



MATHS

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MATHS (GUJRATI ENGLISH)

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.

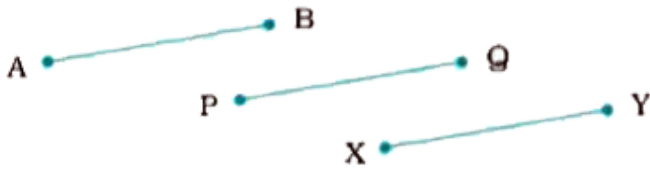
(ii) There are an infinite number of lines which pass through two distinct points.

(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. 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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3. In Q.4, point C is called a midpoint of line segment AB. Prove that every line segment has one and only one midpoint.



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



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



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Skill Testing Exercise

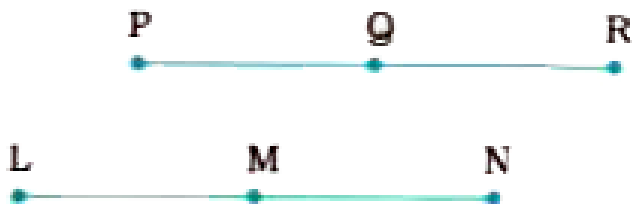
1. In the following figure, if $AB = CD$, prove that $AC = BD$. State the axioms used in proving the result.



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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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