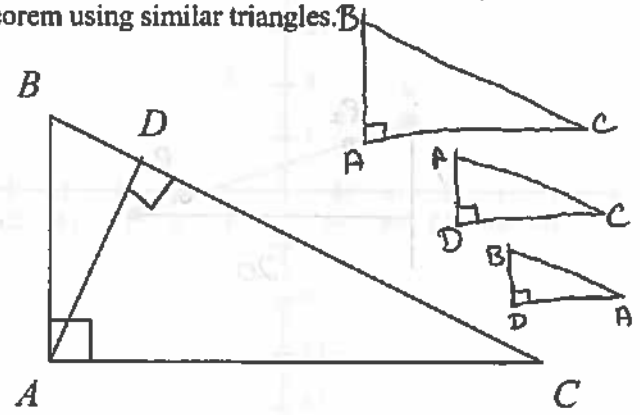
Geometry 2: Name: _____

Triangle Similarity Part 2 REVIEW H Date: _____

G-SRT.4. Learning Target: *I can prove the following theorems in narrative paragraphs, flow diagrams, in two column format, and/or using diagrams without words: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem using triangle similarity.*

1. Given the triangle below, prove the Pythagorean Theorem using similar triangles.



GIVEN: $\overline{AB} \perp \overline{AC}$, $\overline{AD} \perp \overline{BC}$

PROVE: $(AB)^2 + (AC)^2 = (BC)^2$

① $\overline{AB} \perp \overline{AC}$; $\overline{AD} \perp BC$	① GIVEN
② $\triangle ABC \sim \triangle DAC$ $\triangle ABC \sim \triangle DBA$	② AA~
③ $\frac{AC}{DC} = \frac{BC}{AC}$; $\frac{BA}{BD} = \frac{BC}{BA}$	③ SIDES OF SIMILAR TRIANGLES ARE PROPORTIONAL
④ $AA = AC \cdot DC$ $BA \cdot BA = BC \cdot BD$	④ SOLVING PROPORTIONS BY CROSS MULTIPLYING
⑤ $AC^2 + BA^2 = (BC \cdot DC) + (BC \cdot BD)$	⑤ ADDITION PROPERTY OF EQUALITY
⑥ $AC^2 + BA^2 = BC(DC + BD)$ $DC + BD = BC$ IN ORIG DIAGRAM	⑥ FACTOR OUT BC COMMON TO BOTH TERMS
⑦ $(AC)^2 + (AB)^2 = BC \cdot BC$	⑦ SUBSTITUTION OR ANGLE ADDITION POSTULATE
⑧ $AC^2 + AB^2 = BC^2$	⑧ PYTHAGOREAN THEOREM

2. A segment connects the midpoints on two sides of a triangle. What is true about this segment?

a. It is always horizontal and half the length of each side. NOT ALWAYS HORIZONTAL

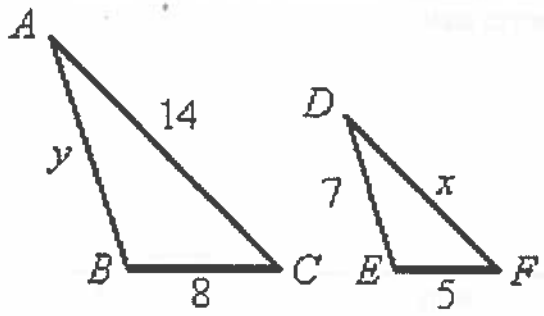
b. It is always perpendicular to the two sides it joins and forms an isosceles triangle with the portions of the sides above it. NOT ALWAYS PERPENDICULAR

c. It is always parallel to the third side and half as long as the third side. THESE ARE THE TWO PROPERTIES OF A MIDSEGMENT

d. It is always half the length of those two sides and parallel to the third. NOT ALWAYS ½ THE LENGTH OF THE TWO SIDES

G-SRT.5. Learning Target: *I can solve problems and prove relationships in geometric figures using similarity criteria.*

3. Given that $\triangle ABC \sim \triangle DEF$, solve for x and y.



SOLVE FOR x

$\frac{8}{5} = \frac{14}{x}$ $8x = 70$ $x = 8.75$

SOLVE FOR y

$\frac{8}{5} = \frac{y}{7}$ $56 = 5y$ $y = 11.2$