Geometry Regents Lomac 2015-2016 **Date** 2/1 **due** 2/2 | **Similar Triangles in Right Triangles** **6.6R**

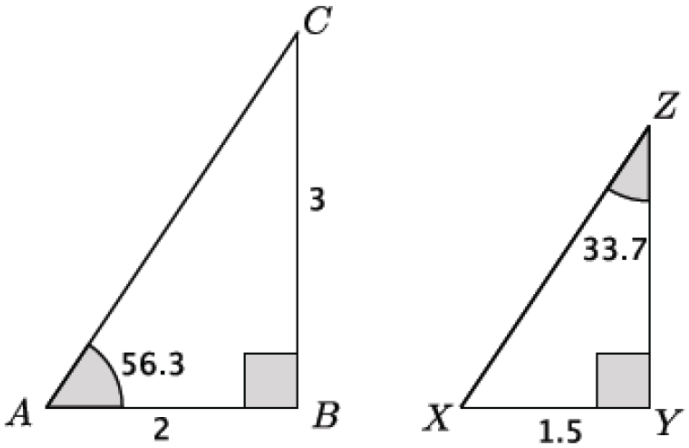
Name _____ **Per**_____

LO: I can use similarity to solve problems with altitudes in right triangles.

☐ **DO NOW** On the back of this packet

☐ (1) calculator **Similarity: Right triangles and similarity.**

☐ (a) Are the triangles at right similar? Explain.



☐ (b) Determine the unknown side lengths.

☐ (c) Explain how you found the lengths in part (b).

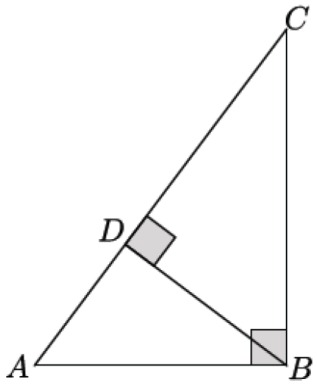
☐ (2) highlighter **Similarity: Right triangles, altitudes, and similarity**

Recall that an altitude of a triangle is a perpendicular line segment from a vertex to the line determined by the opposite side. In triangle ABC below, $\overline{BD}$ is the altitude from vertex B to the line containing $\overline{AC}$.

☐ (a) How many triangles do you see in the figure?_____

☐ (b) Mark ∠A and ∠C with 2 different marks or colors.

☐ (c) Redraw the triangles separately. Label and mark all angles as they are marked in the original diagram.



☐ (d) Are the triangles similar? Explain how you know.

☐ (e) Identify the three triangles by name – be sure to name each one in the order of the corresponding parts.

_____, _____, _____

☐ (f) Summarize what we know about the triangles formed by an altitude from the right angle of a right triangle. You may want to include diagrams.

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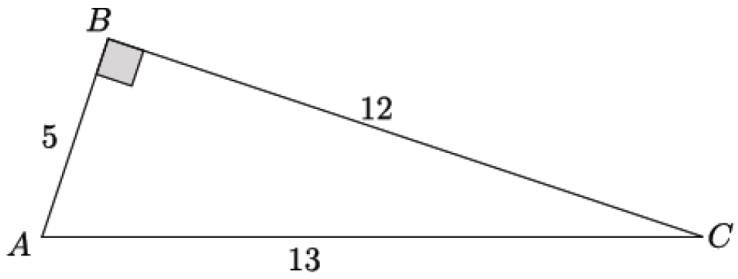
☐ (3) highlighters & calculators **Similarity: Right triangles, altitudes, and using similarity to find unknown values.**

Consider △ABC at below.

☐ (a) Draw the altitude $\overline{BD}$ from vertex B to the line containing $\overline{AC}$. Label the segment $\overline{AD}$ as x, the segment $\overline{DC}$ as y and the segment $\overline{BD}$ as z.

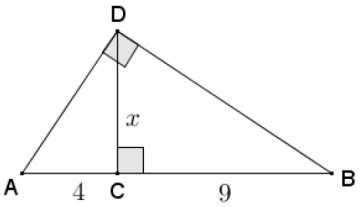
☐ (b) Find the values of x, y, and z. Redraw triangles and write and solve proportions as needed.



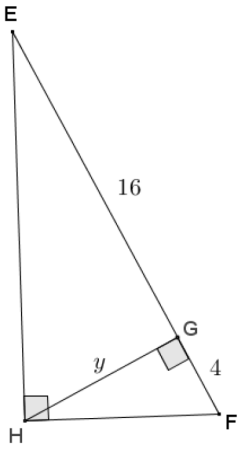
☐ (4) highlighters & calculators **Similarity: Right triangles, altitudes, and similarity patterns.**

Use similar triangles to find the length of the altitudes labeled with variables in each triangle below.

☐ (a)



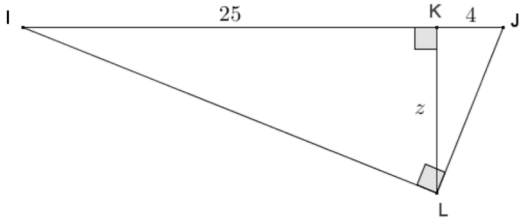
☐ (b)



☐ (4) highlighters & calculators **Similarity: Right triangles, altitudes, and similarity patterns.**

Use similar triangles to find the length of the altitudes labeled with variables in each triangle below.

☐ (c)



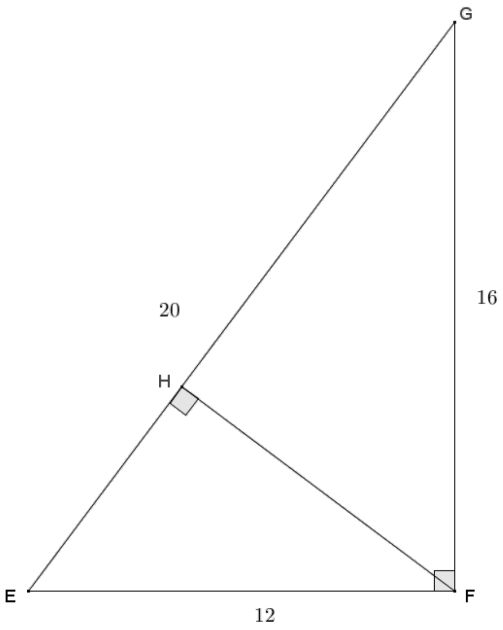
☐ (d) Describe the pattern that you see in your calculations for parts (a) through (c).

☐ (5) highlighters & calculators **Exit Ticket**

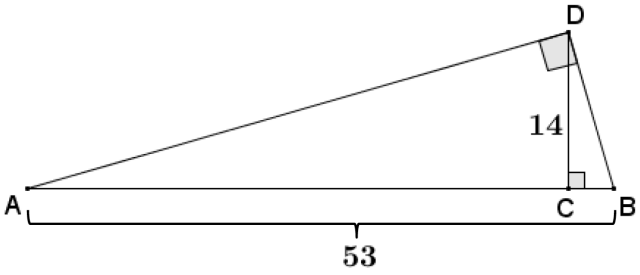
The Exit Ticket is on the last page of this packet. Do it, tear it off and turn it in.

☐ (6) highlighters & calculators **Homework:**

(1) Given right triangle EFG with altitude $\overline{FH}$ drawn to the hypotenuse, find the lengths of EH, FH, and GH.



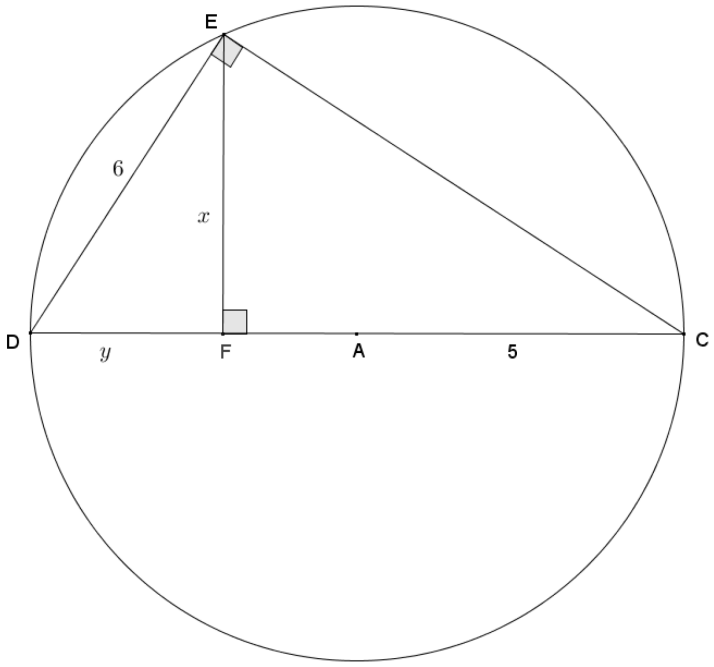
(2) In right triangle ABD, $AB = 53$, and altitude $DC = 14$. Find the lengths of BC and AC.



☐ (9) highlighters & calculators

Homework:

(3) Right triangle DEC is inscribed in a circle with radius $AC = 5$. $\overline{DC}$ is a diameter of the circle, EF is an altitude of $\triangle DEC$, and $DE = 6$. Find the lengths x and y.

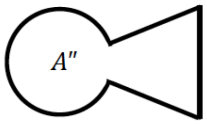


☐ (9) highlighters & calculators

Homework:

(4) A tower casts a shadow of 64 feet. A 6-foot tall pole near the tower casts a shadow 8 feet long. How tall is the tower?

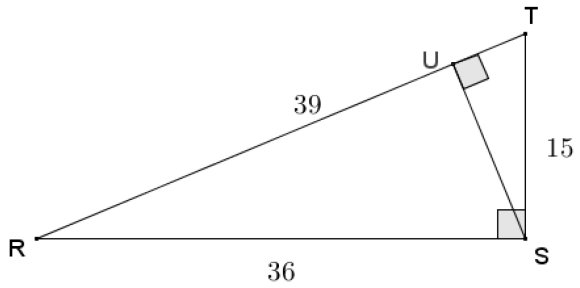
(5) Describe a similarity transformation that maps figure A to figure A'' the other or explain why such a sequence does not exist.



Exit Ticket Name_____ Date _____ Per_____ 6.6R

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

(1) Given △RST, with altitude $\overline{SU}$ drawn to its hypotenuse, ST = 15, RS = 36, and RT = 39, answer the questions below.



(2) Complete the similarity statement relating the three triangles in the diagram: △RST ~ △_____ ~ △_____

(3) Find the length of SU

DO NOW **Name**_____ **Date** _____ **Per**_____ **6.6R**

(1) What do you think the word ***altitude*** means?

(2) Use the word ***altitude*** in a sentence.

(3) How does the picture they are looking at relate to the captions below?

"I'm pretty sure that Pythagoras was a Greek."

"I said 'Greek', not 'Geek'."