



MATHS

BOOKS - NCERT MATHS (ENGLISH)

INTRODUCTION TO EUCLID

GEOMETRY

Exercise 5.1 Multiple Choice Questions Mcqs

1. The three steps from solids to point are

A. solids- surface - lines- points

B. solids- lines -surface- points

C. lines- points - surfaces - solids

D. lines- surface - points - solids

Answer: A



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2. The number of dimension ,a solid has

A. 1

B. 2

C. 3

D. 0

Answer: C



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3. the number of dimension, a surface has

A. 1

B. 2

C. 3

D. 0

Answer: B



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4. The number of dimension, a point has

A. 0

B. 1

C. 2

D. 3

Answer: A



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5. Euclid divided his famous treatise 'The Element' into

A. 13 chapters

B. 12 chapters

C. 11 chapters

D. 9 chapters

Answer: A



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6. The total number of propositions in 'The Element' are

A. 465

B. 460

C. 13

D. 55

Answer: A



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7. Boundaries of solids are

A. surface

B. curves

C. lines

D. points

Answer: A



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8. Boundaries of surfaces are curves.

A. surface

B. curves

C. lines

D. points

Answer: B



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9. In Indus valley Civilisation (about 3000 BC), 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

Answer: B



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

- A. only a triangle
- B. onley a square
- C. only a rectangle
- D. any polygon

Answer: B



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11. The side faces of a pyramid are

A. triangles

B. squares

C. polygons

D. trapeziums

Answer: A



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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

Answer: B



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13. 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. ractangles and squares

Answer: A



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

A. seven

B. eight

C. nine

D. eleven

Answer: C



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15. Greek's emphasised on

A. inductive reasoning

B. deductive reasoning

C. Both (a) and (b)

D. practical use of geometry

Answer: B



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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 these

Answer: A



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17. Euclid belongs to the country

A. Babylonia

B. Egypt

C. Greece

D. India

Answer: C



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18. Thales belongs to the country

A. Babylonia

B. Egypt

C. Greece

D. Rome

Answer: C



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19. Pythagoras was a student of

A. Thales

B. Euclid

C. Both (a) and (b)

D. Archimedes

Answer: A



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20. Which of the following needs a proof ?

A. Theorems

B. Axiom

C. Definition

D. Postulate

Answer: A



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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

Answer: C



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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

Answer: B



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Exercise 5 2 Very Short Answer Type Questions

1. Euclidean geometry is valid only for curved surfaces.



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2. The boundaries of the solids are curves.



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3. The edges of a surface are curves.



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4. The things which are double of the same thing are equal to one another.



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5. If a quantity B is a part of another quantity A, then A can be written as the sum of B and

some third quantity C.



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6. The statements that are proved are called axioms.



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7. "For every line L and for every point P not lying on a given line L, there exists a unique

line m passing through P and parallel to L' is known as playfair 's axiom.



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8. Two distinct intersecting lines cannot be parallel to the same line.



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9. Attempt to prove Euclid 's fifth postulate using the other postulates and axioms led to

the discovery of several other geometries.



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Exercise 5 3 Short Answer Type Questions

1. 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.



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2. It is known that $x + y = 10$ and that $x = z$.

Show that $z + y = 10$.



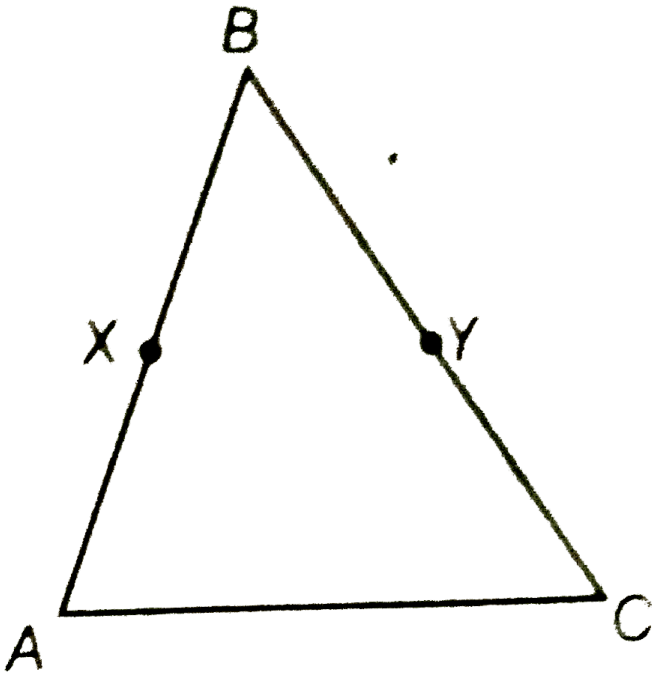
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3. Look at the adjoining figure. Show that length AH gt sum of lengths of AB + BC + CD



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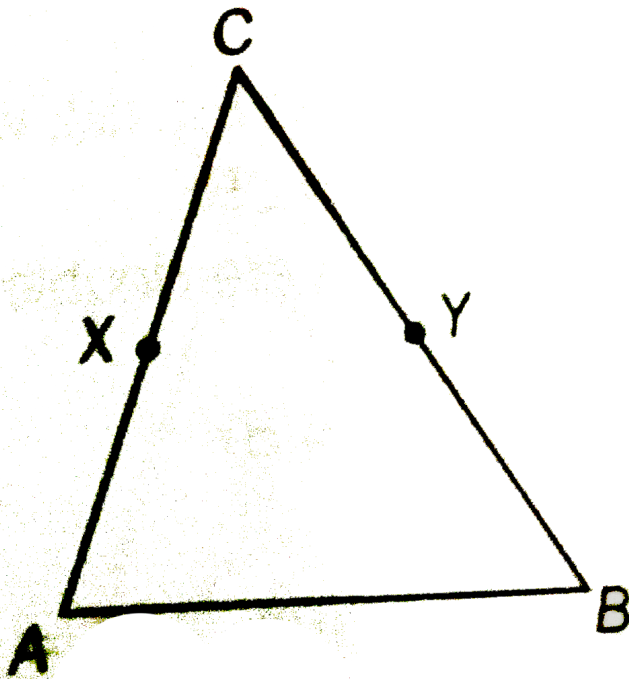
4. In the adjoining figure, if $AB = BC$ and $BX = BY$, then show that $AX = CY$



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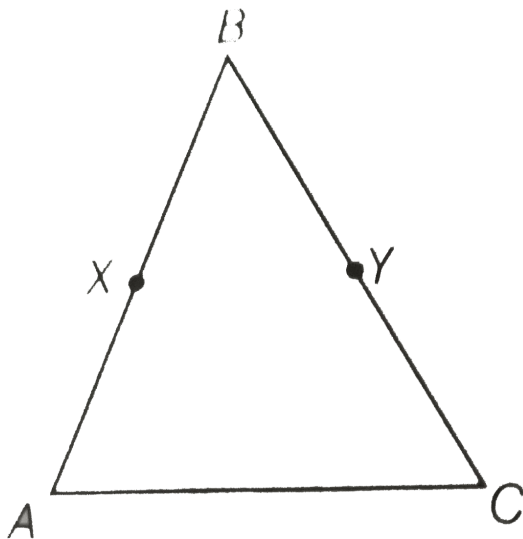
5. In the adjoining figure , we have X and Y are the mid - point of AC and BC and $AX = CY$.

Show that $AC = BC$.



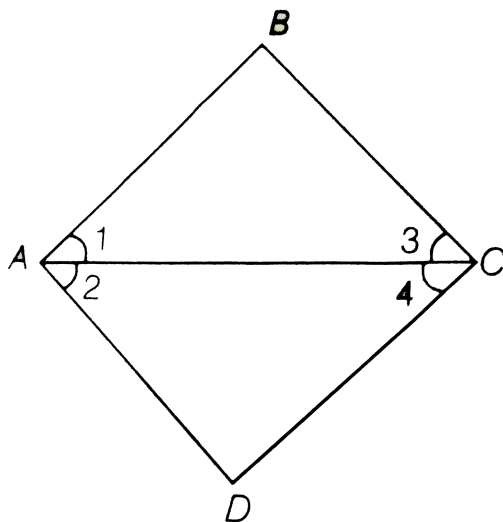
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6. In the adjoining figure, if $BX = \frac{1}{2}AB$, $BY = \frac{1}{2}BC$ and $AB = BC$, then show that $BX = BY$.



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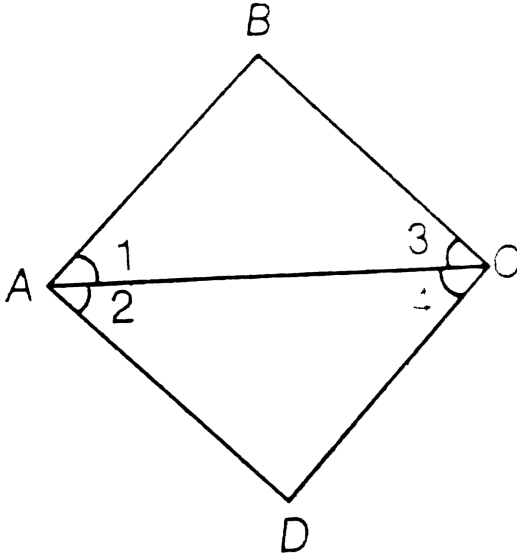
7. In the adjoining figure, we have $\angle 1 = \angle 2$ and $\angle 3 = \angle 4$. Show that $\angle 1 = \angle 3$.



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8. In the adjoining figure, we have $\angle 1 = \angle 3$ and $\angle 2 = \angle 4$. Show that

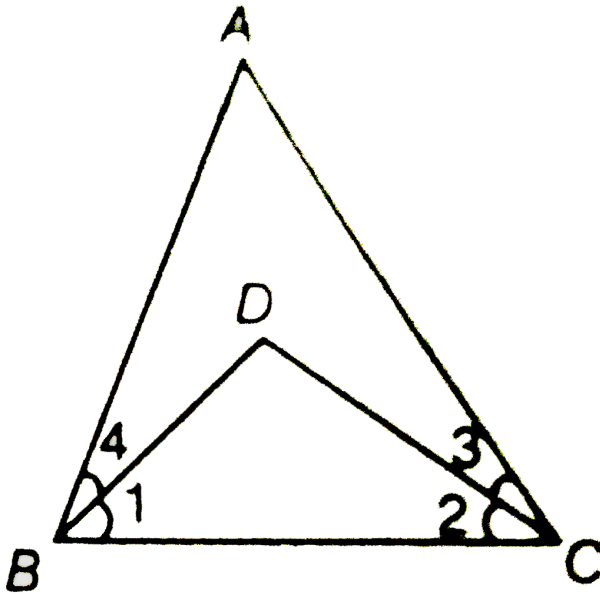
$$\angle A = \angle C.$$



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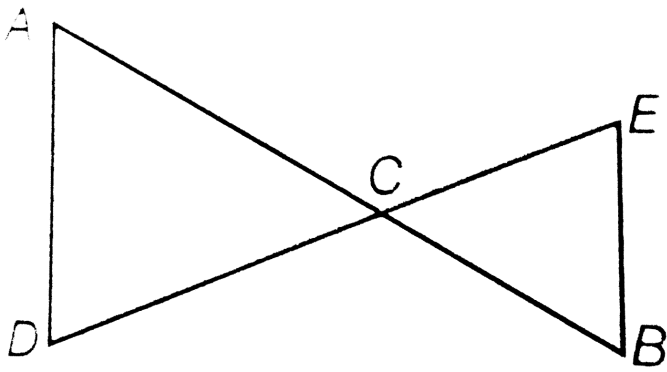
9. In the adjoining figure, we have $\angle ABC = \angle ACB$ and $\angle 3 = \angle 4$. Show that

$$BD=DC.$$



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10. In the adjoining figure , we have $AC=DC$ and $CB = CE$. Show that $AB=DE$.



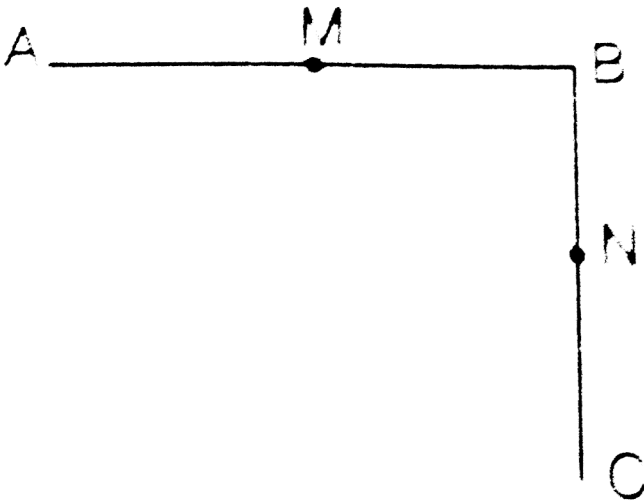
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11. In the adjoining figure,
 $OX = \frac{1}{2}XY$, $PX = \frac{1}{2}XZ$ and $OX = PX$. Show
that $XY = XZ$



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12. In the adjoining 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 that $AB=BC$.



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Exercise 5 4 Long Answer Type Questions

1. Read the following statements:

An equilateral triangle is a polygon made up of three line segments out of which two line segments are equal to the third - one and all its angles are 60° each.

Define the terms used in this definition which you feel necessary. Are there any undefined terms in this ? Can you justify that all sides and all angles are equal in a equilateral triangle.



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2. Study the following statements

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



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3. Read the following statements which are taken as axioms

(i) If a transversal intersects two parallel lines, then corresponding angles are not necessarily equal.

(ii) If a transversal intersect two parallel lines, then alternate interior angles are equal.

Is this system of axioms consistent ? Justify your answer.



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4. Read the following two statements which are taken as axiom:

(i) If two lines intersect each other , then the vertically opposite angles are not equal.

(ii) If a ray stands on a line , then the sum of two adjacent angles, so formed is equal to 180° .

Is this system of axioms consistent ? Justify your answer.



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5. Read the following axioms

(i) Things which are equal to the same thing

are equal to one another.

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

(iii) Things which are double of the same things are equal to one another.

Check whether the given system of axioms is consistent or inconsistent.



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