

FAISALABAD BOARD

GRADE 9

Mathematics

2019 GROUP 1

Lesson 1 of 38

Section-A (MCQs)

i) Midpoint of the points (2,2) and (0,0) is:- (Mark 1)

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

Answer:

- A. (1,1)

ii) Three points are said to be _____ if they lie on same line. (Mark 1)

- A. Collinear
- B. Non-collinear
- C. Equal
- D. Unequal

Answer:

- A. Collinear

iii) Diagonal of a parallelogram divides the parallelogram into _____ congruent triangles. (Mark 1)

- A. 4
- B. 5
- C. 3
- D. 2

Answer:

- D. 2

iv) The bisectors of the angles of a triangle are:- (Mark 1)

- A. Parallel
- B. Perpendicular

- C. Congruent
- D. Concurrent

Answer:

D. Concurrent

v) Proportion is defined as the equality of _____ ratios. (Mark 1)

- A. 3
- B. 4
- C. 2
- D. 6

Answer:

C. 2

vi) (Mark 1)

- A. 9 cm
- B. 18 cm^2
- C. 9 cm^2
- D. 18 cm^3

Answer:

B. 18 cm^2

vii) Triangles having two sides congruent is called: (Mark 1)

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

Answer:

A. Isosceles

viii) The order of matrix $\begin{bmatrix} 2 & 1 \end{bmatrix}$ is: (Mark 1)

- A. 2-by-1
- B. 1-by-2
- C. 1-by-1
- D. 2-by-2

Answer:

B. 1-by-2

ix) Write $4^{2/3}$ with radical sign: (Mark 1)

- A. $\sqrt[3]{4^2}$
- B. $\sqrt{4^3}$
- C. $\sqrt[2]{4^3}$

D. $\sqrt{4^6}$

Answer:

A. $\sqrt[3]{4^2}$

x) The logarithm of unity to any base is:

(Mark 1)

A. 0

B. 10

C. e

D. 100

Answer:

A. 0

xi) $a^3+b^3=$

(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:

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

xii) The 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. $(x-1)(3x+2)$

xiii) H.C.F of $x-2$ and x^2+x-6 is:

(Mark 1)

A. x^2+x-6

B. $x+3$

C. $x-2$

D. $x+2$

Answer:

C. $x-2$

xiv) $x=$ _____ is a solution of inequality $-2 < x < 3/2$

(Mark 1)

A. -5

B. 3

C. 0

D. $3/2$

Answer:

C. 0

xv) Point (2,-3) lies in quadrant:

(Mark 1)

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

Answer:

D. IV

Q.2 i) Find the values of a, b,c and d which satisfy the matrix equation:

(Marks 2)

$$\begin{bmatrix} a + c & a + 2b \\ c - 1 & 4d - 6 \end{bmatrix} = \begin{bmatrix} 0 & -7 \\ 3 & 2d \end{bmatrix}$$

Q.2 ii)

(Marks 2)

. If $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$ then verify $(A^t)^t = A$

Q.2 iii) Simplify and write in the form a+bi: $-2/1+i$

(Marks 2)

Q.2 iv) Simplify: $(2x^5y^4)(-8x^3y^2)$

(Marks 2)

Q.2 v) Find the value of x when: $\log_4 256 = x$

(Marks 2)

Q.2 vi) Find the value of x when: $\log x = 2.4543$

(Marks 2)

Q.2 vii) Simplify: $\left(\sqrt{2} + \frac{1}{\sqrt{3}}\right)\left(\sqrt{2} - \frac{1}{\sqrt{3}}\right)$ (Marks 2)

Q.2 viii)

(Marks 2)

Reduce the rational expression in the lowest form $\frac{(x+y)^2 - 4xy}{(x-y)^2}$

Q.2 ix) Factorize: $x^3 + 3xy^2 - 2x^2y - 6y^3$

(Marks 2)

Q.3 i) Use factorization to find the square root: $4x^2 - 12x + 9$

(Marks 2)

Q.3 ii) Solve the inequality:

(Marks 2)

Q.3 iii) Define a linear inequality in one variable.

(Marks 2)

Q.3 iv)

(Marks 2)

Find the value of m and c of the line $3 - 2x + y = 0$ by expressing it in the form $y = mx + c$

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

(Marks 2)

Q.3 vi) Define right angled triangle.

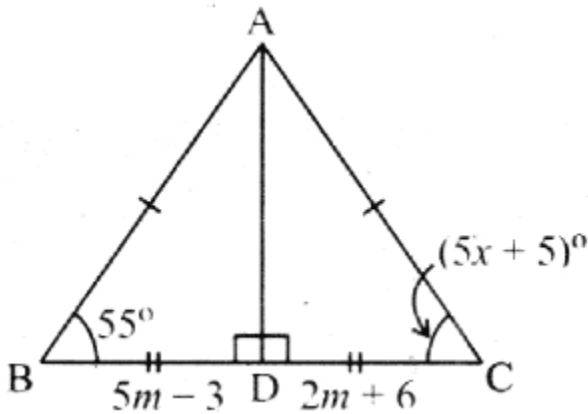
(Marks 2)

Q.3 vii) Find the midpoint between the pair of points (6,6),(4,-2).

(Marks 2)

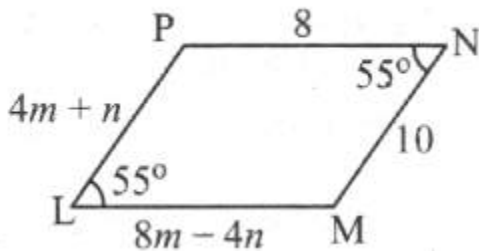
Q.3 viii) Find the value of unknown m and x for the given congruent triangles.

(Marks 2)



Q.3 ix) The given figure LMNP is a parallelogram. Find the value of m and n .

(Marks 2)



Q.4 i) Define bisector of a line segment.

(Marks 2)

Q.4 ii) If 10 cm, 6 cm, and 8 cm are the lengths of a triangle then verify that sum of measures of two sides of a triangle is greater than the third side.

(Marks 2)

Q.4 iii) Define similar triangles.

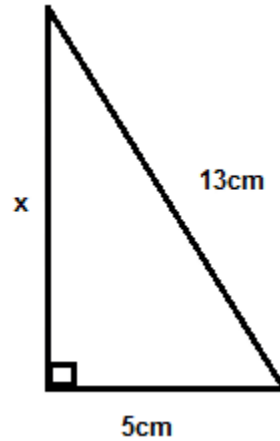
(Marks 2)

Q.4 iv) State Pythagoras Theorem.

(Marks 2)

Q.4 v) Find the value of x in the given figure.

(Marks 2)

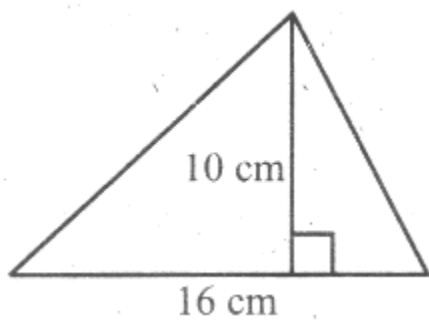


Q.4 vi) Define triangular region.

(Marks 2)

Q.4 vii) Find the area of the given figure.

(Marks 2)



Q.4 viii) Define circumcenter.

(Marks 2)

Q.4 ix)

(Marks 2)

Construct a ΔABC in which $AC = 3.2\text{cm}$, $AB = 3\text{cm}$ & $m\angle A = 45^\circ$

Q.5 a) Solve by using the Cramer's rule: $4x+2y=8; 3x-y=-1$ (Marks 4)

Q.5 b)

(Marks 4)

Simplify $\left(\frac{a^{2l}}{a^{l+m}}\right) \cdot \left(\frac{a^{2m}}{a^{m+n}}\right) \cdot \left(\frac{a^{2n}}{a^{n+l}}\right)$

Q.6 a)

(Marks 4)

Use log table to find the value of $\sqrt[3]{\frac{0.7214 \times 20.37}{60.8}}$

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

Q.7 a) Factorize: $x^2 - y^2 - 4x - 2y + 3$ (Marks 4)

Q.7 b) Find the H.C.F by division method: $x^3 + 3x^2 - 16x + 12$, $x^3 + x^2 - 10x + 8$ (Marks 4)

Q.8 a) Solve the equation: (Marks 4)

$$\frac{1}{2}\left(x - \frac{1}{6}\right) + \frac{2}{3} = \frac{5}{6} + \frac{1}{3}\left(\frac{1}{2} - 3x\right)$$

**Q.8 b) Construct the triangle PQR and draw its altitude:
 $m\overline{RP} = 3.6$ cm, $m\angle Q = 30^\circ$, $m\angle R = 105^\circ$ (Marks 4)**

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

FAISALABAD BOARD

GRADE 9

Mathematics

2019 GROUP 2

Lesson 1 of 38

Section-A (MCQs)

i) A triangle having two sides congruent is called: (Mark 1)

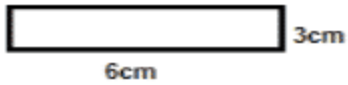
- A. Scalene
- B. Right-angled
- C. Equilateral
- D. Isosceles

Answer:

- D. Isosceles

ii) (Mark 1)

Area of the given figure is:



- A. 9 cm^2
 - B. 36 cm^2
 - C. 18 cm^2
 - D. 3 cm^2
- Answer:
C. 18 cm^2

iii) Equality of two ratios is called:

(Mark 1)

- A. Ratio
- B. Proportion
- C. Directly proportion
- D. Inversely proportion

Answer:

- B. Proportion

iv) Bisection means to divide into _____ equal parts.

(Mark 1)

- A. 3
- B. 4
- C. 5
- D. 2

Answer:

- D. 2

v) Medians of a triangle are:

(Mark 1)

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

Answer:

- B. Concurrent

vi) A ray has end points:

(Mark 1)

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

Answer:

- D. 1

vii) Midpoint 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. (0,0)

viii) Which ordered pair satisfies the equation $y=2x$? (Mark 1)

- A. (1,2)
- B. (2,1)
- C. (2,2)
- D. (0,1)

Answer:

- A. (1,2)

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

- A. Equation
- B. Identity
- C. Inequation
- D. Linear equation

Answer:

- C. Inequation

x) H.C.F of $5x^2y^2$ and $20x^3y^3$ is: (Mark 1)

- A. $5x^2y^2$
- B. $20x^3y^3$
- C. $100x^5y^5$
- D. $5xy$

Answer:

- A. $5x^2y^2$

xi) The factors of x^2-5x+6 are: (Mark 1)

- A. $x+1, x-6$
- B. $x-2, x-3$
- C. $x+6, x-1$
- D. $x+2, x+3$

Answer:

- B. $x-2, x-3$

xii) $(3+\sqrt{2})(3-\sqrt{2}) =$: (Mark 1)

- A. 7
- B. -7
- C. -1
- D. 1

Answer:

A. 7

xiii) If $a^x=n$ then:

- A. $a=\log_n x$
- B. $x=\log_n a$
- C. $x=\log_a n$
- D. $a=\log_x a$

Answer:

C. $x=\log_a n$

xiv) $(25/16)^{-1/2}$:-

(Mark 1)

- A. 5/4
- B. 4/5
- C. -5/4
- D. -4/5

Answer:

B. 4/5

xv)

(Mark 1)

Adjoint of $\begin{bmatrix} 1 & 2 \\ 0 & -1 \end{bmatrix}$ is equal to:

- 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

Q.2 i) Define null or zero matrix.

(Marks 2)

Q.2 ii) Find the determinant of matrix:

(Marks 2)

$$C = \begin{bmatrix} 3 & 2 \\ 3 & 2 \end{bmatrix}$$

Q.2 iii) Write the conjugate of -i

(Marks 2)

Q.2 iv) Simplify: $(-7+3i)(-3+2i)$ (Marks 2)

Q.2 v) Find the value of x : $\log_3 x = 4$ (Marks 2)

Q.2 vi) Find the value: $\log_3 2 \times \log_2 81$ (Marks 2)

Q.2 vii) Simplify: $\sqrt{21} \times \sqrt{7} \times \sqrt{3}$ (Marks 2)

Q.2 viii) (Marks 2)

If $x = 2 - \sqrt{3}$ find the values of $\frac{1}{x}$

Q.2 ix) Factorize: $3x^2 - 75y^2$ (Marks 2)

Q.3 i) Find the LCM: $39x^7y^3z, 91x^5y^6z^7$ (Marks 2)

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

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

Q.3 iv) (Marks 2)

Find the value of m and c of the line $3 - 2x + y = 0$ by expressing it in the form $y = mx + c$

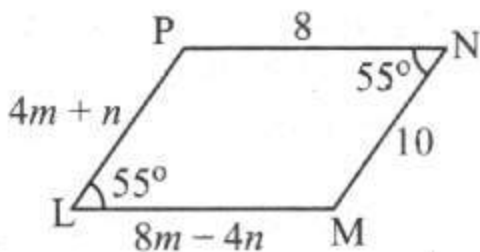
Q.3 v) Verify that the given point $(5,3)$ lies on the line $2x - y + 1 = 0$ or not. (Marks 2)

Q.3 vi) Find the distance between pair of point. $A(2,-6), B(3,-6)$ (Marks 2)

Q.3 vii) Find the midpoint between the pair of points: $A(3,-11), B(3,-4)$ (Marks 2)

Q.3 viii) State H.S postulate. (Marks 2)

Q.3 ix) The given figure LMNP is a parallelogram. Find the value of m and n . (Marks 2)



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

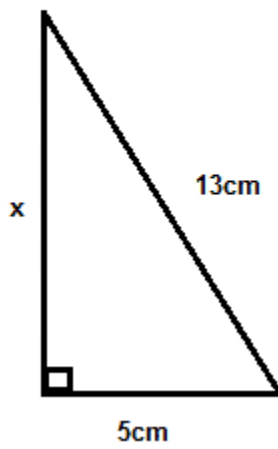
Q.4 ii) Explain whether the given length 2 cm, 4 cm, 7 cm, can be the lengths of the sides of a triangle. (Marks 2)

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

Q.4 iv) Verify that triangle having the given measures of sides is a right-angled triangle: $a = 5$ cm, $b = 12$ cm, $c = 13$ cm (Marks 2)

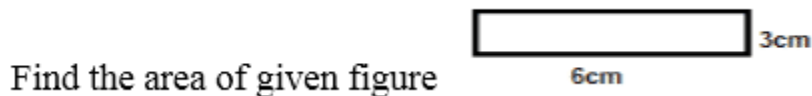
Q.4 v) (Marks 2)

Find the value of unknown x



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

Q.4 vii) (Marks 2)



Find the area of given figure

Q.4 viii) (Marks 2)

Construct a ΔABC in which $m\overline{AB} = 3.2$ cm, $m\overline{BC} = 4.2$ cm, $m\overline{CA} = 5.2$ cm

Q.4 ix) Define circumcenter. (Marks 2)

Q.5 a) Solve the system of linear equation by using Cramer's rule:
 $2x+y=3$, $6x+5y=1$ (Marks 4)

Q.5 b) (Marks 4)

Simplify $\left(\frac{a^{2l}}{a^{l+m}}\right) \cdot \left(\frac{a^{2m}}{a^{m+n}}\right) \cdot \left(\frac{a^{2n}}{a^{n+l}}\right)$

Q.6 a) Use log table to find the value: $0.002913/0.04236$ (Marks 4)

Q.6 b)

(Marks 4)

If $x + \frac{1}{x} = 8$ then find value of $x^3 + \frac{1}{x^3}$.

Q.7 a) Factorize: $81x^4 + 36x^2y^2 + 16y^4$

(Marks 4)

Q.7 b)

(Marks 4)

Find the value of k for which the expression becomes perfect square.

$$4x^4 - 12x^3 + 37x^2 - 42x + k$$

Q.8 a) Solve the equation: $3x - \frac{1}{3} - \frac{2x}{x-1} = x$

(Marks 4)

Q.8 b)

(Marks 4)

Construct the triangle PQR and draw its altitude. $m\overline{PQ} = 4.5\text{cm}$, $m\overline{QR} = 3.9\text{cm}$ & $m\angle R = 45^\circ$

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