Triangle Similarity- Shortcut Exploration

To begin exploring Triangle Similarity, we need to start with Triangle Congruence. What were the Triangle Congruence Shortcuts that we studied?

1.   Question: If a triangle is congruent to another triangle, are the two triangles similar? Draw an example and write you scale factor (equal corresponding side length ratios).

2.   Question: If 3 angles of one triangle are congruent to 3 corresponding angles of another triangle, are the two triangles similar?

3.   Question: If 2 angles of one triangle are congruent to 2 corresponding angles of another triangle, are the two triangles similar?

AA Similarity Conjecture: If two angles of one triangle are congruent to two angles of another triangle, then_____ .

4.   Let's take a look at shortcuts AAA, ASA, and SAA. Do we have to do investigations for each of these shortcuts? Why or why not? Do these shortcuts work?

5.   To determine if two polygons are similar, what must be true of the two polygons?

Part 1:   SSS Similarity
Draw triangles: △ABC and △XYZ with lengths AB=_____ BC=_____ AC= _____ XY= _____

YZ= _____ XZ= _____

Are the side length ratios EQUAL? _____

Are the sides proportional? _____

Are the corresponding angles in your two triangles equal? _____

Are your two triangles similar? How do you know?

Inductive reasoning:
Does SSS determine that triangles are similar? _____

Part 2:   SAS Similarity

Draw the examples from the board:

Do the corresponding side lengths have equal ratios? _____

Are the sides proportional? _____

Are the corresponding angles in your two triangles equal? _____

Are your two triangles similar? How do you know?

Does SAS determine that triangles are similar? _____

Part 3:   ASS Similarity

Do the corresponding side lengths have equal ratios? _____

Are the sides proportional? _____

Are the corresponding angles in your two triangles equal? _____

Are your two triangles similar? How do you know?

Does SSA determine that triangles are similar? _____

More Similar Triangles :
Ex 1:
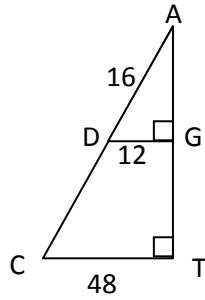


a). Explain why   .

b). What is the measurement of CD?

Indirect Measurement:
Ex 2: A flagpole that is 11 feet tall casts a 5 and a half foot shadow. At the same time of day, a nearby building casts a 10 ft, 7 in shadow. How tall is the building?

Ex 3:
Anna wants to find the height of the tallest building in her city. She stands 384 feet away from the building. There is a tree 200 feet in front of a building that is 20 feet tall. How tall is the building to the nearest foot? **SHOW ALL YOUR WORK.**
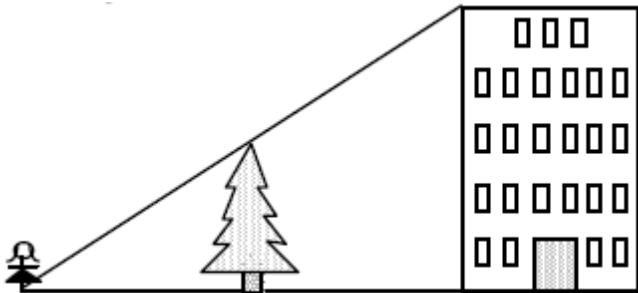
4.   Driving through the mountains, Dale has to go up and over a high mountain pass. The road has a constant incline for $7\,^3/_4$ miles to the top of the pass. Dale notices from a road sign that in the first mile, he climbed 840 ft. What is the height of the mountain pass? (5280 ft = 1 mile)

Perimeters, Areas, and Volumes of Similar Figures
Objective: To find perimeters, areas and volumes of similar figures.

Perimeter & Area
Perimeter –

_____=_____=_____

Area –

_____=_____

Volume-

_____=_____

Ex 5: **Rectangle TELA Rectangle PHON and the ratio of the areas is 1/4. Find EL.**

N _____ O   A _____ L

22m

P _____   T _____ E
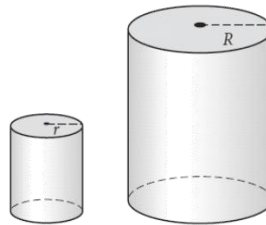   H
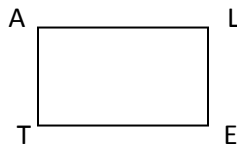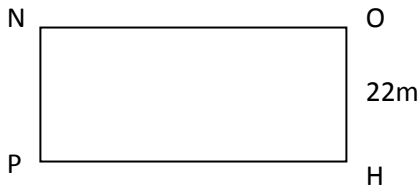
The right cylinders are similar and $r = 10$ cm.

Ex 6   Volume of large cylinder $= 64$ cm

Volume of small cylinder $= 8$ cm

$R =$ _____

R

r

Example 7:

The corresponding heights of two similar cylinders is $2:5$. What is the ratio of their volumes?

Example 8: The area ratio of a geometric solid is $9:16$, find the volume ratio.

Example 9: The volume ratio of a triangular prism (3D solid) is $512/216$. Find the area ratio.