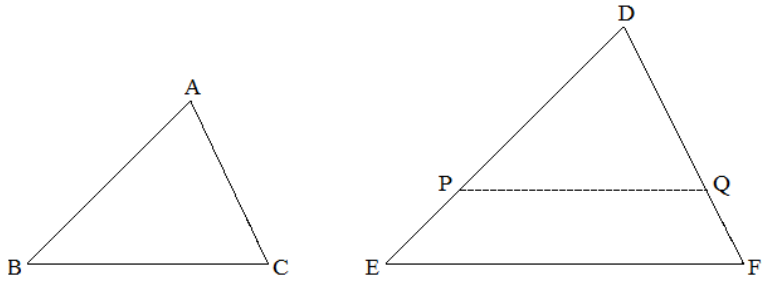
Theorem: If in two triangles, one pair of corresponding sides are proportional and the included angles are equal then the two triangles are similar.

Proof:



Given: In two triangles △ABC and △DEF, such that:

AB/DE=AC/DF and, ∠A=∠D

To prove that △ABC~△DEF,

Construction: When AB ≠ DE, AB< DE, in ⊿DEF, take ponts P and Q in sides DE and DF such that AB = DP and AC = DQ; join P__Q.

Proof: Now in triangles △ABC and △DPQ,

AB=DP(by construction)

AC=DQ(by construction)

∠A=∠D(given)

Hence, △ABC≅△DPQ [by SAS rule of congruence.]

△ABC~△DPQ _____(i)

Now,AB/DE=AC/DF(given)

∴DP/DE=DQ/DF (by construction)

∴PQ∥EF(by converse of Basic Proportionality Theorem)

∴∠DPQ=∠E(corresponding angles)

Also, since ∠D is common in △DPQ and △DEF, hence by AA similarity,

△DPQ~△DEF_____(ii)

From (i) and (ii)

∴△ABC~△DEF Proved