Pull It **All Together**

To solve these problems, you will pull together many concepts and skills that you have studied about similarity.
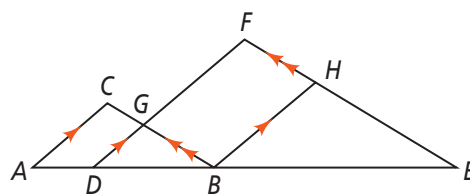
BIG idea Visualization, Reasoning and Proof, and Similarity

You can show that two triangles are similar when certain relationships exist between two or three pairs of corresponding parts. If you know two triangles are similar, then you know their corresponding sides are proportional.

Task 1

In the diagram below, $\overline{AC} \parallel \overline{DF} \parallel \overline{BH}$ and $\overline{CB} \parallel \overline{FE}$.

a. Find four similar triangles. Explain how you know that they are all similar.

b. Using the similar triangles you found in part (a), complete the following extended proportion:

$$\frac{AB}{AC} = \frac{DE}{\blacksquare} = \frac{\blacksquare}{DG} = \frac{\blacksquare}{\blacksquare}$$

BIG idea Similarity

Lines with special relationships to the sides and angles of a triangle determine proportional segments. When you know the lengths of some of the segments, you can use a proportion to find an unknown length.

Task 2

You are making the kite shown at the right from five pairs of congruent panels. In parts (a)–(d) below, use the given information to find the side lengths of the kite's panels.

ABCD is a kite.
$EB = 15$ in., $BC = 25$ in.
The extended ratio $XY : YZ : ZC$ is $3 : 1 : 4$.
$\overline{EX} \perp \overline{BC}$, $\overline{EX} \parallel \overline{YF} \parallel \overline{GZ}$

a. $\triangle BEX$ **b.** *XEFY*

c. *YFGZ*   **d.** $\triangle ZGC$