

LAHORE BOARD

GRADE 10

MATHS

2017 GROUP 1

MCQ's

1. $\frac{3\pi}{4}$ radians = _____ 1
- (A). 115° (B). 150° (C). 30° (D). 135°

Answer:

(D) 135°

2. If $A \subseteq B$ then $A-B$ is equal to: 1
- (A). A (B). B (C). $B-A$ (D). \emptyset

Answer:

(D). \emptyset

3. Radii of a circle are: 1
- (A). Double of the diameter (B). All unequal
- (C). Half of any chord (D). All equal

Answer:

(A) Double of the diameter

Answer:

(C) Perpendicular

Answer:

(C) Single point

6. An equation which remains unchanged when x is replaced by $\frac{1}{x}$ is called

a/an: 1

(A). Exponential equation (B). Reciprocal equation

(C). Radical equation (D). Quadratic equation

Answer:

(B) Reciprocal equation

7. Cube roots of -1 are: 1

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

Answer:

8. If $a:b = x:y$, then alternando property is: 1

(A). $\frac{a}{x} = \frac{b}{y}$ (B). $\frac{a}{b} = \frac{x}{y}$ (C). $\frac{a+b}{b} = \frac{x+y}{y}$ (D). $\frac{a-b}{x} = \frac{x-y}{y}$

Answer:

9. A frequency polygon is a many sided _____.: 1

(A). Closed figure (B). Rectangle (C). Circle (D). Square

Answer:

(A) Closed figure

Answer:

(D) Incongruent

11. $\sec^2\theta =$ _____.: 1

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

Answer:

Answer:

13. The length of the diameter of a circle is how many times the radius of the circle: 1

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

Answer:

(B) 2

Answer:

Answer:

(C) Singleton set

Q. No.2. Write short answers to any six (6) questions:

- (i) Write the name of any two methods for solving a quadratic equation. 2
- (ii) Solve: $x^2+2x-2=0$ 2
- (iii) Evaluate: $(1 - 3w - 3w^2)^5$ 2
- (iv) Evaluate: $w^{37} + w^{38} - 5$ 2
- (v) Without solving find the sum and the product of roots of quadratic equation:
 $3x^2+7x-11=0$ 2
- (vi) Write the quadratic equation having the roots: -1, -7 2
- (vii) Define direct variation. 2
- (viii) Find the fourth propotional to 8, 7, 6. 2
- (ix) Find x if $6:x::3:5$ 2

Q. No.3. Write short answers to any six (6) questions:

- (i) Define a rational fraction. 2
- (ii) Resolve $\frac{1}{x^2-1}$ into partial fraction. 2

- (iii) Define subset. 2
- (iv) If $L = \{a, b, c\}$, $M = \{3, 4\}$ then find $L \times M$. 2
- (v) Find domain and range of the binary relation, $R = \{(1, 1), (2, 2), (3, 3), (4, 4)\}$. 2
- (vi) If $(2a+5, 3) = (7, b-4)$, find a, b . 2
- (vii) Write two properties of arithmetic mean. 2
- (ix) The sugar contents for a random sample of 6 packs of juices of a certain brand are found to be 2.3, 2.7, 2.5, 2.9, 3.1 and 1.9 milligram, find the median. 2
- Q. No.4. Write short answers to any six (6) questions:**
- (i) Define radian measure of an angle. 2
- (ii) Convert 15° to radian. 2
- (ii) Convert 15° to radian. 2
- (iv) What is meant by zero dimension. 2
- (v) Define chord of a circle. 2
- (vi) Define tangent to a circle. 2
- (vii) What is meant by sector of a circle? 2
- (viii) Define circum Angle. 2
- (ix) Define inscribed circle. 2

Note: Attempt any Three questions. But question no. 9 is compulsory.

Q. No.5.(a) Solve the equation by completing square: $11x^2-34x+3=0$. 4

(b) If α, β are the roots of equation $lx^2+mx+n=0, (l \neq 0)$ then find the value of

$$\frac{1}{\alpha^2} + \frac{1}{\beta^2}. \quad 4$$

Q. No.6.(a) Using theorem of componendo-dividendo find the value of: $\frac{x+2y}{x-2y} + \frac{x+2z}{x-2z}$ if

$$x = \frac{4yz}{y+z}. \quad 4$$

(b) Resolve into partial fractions: $\frac{x-11}{(x-4)(x+3)}$ 4

Q. No.7.(a) If $U=\{1, 2, 3, \dots, 10\}, A=\{1, 3, 5, 7, 9\}, B=\{1, 4, 7, 10\}$ then verify that

$$A-B=A \cap B'. \quad 4$$

(b) Calculate the variance for the data: 10, 8, 9, 7, 5, 12, 8, 6, 8, 2 4

Q. No.8.(a) Prove that: $\sin \theta (\tan \theta + \cot \theta) = \sec \theta$ 4

(b) Draw two perpendicular tangents to a circle of radius 3cm. 4

Q. No.9. Prove that if two chords of a circle are congruent then they will be equidistant from the centre. 8

LAHORE BOARD

GRADE 10

MATHS

2017 GROUP 2

MCQ's

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

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

Answer:

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

2. Cube root of -1 are: 1

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

Answer:

(A). $-1, -\omega, \omega^2$

3. If α, β are the roots of $x^2-x-1=0$, then product of the roots 2α and 2β is: 1

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

Answer:

(D). -4

4. Find x in the proportional of $4:x :: 5:15$: 1

- (A). $\frac{75}{4}$ (B). $\frac{4}{3}$ (C). $\frac{3}{4}$ (D). 12

Answer:

(D). 12

5. The third proportional of x^2 and y^2 is: 1

- (A). $\frac{y^2}{x}$ (B). x^2y^2 (C). $\frac{y^4}{x^2}$ (D). $\frac{y^2}{x^4}$

Answer:

(C). $\frac{y^4}{x^2}$

6. The set having only one element is called: 1
(A). Null set (B). Power set (C). Singleton set (D). Subset

Answer:

7. The different number of ways to describe a set is: 1
(A). 1 (B). 3 (C). 2 (D). 4

Answer:

(B). 3

8. If $A \subseteq B$ then $A-B$ equal to: 1
(A). A (B). \emptyset (C). B (D). B-A

Answer:

(B). \emptyset

9. The extent of variation between two extreme observations of a data set is measured by: 1
(A). Range (B). Average (C). Quartiles (D). Median

Answer:

(A). Range

10. $\frac{3\pi}{4}$ radian = _____: 1
(A). 115° (B). 150° (C). 30° (D). 135°

Answer:

11. The distance of any point of the circle to its centre is called: 1
(A). Diameter (B). A chord (C). Radius (D). An arc

Answer:

(C). Radius

Answer:

(A). Parallel

13. $\sec^2\theta =$ _____: 1
(A). $1-\sin^2\theta$ (B). $1+\tan^2\theta$ (C). $1+\cos^2\theta$ (D). $1-\tan^2\theta$

Answer:

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

14. The portion of a circle between two radii and an arc is called: 1

(A). Sector (B). Segment (C). Chord (D). Diameter

Answer:

(A). Sector

15. How many common tangents can be drawn for two touching circles: 1

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

Answer:

(D). 3

Q.2)

(i). Define radical equation. 2

Q.2)

(ii). Write the equation in standard form: $\frac{x}{x+1} + \frac{x+1}{x} = 6$ 2

Q.2)

(iii). Define simultaneous equations. 2

Q.2)

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

Q.2)

(v). Without solving, find the sum and product of the roots of quadratic equation:
 $(l+m)x^2 + (m+n)x + n-l = 0$. 2

Q.2)

(vi). Use synthetic division to find the quotient and the remainder, when:

$(x^2+7x-1)(x+1)$ 2

Q.2)

(vii) Define direct variation. 2

Q.2)

(viii). Find the fourth proportional: $4x^4, 2x^3, 18x^5$

Q.2)

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

Q.3)

- (i). Define a rational fraction. 2
- Q.3)
- (ii). How can we make partial fractions of: $\frac{7x-9}{(x+1)(x-3)}$ 2
- Q.3)
- (iii). Define complement of a set.
- Q.3)
- (iv). Find a and b if $(a-4, b-2)=(2, 1)$
- Q.3)
- (v). Define domain and range of a relation. 2
- Q.3)
- (vi). Find $A \cap B$ if $A=\{2,3,5,7\}$ and $B=\{3,5,8\}$
- Q.3)
- (vii). The marks of seven students in Mathematics are as follows. Find Arithmetic Mean: 45, 60, 74, 58, 65, 63, 49 2
- Q.3)
- (viii). Find geometric mean of 2, 4 and 8. 2
- Q.3)
- (ix). Define mode.
- Q.4)
- (i). Define radian.
- Q.4)
- (ii). Express 225° into radian. 2
- Q.4)
- (iii). In a circle of radius 12m, find the length of an arc which subtends a central angle $\theta=1.5$ radian. 2
- Q.4)
- (iv). Define projection of a point.
- Q.4)

(v). Define radial segment. 2

Q.4)

(vi). Define the tangent to a circle.

Q.4)

(vii). Define sector of a circle. 2

Q.4)

(viii). Define central angle. 2

Q.4)

(ix). Define geometry.

Q.5)

(a). Solve the equation: $2x+5=\sqrt{7x+16}$ 4

Q.5)

(b). Use synthetic division to find the value of l and m, if (x+3) and (x-2) are the factors of the polynomial $x^3+4x^2+2lx+m$ 4

Q.6)

(a). If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f}$ ($a, b, c, d, e, f \neq 0$), then show that $\frac{a}{b} = \sqrt{\frac{a^2+c^2+e^2}{b^2+d^2+f^2}}$

Q.6)

(b). Resolve into partial fractions: $\frac{x-11}{(x-4)(x+3)}$

Q.7)

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

Q.7)

(b) The marks of six students in mathematics are as follows. Determine standard deviation "S". 4

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

Q.8)

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

Q.8)

- (b). **Inscribe a circle in an equilateral triangle ABC with each side of length 5cm.** **4**

Q.9

- (a). **Prove that two chords of a circle which are equidistant from the centre, are congruent?** **8**

Q.9

- (b). **Prove that the opposite angles of any quadrilateral inscribed in a circle are supplementary.** **8**