fractions: $\frac{1}{(x^2-1)(x+1)}$ (Marks 4)

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

Q.7 b) Calculate the variance for the data: 10, 8, 9, 7, 5, 12, 8, 6, 8, 2 (Marks 2)

Q.8 a) Prove that: $\frac{1 + \sin\theta}{1 - \sin\theta} - \frac{1 - \sin\theta}{1 + \sin\theta} = 4 \tan\theta \sec\theta$ (Marks 4)

Q.8 b) Draw two circles with radii 2.5cm and 3cm. If their centres are 6.5cm apart, then draw two direct common tangents? (Marks 4)

Q.9 Prove that perpendicular from the centre of a circle on a chord bisects it. (Marks 8)