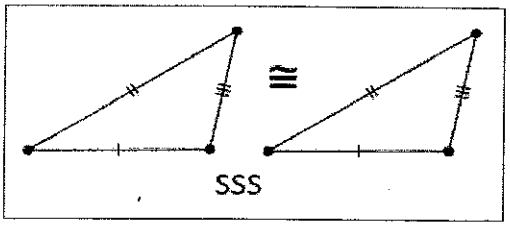
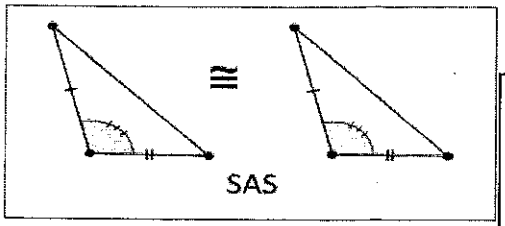
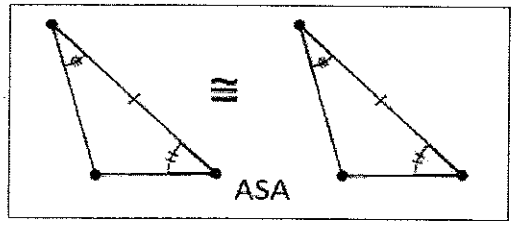
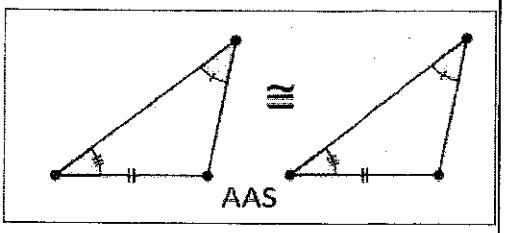
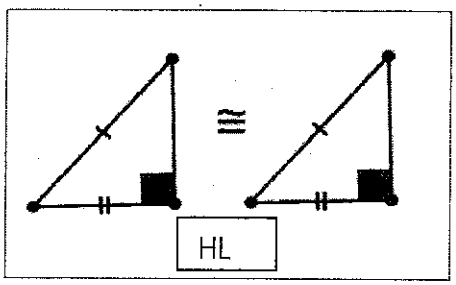
Rules for Triangle Congruency

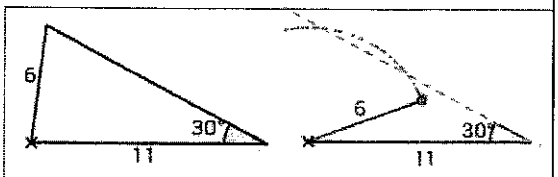

SSS


SAS


ASA


AAS


HL



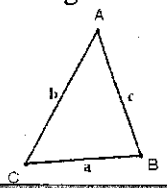
SSA is not sufficient for congruency. It may make two different triangles.

Common reasons in proofs:

- Reflexive property
- Alt int angles congruent
- Definition of midpoint
- Definition of bisector
- Vertical angles congruent
- Supps of congruent angles congruent
- CPCTC

Triangle Inequality Theorem:

The sum of the lengths of any two sides of a triangle is greater than the length of the third side.



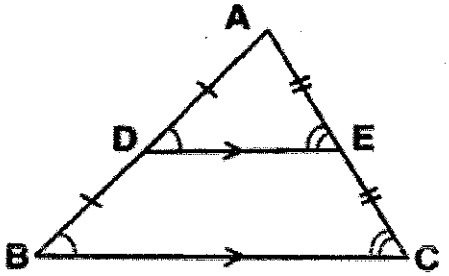
$a + b > c$

$a + c > b$

$b + c > a$

Triangle Midsegment Theorem

If a segment joins the midpoints of two sides of a triangle, then the segment is parallel to the 3rd side and half its length.

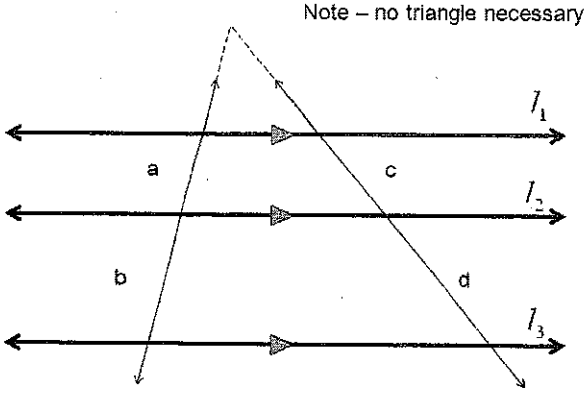


$\overline{DE} = \frac{1}{2}\overline{BC}$ or $\overline{BC} = 2(\overline{DE})$

Since the lines are parallel corresponding ∠'s will also be congruent.

Th. 8.6 If three parallel lines intersect two transversal, then they divide the transversals proportionally.

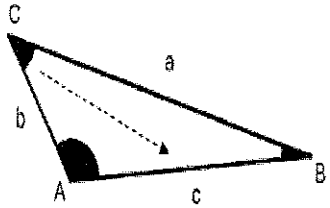
Note – no triangle necessary



$$\frac{a}{b} = \frac{c}{d}$$

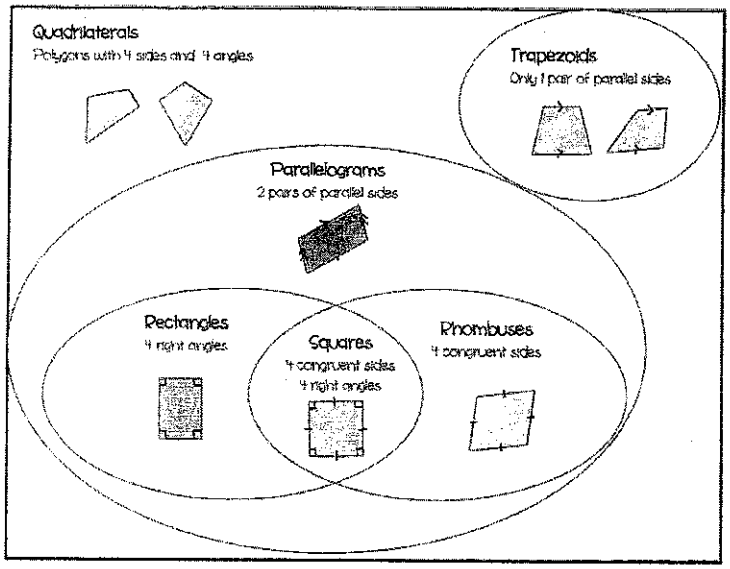
Angle-Side Relationship Theorem

In a triangle, the side opposite the larger angle is the longer side.



Ways to prove a parallelogram:

1. both pairs opp sides parallel
2. both pairs opp sides congruent
3. opposite angles congruent
4. diagonals bisect each other
5. consecutive angles supplementary
6. one pair opp sides parallel AND congruent



Type of quadrilateral	Properties
Parallelogram 	Opposite sides are equal and parallel. Opposite angles are equal.
Rhombus 	Opposite sides are parallel. All sides are equal.
Rectangle 	Opposite sides are parallel and equal. Each angle is a right angle.
Square 	Opposite sides are parallel. All sides are equal. Each angle is a right angle.
Kite 	Exactly two pairs of consecutive sides are equal.
Trapezoid 	Only one pair of opposite sides are parallel.