परमाणु ऊर्जा शिक्षा संस्था , मुंबई
Atomic Energy Education Society, Mumbai
Session : 2023 – 24

Class: IX   **Subject: MATHEMATICS**
WORKSHEET NO.- 1

Name of the Chapter : INTRODUCTION TO EUCLID'S GEOMETRY
(CHAPTER – 5)

General Instructions:

1. There are 5 sections in this worksheet.
2. Section – A has 10 multiple choice questions of 1 mark each.
3. Section – B has 10 very short answer questions of 1 mark each.
4. Section – C has 10 short answer questions of 2 marks each.
5. Section – D has 5 short answer questions of 3 marks each.
6. Section – E has 5 long answer questions of 5 marks each.
7. Draw neat diagrams wherever necessary.
8. Use of calculator is not permitted.

SECTION – A (1 X 10=10)

1   A point C is called the midpoint of a line segment $\overrightarrow{AB}$ if   **[1]**

   a) AC + CB = AB

   b) C is an interior point of AB such that $\overrightarrow{AC} = \overrightarrow{CB}$

   c) C is an interior point of AB

   d) $\overrightarrow{AC} = \overrightarrow{CB}$

2   Pythagoras was a student of: **[1]**

   a) Euclid

   b) Thales

   c) Both Thales and Euclid

   d) Archimedes

3   A and B have the same weight. If they gain weight by 3 kg, then   **[1]**

   a) none of these

   b) Weight of A Weight of B

   c) Weight of A Weight of B

d) Weight of A = Weight of B

4 The number of interwoven isosceles triangles in Sriyantra (in the Atharvaveda) is: **[1]**

a) Eight

b) Eleven

c) Seven

d) Nine

5 Three or more lines intersecting at the same point are said to be **[1]**

a) None of these

b) Collinear

c) Concurrent

d) Intersecting

6 A polygon is a closed figure made up of **[1]**

a) three line segments only

b) none of these

c) three or more line segments

d) two line segments

7 Given four distinct points in a plane. How many line segments can be drawn using them when no three of them are collinear? **[1]**

a) 8

b) 4

c) 6

d) 1

8 A pyramid is a solid figure, the base of which is **[1]**

a) only a rectangle

b) any polygon

c) only a square

d) only a triangle

9   The things which are double of the same things are   **[1]**

    a) equal

    b) halves of the same thing

    c) unequal

    d) double of the same thing

10 The number of dimensions, a solid has   **[1]**

    a) 1

    b) 3

    c) 0

    d) 2

<h2 style="text-align:center">SECTION – B (1 X 10 = 10)</h2>

11 How many least number of distinct points determine a unique plane?   **[1]**
12 How many lines can pass through a single point?   **[1]**
13 Define plane.   **[1]**
14 Define : Perpendicular lines   **[1]**
15 How many least number of distinct points determine a unique line?   **[1]**
16 How many planes can be made to pass through three distinct points?   **[1]**
17 How many lines can be drawn to pass through a given point?   **[1]**
18 Name the line segments determined by the three collinear points P, Q and R.   **[1]**
19 In how many points two distinct planes can intersect?   **[1]**
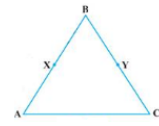20 Write the number of dimensions, that a surface contains.   **[1]**

<h2 style="text-align:center">SECTION – C</h2>

21 From the given figure, name the following: **[2]**

    1. Three lines

    2. One rectilinear figure

    3. Four concurrent points.
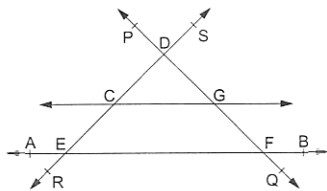
22 Ram and Ravi have the same weight. If they each gain weight by 2 kg, how will their   **[2]**

new weights be compared?
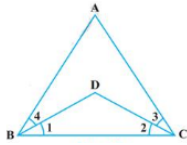
23   **[2]**

In the given figure, we have AB = BC, BX = BY. Show that AX = CY.

24 In the given figure, we have $\angle ABC = \angle ACB, \angle 4 = \angle 3$. Show that $\angle 1 = \angle 2$.   **[2]**

25 Why is Axiom 5, in the list of Euclid's axioms, considered a **universal truth** ?   **[2]**
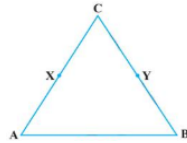
26 In how many lines two distinct planes can intersect?   **[2]**

27 Look at the Fig.Show that length AH sum of lengths of AB + BC + CD.   **[2]**

       A B C D E F G H

28 In the given figure, we have X and Y are the mid - points of AC and BC and AX =   **[2]**

CY. Show that AC = BC.

29 Two salesmen make equal sales during the month of August. In September, each   **[2]**
salesman doubles his sale of the month of August. Compare their sales in September.

30 In fig. AC = XD, C is the mid - point of AB and D is the mid - point of XY. Using a   **[2]**
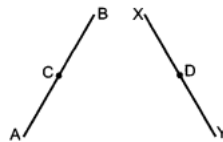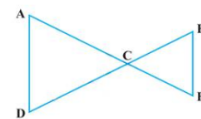
Euclid's axiom, show that AB = XY.

SECTION – D (5 X 3= 15)
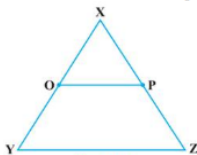
31   **[3]**

In the given figure, we have AC = DC, CB = CE. Show that AB = DE.

32 In the given figure, if $OX = \frac{1}{2}XY$, $PX = \frac{1}{2}XZ$ and OX = PX, show that XY = XZ.   **[3]**

33 Read the following statement:A square is a polygon made up of four line segments, out   **[3]**
of which, length of three line segments are equal to the length of fourth one and all its
angles are right angles. Define the terms used in this definition which you feel
necessary. Are there any undefined terms in this? Can you justify that all angles and
sides of a square are equal?

34 In Fig., if $\angle 1 = \angle 3$, $\angle 2 = \angle 4$ and $\angle 3 = \angle 4$, write the relation between $\angle 1$ and $\angle 2$ **[3]**
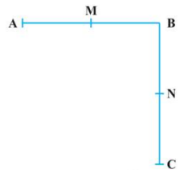
using Euclid's axiom.
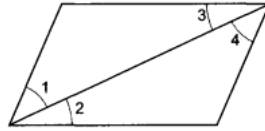
35. Prove that an equilateral triangle can be constructed on any given line segment.
[3]

SECTION – E (5 X 5 = 25)

36
1. AB = BC, M is the mid - point of AB and N is the mid - point of BC. Show that AM = NC. **[5]**

2. BM = BN, M is the mid - point of AB and N is the mid - point of BC. Show

that AB = BC.

37 In a line segment AB point C is called a mid - point of line segment AB, prove that every line segment has one and only one mid - point. **[5]**

38 In the adjoining figure, name: **[5]**

1. Two pairs of intersecting lines and their corresponding points of intersection

2. Three concurrent lines and their points of intersection

3. Three rays

4. Two line segments
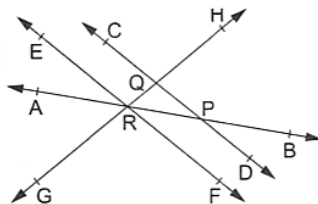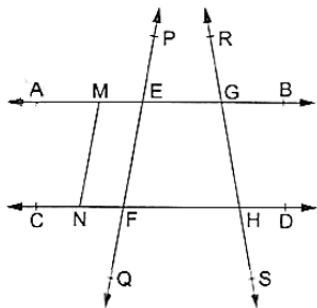

39 In Fig, name the following: **[5]**

1. Five line segments

2. Five rays

3. Four collinear points

4. Two pairs of non - intersecting line segments

40 In the adjoining figure, name: **[5]**

1. Six points

2. Five line segments

3. Four rays

4. Four lines

5. Four collinear points

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