Chapter 7

Congruence of Triangles

Congruence of Plane Figures

• If two objects are of exactly the same shape and size, they are said to be congruent and the relation
between the two objects being congruent is called congruence.

• The method of superposition examines the congruence of plane figures, line segments and angles.
• A plane figure is any shape that can be drawn in two dimensions

• Two plane figures are congruent, if each, when superimposed on the other, covers it exactly.

Congruence of Line Segments

• If two line segments have the same (i.e., equal) length, they are congruent. Also, if two line segments are congruent, they have the same length.

Congruence of Angles

• If two angles have the same measure, they are congruent. Also, if two angles are congruent, their measures are same.

Congruence of Triangles

• Two triangles are congruent if they are copies of each other and when superposed, they cover each other exactly.

• We can tell if two triangles are congruent using 4 axioms: SAS axiom, ASA axiom, sss axiom and RHS axiom.

• SSS congruence criterion: Two triangles are congruent if three sides of one triangle are equal to the three corresponding sides of the other triangle.

• SAS congruence criterion: Two triangles are congruent if two sides and the included angle of one triangle are equal to the corresponding two sides and the included angle of the other triangle.

• RHS congruence criterion: Two right-angled triangles are congruent if the hypotenuse and a side of one triangle are equal to the hypotenuse and the corresponding side of the other triangle.

• ASA congruence criterion: Two triangles are congruent if two angles and the included side of one triangle are equal to the corresponding two angles and the included side of the other triangle.