CHAPTER-5

Introduction to Euclid's Geometry

QUESTION BANK

(1) Euclid belongs to the country
(a) Babylonia (b) Egypt
(c) Greece (d) India

(2) Thales belongs to the country
(a) Babylonia (b) Egypt
(c) Greece (d) India

(3) Pythagoras was a student of
(a) Thales (b) Euclid
(c) Both (a) & (b) (d) Archimedes

(4) Euclid divided has famous treatise "The Elements" into
(a) 13 chapters (b) 12 chapters
(c) 11 chapters (d) 9 chapters

(5) The total number of propositions in the Element are
(a) 465 (b) 460 (c)13 (d) 55

(6) Greeks emphasized on
(a) Inductive reasoning (b) deductive reasoning
(c) both (a) & (b) (d) practical use of geometry

(7) In Ancient India, Alters with combination of shapes like rectangles, triangles and trapeziums were used for
(a) Public worship (b) household rituals
(c) both (a) & (b) (d) none of (a), (b) & (c)

(8) In ancient India, the shapes of altars used for household rituals were
(a) squares and circles
(b) triangles and rectangles
(c) trapeziums and pyramids
(d) rectangles and squares

(9) The number of interwoven isosceles triangles in Sriyantra (in the Athavaveda) is
(a) seven (b) eight (c) nine (d) eleven

(10) In Indus Valley Civilization (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 : 1

(11) The three steps from solids to points are:

(a) solids –surface-lines-points

(b) Solids- lines – surfaces-points

(c) Lines- points-surface-solids

(d) Lines-surfaces-points-solids

(12) The number of dimensions, a solid was

(a) 1 (b) 2

(c) 3 (d) 0

(13) The number of dimensions, a point has

(a) 0 (b) 1

(c) 2 (d) 3

(14) The number of dimensions, a point has

(a) 0 (b) 1

(c) 2 (d) 3

(15) Boundaries of solids are

(a) surface (b) curves

(c) lines (d) points

(16) Boundaries of surfaces are

(a) surface (b) curves

(c)lines (d) points

(17) 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

(18) The side faces of a pyramid are

(a) triangle (b) squares

(c) polygons (d) trapeziums

(19) Which of the following needs a proof?

(a) theorem (b) axiom

(c) definition (d) postulate

(20) The basic fact which is taken for granted, without proof, is called

(a) theorem (b) axiom

(c) definition (d) postulate

(21) Axioms are assumed

(a) universal truths in all branches of mathematics

(b) universal truths specific to geometry

(c) theorems

(d) definitions

(22) The Greek Mathematician credited with giving the first known proof is

(a) Euclid (b) Thales

(c) Pythagoras (d) Newton

(23) 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

(24) '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

(25) 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 equal.

(d) The things which coincide with one another are equal to one another.

(16) The number of dimensions, a solid was

(a) 1 (b) 2

(c) 3 (d) 0

(26) 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

(17) The number of dimensions, a solid was

(a) 1 (b) 2 (c) 3 (d) 0

(27) The side faces of a pyramid are

(a) triangle (b) squares

(c) polygons (d) trapeziums

(28) John is of the same age as Mohan Ran 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

(29) Euclid's fifth postulate is

(a) The whole is greater than 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.

(30) If a straight line falling on two straight lines makes the interior angles on the same side of it, whose sum is 120^0, then the two straight lines, if produced indefinitely, meet on the side on which the sum of angles is

(a) less than 120^0 (b) greater than 120^0

(c) is equal to 120^0 (d) greater than 180^0

(31) 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

(32) For every line l and for every point P not lying on l, there is a unique line m passing through P and parallel to l. The Euclid's postulate which is equivalent version of this 'Playfair's Axiom' is

(a) first postulate (b) second postulate

(c) third postulate (d) fifth postulate

(33) _________ are the basic facts which are taken for granted without any proof.

(34) _________ are the axioms that are specific to geometry.

(35) ___________are statements which are proved through logical reasoning on the basis of previously proved results and axioms.

(36) Things which are equal to the same things are __________to one another.

(37) If equals are added to equals, the wholes are ________.

(38) Things which coincide with one another are ___________to one another.

(39) The whole is _________ than the part.

(40) Two distinct points in a plane determine a __________line.

(41) A line segment has ____________ end points.

(42) A line segment AB when extended in one direction is called a ______.

(43) Two distinct __________ in a plane cannot have more than one point in common.

(44) In geometry, there are __________ undefined terms, namely __________, __________ and __________.

(45) Concurrent lines pass through a __________ point.

(46) Rectilinear figure is formed by __________.

(47) A straight line separates a plane into __________ parts, namely the two __________ and the __________ itself.

(48) A pyramid is a solid figure, the base of which is any __________.

(49) The side faces of a pyramid are __________.

(50) Pythagoras was a student __________.

(51) Given a line and a point, not on the line, there is one and only one __________ which passes through the given point and is __________ to the given line.

(52) The number of lines which can drawnthrough three non-collinear point is __________.

(53) The whole is _________ than the part.

(54) Two distinct points in a plane determine a __________line.

(55) The whole is _________ than the part.

(56) Concurrent lines pass through a __________ point.

(57) Two distinct points in a plane determine a __________line.

(58) State the fifth postulate of Euclid.

(59) Things which are equal to the same things are __________to one another.

(60) There are given five distinct points and no three of them are collinear. What is the number of lines that can be drawn through them?

(61) How many lines can be drawn through a given point?

(62) In how many points two district lines can intersect?

(63) In how many lines two distinct planes can intersect?

(64) How many lines can be drawn through two given points?

(65) Given three collinear points A, B and C. Name all the line segments they determine.

(66) If B lies between A and C and AC=10, BC=6, What is AB^2?

(67) What is determined by two distinct points?

(68) Two intersecting lines cannot be perpendicular to the same line. Check whether it is an equivalent version to the Euclid's fifth postulate.

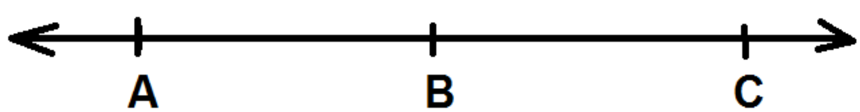
(69) Ram and Ravi have the same weight. If they each gain weight by 2 kg, how will their new weights be compared?

(70) Solve the equation a– 15 =25 and state which axiom do you use here.

(71) It is known that x + y =10 and that x = z. Show that z + y = 10.

(72) Two salesman 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.

(73) If A,B and C are three points on a line, and B lies between A and C (Figure), then prove that, AB + BC = AC

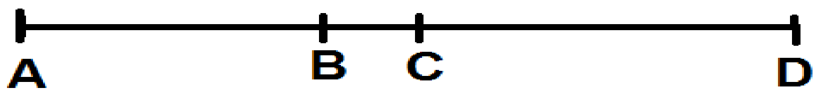


(74) If a point C lies between two points A and B such that AC = BC, then prove that AC = $\frac{1}{2}$ AB.

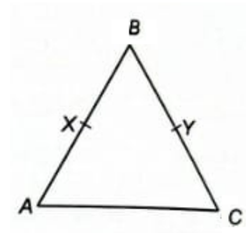
(75) Prove that every line segment has one and only one mid-point.

(76) What is determined by two distinct points?

(77) In figure, if AC= BD, then prove that AB = CD.

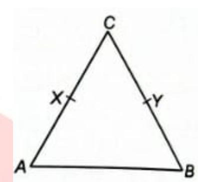


(78) In the figure, we have AB=BC, BX = BY. Show that AX =CY.

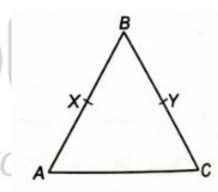


(79) How many planes can be made to pass through three distinct points?

(80) In the figure, we have X and Y as the mid –points of AC and BC and AX=CY. Show that AC = BC.

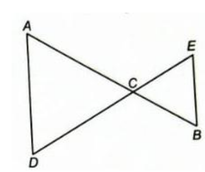


(81) In the figure, BX = $\frac{1}{2}$ AB; BY = $\frac{1}{2}$ BC and AB= BC. Show that BX=BY.

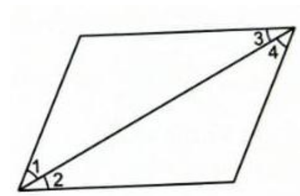


(82) Prove that an equilateral triangle can be constructed on any given line segment.

(83) In figure, we have AC = DC, CB=CE. Show that AB=DE.

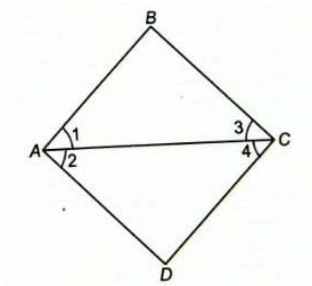


(84) In figure, if ∠1=∠3, ∠2=∠4 and ∠3=∠4, write the relation between ∠1 and ∠2 using a Euclid's axiom.

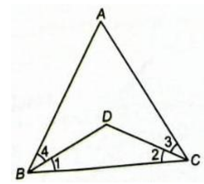


(85) If a point C lies between two points A and B such that AC = BC, then prove that AC = $\frac{1}{2}$ AB.

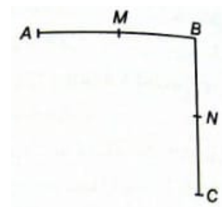
(86) In figure, we have ∠1=∠2, ∠2=∠3. Show that ∠1=∠3



(87) In figure, we have ∠ABC = ∠ACB, ∠3=∠4. Show that ∠1=∠2.



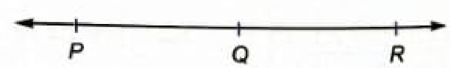
(88) In figure:



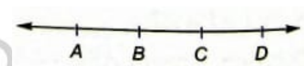
(i) AB = BC, M is the mid-point of AB and N is the mid-point of BC. Show that AM = NC.

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

(89) Given three collinear points P, Q and R. Name all the line segments these points determine.



(90) Given four distinct points in a pane how many lines can be drawn through them?



(91) How many planes can be made to pass through three distinct points?

(92) Solve the equation a– 15 =25 and state which axiom do you use here.

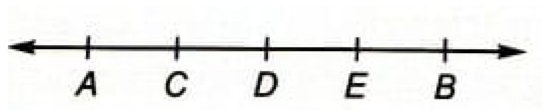
(93) Two servicemen get equal salaries in the month of June. In July, each serviceman gets an increment of ₹500 in addition to his previous salary. Compare their salaries in July.

(94) Solve the equation x – 25=40 and state which axiom do you use here.

(95) We are given that y + z =30, and that y =x. Show that x + z =30.

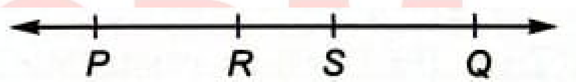
(96) If A, B and C are three points on a line and B is between A and C, then prove that AC – BC = AB.

(97) In Fig. it is given that (i) AE = CB and (ii) DE = CD. Show that D is the mid-point of AB.

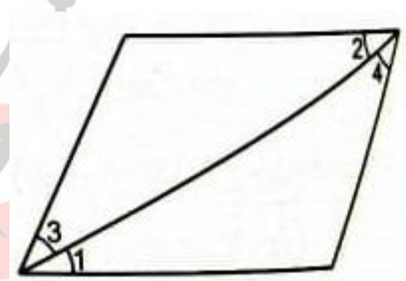


(98) In fig. if AB = CD, prove that AC=BD. State Euclid axiom, which is applicable here.

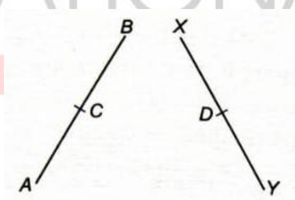
(99) In figure, if PS = RQ, then prove that PR= SQ.



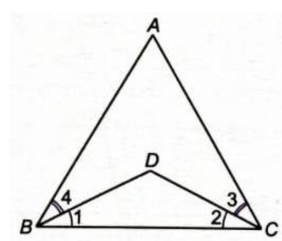
(100) In figure, it is given that ∠1= ∠4 and ∠3 = ∠2. By which Euclid's axiom, it can be show that if ∠2=∠4, then ∠1=∠3.



(101) In fig, we have : AC = XD, C is the mid-point of AB and D is the mid-point of XY. Using a Euclid's axiom, show that AB=XY.

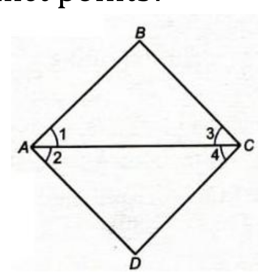


(102) In figure, we have ∠1= ∠2 and ∠3 = ∠4. Show that ∠ABC = ∠ACB.



(103) How many planes can be made to pass through three distinct points?

(104) In figure, we have ∠BAD = ∠BCD and ∠1 = ∠3.
Show that ∠2= ∠4.



(105) Consider the following statement. There exists a pair of lines that are everywhere equidistant from one another.

In this statement a direct consequence of Euclid's fifth postulate? Explain.

(106) How would you write Euclid's fifth postulate so that it would be easier to understand?

(107) Does Euclid's fifth postulate imply the existence of parallel lines? Explain.

(108) If lines AB, AC, AD and AE are parallel to line *l*, show that the points A, B, C, D, E are all collinear.

(109) *l*, *m, n* are three lines in the same plane such that *l* intersects *m* || *n*, Show that *l* intersects *n* also.

(110) *l* and *m* are intersecting lines such that *p*|| *l* and *q* ||*m.* Show that p and q also intersect.

(111) Gita and Sita have the same weight. If they each gain weight by 6 kg, how will their new weights be compared?

(112) How many planes can be made to pass through three distinct points?

(113) How many lines can be drawn through two given points?

(114) Two servicemen get equal salaries in the month of June. In July, each serviceman gets an increment of ₹900 in addition to his previous salary. Compare their salaries in July.

(115) Does Euclid's fifth postulate imply the existence of parallel lines? Explain.

(116) The Greek Mathematician credited with giving the first known proof is

(a) Euclid (b) Thales
(c) Pythagoras (d) Newton

(117) We are given that y + z =30, and that y =x. Show that x + z =30.

(118) How would you write Euclid's fifth postulate so that it would be easier to understand?

(119) If A, B and C are three points on a line and B is between A and C, then prove that AC – BC = AB.

(120) In fig. if AB = CD, prove that AC=BD. State Euclid axiom, which is applicable here.