

# BAHAWALPUR BOARD

## GRADE 9

### Math

#### 2019 GROUP 1

Section-A (MCQs)

i) Which is the order of a square matrix? (Mark 1)

A. 2-by-2

B. 1-by-2

C. 2-by-1

D. 3-by-2

Answer:

A

ii)  $4x+3y - 2$  is an algebraic \_\_\_\_\_: (Mark 1)

A. Expression

B. Sentence

C. Equation

D. Inequation

Answer:

A

iii)  $\log mn$  can be written as \_\_\_\_\_: (Mark 1)

A.  $(\log m)n$

B.  $m \log n$

C.  $n \log m$

D.  $\log(mn)$

Answer:

C

iv) The value of  $i^9$  is:

(Mark 1)

A. 1

B. -1

C.  $i$

D.  $-i$

Answer:

C

v) The factors of  $a^4 - 4b^4$  are \_\_\_\_\_:

(Mark 1)

A.  $(a - b), (a+b), (a^2+4b^2)$

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

C.  $(a - b), (a+b), (a^2-4b^2)$

D.  $(a-2b), (a^2-4b^2)$

Answer:

B

vi) The point  $(-3, -3)$  lies in the Quadrant:

(Mark 1)

A. I

B. II

C. III

D. IV

Answer:

C

vii)  $x = \underline{\hspace{2cm}}$  is a solution of the inequality  $-2 < x < 3/2$ : (Mark 1)

A. -5

B. 3

C. 0

D.  $3/2$

Answer:

C

viii) H.C.F of  $a^2 - b^2$  and  $a^3 - b^3$  is  $\underline{\hspace{2cm}}$ : (Mark 1)

A.  $a - b$

B.  $a + b$

C.  $a^2 + ab + b^2$

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

Answer:

A

ix) Distance between the points  $(1, 0)$  and  $(0, 1)$  is  $\underline{\hspace{2cm}}$ : (Mark 1)

A. 0

B.  $\sqrt{2}$

C. 1

D. 2

Answer:

B

x) The right bisectors of the sides of a triangle intersect each other on the Hypotenuse is \_\_\_\_\_ triangle. (Mark 1)

- A. Acute angle
- B. Equilateral
- C. Obtuse Angle
- D. Right-angled

Answer:

D

xi) A Quadrilateral having each angle equal to  $90^\circ$  is called: (Mark 1)

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

Answer:

A

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

- A. —
- B. =
- C.  $\cong$
- D.  $\leftrightarrow$

Answer:

A

xiii) Unit of Ratio is:

(Mark 1)

- A. Kg
- B. Meter
- C. cm
- D. No unit

Answer:

D

xiv) Similar Figures have \_\_\_\_\_ area.

(Mark 1)

- A. Parallel
- B. Different
- C. Perpendicular
- D. Same

Answer:

D

xv) Medians of triangle are \_\_\_\_\_:

(Mark 1)

- A. Parallel
- B. Concurrent
- C. Opposite
- D. Non-Concurrent

Answer:

B

**Q.2 i) Find the product of:**  $\begin{bmatrix} 1 & 2 \\ -3 & 0 \\ 6 & -1 \end{bmatrix} \begin{bmatrix} 4 & 5 \\ 0 & -4 \end{bmatrix}$  **(Marks 2)**

**Q.2 ii) If  $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$ , then verify that  $A + A^t$  is a symmetric Matrix.** **(Marks 2)**

**Q.2 iii) Express the Recurring Decimal  $0.\overline{5}$  as the Rational Number  $\frac{p}{q}$  where p, q are integers and  $q \neq 0$ .** **(Marks 2)**

**Q.2 iv) Express  $6 \times 10^{-4}$  in Ordinary Notation.** **(Marks 2)**

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

**Q.2 vi) Express  $\frac{1}{1+2i}$  in the standard form  $a + bi$ .** **(Marks 2)**

**Q.2 vii) Factorize.  $x(x - 1) - y(y - 1)$**  **(Marks 2)**

**Q.2 viii) Reduce  $\frac{(x+2)(x^2-1)}{(x+1)(x^2-4)}$  to the lowest form.** **(Marks 2)**

**Q.2 ix) If  $x = 2 - \sqrt{3}$ , find  $\frac{1}{x}$ .** **(Marks 2)**

**Q.3 i) Find the L.C.M of:  $39x^7y^3z, 91x^5y^6z^7$**  **(Marks 2)**

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

**Q.3 iii) Solve for 'x'.  $\frac{1}{2} |3x+2| - 4 = 11$**  **(Marks 2)**

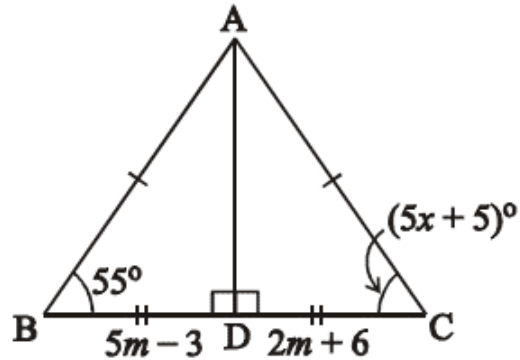
**Q.3 iv) The formula of Degree Fahrenheit is given by  $F = \frac{9}{5} C + 32$ , if  $C = 10$ , then Find F.** **(Marks 2)**

**Q.3 v) Find the value of "m" and "c" of the line  $2x + 3y - 1 = 0$  by expressing in the form  $y = mx + c$ .** **(Marks 2)**

**Q.3 vi) Define Right angle Triangle.** **(Marks 2)**

Q.3 vii) Find the Midpoint between (3, -11) and (3, -4). (Marks 2)

Q.3 viii) Find the value of unknown “m” and “x” for the given congruent Triangles. (Marks 2)



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Q.9 Prove that any point on the right bisector of a line segment is equidistant from its endpoint. (Marks 8)

## BAHAWALPUR BOARD

### GRADE 9

### Math

### 2019 GROUP 2

Section-A (MCQs)

i) Similar Figures have same \_\_\_\_\_: (Mark 1)

- A. Area
- B. Shape
- C. Size
- D. Perimeter

Answer:

A

ii) The Diagonals of a Parallelogram \_\_\_\_\_ each other: (Mark 1)

- A. Bisect
- B. Trisect
- C. Bisect at Right angle
- D. None of these

Answer:

A

iii) Symbol used for similarity is: (Mark 1)

- A.  $\sim$
- B. =
- C.  $\angle$
- D.  $\cong$

Answer:

A

iv) The Bisectors of the angles of a triangle are \_\_\_\_\_: (Mark 1)

- A. Parallel
- B. Perpendicular
- C. Concurrent
- D. Bisector

Answer:

C

v) The line segment joining the mid-points of two sides of a Triangle is \_\_\_\_\_ to the third side:  
(Mark 1)



A. Equal

B. Parallel

C. Non-Parallel

D. Perpendicular

Answer:

B

vi) Two parallel Lines intersect at \_\_\_\_\_ Point. (Mark 1)

A. One

B. Two

C. Three

D. Zero

Answer:

D

vii) Mid-point of the points  $(-2, 2)$  and  $(2, -2)$  is \_\_\_\_\_: (Mark 1)

A.  $(2, 2)$

B.  $(-2, 2)$

C.  $(0, 0)$

D.  $(1, 1)$

Answer:

C

viii) Point  $(-3, -3)$  lies in the Quadrant: (Mark 1)

A. I

B. III

C. II

D. IV

Answer:

B

ix) A statement involving any of the symbols  $<$ ,  $>$ ,  $\leq$ ,  $\geq$  is called: (Mark 1)

A. Equation

B. Identity

C. Inequality

D. Linear Equation

Answer:

C

x) What should be added to Complete the square of  $x^4+64$  \_\_\_\_\_:

(Mark 1)

A.  $8x^2$

B.  $-8x^2$

C.  $16x^2$

D.  $4x^2$

Answer:

C

xi) The factors of  $a^4 - 4b^4$  are \_\_\_\_\_:

(Mark 1)

A.  $(a - b), (a+b), (a^2+4b^2)$

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

C.  $(a - b), (a+b), (a^2-4b^2)$

D.  $(a-2b), (a^2-4b^2)$

Answer:

B

xii)  $(3+\sqrt{2})(3-\sqrt{2})$  is equal to \_\_\_\_\_:

(Mark 1)

A. 7

B. -7

C. -1

D. 1

Answer:

A

xiii)  $\log p - \log q$  is same as \_\_\_\_\_:

(Mark 1)

A.  $\log(q/p)$

B.  $\log(p - q)$

C.  $\log p / \log q$

D.  $\log (p/q)$

Answer:

D

xiv) Real part of  $2ab(i + i^2)$  is \_\_\_\_\_:

(Mark 1)

A.  $2ab$

B.  $-2ab$

C.  $2abi$

D.  $-2abi$

Answer:

D

xv) Product of  $\begin{bmatrix} x & y \end{bmatrix} \begin{bmatrix} 2 \\ -1 \end{bmatrix}$  is equal to \_\_\_\_\_: (Mark 1)

A.  $[2x+y]$

B.  $[x-2y]$

C.  $[2x-y]$

D.  $[x+2y]$

Answer:

C

Q.2 i) Define Scalar Matrix with example. (Marks 2)

Q.2 ii) If  $\begin{bmatrix} a+3 & 4 \\ 6 & b-1 \end{bmatrix} = \begin{bmatrix} -3 & 4 \\ 6 & 2 \end{bmatrix}$ , then find “a” and “b”. (Marks 2)

Q.2 iii) Simplify:  $\sqrt[4]{81y^{-12}x^{-8}}$  (Marks 2)

Q.2 iv) Simplify in the form of  $a+bi$ . (Marks 2)  
 $(-7+3i)(-3+2i)$

Q.2 v) Express in Ordinary Notation.  $9.018 \times 10^{-6}$  (Marks 2)

Q.2 vi) Find the value of “x”, when  $\log_2 x = 5$  (Marks 2)

Q.2 vii) Reduce to the lowest form.  $\frac{(x+y)^2 - 4xy}{(x-y)^2}$  (Marks 2)

Q.2 viii) Simplify.  $\frac{\sqrt{18}}{\sqrt{3}\sqrt{2}}$  (Marks 2)

Q.2 ix) Factorize.  $x^2 + 5x - 36$  (Marks 2)

Q.3 i) Find L.C.M of given Expression. (Marks 2)

$$39x^7y^3z, 91x^5y^6z^7$$

Q.3 ii) Solve for 'x':  $\frac{1}{2}|3x+2| - 4 = 11$  (Marks 2)

Q.3 iii) Solve the equation.  $\sqrt{5x-7} - \sqrt{x+10} = 0$  (Marks 2)

Q.3 iv) Define The Cartesian Plane. (Marks 2)

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

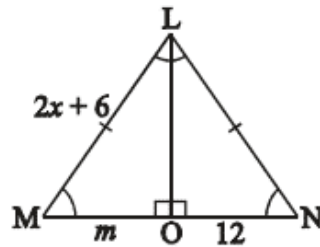
Q.3 vi) Find the distance of the given pair of points. A(-8, 1), B(6, 1). (Marks 2)

Q.3 vii) Find the Midpoint of the lines Segment joining each other of the given a pair of points. A(9, 2), B(7, 2) (Marks 2)

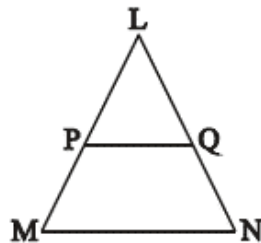
Q.3 viii) Define the H.S Postulate. (Marks 2)

Q.3 ix) One Angle of a Parallelogram is  $130^\circ$ . Find the measure of its remaining angles. (Marks 2)

Q.4 i) In the given Congruent Triangles LMO and LNO, find the unknown "x" and "m". (Marks 2)



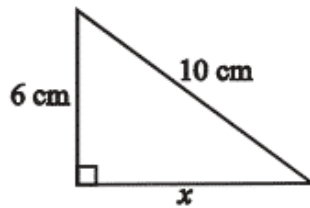
Q.4 ii) In Triangle LMN shown in figure  $\overline{MN} \parallel \overline{PQ}$  if  $m\overline{LM} = 5\text{cm}$ ,  $m\overline{LP} = 2.5\text{ cm}$ ,  $m\overline{LQ} = 2.3\text{ cm}$  then find  $m\overline{LN}$  (Marks 2)



**Q.4 iii) If 10cm, 6cm and 8cm are the lengths of a triangle then verify that sum of measure of two sides if a Triangle is greater than the third. (Marks 2)**

**Q.4 iv) Verify that the Triangle having the following measures of the sides is Right angled. (Marks 2)**  
**a=9cm, b=12cm and c=15cm**

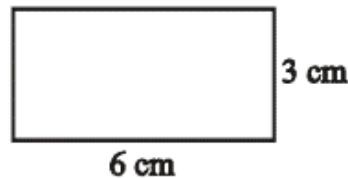
**Q.4 v) Find the unknown value of 'x' in the given figure. (Marks 2)**



**Q.4 vi) Define the Interior of a Triangle. (Marks 2)**

**Q.4 vii) Define Altitude of a Triangle. (Marks 2)**

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



**Q.4 ix) Construct a Triangle ABC in which  $\overline{mAB} = 3\text{cm}$ ,  $\overline{mAC} = 3.2\text{cm}$ ,  $m\angle A = 45^\circ$ . (Marks 2)**

**Q.5 a) Solve the system of linear equations by using Cramer's Rule.**

$$4x + 2y = 8 \quad \text{(Marks 2)}$$

$$3x - y = -1$$

**Q.5 b) If  $Z = \frac{4-3i}{2+4i}$  then calculate  $Z - \overline{Z}$ . (Marks 2)**

**Q.6 a) Simplify with the help of the Log table. (Marks 2)**

$$\frac{(8.97)^3 \times (3.95)^2}{\sqrt[3]{15.37}}$$

**Q.6 b) If  $a^2 + b^2 + c^2 = 43$  and  $ab + bc + ca = 3$ , then find the value of  $a + b + c$ . (Marks 2)**

**Q.7 a) Factorize by Factor Theorem. (Marks 4)**

$$x^3 - 4x^2 + x + 6$$

**Q.7 b) Find the square root by using Division Method. (Marks 4)**

$$4 + 25x^2 - 12x - 24x^3 + 16x^4$$

**Q.8 a) Solve the equation.  $\frac{2}{3}x - \frac{1}{2}x = x + \frac{1}{6}$  (Marks 4)**

**Q.8 b) Construct Triangle PQR and draw its Altitudes. (Marks 4)**

$$m\overline{PQ} = 6\text{cm}, m\overline{QR} = 4.5\text{cm}, m\overline{PR} = 5.5\text{cm}$$

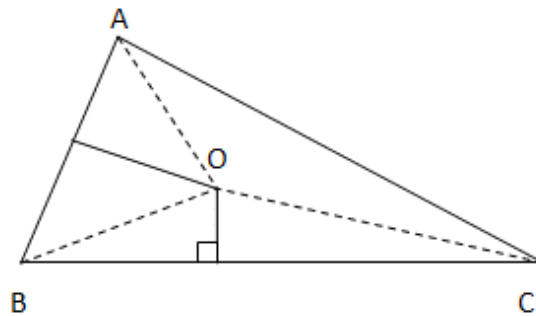
**Q.9 Prove that the right bisectors of the sides of a triangle are concurrent. (Marks 4)**

**Given:**

$\triangle ABC$

**To prove:**

The right bisectors of  $\overline{AB}$ ,  $\overline{BC}$  and  $\overline{CA}$  are concurrent.



**Construction:**

Draw the right bisectors of  $\overline{AB}$  and  $\overline{BC}$  which intersect at point O. Join O to A, B and C.