



MATHS

BOOKS - NAGEEN MATHS (HINGLISH)

INTRODUCTION TO EUCLID'S GEOMETRY

Solved Example

1. If lines AB, AC, AD and AE are parallel to a line l show that points A, B, C, D and E are collinear.



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2. If A, B and C are three points on a line and B lies between A and C, then prove that $AB + BC = AC$.



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3. Which of the following statements are true and which are false? Give reasons for your answers?

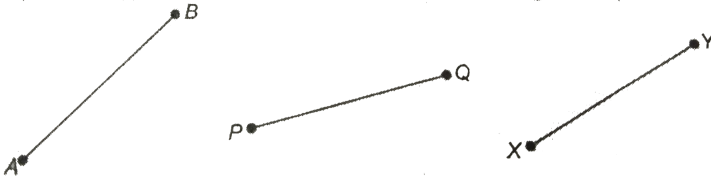
(i) Only one line can pass through a single point. (ii) There are an infinite number of lines which pass through two distinct points.

(iii) A terminated line can be produced indefinitely on both sides.

(iv) If two circles are equal, then their radii are equal.

(v) In the given figures belows, if $AB = PQ$ and

$PQ = XY$, then $AB = XY$.



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4. Give a definition for each of the following terms. Are there other terms that need to be defined first? What are they and how could you define them?

(i) Line segment (ii) Perpendicular lines (iii)

Square (iv) Radius of a circle



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5. Read the following statement :

"A square is a polygon made up of four line segments, out of which, length of 3 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 the angles and sides of a square are equal?



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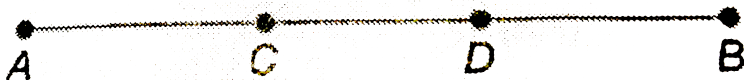
Problems From NCERT/exemplar

1. If a point C lies between two points A and B such that $AC = BC$, then prove that $AC = \frac{1}{2}AB$. Explain by drawing the figure.



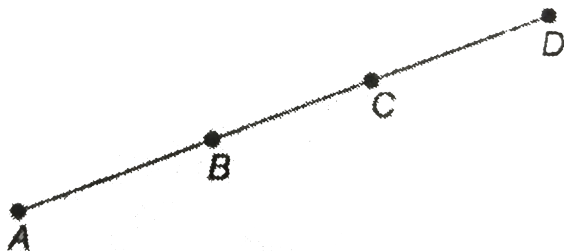
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2. In question 1, point C is called a mid-point of line segment AB. Prove that every line segment has one and only one mid-point.



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3. In the given figure below, if $AC = BD$ then prove that $AB = CD$.





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4. Prove that an equilateral triangle can be constructed on any given line segment.



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Exercise

1. Write which of the following are true and which are false?

- (i) Every ray has a finite length.
- (ii) Two lines intersect at a point.
- (iii) A terminated can be produced indefinitely on both the sides.
- (iii) A terminated line can be produced indefinitely on both the sides.
- (iv) A segment has one end point only.
- (v) If two circles are equal, then their radii are equal.
- (vi) The ray AB is same as the ray BA.



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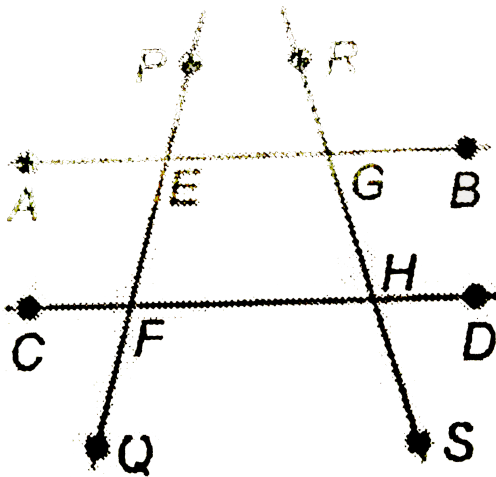
2. In the adjoining figure, name :

(i) four points

(ii) four line segments

(iii) four rays

(iv) four collinear points.



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3. Solve the equation $a - 15 = 25$ and state which axiom do you use here.



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