SARGODHA BOARD

GRADE 9
MATHEMATICS
2019 GROUP 1

MCQ'S

i) Adjoint of $\begin{bmatrix} 1 & 2 \\ 0 & -1 \end{bmatrix}$ **is .....** **(Mark 1)**

A. $\begin{bmatrix} -1 & -2 \\ 0 & 1 \end{bmatrix}$

B. $\begin{bmatrix} 1 & -2 \\ 0 & 1 \end{bmatrix}$

C. $\begin{bmatrix} -1 & 2 \\ 0 & -1 \end{bmatrix}$

D. $\begin{bmatrix} -1 & 0 \\ 2 & 1 \end{bmatrix}$

Answer:
A.

ii) Symbol used for congruent is _____. **(Mark 1)**

A. ~
B. ^
C. =
D. ≅

Answer:
D. ≅

iii) The perpendicular from vertex to the opposite side of a triangle is called_____.
(Mark 1)

A. Bisector of angle
B. Bisector of side
C. Altitude

D. Median

Answer:

C. Altitude

iv) A point equidistant from the endpoints of a line segment is on its _____. (Mark 1)

A. Bisector

B. Right Bisector

C. Perpendicular

D. Median

Answer:

B. Right Bisector

v) The value of i^9 is _____. (Mark 1)

A. 1

B. -1

C. i

D. -i

Answer:

C. i

vi) The value of log(p/q) is_____. (Mark 1)

A. log p -logq

B. logp/log q

C. logp+logq

D. log q - log p

Answer:

A. log p -logq

vii) a^3+b^3 is equal to _____. (Mark 1)

A. (a-b) (a^2+ab-b^2)

B. $(a-b)(a^2-ab+b^2)$

C. $(a+b)(a^2-ab+b^2)$

D. $(a-b)(a^2+ab+b^2)$

Answer:

C. $(a+b)(a^2-ab+b^2)$

viii) Factors of $3x^2-x-2$ are _____. (Mark 1)

A. (x+1), (3x-2)

B. (x+1), (3x+2)

C. (x-1), (3x-2)

D. (x-1), (3x+2)

Answer:
D. (x-1), (3x+2)

ix) The square root of a^2-2a+1 is_____. (Mark 1)

A. ±(a+1)
B. ±(a-1)
C. (a-1)
D. (a+1)

Answer:
B. ±(a-1)

x) If x is no larger than 10, then _____. (Mark 1)

A. $x \geq 8$
B. $x \leq 10$
C. $x < 10$
D. $x > 10$

Answer:
B. $x \leq 10$

xi) Point (2, -3) lies in quadrant _____. (Mark 1)

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

Answer:
D. IV

xii) Mid-point of points (2, 2) and (0,0) is _____. (Mark 1)

A. (1, 0)
B. (1, 1)
C. (0, 1)
D. (-1, -1)

Answer:
B. (1, 1)

xiii) Three points are said to be collinear if they lie on same_____. (Mark 1)

A. Triangle
B. Circle
C. Line
D. Square

Answer:
C. Line

xiv) The line segment joining the mid-points of two sides of the triangle is _____ to the third side. (Mark 1)

A. Double
B. Half
C. One third
D. One fourth

Answer:
B. Half

xv) The right bisectors of the sides of triangle are_____. (Mark 1)

A. Parallel
B. concurrent
C. Perpendicular
D. Bisector

Answer:
B. concurrent

SHORT QUESTIONS

Q.2 i) Define square matrix with one example. (Marks 2)

Q.2 (ii) If $A=\begin{bmatrix} -1 & 2 \\ 2 & 1 \end{bmatrix}$ then find $A+\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$. (Marks 2)

Q.2 iii) Simplify $\sqrt[3]{16x^4y^5}$. (Marks 2)

Q.2 iv) Express in ordinary notation 7.61×10^{-4}. (Marks 2)

Q.2 v) Simplify in the form of a+ib (2+3i)/(4-i). (Marks 2)

Q.2vi) $\frac{(x+2)(x^2-1)}{(x+1)(x^2-4)}$ (Marks 2)

Q.2 vii) Find the value of x, when $\log_{81} 9=x$. (Marks 2)

Q.2 (viii) Simplify $\sqrt[5]{243x^5y^{10}z^{15}}$. (Marks 2)

Q.2 ix) Factorize $x^2-11x-42$. (Marks 2)

SHORT QUESTIONS

Q.3 i) Find the L.C.M of the following Expressions.

$102x\,y^2\,z$, $85x^2yz$, $187x\,y\,z^2$ (Marks 2)

Q.3 ii) Solve the equation $\sqrt[3]{2x-4}-2=0$ (Marks 2)

Q.3 iii) Solve for x $|3x-5|=4$. (Marks 2)

Q.3 iv) Find the value of m and c of the following line by expressing it in the form of y=mx+c, 2x-y=7. (Marks 2)

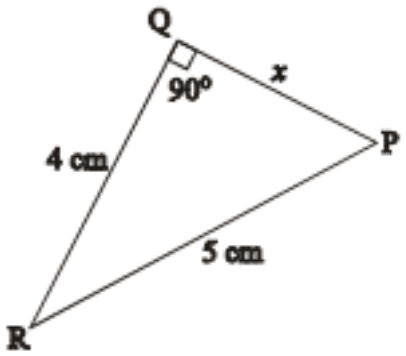
Q.3 v) Verify whether the point (2,5) lies on the line 2x-y+1=0 or not. (Marks 2)

Q.3 vi) Find the mid-point of line segment joining of the following pair of points A(2, -6), B(3, -6).

Q.3 (vii) Find the distance between the following pair of points. $A\left(-4,\sqrt{2}\right)$, $B(-4,-3)$. (Marks 2)

Q.3 viii) What is meant of point of trisection? (Marks 2)

Q.3 ix) Find the value of x of △PQR. (Marks 2)



SHORT QUESTIONS

Q.4 i) Define bisector of an angle. (Marks 2)

Q.4 ii) If 3cm and 4cm are the lengths of two sides of a right-angled triangle, then what should be the third length of the triangle. (Marks 2)

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

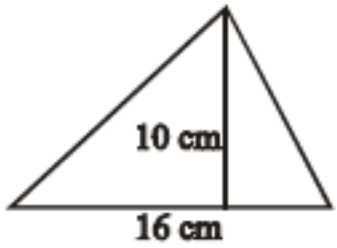
Q.4 iv) Define Converse of Pythagoras' theorem.

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

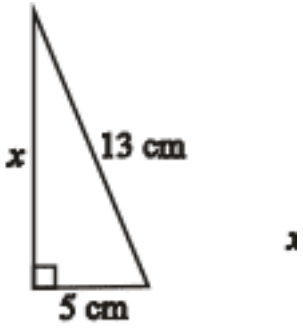
Q.4 vi) Define altitude of triangle. (Marks 2)

Q.4 vii) Construct a triangle △ABC in which $m\overline{AB} = 4.8cm.$ $m\overline{BC} = 3.7cm.$ $m\angle B = 60°$ (Marks 2)

Q.4 viii) Find the area of given figure (Marks 2)



Q.4 ix) Find the value of x



LONG QUESTIONS

Q.5 a) Solve by using Crammer's rule 2x-2y=4, 3x+2y=6. (Marks 4)

Q.5 b) Simplify $\sqrt{\frac{(216)^{2/3} \times (25)^{1/2}}{(.04)^{-1/2}}}$ (Marks 4)

Q.6 a) Evaluate with the help of logarithm $\sqrt[5]{2.709} \times \sqrt[7]{1.239}$. (Marks 4)

Q.6 b) If $a+b+c=6$ and $a^2+b^2+c^2=24$, then find the value of $ab+bc+ca$.

(Marks 4)

Q.7 a) Factorize $(x^2+5x+4)(x^2+5x+6)-3$. (Mark 2)

Q.7 b) Find the H.C.F by Division method $2x^5 - 4x^4 - 6x$, $x^5 + x^4 - 3x^3 - 3x^2$. (Marks 4)

Q.8 a) Solve the following equation. $\frac{5(x-3)}{6} - x = 1 - \frac{x}{9}$ (Marks 4)

Q. 8 b) Construct the following $\triangle ABC$ and draw the bisectors of the angles $m\overline{AB} = 4.2cm$, $m\overline{BC} = 6cm$, $m\overline{CA} = 5.2cm$. (Marks 4)

Q.9 Any point on the bisector of an angle is equidistant from its arms.

(Marks 8)

SARGODHA BOARD

GRADE 9

MATHEMATICS

2019 GROUP 2

i) Equality of_____ratios is defined as proportion. (Mark 1)

A. Five
B. Two
C. Three
D. Four

Answer:

B. Two

ii) The unit of area is_____ (Mark 1)

A. m^3
B. ms^{-1}
C. m
D. m^2

Answer:

D. m^2

iii) A quadrilateral having each angle equal to 90^o is called_____ (Mark 1)

A. Rectangle
B. Rhombus
C. Trapezium
D. Parallelogram

Answer:

A. Rectangle

iv)

(Mark 1)

$$\begin{bmatrix} \sqrt{2} & 0 \\ 0 & \sqrt{2} \end{bmatrix}$$ **is called.....matrix.**

A. Zero
B. Unit
C. Scalar
D. Singular

Answer:
C. Scalar

v) The value of i^9 is_____ (Mark 1)

A. -i
B. i
C. 1
D. -1

Answer:
B. i

vi) The relation $y = \log_z x$ implies _____ (Mark 1)

A. $x^y = z$
B. $x^z = y$
C. $z^y = x$
D. $y^z = x$

Answer:
C. $z^y = x$

vii) $(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b})$ is equal to: (Mark 1)

A. a^2+b^2
B. a^2-b^2
C. a+b
D. a-b

Answer:
D. a-b

viii) Find m so that x^2+4x+m is a complete square. (Mark 1)

A. 4
B. 8
C. -8
D. 16

Answer:
A. 4

ix) H.C.F of x^2-5x+6 and x^2-x-6 is_____ (Mark 1)

A. x-3
B. x+2
C. x^2-4
D. x-2

Answer:
A. x-3

x) x=0 is a solution of the inequality_____ (Mark 1)

A. $x+2<0$
B. $x-2<0$
C. $x>0$
D. $3x+5<0$
Answer:
B. $x-2<0$

xi) If (x,0) =(0,y) then (x,y) is_____ (Mark 1)

A. (0,1)
B. (1,0)
C. (0,0)
D. (1,1)
Answer:
C. (0,0)

xii) Distance between point (0,0) and (1,1) is_____ (Mark 1)

A. 0
B. 1
C. 2
D. √2
Answer:
D. √2

xiii) If one angle of a right triangle is 30^{o} the hypotenuse is_____ as long as the opposite to the angle. (Mark 1)

A. Equal
B. Four times
C. Three times
D. Two times
Answer:
D. Two times

xiv) Each diagonal of a parallelogram bisect into_____congruent triangles. (Mark 1)

A. Two
B. Three
C. Four
D. Six
Answer:
C. Four

xv) Bisection of an angle mean to draw a ray to divide the given angle into_____equal parts. **(Mark 1)**

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

Answer:
B. 2

SHORT QUESTIONS

Q.2 i) Define square matrix with an example. (Marks 2)

Q.2 ii) (Marks 2)

Find the value of x, if $\begin{bmatrix} 2 & 1 \\ 3 & -3 \end{bmatrix} + x = \begin{bmatrix} 4 & -2 \\ -1 & 2 \end{bmatrix}$

Q.2 iii) Use Law of exponents to simplify $(2x^5y^{-4})(-8x^{-3}y^2)$ (Marks 2)

Q.2 iv) Express 4+5i/4-5i in the standard form a+bi. (Marks 2)

Q.2 v) Calculate: $\log_5 3 \times \log_3 25$ (Marks 2)

Q.2 vi) Find the value of unknown $\log_3 81 = L$. (Marks 2)

Q.2 vii) Simplify: $\frac{7xy}{x^2-4x+4} \div \frac{14y}{x^2-4}$ **(Marks 2)**

Q.2 viii) Evaluate: x^3y-2z/xz for x=3,y=-1,z=-2. (Marks 2)

Q.2 ix) Factorize: $125x^3-216y^3$ (Marks 2)

SHORT QUESTIONS

Q.3 i) Find square root by Factorization $4x^2-12xy+9y^2$. (Marks 2)

Q.3 ii) Solve the Equation $\sqrt[3]{2-t} = \sqrt[3]{2t-28}$ **(Marks 2)**

Q.3 iii) Solve the inequality $-\frac{1}{3}x + 5 \leq 1$ **(Marks 2)**

Q.3 iv) Find the value of m and c by expressing the line 2x=y+3 in the form of y=mx+c. (Marks 2)

Q.3 v) Verify whether the point (2,3) lies on the line 2x-y+1=0 or not. (Marks 2)

Q.3 vi) Find the distance between the pair of points A(0,0) and B(0,-5). (Marks 2)

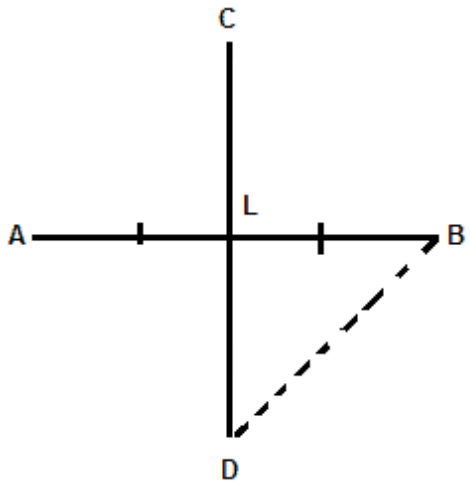
Q.3 vii) Find the mid-point of the line segment joining the pair of points A(3,-11) and B(3,-4) (Marks 2)

Q.3 viii) Define A.S.A postulate. (Marks 2)

Q.3 ix) Sum of the two opposite angles of a parallelogram is 110°. Find the remaining angles. (Marks 2)

Q.4 i) (Marks 2)

In the given diagram $\overline{CD}$ is a right bisector of line segment AB, if $m\overline{AB} = 6cm$ then find $m\overline{AL}$ & $m\overline{LB}$



Q.4 ii) Define Ratio. (Marks 2)

Q.4 iii) 2cm, 3cm, 5cm can be the lengths of a sides of a triangle. (Marks 2)

Q.4 iv) State converse of Pythagoras theorem. (Marks 2)

Q.4 v) Verify that the triangle having measure of sides a= 9 cm, b= 12 cm , c = 15 cm is right-angled (Marks 2)

Q.4 vi) Define Altitude of the parallelogram. (Marks 2)

Q.4 vii) Write formula to find the area of parallelogram. (Marks 2)

Q.4 viii) Define point of concurrency. (Marks 2)

Q.4 ix) (Marks 2)

. Construct a ΔABC when $m\overline{AB} = 4.6cm$, $m\overline{BC} = 4cm$ and $m\angle A = 60^0$

Q.5 a) Solve by matrix Inversion method. 2x+y=3, 6x+5y=1 (Marks 4)

Q.5 b) Simplify: $\left(\frac{x^{-2}y^{-1}z^{-4}}{x^4y^{-3}z^0}\right)^{-3}$ **(Marks 2)**

Q.6 a) (Marks 4)

Using log tables find the values of $\sqrt[5]{2.709} \times \sqrt[7]{1.239}$

Q.6 b) If $p = 2+\sqrt{3}$, find $p^2 - 1/p^2$ (Marks 4)

Q.7 a) Factorize the following cubic polynomial by factor theorem

x^3-2x^2-x+2 (Marks 4)

Q.7 b) Use division method to find the square root of the expression

$4x^2+12xy+9y^2+16x+24y+16$ (Marks 4)

Q.8 a) Solve the inequality $-5 \leq \frac{4-3x}{12} < 1$ **(Marks 4)**

Q.8 b) (Marks 4)

Construct a triangle PQR and draw altitude and show that they are concurrent when $m\overline{PQ} = 6cm, m\overline{QR} = 4.5cm, m\overline{PR} = 5.5cm$

Q.9) Any point inside an angle is equidistant from its arms is on the bisector of it. Prove it. (Marks) OR

Triangles on equal bases and of equal altitudes are equal in area. Prove it.