

**SARGODHA BOARD**  
**GRADE 9**  
**MATHEMATICS**  
**2018 GROUP 1**

**MCQ'S**

1. If  $\begin{bmatrix} 2 & 6 \\ 3 & x \end{bmatrix} = \mathbf{0}$ , then x is equal to: **(Mark 1)**

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

Answer: D

2. Ratio has ..... unit: **(Mark 1)**

- A. m
- B.  $\text{cm}^2$
- C. Kg
- D. No any

Answer: D

3. A triangle having two sides congruent is called: **(Mark 1)**

- A. Isosceles
- B. Equilateral
- C. Right angled
- D. Scalene

Answer: A

4.  $\left(\frac{25}{16}\right)^{-\frac{1}{2}} = \dots\dots\dots$ : (Mark 1)

A.  $\frac{5}{4}$

B.  $\frac{4}{5}$

C.  $-\frac{5}{4}$

D.  $-\frac{4}{5}$

Answer: B

5. **The logarithm of unity to any base is ..... :** (Mark 1)

A. 1

B. 10

C. e

D. 0

Answer: D

6.  $\frac{a^2 - b^2}{a + b}$  is equal to .....

(Mark 1)

A.  $(a - b)^2$

B.  $(a + b)^2$

C.  $(a + b)$

D.  $a - b$

Answer: D

7. **Find m so that  $x^2 + 4x + m$  is complete square:** (Mark 1)

A. 4

B. -8

C. 8

D. 16

Answer: A

8. Simplify  $\frac{a}{9a^2 - b^2} + \frac{1}{3a - b}$  (Mark 1)

A.  $\frac{4a}{9a^2 - b^2}$

B.  $\frac{4a - b}{9a^2 - b^2}$

C.  $\frac{4a + b}{9a^2 - b^2}$

D.  $\frac{b}{9a^2 - b^2}$

Answer: C

9.  $x = \dots$  is a solution of inequality  $-2 < x < 3/2$ : (Mark 1)

A. -5

B. 3

C. 0

D.  $3/2$

Answer: C

10. 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

11. Distance between the Points (0, 0) and (1, 1) is: (Mark 1)

A.  $\sqrt{2}$

B. 1

C. 2

D. 0

Answer: A

12. The symbol used for (1 - 1) correspondence between two triangles is: (Mark 1)

- A.  $\sim$
- B.  $\cong$
- C.  $//$
- D.  $\leftrightarrow$

Answer: D

13. Medians of a triangle are .....: (Mark 1)

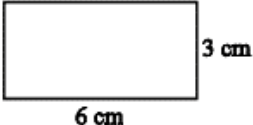
- A. Concurrent
- B. Parallel
- C. Congruent
- D. Collinear

Answer: A

14. Any point equidistant from the end points of a line segment is on its ..... : (Mark 1)

- A. Bisector
- B. Right bisector
- C. Perpendicular
- D. Median

Answer: B

15. The figure  has area ..... : (Mark 1)

- A.  $18\text{cm}^2$
- B.  $8\text{cm}^2$
- C.  $36\text{cm}^2$
- D.  $6\text{cm}^2$

Answer: A

## SHORT QUESTIONS

### QUESTION#2

i). Define matrix. (Marks 2)

ii). Multiply:  $\begin{bmatrix} 8 & 5 \\ 6 & 4 \end{bmatrix} \begin{bmatrix} 2 & -\frac{5}{2} \\ -4 & 4 \end{bmatrix}$  (Marks 2)

iii). Simplify:  $\left(\frac{8}{125}\right)^{-\frac{4}{3}}$  (Marks 2)

iv). Find the value of  $i^{50}$ . (Marks 2)

v). Express in scientific notation 0.0074 . (Marks 2)

vi). Define binomial surd. (Marks 2)

vii). Define common logarithm. (Marks 2)

viii). Rationalize the denominator  $\frac{2}{\sqrt{5} + \sqrt{2}}$  (Marks 2)

ix). Factorize  $3x - 243x^3$  (Marks 2)

### QUESTION#3

i). Find H.C.F by factorization  $x^2 + 5x + 6$ ,  $x^2 - 4x - 12$  (Marks 2)

ii). Solve the equation and check for extraneous solution.

$$\sqrt{2x - 3} - 7 = 0 \quad (\text{Marks 2})$$

iii). Find the solution set.  $|3x - 5| = 4$ . (Marks 2)

iv). Define Collinear points. (Marks 2)

v). Find the value of  $m$  and  $c$  after expressing line  $2x - y = 7$  in the form  $y = mx + c$ , (Marks 2)

vi). Find the distance between given points. (Marks 2)

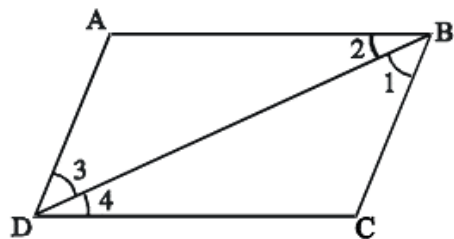
$$A(9, 2) \quad B(7, 2)$$

vii). Find the mid point of line segment joining pair of points.

$$A(2, -6), B(3, -6) \quad (\text{Marks 2})$$

viii). If two angles of a triangle are  $90^\circ$  and  $30^\circ$  what will be the value of 3rd angle? (Marks 2)

ix). In figure find  $m\angle 1 \cong \dots$ ,  $m\angle 2 \cong \dots$  (Marks 2)



### QUESTION#4

i). Define Right bisector of a line segment. (Marks 2)

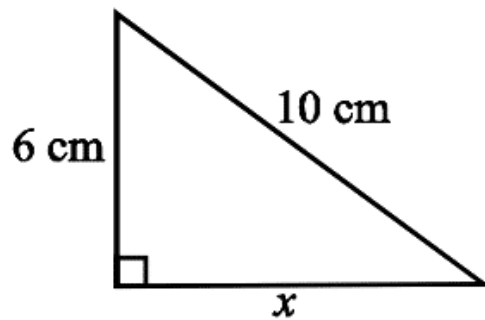
ii). Whether 2cm, 4cm and 7cm can be the lengths of sides of a triangle? Give reason. (Marks 2)

iii). Define Proportion. (Marks 2)

iv). State converse of Pythagoras Theorem. (Marks 2)

v). Find the value of  $x$ .

(Marks 2)



vi). Define Rectangular Region.

(Marks 2)

vii). Define the median of triangle.

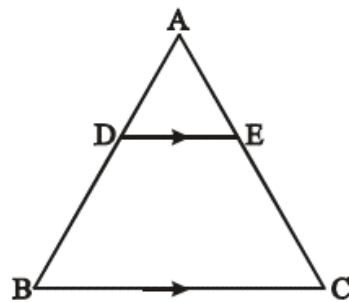
(Marks 2)

viii). Construct  $\triangle XYZ$  in which  $m\overline{ZX} = 6.4$  cm,  $m\overline{YZ} = 2.4$  cm and  $m\angle Y = 90^\circ$

(Marks 2)

ix). In  $\triangle ABC$ ,  $\overline{DE} \parallel \overline{BC}$  if  $m\overline{AD} = 2.4$  cm,  $m\overline{AE} = 3.2$  cm,  $m\overline{EC} = 4.8$  cm, Find  $m\overline{AB}$ .

(Marks 2)



## LONG QUESTIONS

Q. 5a). Solve by Cramers's Rule:

(Marks 4)

$$2x - 2y = 4 ; 3x + 2y = 6$$

Q.5 b). Simplify

$$\sqrt{\frac{(216)^{\frac{2}{3}} \times (25)^{\frac{1}{2}}}{(0.04)^{-\frac{1}{2}}}}$$

(Marks 4)

Q.6 a). Evaluate with the help of Logarithm.  $0.8176 \times 13.64$

(Marks 4)

Q.6 b). Simplify  $\frac{\sqrt{a^2+2} + \sqrt{a^2-2}}{\sqrt{a^2+2} - \sqrt{a^2-2}}$  (Marks 4)

Q.7 a). If  $(x + 2)$  is a factor of  $3x^2 - 4kx - 4k^2$ , then find the values of  $k$ . (Marks 4)

Q.7 b). Use division method to find the square root of  $x^4 - 10x^3 + 37x^2 - 60x + 36$  (Marks 4)

Q.8 a). Solve:  $\frac{2x}{2x+5} = \frac{2}{3} - \frac{5}{4x+10}$ ,  $x \neq -\frac{5}{2}$  (Marks 4)

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

Q.9 Prove that right bisector of sides of the sides of a triangle are concurrent. (Marks 8)

Or

Prove that parallelogram on the same base and between the same parallel lines (or of the same altitude) are equal in area.



**SARGODHA BOARD**  
**GRADE 9**  
**MATHEMATICS**  
**2018 GROUP 2**

**MCQ'S**

i) If  $X + \begin{bmatrix} -1 & -2 \\ 0 & -1 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ , then X is equal to.....: (Mark 1)

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

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

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

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

**Answer:**

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

ii) Imaginary part of  $-i(3i+2)$  is.....: (Mark 1)

A. -2

B. 2

C. 3

D. -3

**Answer:**

A. -2

iii) The logarithm of unity to any base is.....: (Mark 1)

A. 10

B. e

C. 0

D. 1

**Answer:**

C. 0

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

A.  $(a - b)^2$

B.  $a - b$

C.  $(a + b)^2$

D.  $a + b$

**Answer:**

B.  $a - b$

**v) Find m so that  $x^2 + 4x + m$  is a complete square.....: (Mark 1)**

A. 4

B. 16

C. 8

D. 12

**Answer:**

A. 4

**vi) L.C.M of  $a^2 + b^2$  and  $a^4 - b^4$  is.....: (Mark**

**1)**

A.  $a^2 - b^2$

B.  $a^2 + b^2$

C.  $a - b$

D.  $a^4 - b^4$

**Answer:**

C.  $(x - 2)$

**vii)  $x = \dots$  is a solution of the inequality  $-2 < x < \frac{3}{2}$  : (Mark 1)**

A. -5

B. 3

C. 0

D.  $\frac{3}{2}$

**Answer:**

C. 0

**viii) Point  $(2, -3)$  lies in quadrant.....: (Mark 1)**

A. IV

B. III

C. II

D. I

**Answer:**

A. IV

**ix) Mid-point of the points (2,-2) and (-2,2) is: (Mark 1)**

A. (2,2)

B. (0,0)

C. (-2,-2)

D. (1,1)

**Answer:**

B. (0,0)

**x) If two angles of a triangle are congruent, the sides opposite them are.....: (Mark**

**1)**

A. Collinear

B. Concurrent

C. Parallel

D. Congruent

**Answer:**

D. Congruent

**xi) If two angles of a triangle are congruent, the sides opposite them are.....:**

**(Mark 1)**

A. 4

B. 2

C. 3

D. 6

**Answer:**

**xii) Bisection means to divide into ....equal parts: (Mark 1)**

A. 4

B. 3

C. 2

D. 5

**Answer:**

C. 2

**xiii) If two triangles are similar, the measures of their corresponding sides are.....: (Mark**

**1)**

A. Proportional

B. Parallel

C. Concurrent

D. Congruent

**Answer:**

D. No any

**xiv) The**

**symbol**

**of**

**parallel**

**is.....:**

A.  $\perp$

B.  $\leftrightarrow$

C. =

D. ||

**(Mark 1)**

**Answer:**

D. ||

**xv) If the three altitudes of a triangle are congruent, then the triangle**

**is.....:**

**(Mark 1)**

A. Equilateral

B. Right angled

C. Isosceles

D. Acute angled

**Answer:**

A. Equilateral

## SHORT QUESTIONS

Q.2 i) Define column matrix with example. (Marks 2)

Q.2 ii) Find whether the matrix  $\begin{bmatrix} 7 & -9 \\ 3 & 5 \end{bmatrix}$  is singular or non-singular. (Marks 2)

Q.2 iii) Simplify  $5^{2^3} \div (5^2)^3$  (Marks 2)

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

Q.2 v) Find the value of x.

$\log_{64}8 = x/2$  (Marks 2)

Q.2 vi) If  $\log 2 = 0.3010$ ,  $\log 3 = 0.4771$ ,  $\log 5 = 0.6990$  find the values of log

30.

(Marks 2)

Q.2 vii) Evaluate  $\frac{x^2y - 2z}{xz}$  for  $x=3, y=-1, z=-2$  (Marks 2)

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

Q.2 ix) Factorize:  $3x^2 -$

$75y^2$  (Marks 2)

## SHORT QUESTIONS

Q.3 i) Find L.C.M by factorization;  $x^2 - 25x + 100, x^2 - x - 20$  (Marks 2)

Q.3 ii) Solve equation and check for extraneous solution.  $\sqrt{3x + 4} = 2$  (Marks 2)

Q.3 iii) Solve:  $1/2|3x+2| -$

$4 = 11$  (Marks 2)

Q.3 iv) Define Cartesian plane.

(Marks 2)

Q.3 v) Find values of  $m$  and  $c$  after expressing line in the form  $y=mx+c$ ,  $3x+y-$

$1=0$

(Marks 2)

Q.3 vi) Find the distance between the points  $A(-8,1), B(6,1)$ . (Marks 2)

Q.3 vii) Find the midpoint of the line segment joining pairs of points  $A(0,0), B(0,-$

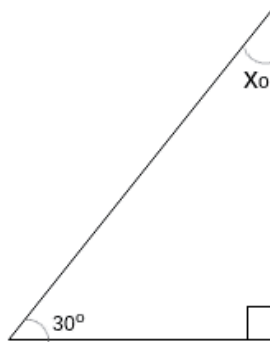
$5)$

(Mark

s 2)

Q. viii) Find  $x^\circ$ .

(Marks 2)



Q.3  
figure?

ix)

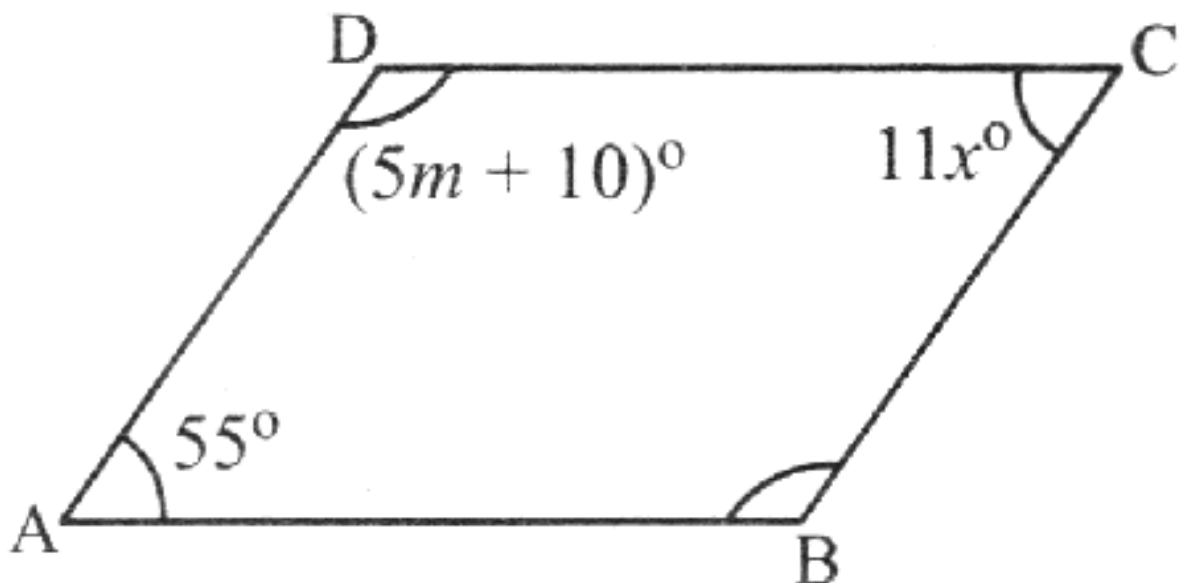
Find

$x^\circ$  and

$m^\circ$  in

the

(Marks 2)



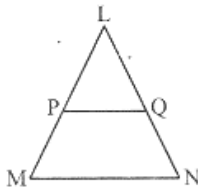
## SHORT QUESTIONS

Q.4 i) Define right bisector of a line segment. (Marks 2)

Q.4 ii) Whether 3 cm, 4 cm and 5 cm can be lengths of the sides of a triangle? Give reasons (Marks 2)

Q.4 iii) Define similar triangles. (Marks 2)

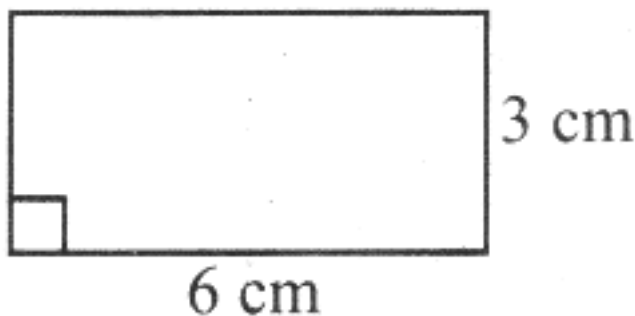
Q. iv) In  $\triangle LMN$ ,  $\overline{MN} \parallel \overline{PQ}$  if  $m\overline{LM} = 6$  cm,  $m\overline{LQ} = 2.5$  cm and  $m\overline{QN} = 5$  cm, then find  $m\overline{LP}$ . (Marks 2)



Q.4 v) State Pythagoras Theorem. (Marks 2)

Q.4 vi) Verify that  $a = 5$  cm,  $b = 12$  cm,  $c = 13$  cm are lengths of right-angled triangle. (Marks 2)

Q.4 vii) Find area (Marks 2)



Q.4 viii) Define the orthocenter of the triangle. (Marks 2)

**Q.4 (ix)** Construct a triangle ABC in which:  $m\overline{AB} = 3.2$  cm,  
 $m\overline{BC} = 4.2$  cm,  $m\overline{CA} = 5.2$  cm. (Marks 2)

## LONG QUESTIONS

**Q.5 a)** Solve by using matrix inversion method:  $2x+y=3$ ,  
 $6x+5y=1$

(Marks 4)

**Q.5 b)** (Marks 4)

Simplify  $\sqrt[3]{\frac{a^l}{a^m}} \times \sqrt[3]{\frac{a^m}{a^n}} \times \sqrt[3]{\frac{a^n}{a^l}}$

**Q.6 a)** Use log table to find the value of  $\sqrt[5]{2.709} \times \sqrt[7]{1.239}$

(Marks 4)

**Q.6 b)** Find the value of  $x+y+z$  if,  $x^2+y^2+z^2=78$  and  
 $xy+yz+zx=59$  (Marks 4)

**Q.7 a)** If  $(x+2)$  is a factor of  $3x^2-4kx-4k^2$ , then find the  
value(s) of  $k$

(Marks 4)

**Q.7 b)** Find  $9x^4-6x^3+7x^2-$   
 $2x+1$

(Marks 4)

**Q.8 a)** Find the solution set of the equation

$$x + \frac{1}{3} = 2\left(x - \frac{2}{3}\right) - 6x \quad \text{(Marks 4)}$$

**Q.8 a)** Construct triangle PQR and draw its altitude:

$m\overline{PQ} = 6$ cm,  $m\overline{QR} = 4.5$  cm,  $m\overline{PR} = 5.5$  cm (Marks 4)

**Q.9 a)** Prove that the bisectors of the angles of a triangle are



concurrent.  
8)

(Marks

Q.9 b) Prove that triangles on equal bases and of equal altitudes are equal in area.  
8)

(Marks