Swotters Academy

www.swottersacademy.com

Test / Exam Name: Ch5 - Introduction To Euclid's Geometry **Standard: 9th** **Subject: Mathematics**

Student Name: ..... **Section:** ..... **Roll No.:** .....

Questions: 26 **Time: 01:45 hh:mm** **Marks: 50**

Instructions

1. Keep the timer and then start the exam. 2. Keep your work tidy. 3. Make sure to write new section on the new page and all the questions number properly. 4. For Maths – make sure to do all the rough work on the right hand side only. 5. Recheck your paper before submitting. Check your paper like you are checking your enemy's paper – find the maximum mistakes and then correct it.

SECTION-A

Q1. Thales belongs to the country: **1 Mark**

A India. **B** Egypt. **C** Greece. **D** Babylonia.

Q2. Write the correct answer in the following: **1 Mark**

The three steps from solids to points are:

A Solids - surfaces - lines - points. **B** Solids - lines - surfaces - points.
C Lines - points - surfaces - solids. **D** Lines - surfaces - points - solids.

Q3. Given four distinct points in a plane. How many line segments can be drawn using them when no three of them are collinear? **1 Mark**

A 8 **B** 4 **C** 6 **D** 1

Q4. Which of the following is a true statement? **1 Mark**

A The floor and a wall of a room are parallel planes. **B** The ceiling and a wall of a room are parallel planes.
C The floor and the ceiling of a room are parallel planes. **D** Two adjacent walls of a room are parallel planes.

Q5. Two intersecting lines cannot be parallel to the same line is stated in the form of: **1 Mark**

A A theorem. **B** A postulate. **C** A definition. **D** None of these.

Q6. A point C is said to lie between the points A and B if. **1 Mark**

A AC = CB. **B** AC + CB = AB.
C Point A, C and B are collinear. **D** None of these.

Q7. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following: **1 Mark**
Assertion (A): An angle can be compared to a pentagon.
Reasons (R): Magnitudes of the same kind can be compared.

A Both A and R are true and R is the correct explanation of A. **B** Both A and R are true but R is not the correct explanation of A.
C A is true but R is false. **D** A is false but R is true.

Q8. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following: **1 Mark**
Assertion (A): The Indus Valley Civilisation made extensive use of geometry.
Reasons (R): The brick used for construction were in ratio: 4 : 2 : 1.

A Both A and R are true and R is the correct explanation of A. **B** Both A and R are true but R is not the correct explanation of A.
C A is true but R is false. **D** A is false but R is true.

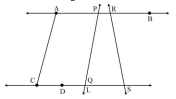
Q9. Fill in the blanks so as to make the following statements true: **1 Mark**

Two distinct _____ in a plane cannot have more than one point in common.

Q10. Fill in the blanks so as to make the following statements true: **1 Mark**

Two distinct points in a plane determine a _____ line.

Q11. In the below figure. Name the following: **1 Mark**



Five rays.

Q12. If A, B and C are three collinear points, name all the line segment determined by them. **1 Mark**

Q13. At how many points can two lines at the most intersect? **1 Mark**

Q14. How many lines can be drawn through two given point? **1 Mark**

SECTION-B

Q15. Read the following statements which are taken as axioms: **2 Marks**

1. If a transversal intersects two parallel lines, then corresponding angles are not necessarily equal.
2. If a transversal intersect two parallel lines, then alternate interior angles are equal.

Is this system of axioms consistent? Justify your answer.

Q16. In countries like USA and Canada, temperature is measured in Fahrenheit, whereas in countries like India, it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius: **2 Marks**

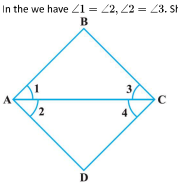
$$F = \left(\frac{9}{5}\right)C + 25$$

If the temperature is 30°C, what is the temperature in Fahrenheit?

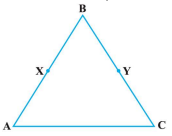
Q17. Study the following statement: **2 Marks**

"Two intersecting lines cannot be perpendicular to the same line". Check whether it is an equivalent version to the Euclid's fifth postulate.
[**Hint:** Identify the two intersecting lines l and m and the linen in the above statement]

Q18. In the we have $\angle 1 = \angle 2, \angle 2 = \angle 3$. Show that $\angle 1 = \angle = 3$ **2 Marks**



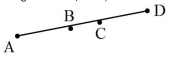
Q19. In the we have AB = BC, BX = BY. Show that AX = CY. **2 Marks**



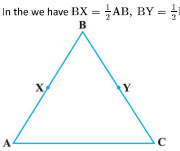
Q20. Solve the following question using appropriate Euclid's axiom: **3 Marks**

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

Q21. In Fig. if AC = BD, then prove that AB = CD. **3 Marks**



Q22. In the we have $BX = \frac{1}{3}AB$, $BY = \frac{1}{2}BC$ and AB = BC. Show that BX = BY. **3 Marks**



SECTION-C

Q23. **Read the case study given below and answer the questions that follow:** **4 Marks**

One of Euclid's most significant contributions outside of pure geometry is the Euclidean Algorithm, a method for finding the greatest common divisor (GCD) of two numbers. This algorithm is detailed in Book VII of "Elements." The process involves repeatedly subtracting the smaller number from the larger number, replacing the larger number with this difference, until one of the numbers becomes zero. The remaining number is the GCD. This algorithm is foundational in number theory and has practical applications in various fields such as cryptography and computer science. The Euclidean Algorithm exemplifies Euclid's approach to problem-solving—systematic, logical, and elegant. It has stood the test of time, remaining one of the most efficient and widely used algorithms in mathematics. Its enduring relevance underscores the lasting impact of Euclidean methods on modern mathematical practices.

1. What is the purpose of Euclid's Algorithm?
2. In which book of Euclid's "Elements" is the Euclidean Algorithm detailed?
3. Explain the basic steps of Euclid's Algorithm for finding the GCD of two numbers.

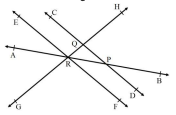
OR

3. Describe one practical application of the Euclidean Algorithm in modern fields such as cryptography or computer science.

Q24. In the adjoining figure, name: **4 Marks**

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

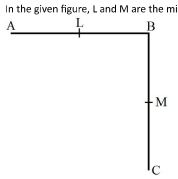
3. Three rays.
4. Two line segments.



Q25. Consider two 'postulates' given below: **4 Marks**

Given any two distinct points A and B, there exists a third point C which is in between A and B.
There exist at least three points that are not on the same line.
Do these postulates contain any undefined terms? Are these postulates consistent? Do they follow from Euclid's postulates? Explain.

Q26. In the given figure, L and M are the mid-points of AB and BC respectively. **5 Marks**



1. If AB = BC, prove that AL = MC.
2. If BL = BM, prove that AB = BC.

Hint:

1. $AB = BC \Rightarrow \frac{1}{2}AB = \frac{1}{2}BC \Rightarrow AL = MC$.
2. $BL = BM \Rightarrow 2BL = 2BM \Rightarrow AB = BC$.