



MATHS

BOOKS - NAVBODH MATHS (HINGLISH)

INTRODUCTION TO EUCLID.S

GEOMETRY

Sums To Enrich Remember

1. If A, B and C are three points on a line, and B lies between A and C (see figure), then prove

that $AB + BC = AC$.



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



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3. Consider the following statement: There exists a pair of straight lines that are everywhere equidistant from one another. Is this statement a direct consequence of Euclid's fifth postulate? Explain.



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Exercise 5 1

1. 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.

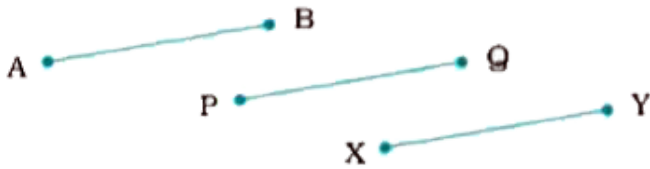
(ii) There are an infinite number of lines which pass through two distinct points.

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

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

(v) In the given figure, if $AB = PQ$ and $PQ = XY$,

then $AB = XY$.



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

(i) Parallel lines

(ii) Perpendicular lines

(iii) Line Segment

(iv) Radius of a circle

(v) Square



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3. Consider two postulates given below: (i)

Given any two distinct points A and B, there

exists a third point C which is in between A

and B. (ii) There exist at least three points that

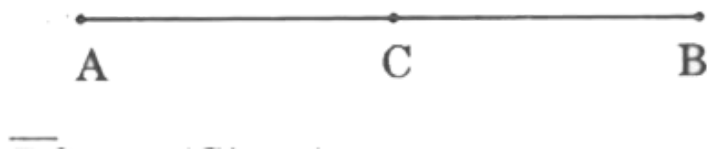
are not on the same line. Do these postulates

contain any un



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4. 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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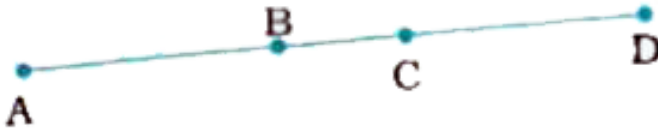
5. In Question 4, point 'C' is called a midpoint of line segment AB. Prove that every line

segment has one and only one mid point.



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



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7. Why is Axiom 5, in the list of Euclid's axioms, considered a universal truth? (Note that the question is not about the fifth postulate.)



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Exercise 5.2

1. How would you rewrite Euclid's fifth postulate so that it would be easier to understand?



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2. Does Euclid's fifth postulate imply the existence of parallel lines? Explain.



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Skill Testing Exercise

1. In the following figure, if $AB = CD$, prove that $AC = BD$. State the axioms used in proving the

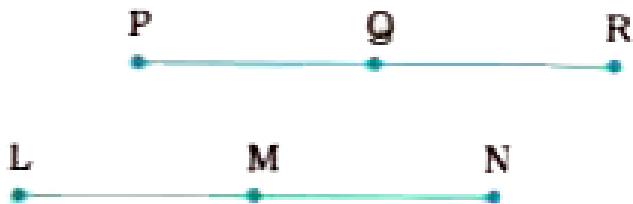
result.



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2. In the following figures, $PQ = LM$, Q is the midpoint of PR and M is the midpoint of LN .

Using the axioms, prove that $PR = LN$.



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Multiple Choice Questions

1. The number of dimensions of a plane is

A. 1

B. 2

C. 3

D. 0

Answer: B



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2. The number of line/s passing through two distinct points is

A. 1

B. 2

C. 0

D. infinitely many

Answer: A



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3. The number of line/s passing through three collinear points is

A. 1

B. 2

C. 0

D. infinitely many

Answer: A



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