

# Mathematics

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(Chapter – 5) (Introduction to Euclid's Geometry)(Exemplar Problems)  
(Class – IX)

## Exercise 5.4

### Question 1:

Read the following statement:

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  $60^\circ$  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.

### Answer 1:

The terms need to be defined are

- **Polygon** is a closed figure bounded by three or more line segments.
- **Line segment** is part of a line with two end points.
- **Line** undefined term.
- **Point** Undefined term.
- **Angle** in a figure is formed by two rays with one common initial point.
- **Acute angle** is an angle whose measure is between  $0^\circ$  to  $90^\circ$

Here undefined terms are *line* and *point*.

All the angles of equilateral triangle are  $60^\circ$  each (given)

Two line segments are equal to the third-one (given)

Therefore, all three sides of an equilateral triangle are equal (according to Euclid's axiom, things which are equal to the same thing are equal to one another).

