

Ch.6 Similar Polygons

6.1 Use Similar Polygons

- **Congruent:** All sides and All angles equal
- **Similar:** All angles equal, sides in proportion
- **Scale Factor:** A ratio of corresponding sides:
 - Reduced
- For two shapes to be similar: all ratios reduce to scale factor

- You can use similarity to find the missing sides of a polygon: make ratios of sides
- The ratio of one perimeter to another perimeter = scale factor
- If 2 shapes congruent, then there is 1:1 scale factor

- If 2 shapes similar, then any 2 corresponding lengths = scale factor
 - Corresponding lengths: altitudes, medians, midsegments

6.2 Transformations and Similarity

- **Transformations:** with congruence
 - 1. translation (slide)
 - 2. reflection (flip)
 - 3. rotation (turn)
- **Dilation:** with similarity
 - 1. stretch or shrink

6.3 Prove Two Triangles Similar by AA

AA Postulate

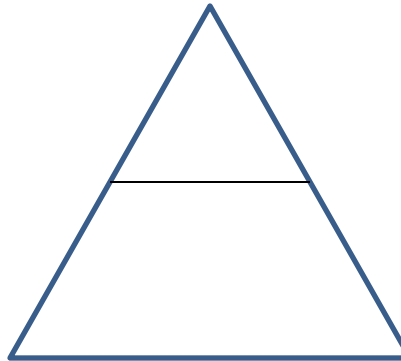
- If 2 angles of one triangle \cong 2 angles of another triangle, Then the 2 triangles are Similar.

6.4 Prove Triangles Similar by SSS and SAS

- **To Prove 2 triangles Similar:**
 - 1. Show all angles =, all sides in proportion
 - 2. Show 2 angles congruent **AA**
 - 3. Show all sides in proportion **SSS**
 - 4. Show 2 sides in proportion and included angles congruent **SAS**

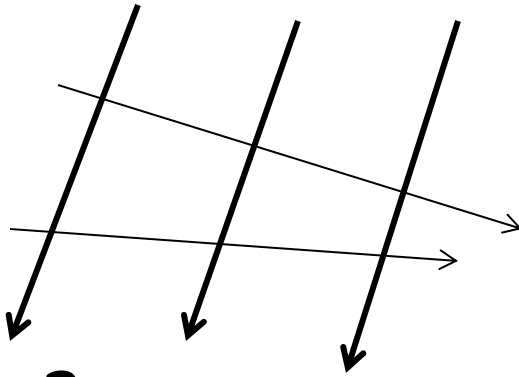
6.5 Use Proportionality Theorems

- **Theorem 1:**
 - If 2 segments parallel, then sides in proportion
 - If sides in proportion, then 2 segments parallel



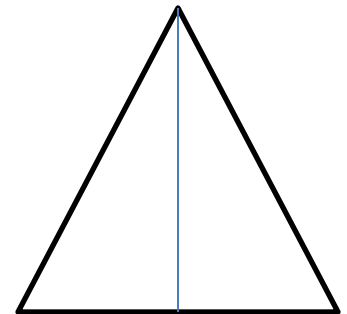
- **Theorem 2:**

- If 3 lines are parallel and cut by 2 transversals, then sides all in proportion



- **Theorem 3:**

- If ray bisects an angle in triangle, then divides the triangle proportionally



6.6 Perform Similarity Transformations

- A dilation is a type of similarity
- Center of dilation: fixed point
- Dilation with respect to origin:
 - $(x,y) \longrightarrow (kx,ky)$
 - If $0 < k < 1$ reduction
 - If $k > 1$ enlargement