

LAHORE BOARD

GRADE 10

MATHS

2016 GROUP 1

MCQ's

1. If $\frac{a}{b} = \frac{c}{d}$, then componendo property is: 1

(A). $\frac{a}{a+b} = \frac{c}{c+d}$ (B). $\frac{a}{a-b} = \frac{c}{c-d}$ (C). $\frac{ad}{bc}$ (D). $\frac{a-b}{b} = \frac{c-d}{d}$

Answer:

2. Point (-1,4) lies in the quadrant: 1

(A). I (B). II (C). III (D). IV

Answer:

(B). II

3. The solution set of equation $4x^2-16=0$ is: 1

(A). $\{\pm 4\}$ (B). $\{4\}$ (C). $\{\pm 2\}$ (D). $\{2\}$

Answer:

(C). $\{\pm 2\}$

4. The mode in the data 1, 3, 5, 3, 7, 9 is: 1

(A). 1 (B). 3 (C). 5 (D). 7

Answer:

(B). 3

5. $\sec^2\theta =$ _____ 1

(A). $1-\sin^2\theta$ (B). $1+\tan^2\theta$ (C). $1+\cos^2\theta$ (D). $1-\tan^2\theta$

Answer:

(B). $1+\tan^2\theta$

6. The semi circumference and the diameter of a circle both subtend a central angle of: 1

(A). 90° (B). 180° (C). 270° (D). 360°

Answer:

(B). 180°

7. A complete circle is divided into: 1

(A). 90° (B). 180° (C). 270° (D). 360°

Answer:

8. $\sin^2\theta+\cos^2\theta=$ _____ 1

(A). $\sin \theta$ (B). $\cos \theta$ (C). 1 (D). 2

Answer:

(C). 1

9. If $\frac{u}{v} = \frac{v}{w} = k$, then: 1

(A). $u=wk^2$ (B). $u=vk^2$ (C). $u=w^2k$ (D). $u=v^2k$

Answer:

(A). $u=wk^2$

10. The tangents drawn to a circle from a point outside it are of _____ in length: 1

(A). Half (B). Equal (C). Double (D). Triple

Answer:

(B). Equal

11. Angle inscribed in a semi circle is: 1

(A). $\frac{\pi}{2}$ (B). $\frac{\pi}{3}$ (C). $\frac{\pi}{4}$ (D). $\frac{\pi}{5}$

Answer:

(A). $\frac{\pi}{2}$

12. If A and B are disjoint sets, $A \cup B$ is equal to: 1

- (A). A (B). B (C). \emptyset (D). $B \cup A$

Answer:

(D). $B \cup A$

13. Product of cube roots of unity is: 1

- (A). 0 (B). 1 (c). -1 (D). 3

Answer:

(B). 1

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

- (A). A proper fraction (B). An improper fraction
(C). An identity (D). A constant term

Answer:

(B). An improper fraction

15. The discriminant of $ax^2+bx+c=0$ is: 1

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

Answer:

(A). b^2-4ac

Q.2

- i. Define radical equation. 2
- ii. Solve by factorization: $5x^2=15$. 2
- iii. Find the discriminant of the following equation: $6x^2-8x+3=0$ 2
- iv. Without solving, find the sum and product of the roots of the equation:
 $7x^2-5mx+9n=0$ 2
- v. Write quadratic equation having following roots: 2, -6 2
- vi. Find w^2 , if $w = \frac{-1+\sqrt{-3}}{2}$ 2
- vii. Define direct variation. 2

- viii. Find a mean propotional between: 20, 45. 2
- ix. If $a:b=c:d$ then prove that: $\frac{4a+5b}{4a-5b} = \frac{4c+5d}{4c-5d}$ 2

Q.3

- i. What are partial fractions? 2
- ii. Resolve into partial fractions: $\frac{x-2}{(x+2)(x+3)}$ 2
- iii. Write all subsets of the set $\{a,b\}$.
- iv. If $X=\emptyset, Y=Z$ then $X \cap Y$. 2
- v. If $A=\{a, b\}$ and $B=\{c,d\}$ then find $B \times A$. 2
- vi. Find the set X and Y if: 2
- $X \times Y = \{(a,a), (b,a), (c,a), (d,a)\}$
- vii. Define class limit. 2
- viii. Define arithmetic mean. 2
- ix. Find arithmetic mean by direct method: 2
- 12, 14, 17, 20, 24, 29, 35, 45

Q.4

- i. How many minutes are in two right angles? 2
- ii. Find $\tan \theta$ when $\cos \theta = \frac{9}{41}$ and θ terminal side of the angle θ is in fourth quadrant. 2
- iii. If $l=4\text{cm}, \theta = \frac{1}{4}$ rad then find r . 2
- iv. Whether the triangle with sides 8cm, 15cm and 17cm is acute, obtuse or right angled? 2
- v. Differentiate between minor arc and major arc of a circle and explain with figure. 2
- vi. Define tangent of a circle. 2
- viii. What is meant by cyclic quadrilateral? 2
- ix. Define and draw the sector of a circle. 2

Q.5

- (a). Solve the equaton: $2x+5=\sqrt{7x+16}$. 4
- (b). Find m , if the equation $x^2+7x+3m-5=0$ satisfy the relation $3\alpha-2\beta=4$. 4

Q.6

- (a). If $a:b :: c:d$ ($a,b,c,d \neq 0$) then prove that: 4

$$\frac{a}{b} = \sqrt{\frac{a^2+c^2}{b^2+d^2}}$$

- (b). Resolve into partial fractions: 4

$$\frac{7x-9}{(x+1)(x-3)}$$

Q.7

- (a). If $y=\{-2,1,2\}$, then make two binary relations for $y \times y$? Also find their domain and range. 4
- (b). The following frequency distribution shows weight of boys in kilogram. Compute Median: 4

Class Interval	1-3	4-6	7-9	10-12	13-15	16-18	19-21
Frequency	2	3	5	4	6	2	1

Q.8

- (a). Verify that: $\sqrt{\frac{1+\cos \theta}{1-\cos \theta}} = \frac{\sin \theta}{1-\cos \theta}$ 4

- (b). Draw two common tangents to two intersecting circle of radii 3cm and 4cm. 4

Q.9

- (a). Prove that if two chords of a circle are congruent then they will be equidistant from the centre. 4
- (b). Prove that the opposite angles of any quadrilateral inscribed in a circle are supplementary. 4

LAHORE BOARD

GRADE 10

MATHS

2016 GROUP 2

MCQ's

1. Solution set of equation $5x^2-125=0$ is: 1

(A). $\{5\}$ (B). $\{10\}$ (C). $\{-5\}$ (D). $\{\pm 5\}$

Answer:

(D). $\{\pm 5\}$

2. The discriminant of equation $ax^2+bx+c=0$ is: 1

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

Answer:

(A). b^2-4ac

Answer:

(D). $\{\pm 5\}$

Answer:

(A). b^2-4ac

3. Two square roots of unity are: 1

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

Answer:

(B) and (D)

4. In a propotional $a:b :: c:d$, b and c are called:

(A). Extremes (B). Fourth propotional (C). Means (D). Third propotion

Answer:

(C). Means

Answer:

(A). $y^2 = \frac{k}{x^3}$

6. $(x+3)^2 = x^2 + 6x + 9$ is a:

- (A). Linear equation (B). equation (C). In-equation (D). Identity

Answer:

(D). Identity

7. If A has 3 elements and set B has 4 elements then $A \times B$ will have elements

- (A). 3 (B). 4 (C). 12 (D). 7

Answer:

(C). 12

8. The number of elements of the power set $\{a, b\}$ are: 1

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

Answer:

(D). 4

9. The mode in the data 1, 3, 5, 3, 7, 9 is: 1

- (A). 1 (B). 3 (C). 5 (D). 7

Answer:

(B). 3

10. $\sin^2\theta + \cos^2\theta =$ _____ 1

- (A). $\sin \theta$ (B). $\cos \theta$ (C). 1 (D). 2

Answer:

(C). 1

11. The symbol of a triangle is denoted by: 1

- (A). Δ (B). $<$ (C). \perp (D). \odot

Answer:

(A). Δ

12. A line which has two points common with a circle are called:

- (A). Sin of circle (B). Cosine of circle (C). Tangent of circle (D). Secant of circle

Answer:

(D). Secant of circle

13. Point (-1,4) lies in the quadrant: 1

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

Answer:

(B). II

14. How many tangents can be drawn from a point outside the circle:

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

Answer:

(B). 2

15. How many common tangents can be drawn for two disjoint circles:

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

Answer:

(A). 2

Q.2

- i. Evaluate: $(1 - \omega - \omega^2)^7$ 2
- ii. Solve by factorization: $4 - 32x = 17x^2$ 2
- iii. Find the discriminant of given quadratic equation: $9x^2 - 30x + 25 = 0$ 2
- iv. Define reciprocal equation. 2
- v. Find 'k' if the sum of the squares of the roots of the equation $4kx^2 + 3kx - 8 = 0$ is '2'. 2
- vi. If α, β are the roots of the equation $4x^2 - 5x + 6 = 0$, then find the value of the $\frac{1}{\alpha} + \frac{1}{\beta}$. 2
- vii. In a class of 60 students, 25 students are girls and remaining students are boys. Compute the ratio of "boys to girls". 2
- viii. Find the cost of 8kg of mangoes, if 5kg of mangoes cost Rs.250. 2
- ix. Define propotion. 2

Q.3

- i. Resolve the fraction into proper fraction: $\frac{3x^2 - 2x - 1}{x^2 - x + 1}$ 2

ii.	Define rational fraction.	2
iii.	What is meant by union of two sets?	2
iv.	If $A=\{2,3,5,7\}$ and $B=\{3,5,8\}$, find $A-B$.	2
v.	Define a subset.	2
Q.3		
vi.	Write De Morgan's Laws.	2
Q.3		
vii.	Define mode.	2
Q.3		
viii.	Define Standard deviation.	2
Q.3		
ix.	Write two properties of arithmetic mean.	2
Q.4		
i.	Write relation between degree and radian.	2
Q.4		
ii.	Find l if $\theta=180^\circ$, $r=4.9\text{cm}$.	2
Q.4		
iii.	Prove that: $\frac{\tan x}{\sec x} = \sin x$	2
Q.4		
iv.	What is projection of a point?	2
Q.4		
v.	What is sector of a circle?	2
Q.4		
vi.	What is secant?	2
Q.4		
vii.	What is segment of a circle?	2
Q.4		
viii.	What is central angle?	2
Q.4		
ix.	Define triangle.	2
Q. 5		

(a). Solve the equation: $\sqrt{x+5} + \sqrt{x+21} = \sqrt{x+60}$ 4

Q. 5

(b) If α, β are the roots of the equation $x^2 - 3x + 6 = 0$, form an equation whose roots are $2\alpha + 1$ and $2\beta + 1$. 4

Q 6

(a). Find fourth proportion to: $x^2 - 11x + 24, x - 3, 5x^4 - 4x^3$ 4

Q.6

(b). Resolve into partial fractions: $\frac{x^2 + 7x + 11}{(x+2)^2(x+3)}$ 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 prove that

$(A \cap B)' = A' \cup B'$ 4

Q. 7

(b). Find standard deviation 'S': 4

12, 6, 7, 3, 15, 10, 18, 5

Q.No.8.(a). Verify the identity: 4

$$\frac{\sin \theta + \cos \theta}{\cos \theta} = 1 + \tan \theta$$

(b). Circumscribe a circle about a triangle $\triangle ABC$ with sides: 4

$\overline{AB} = 6\text{cm}$, $\overline{BC} = 3\text{cm}$, $\overline{CA} = 4\text{cm}$.

Q. 9

(a). Prove that if two chords of a circle are congruent then they will be equidistant from the centre. 4

(b). Prove that the angle 4

In a semi-circle is a right angle.

In a segment greater than a semi-circle is less than a right angle.

In a segment less than a semi-circle is greater than a right angle.

