

Geometry Proportionality

Overview:

Students will work with similar triangles by using proportions as well as congruent angles.

Background Knowledge:

Definition of similar triangles and proportion

Understanding Goals:

By the end of this lesson, students will understand:

- How to prove triangles are similar by showing that two ratios of corresponding sides are proportional, or two pairs of corresponding angles are congruent

Learning Objectives:

After completing the lesson, students will be able to:

- Prove that triangles who have all corresponding pairs of angles congruent also have proportionality of all corresponding pairs of sides.
- Prove that triangles who have proportionality of all corresponding pairs of sides. also have all corresponding pairs of angles congruent

Subject Area: Math, Grades 9-12

Connection to California Standards:

G-SRT 2. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.

Time: 54 Minutes

Materials:

Pencil, Paper, Ruler, Protractor, Graph Paper

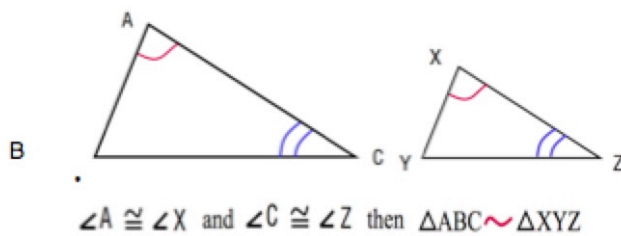
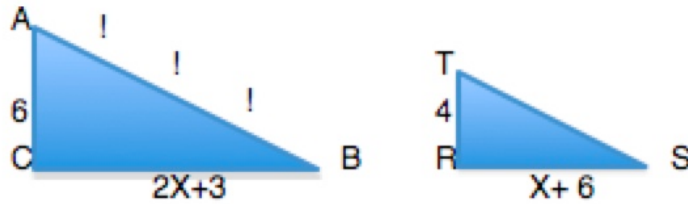
Procedure:

Warm Up

Do Now: Students are asked to draw one image along with a second, small image in equal proportion. Students can draw images of sneakers, flowers, a flag, etc., so long as the proportionality is correct between the two drawings. On the drawings, students should depict the proportions by measuring the angles, length, or width of the two images or shapes drawn.

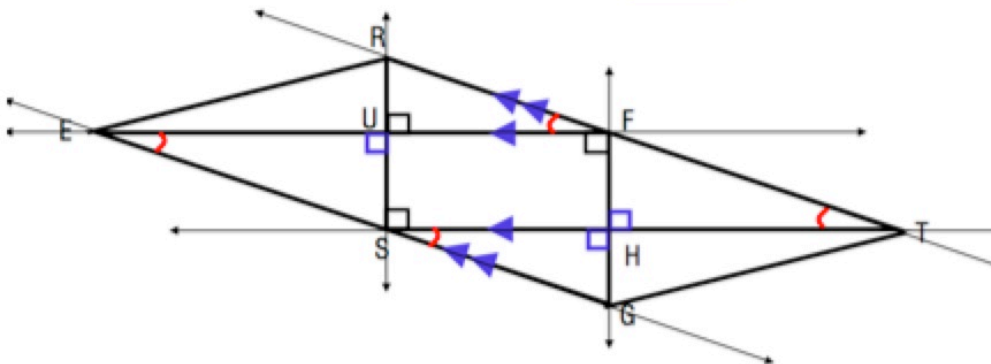
Presentation of Information

- Go over warm up.
- Example review of proportion. Cross multiplying?
- The triangles below are similar. (like their warm up drawings) Find $CB=?$ and $RS=?$



Independent Practice

If $EG = 25$, $GF = 15$, $EF = 20$, $FT = 10$, $UR = 3$, and Given $\underline{\underline{EG \parallel RT}}$. Find RF , UF , and RS .



Prove that all triangles in the figure are similar among them:

1. Two lines cut by a common perpendicular transversal are parallel.
2. A line perpendicular to one line is perpendicular to any line parallel to it.
3. Two perpendicular lines form 4 right angles.
4. Alternate interior angles are congruent.
5. Corresponding angles are congruent.