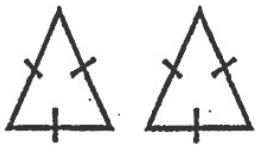
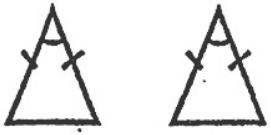
Congruency, Similarity and Polygons

Proving Congruency

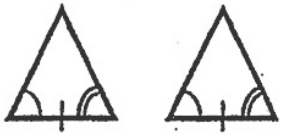
1. Triangles have all 3 sides that are of the same length (SSS)



2. Triangles have 2 sides and an included angle that is the same (SAS)



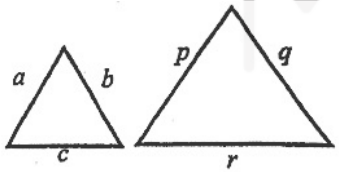
3. Triangles have 2 angles and an included side that is the same (ASA)



4. Triangles have 1 side and the hypotenus that is the same (RHS)(Only applies to right angle triangles only)

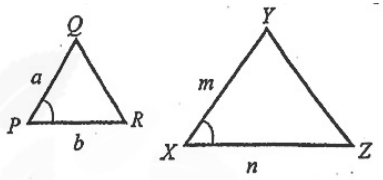
Proving Similarity

1. Triangles have 3 pairs of proportional corresponding sides (SSS)



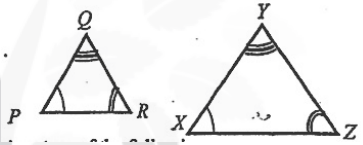
$$\frac{a}{p} = \frac{c}{r} = \frac{b}{q}$$

2. Triangles have 2 pairs of proportional corresponding sides and an identical included angle (SAS)



$\frac{a}{m} = \frac{b}{n}$ and $\measuredangle QPR = \measuredangle YXZ$

3. Triangles have 2 identical angles (AAA)



Area and Volume of Simliar Figures

Area: $\frac{A_1}{A_2} = \left(\frac{S_1}{S_2}\right)^2$ Volume: $\frac{V_1}{V_2} = \left(\frac{S_1}{S_2}\right)^3$

Polygons

Angles of any n-sided polygon

Sum of interior angles: $(n-2)\times 180°$
Sum of exterior angles: $360°$
Sum of an interior angle and the corresponding exterior angle $= 180°$

Angles of any n-sided regular polygon (all sides, interior and exterior angles are equal)

Each interior angle: $\frac{(n-2)\times 180°}{n}$
Each exterior angle: $\frac{360°}{n}$

General names of different n-sided polygons

$n =$	Name
5	Pentagon
6	Hexagon
7	Heptagon
8	Octagon
9	Nonagon
10	Decagon