PRACTICE & PROBLEM SOLVING
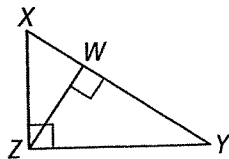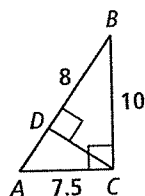
UNDERSTAND

11. Mathematical Connections Consider $\triangle XYZ$ with altitude to the hypotenuse $\overline{ZW}$.

a. Describe a sequence of transformations that maps $\triangle XYZ$ to $\triangle XZW$.

b. Describe a sequence of transformations that maps $\triangle XYZ$ to $\triangle ZYW$.

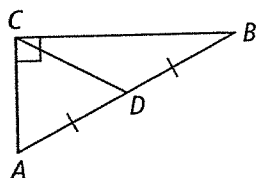**12. Error Analysis** Amaya was asked to find DC. What is Amaya's error? © MP.3

$\triangle ABC \sim \triangle ACD$ by Theorem 7-4.

$$\frac{AC}{BC} = \frac{AC}{DC} \rightarrow \frac{7.5}{10} = \frac{7.5}{DC}$$

$7.5 \times DC = 7.5 \times 10$,

so $DC = 10$.

13. Make Sense and Persevere Is CD the geometric mean of AD and BD? Explain. © MP.1

14. Construct Arguments Write proofs of Theorem 7-4 and its corollaries. © MP.3

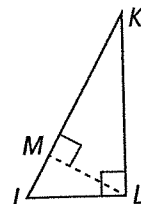**a. Given:** $m\angle JLK = 90$ and $\overline{LM} \perp \overline{JK}$

Prove: $\triangle JKL \sim \triangle JLM \sim \triangle LKM$

b. Given: $\triangle JLM \sim \triangle LKM$

Prove: $\dfrac{JM}{LM} = \dfrac{LM}{KM}$

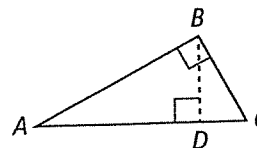**c. Given:** $\triangle JKL \sim \triangle JLM \sim \triangle LKM$

**Prove:** $\dfrac{JK}{JL} = \dfrac{JL}{JM}$ and $\dfrac{JK}{LK} = \dfrac{LK}{MK}$

15. Higher Order Thinking Suppose the altitude to the hypotenuse of a right triangle also bisects the hypotenuse. What type of right triangle is it? Use the similarity of right triangles to explain your answer.
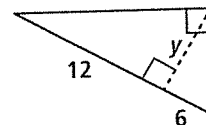
PRACTICE

16. In the figure, what two smaller triangles similar to $\triangle ABC$? Explain. SEE EXAMPLE 1
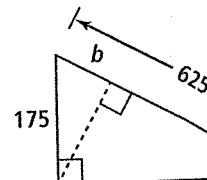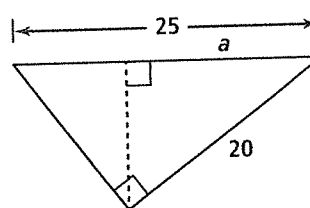

17. What are the values of h and x in the rig triangle? Explain. SEE EXAMPLE 2
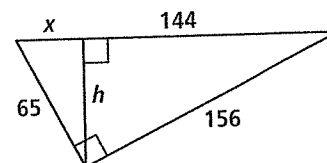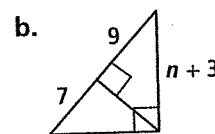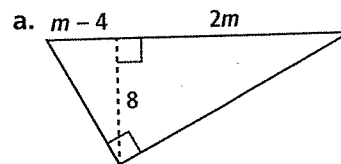

18. What is the value of y in the right trian Explain. SEE EXAMPLE 3

19. What are the values of a and b in each triangle? Explain. SEE EXAMPLES 4 AND 6

20. What are the values of m and n in each triangle? Explain. SEE EXAMPLE 5

a.

b.

21. What is the value of w in the right tria Explain.