**Bridge Over Canyon:**

A bridge is needed to cross over a canyon. The dotted line segment connecting points *S* and *R* represents the bridge. The distance from point *P* to point *S* is 45 yards. The distance from point *Q* to point *S* is 130 feet. How long is the bridge?



 Carnegie Sec. Math 2

Cut out the three triangles below and arrange the triangles so they have same orientation. Are any of the triangles similar to each other? If so, which triangles are similar? Justify yourself.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

h

y

r

x

h

p

q

r

p

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**Bridge Over Canyon:**

1. Complete the following similarity statements using your triangles:



2. Write the corresponding sides of  and  as proportions:

3. Write the corresponding sides of  and  as proportions:

4. Write the corresponding sides of  and  as proportions:

**Right Triangle Altitude Similarity Theorem:**

The altitude to the hypotenuse of a right triangle forms two triangles \_\_\_\_\_\_\_\_\_\_\_ to the original right triangle.

**Vocabulary:**

**Geometric Mean:** The geometric mean between two positive numbers *a* and b is the positive number *x* such that  .

Are there any geometric means found in the proportions in #2-4? If yes, which proportions?

5. Find the length of the bridge needed to cross the canyon.