Name:

BECA / Dr. Huson / Geometry 7 Similarity

7.14 Exam: Similarity transformations

I can solve problems using similarity criteria. CCSS.HSG.SRT.B.5

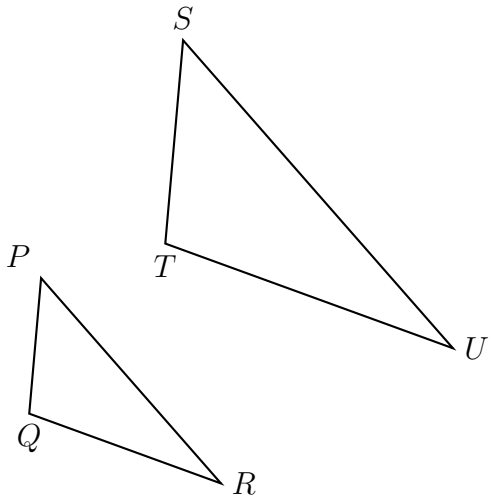
1. A dilation maps triangle PQR onto triangle STU with $QR = 7$ and $TU = 14$.

   (a) $\overline{PR} \rightarrow$ _____

   (b) What scale factor maps $\triangle PQR \rightarrow \triangle STU$?

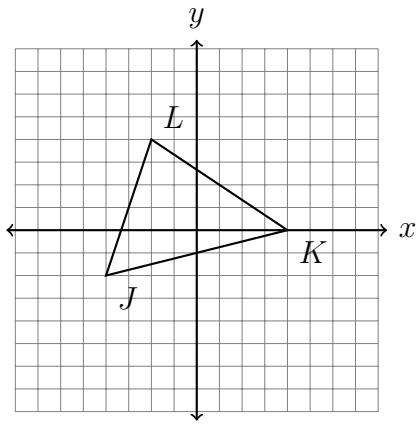
   (c) Given $PR = 10$, find SU.

   (d) Given $ST = 6$, find PQ.



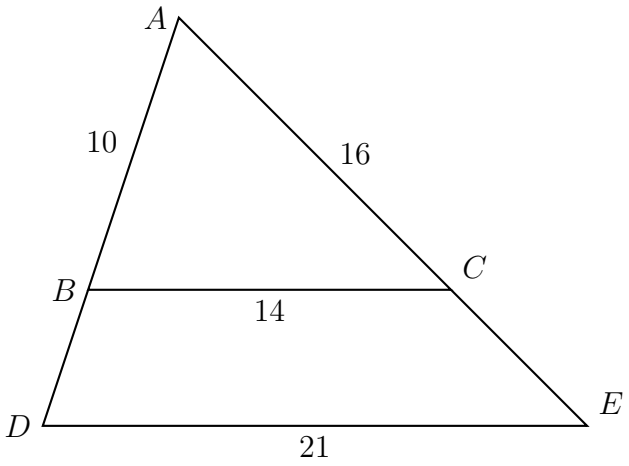
2. Do Now: Given $\triangle PQR \sim \triangle STU$, $m\angle P = 37°$, and $m\angle T = 46°$. Find $m\angle Q$.

3. $\triangle JKL$ with $J(-4, -2)$, $K(4, 0)$, and $L(-2, 4)$, is dilated with a scale factor $k = 1.5$ centered on the origin. Draw the image $\triangle J'K'L'$, labeling the vertices.



4. Triangle ABC is dilated with a scale factor of k centered at A, yielding $\triangle ADE$, as shown. Given $AB = 10$, $BC = 14$, $AC = 16$, and $DE = 21$.

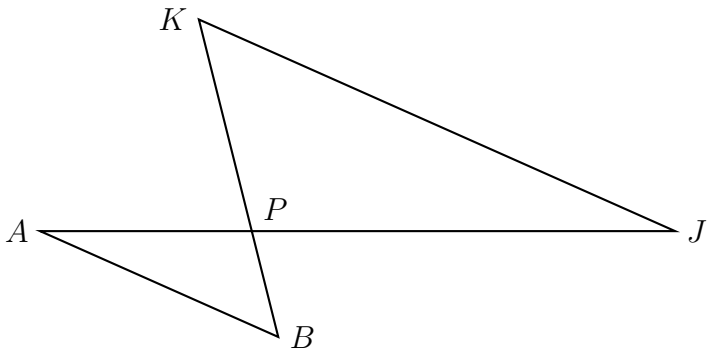
   Find BD, AE, and k (the scale factor).



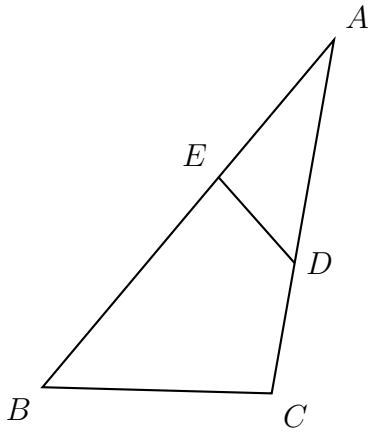
Name:

BECA / Dr. Huson / Geometry 7 Similarity

5. Given $\triangle ABP$ and $\triangle JKP$ as shown below. $\overline{AB} \parallel \overline{JK}$. $AP = 5$, $JP = 12$, and $JK = 18$. Find AB.



6. The diagram below shows $\triangle ABC$, with $\overline{AEB}$, $\overline{ADC}$, and $\angle ACB \cong \angle AED$. $AB = 14$, $AD = 8$, and $DE = 4$.



(a) $\overline{AE} \rightarrow$ _____

(b) $\overline{AD} \rightarrow$ _____

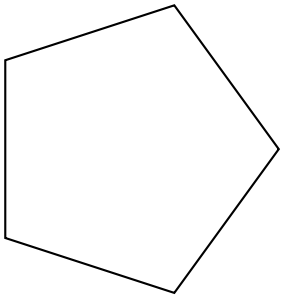
(c) $\triangle ADE \sim$ _____

(d) What is the scale factor?

$k =$ _____

(e) What is the length of $\overline{BC}$?

7. What is the smallest non-zero angle of rotation about its center that would map the pentagon onto itself?

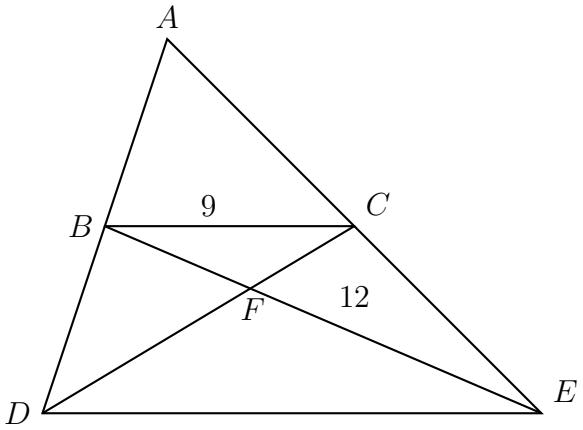


8. Triangle ADE and its midline $\overline{BC}$ are drawn, with B the midpoint of $\overline{AD}$ and C the midpoint of $\overline{AE}$. The two medians $\overline{BE}$ and $\overline{CD}$ are drawn, as shown, intersecting in point F, the centroid.

   $\triangle FCB \sim \triangle FDE$ with scale factor $k = 2$.

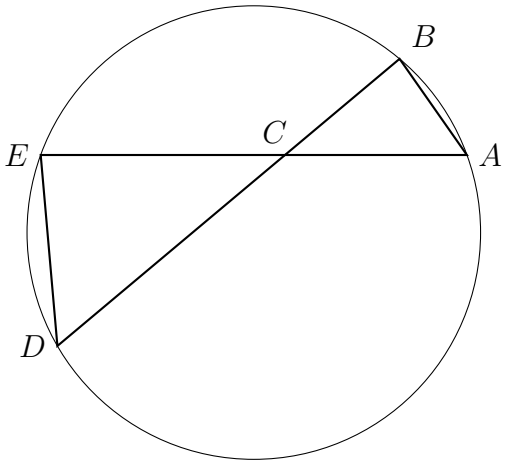
   Given $BC = 9$, find DE.

   Given $FE = 12$, find BF.



9. In the diagram below, the chords $\overline{AE}$ and $\overline{BD}$ intersect at C, with $\triangle ABC \sim \triangle DEC$, $BC = 3$, $AC = 4$, and $AE = 11$. Determine the length of $\overline{CD}$.

Name:



10. In the diagram below, $\triangle ABC \sim \triangle DEF$, $DE = 6$, $AB = x$, $AC = 2x$, and $DF = 2x + 4$. Determine the length of $\overline{AB}$.