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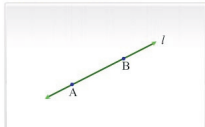
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Objective: Undefined terms of Geometry: Point, Line and Plane

The undefined terms used in geometry include the terms *point*, *line*, and *plane* which serve as starting points for building the vocabulary of our logical system.

Point Line Plane

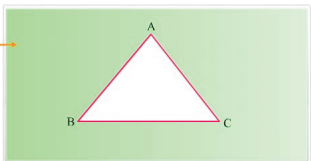
A straight path represents a *line*. The path has no thickness and is assumed to extend infinitely in each direction.
A *line* is labeled by a lowercase cursive letter or by two distinct points on it.



Objective: The Triangle

Triangle Interior of a triangle Exterior of a triangle Included angle

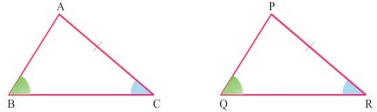
The **exterior** of a $\triangle ABC$ is the set of all points in the plane, lying neither on that $\triangle ABC$, nor in the interior of $\triangle ABC$.
Exterior of $\triangle ABC$ is shown by shading outside the triangle.



Objective: Right Triangles and Congruence

Congruence theorem The Hypotenuse-leg theorem

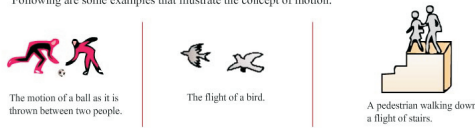
When two angles and the non-included side of one triangle are congruent to two angles and the non-included side of another triangle, the triangles are **congruent**.



Objective: Vectors and the Parallelogram Law

Scalar Vector

A **scalar** is a quantity that indicates a *magnitude* (length, distance, mass etc.).
For example, the number 5, the number $-3/4$, and the number π are scalars. Generally, any real number is considered a **scalar**.
In the study of motion it is useful to know both the speed and direction of a moving object. Following are some examples that illustrate the concept of motion:



The motion of a ball as it is thrown between two people. The flight of a bird. A pedestrian walking down a flight of stairs.

Scalars by themselves are usually inadequate to study problems involving motion. For these it is convenient to use the concept of vectors.

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Objective: Proportional segments on triangles and parallel lines

Proportional segments on a triangle | Proportional segments on parallel lines

If three parallel lines are cut by a pair of transversals, then they divide the transversals into proportional segments.

Proof:
 Draw an auxiliary line segment \overline{BE} and let P be the intersection with line m . Consider $\triangle AEB$ and $\triangle BEF$.
 From above, we have
 $\frac{AC}{CE} = \frac{BP}{PE}$ and $\frac{BP}{PE} = \frac{BD}{DF}$
 by transitive property of equality
 $\frac{AC}{CE} = \frac{BD}{DF}$

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Objective: Circle: Secant lines, and Related theorems

Definitions | Theorem 1 | Theorem 2 | Construction to find the center

- Locate three points A, B and C on a circle.
- Draw chords AB and BC as shown in the figure.
- Construct the perpendicular bisectors of the two chords.
- The intersection of these two perpendicular bisectors is the center of the circle.

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Objective: Areas of Special Figures

Square | Rectangle | Parallelogram | Triangle | Trapezoid

Area of a square: If a square has sides of length s , then its area is s^2 .
 $A = s^2$

Given : The length of the side of a square = 17 inches.

Find : The area of the square.

Solution:
 $\text{Area} = (\text{Side}) \times (\text{Side})$
 $= 17 \times 17$
 $= 289 \text{ Square inches}$

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