Name_____

Pre-Algebra Notes

Week 6: Lessons 6.4 and 6.5

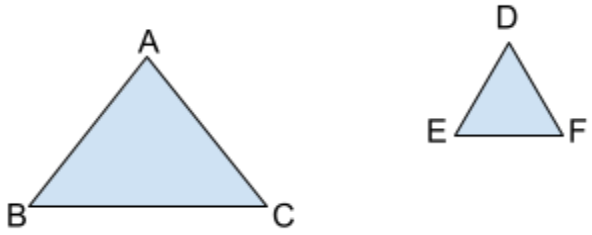
Similar and Congruent Figures (6-4)

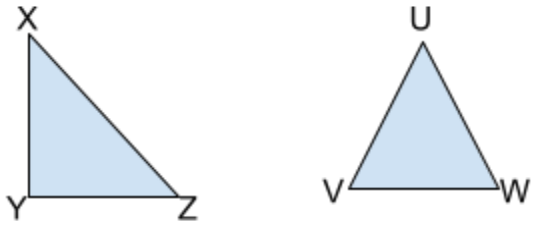
Math Vocab.

1. similar figures- two figures that have the _____ shape but _____ necessarily the _____ size

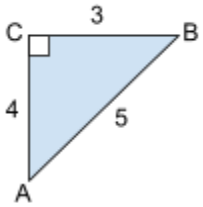
~ shows similar

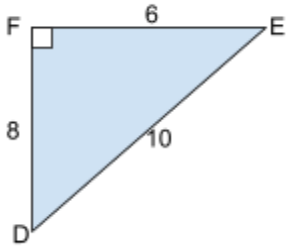
2. corresponding parts- sides or angles of a figure that have the same relative position





Properties of Similar Figures





$\Delta ABC \sim \Delta DEF$

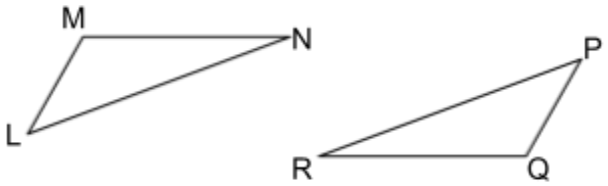
1. Corresponding Angles (congruent)

2. The ratios of the lengths of corresponding sides of similar figures are equal

Examples

1. Identifying Corresponding Parts of Similar Figures

Given $\Delta LMN \sim \Delta PQR$, name the corresponding angles and the corresponding sides



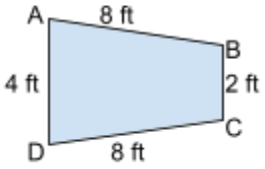
Corresponding angles:

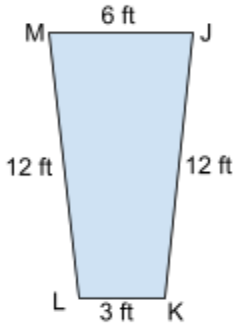
Corresponding sides:

<u>Extra Practice:</u>

2. Finding the Ratio of Corresponding Side Lengths

Given ABCD ~ JKLM, find the ratio of the lengths of corresponding sides of ABCD to JKLM

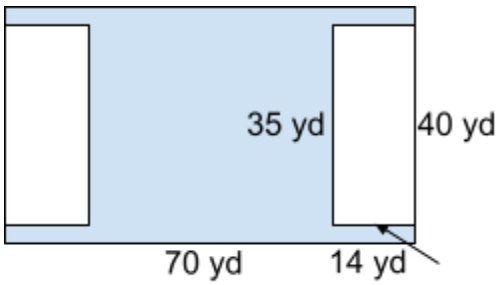




* Write a ratio comparing the lengths of a pair of corresponding sides.
Substitute the lengths of the sides and simplify.

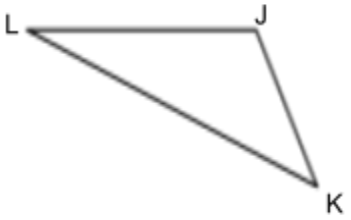
3. Checking for Similarity

A soccer field is a rectangle that is 70 yd. long and 40 yd. Wide. The penalty area of the soccer field is a rectangle that is 35 yd. long and 14 yd. Wide. Is the penalty area Similar to the field?



congruent figures- 2 figures have the same shape **and** the same size

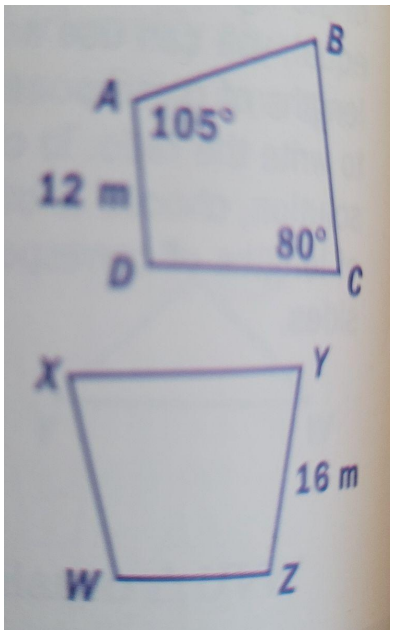
- they will have:
  - corresponding angles
  - corresponding sides
  - similar in shape



4. Finding Measures of Congruent Figures

Given that ABCD≈WXYZ, find the indicated measure

a. WZ b. m< W



Similarity and Measurement (6-5)

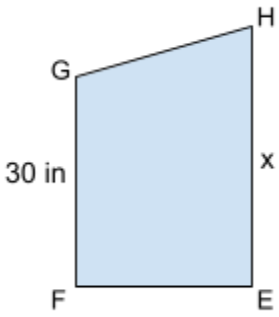
Remember: similar figures have the same shape but necessarily the same size

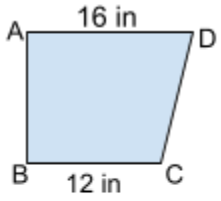
- corresponding angles are congruent
- Ratios of the lengths of corresponding sides are equal

Examples

1. Finding an Unknown Side Length in Similar Figures

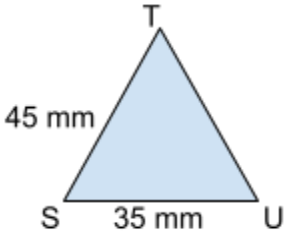
Given ABCD ~ EFGH, find EH

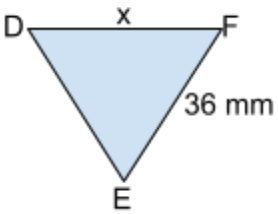




Extra Practice

Given $\Delta STU \sim \Delta DEF$, $find\ DF$

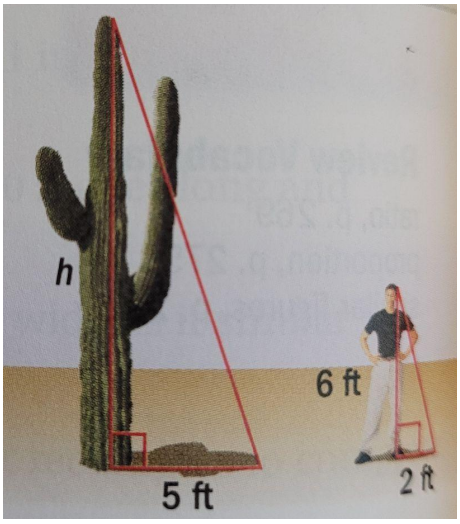




You can use similar figures to find lengths that are difficult to measure directly

2. Using Indirect Measurement

A man who is 6 feet tall is standing near a saguaro cactus. The length of the man's shadow is 2 feet. The cactus casts a shadow 5 feet long. How tall is the cactus?



3. Using Algebra and Similar Triangles

Given $\Delta ABC \sim \Delta DEC$, $find\ BE$