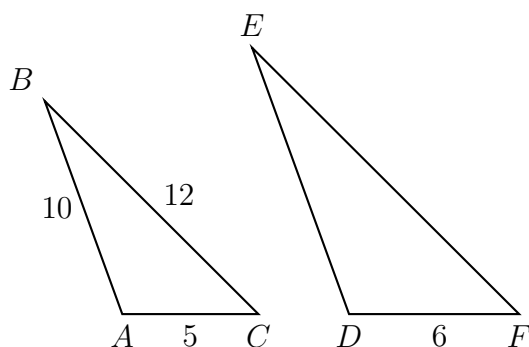Name:

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7.4 Prequiz: Dilations and scale   **CCSS.HSG.SRT.B.5**

1. A dilation maps $\triangle ABC \rightarrow \triangle DEF$, with $AB = 10$, $BC = 12$, $AC = 5$, and $DF = 6$.
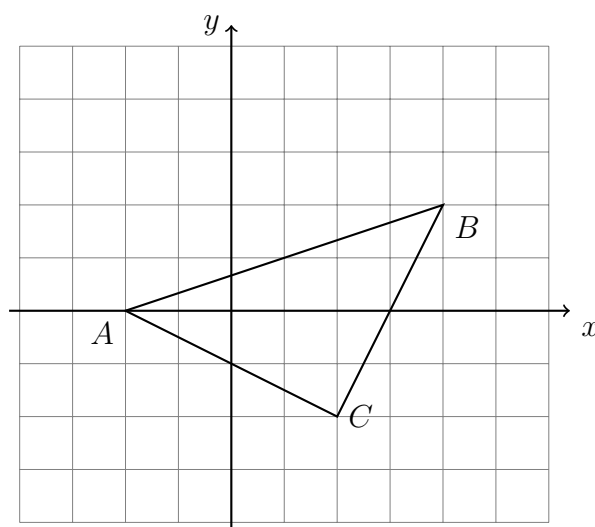

Find the scale factor and missing sides.
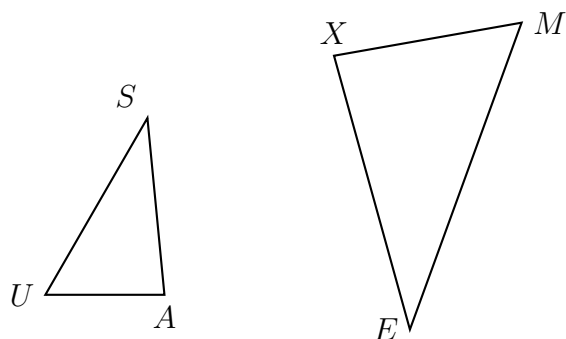
(a) $k =$

(b) $DE =$

(c) $EF =$

2. Dilate the triangle $ABC \rightarrow A'B'C'$ by a factor of $k = 1.5$ centered at the origin.

Complete the table of coordinate mappings.

$A(-2, 0) \rightarrow A'(-3, 0)$

3. Given $\triangle USA \sim \triangle MEX$ and $m\angle U = 60°$, $m\angle A = 85°$. Find the remaining angle measures.
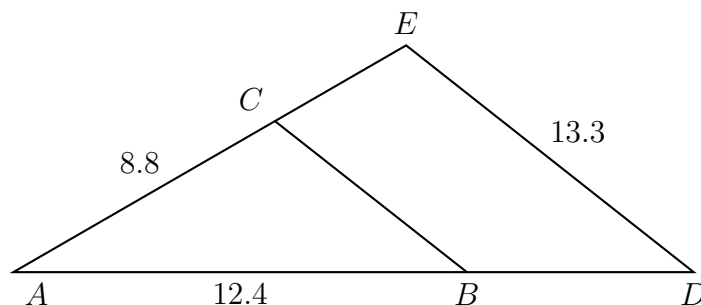
4. A dilation centered at A with a scale factor of $k = 1.75$ maps $\triangle ABC \rightarrow \triangle ADE$. Given $AB = 12.4$, $AC = 8.8$, $DE = 13.3$.

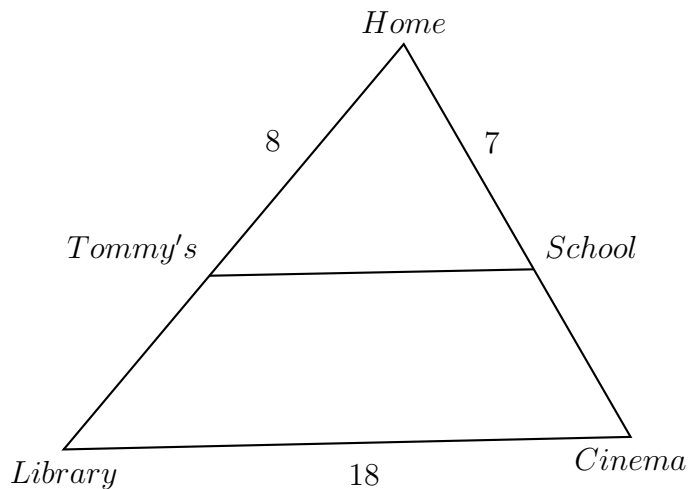Find the remaining side lengths.

$AD =$

$AE =$

$BC =$

5. Triangle HTS, where $H = Home$, is dilated with a scale factor of $k = 2$ centered at H, yielding $\triangle HLC$, as shown.

Given $HT = 8$ blocks, $HS = 7$ blocks, and $LC = 18$ blocks. There are twenty blocks to a mile.

(a) Steven walks from school to Tommy's and then walks home. What fraction of a mile did he walk?

(b) Steven's sister, Marie, goes to the cinema after school and then walks back home. Did she walk more or less than a mile?

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6. Show below is a map of Hispanola with a grid of lines of longitude (north south) and latitude (east west). Mark the following features on the map:

   (a) The approximate national border between Haiti and the Dominican Republic at the line of longitude 71.75° (through Lago Enriquillo).

   (b) The capital city of Santo Domingo at 18.5° N, 70° W.

   (c) The Haitian capital Port-au-Prince at 18.5° N, 72.25° W.

   (d) The world famous Kite Beach, Cabarete at 19.75° N, 70.4° W.
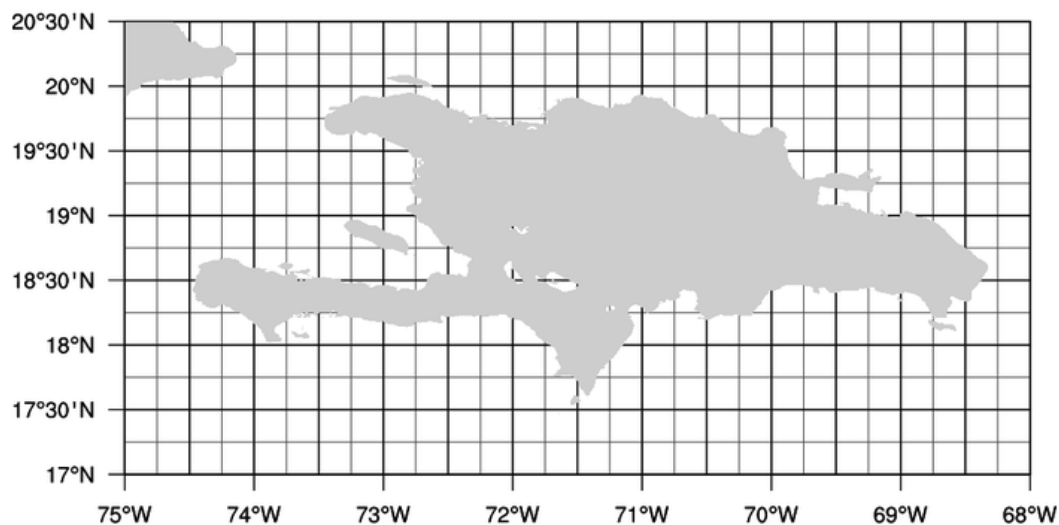
Each degree of latitude or longitude is approximately 110 kilometers.

   (e) By how many degrees of longitude do Port-au-Prince and Santo Domingo differ?

   (f) Calculate the distance between the two capital cities.

   (g) Calculate the distance from Santo Domingo to Cabarete.

7. Rotate $\triangle ABC$ 180° counterclockwise around the origin. Then, dilate $\triangle A'B'C'$ by a factor of $k = \dfrac{5}{3}$ centered at the origin to produce $\triangle A''B''C''$. Plot and label the two triangles in the graph below.
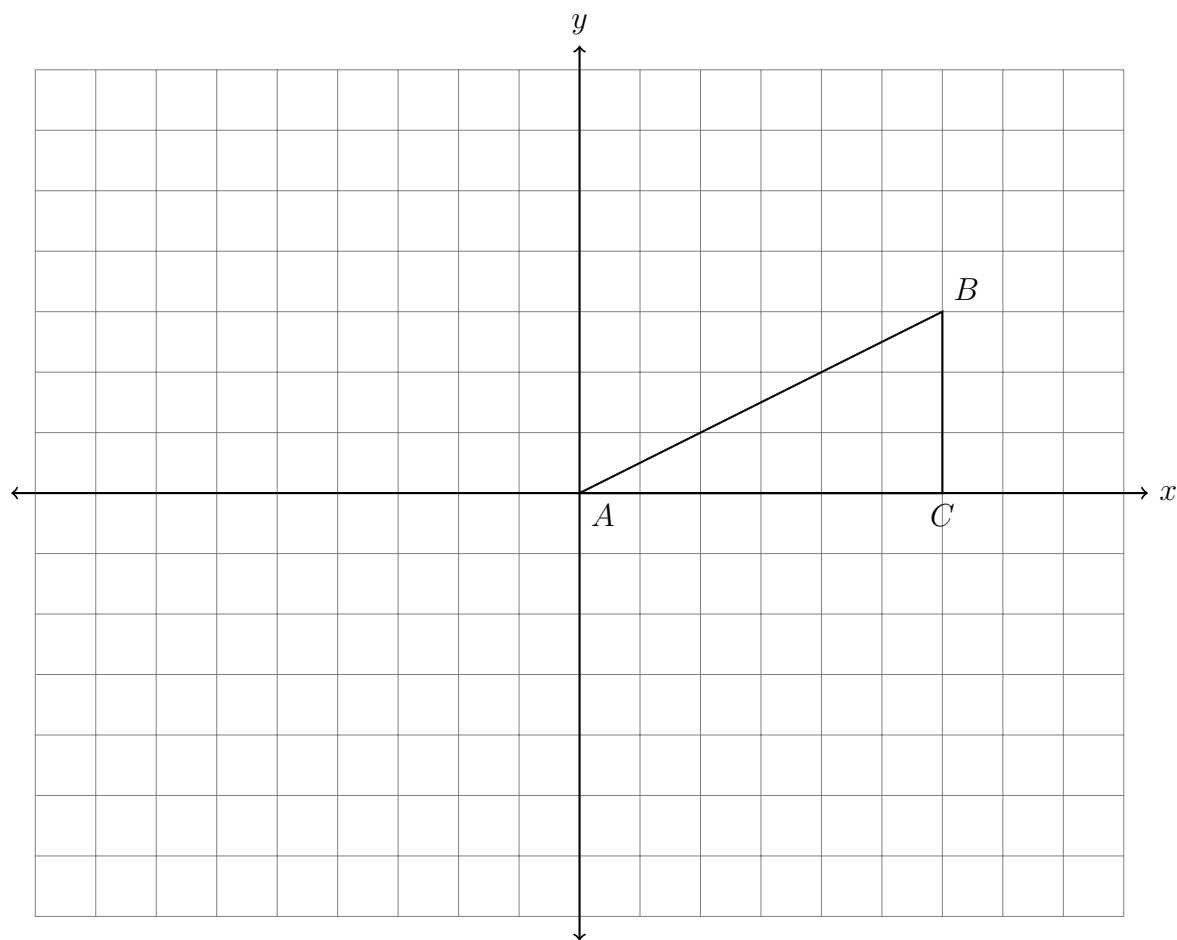
Would the same triangle result if you dilated first and then rotated? When are rotation and dilation "commutative", never, sometimes, always?