**Axioms**

1. The things which are equal to the same thing are equal to one another.
2. If equals be added to the equals, the wholes are equal.
3. If equals be subtracted from equals, the remainders are equals.
4. Things which coincide with one another are equal to one another.
5. The whole is greater than the part.
6. Things which are double of the same thing are equal to one another.
7. Things which are halves of the same thing are equal to one another.

**Postulates**

1. A straight line may be drawn from any point to any other point.
2. A terminated line (line segment) can be produced indefinitely.
3. A circle may be described with any centre and any radius.
4. All right angles are equal to one another.
5. If a straight line falling on two straight lines makes the interior angles on the same side of it, taken together less than two right angles, then the the two straight lines if produced indefinitely, meet on that side on which the sum of angles is taken together less than two right angles.

Euclid used the term postulate for the assumptions that were specific to geometry and otherwise called axioms. A **theorem** is a mathematical statement whose truth has been logically established.

**Multiple Choice Questions**

**Question 1 :** Euclid's second axiom is

(A) The things which are equal to the same thing are equal to one another.

(B) If equals be added to equals, the wholes are equal.

(C) If equals be subtracted from equals, the remainders are equals.

(D) Things which coincide with one another are equal to one another.

**Solution :** Answer (B)

**Question 2 :** Euclid's fifth postulate is

(A) The whole is greater than the part.

(B) A circle may be described with any centre and any radius.

(C) All right angles are equal to one another.

(D) If a straight line falling on two straight lines makes the interior angles on the same side of it taken together less than two right angles, then the two straight lines if produced indefinitely, meet on that side on which the sum of angles is less than two right angles.

**Solution :** Answer (D)

**Question 3 :** The things which are double of the same thing are

(A) equal

(B) unequal

(C) halves of the same thing

(D) double of the same thing

**Solution :** Answer (A)

**Question 4 :** Axioms are assumed

(A) universal truths in all branches of mathematics

(B) universal truths specific to geometry

(C) theorems

(D) definitions

**Solution :** Answer (A)

**Question 5.** John is of the same age as Mohan. Ram is also of the same age as Mohan. State the Euclid's axiom that illustrates the relative ages of John and Ram

(A) First Axiom (B) Second Axiom

(C) Third Axiom (D) Fourth Axiom

**Solution :** Answer (A)

**Question 6 :** If a straight line falling on two straight lines makes the interior angles on the same side of it, whose sum is 120°, then the two straight lines, if produced indefinitely, meet on the side on which the sum of angles is

(A) less than 120° (B) greater than 120° (C) is equal to 120° (D) greater than 180°

**Solution :** Answer (A)

**Practice paper-1**

**1.** 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

**2.** The number of dimensions, a solid has :

(A) 1 (B) 2 (C) 3 (D) 0

**3.** The number of dimensions, a surface has :

(A) 1 (B) 2 (C) 3 (D) 0

**4.** The number of dimension, a point has :

(A) 0 (B) 1 (C) 2 (D) 3

**5.** Euclid divided his famous treatise "The Elements" into :

(A) 13 chapters (B) 12 chapters (C) 11 chapters (D) 9 chapters

**6.** The total number of propositions in the Elements are :

(A) 465 (B) 460 (C) 13 (D) 55

**7.** Boundaries of solids are :

(A) surfaces (B) curves (C) lines (D) points

**8.** Boundaries of surfaces are :

(A) surfaces (B) curves (C) lines (D) points

**9.** In Indus Valley Civilisation (about 300 B.C.), the bricks used for construction work were having dimensions in the ratio

(A) 1 : 3 : 4 (B) 4 : 2 : 1 (C) 4 : 4 : 1 (D) 4 : 3 : 2

**10.** A pyramid is a solid figure, the base of which is

(A) only a triangle (B) only a square

(C) only a rectangle (D) any polygon

**11.** The side faces of a pyramid are :

(A) Triangles (B) Squares (C) Polygons (D) Trapeziums

**12.** It is known that if $x + y = 10$ then $x + y + z = 10 + z$. The Euclid's axiom that illustrates this statement is :

(A) First Axiom (B) Second Axiom

(C) Third Axiom (D) Fourth Axiom

**13.** In ancient India, the shapes of altars used for house hold rituals were :

(A) Squares and circles (B) Triangles and rectangles

(C) Trapeziums and pyramids (D) Rectangles and squares

**14.** The number of interwoven isosceles triangles in Sriyantra (in the Atharvaveda) is:

(A) Seven (B) Eight (C) Nine (D) Eleven

**15.** Greek's emphasised on :

(A) Inductive reasoning (B) Deductive reasoning

(C) Both A and B (D) Practical use of geometry

**16.** In Ancient India, Altars with combination of shapes like rectangles, triangles and trapeziums were used for :

(A) Public worship (B) Household rituals

(C) Both A and B (D) None of A, B, C

**17.** Euclid belongs to the country :

(A) Babylonia (B) Egypt (C) Greece (D) India

**18.** Thales belongs to the country :

(A) Babylonia (B) Egypt (C) Greece (D) Rome

**19.** Pythagoras was a student of :

(A) Thales (B) Euclid (C) Both A and B (D) Archimedes

**20.** Which of the following needs a proof ?

(A) Theorem (B) Axiom (C) Definition (D) Postulate

**21.** Euclid stated that all right angles are equal to each other in the form of

(A) an axiom (B) a definition (C) a postulate (D) a proof

**22.** 'Lines are parallel if they do not intersect' is stated in the form of

(A) an axiom (B) a definition (C) a postulate (D) a proof

**1.** (A) **2.** (C) **3.** (B) **4.** (A) **5.** (A) **6.** (A) **7.** (A) **8.** (B) **9.** (B) **10.** (D) **11.** (A) **12.** (B) **13.** (A) **14.** (C) **15.** (B) **16.** (A) **17.** (C) **18.** (C) **19.** (A) **20.** (A) **21.** (C) **22.** (B)