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**9-11 Homework: Similar triangles, dilation ratios review**

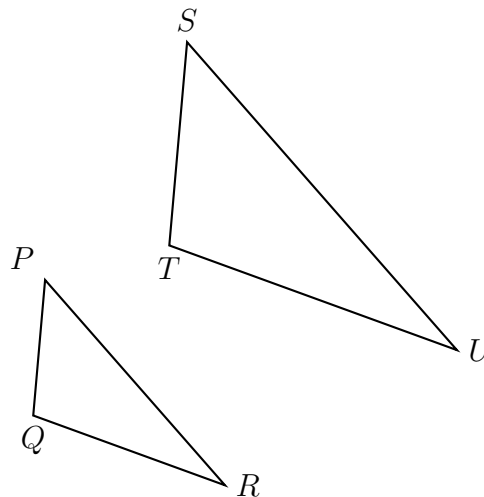
1. A dilation maps triangle  $PQR$  onto triangle  $STU$  with  $QR = 5$  and  $TU = 7.5$ .

(a)  $\overline{QR} \rightarrow$  \_\_\_\_\_

- (b) Complete the fraction numerators with the corresponding segment and length:

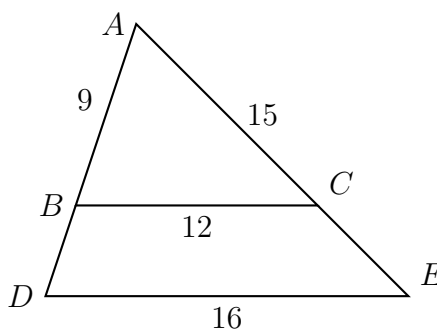
$$k = \frac{\overline{QR}}{\overline{QR}} = \frac{\text{ } }{5}$$

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



2. Triangle  $ABC$  is dilated with a scale factor of  $k$  centered at  $A$ , yielding  $\triangle ADE$ , as shown. Given  $AB = 9$ ,  $BC = 12$ ,  $AC = 15$ , and  $DE = 16$ .

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



3. Given  $\triangle JKL \sim \triangle MNO$ .  $m\angle J = 48^\circ$  and  $m\angle L = 87^\circ$ .  
Find the measure of  $\angle N$ .

4. The diagram below shows  $\triangle ABC$ , with  $\overline{AEB}$ ,  $\overline{ADC}$ , and  $\angle ACB \cong \angle AED$ .  $AB = 8$ ,  $AD = 4$ , and  $DE = 2$ .

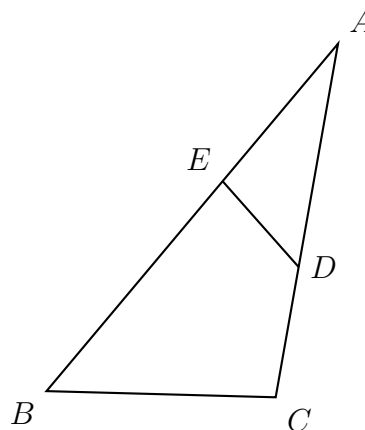
(a)  $\triangle ADE \rightarrow$  \_\_\_\_\_

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

(c) What is the scale factor?

$k =$  \_\_\_\_\_

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



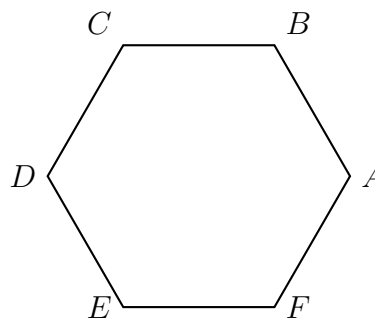
5. Circle YES or NO to indicate whether the given transformation maps the hexagon  $ABCDEF$  onto itself.

(a) Yes    No    A rotation of  $120^\circ$  counterclockwise around its center.

(b) Yes    No    A reflection over  $\overleftrightarrow{AD}$

(c) Yes    No    A reflection over a line through the midpoints of  $\overline{BC}$  and  $\overline{EF}$ .

(d) Yes    No    A rotation of  $60^\circ$  clockwise around  $A$ .

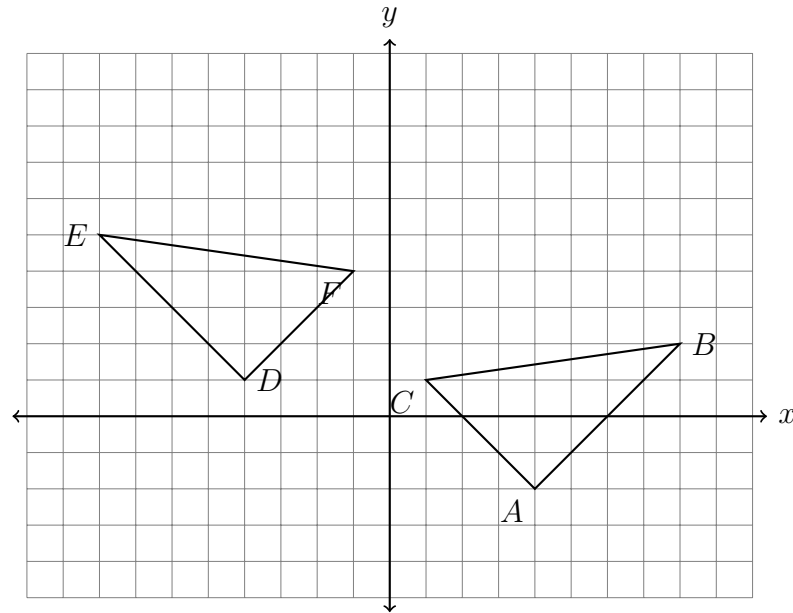


6. What is the length of the segment  $A(-2, 1)$ ,  $B(3, 13)$ ?

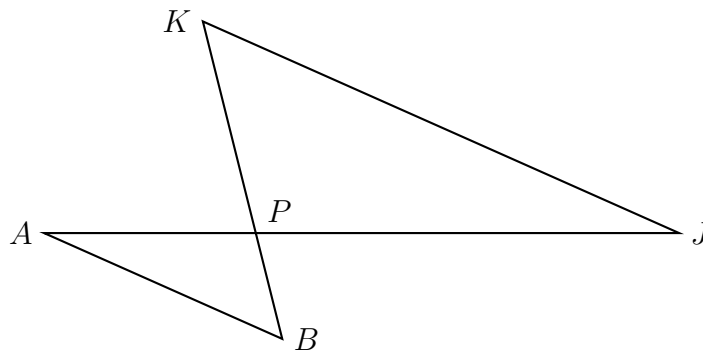
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**8-10 Homework: Pretest on similar triangles, dilation, & symmetry**

1. What series of transformations map  $\triangle ABC$  onto  $\triangle DEF$ , shown below? Fully specify the transformations.

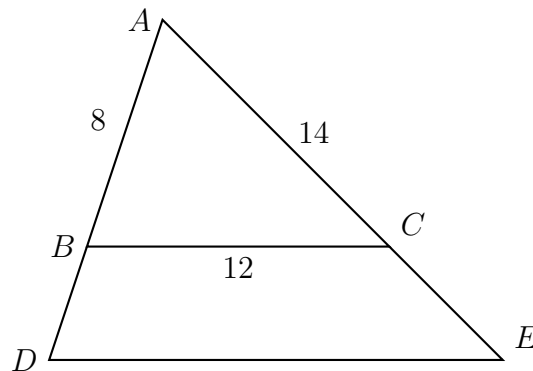


2. Given  $\triangle ABP$  and  $\triangle JKP$  as shown below.  $\overline{AB} \parallel \overline{JK}$ .  $AP = 10$ ,  $JP = 18$ , and  $JK = 27$ . Find  $AB$ .

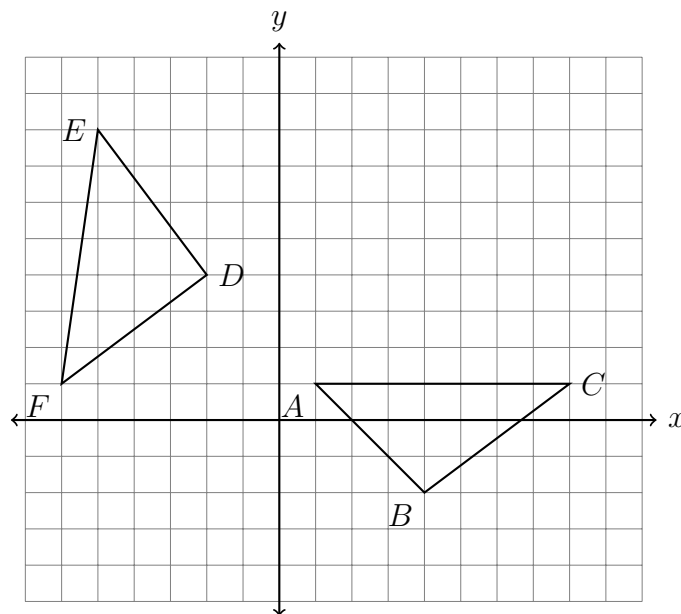


3. Triangle  $ABC$  is dilated with a factor of  $\frac{3}{2}$  centered at  $A$ , yielding  $\triangle ADE$ , as shown. Given  $AB = 8$ ,  $BC = 12$ , and  $AC = 14$ .

Find  $BD$ ,  $AE$ , and  $DE$ .



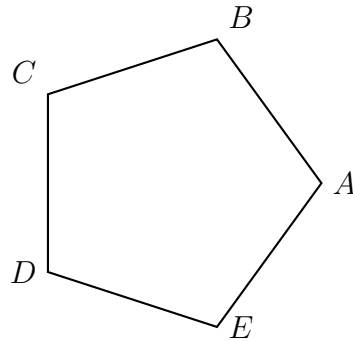
4. The grid shows  $\triangle ABC$  and  $\triangle DEF$ .



Let  $\triangle A'B'C'$  be the image of  $\triangle ABC$  after a rotation about point  $A$ . Determine and state the location of  $B'$  if the location of point  $C'$  is  $(1,8)$ . Explain your answer, supported by stating the transformation applied.

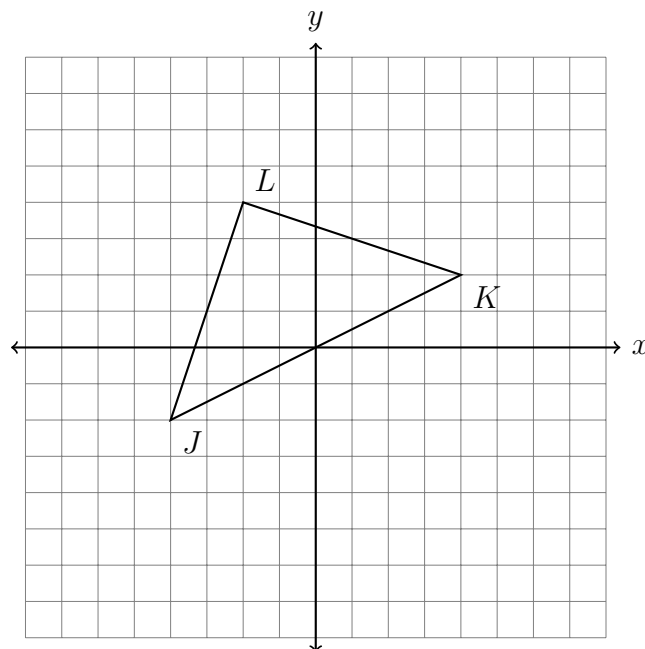
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5. What is the smallest non-zero angle of rotation about its center that would map pentagon  $ABCDE$  onto itself?



6. The vertices of  $\triangle JKL$  have the coordinates  $J(-4, -2)$ ,  $K(4, 2)$ , and  $L(-2, 4)$ , as shown.

Apply a dilation to  $\triangle JKL \rightarrow \triangle J'K'L'$ , centered on the origin and with a scale factor  $k = 1.5$ . Draw the image  $\triangle J'K'L'$  on the set of axes below, labeling the vertices, and make a table showing the correspondence of both triangles' coordinate pairs.

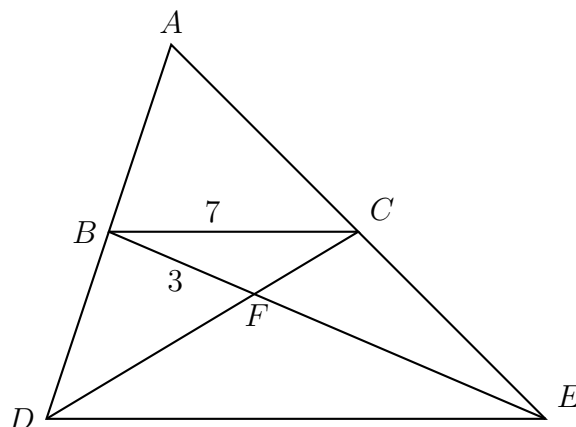


7. Triangle  $ADE$  and its midline  $\overline{BC}$  are drawn, with  $B$  the midpoint of  $\overline{AD}$  and  $C$  the midpoint of  $\overline{AE}$ . The two medians  $\overline{BE}$  and  $\overline{CD}$  are drawn, as shown, intersecting in point  $F$ , the centroid.

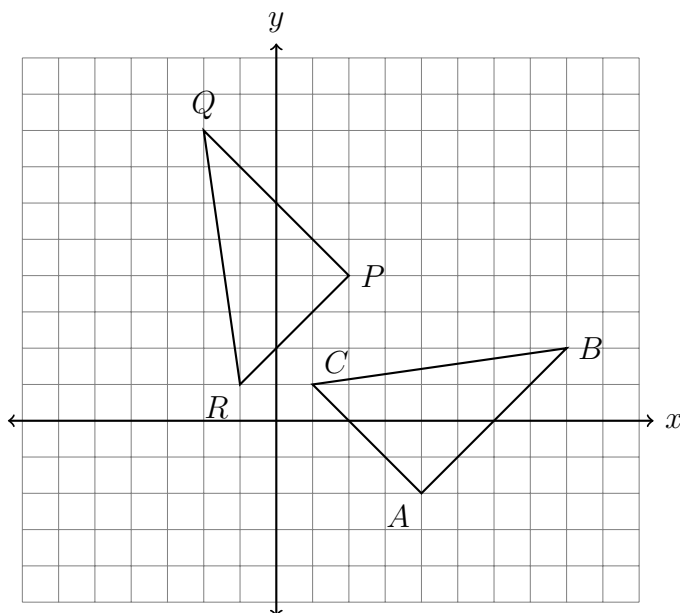
$\triangle FCB \sim \triangle FDE$  with scale factor  $k = 2$ .

Given  $BC = 7$ , find  $DE$ .

Given  $BF = 3$ , find  $FE$ .

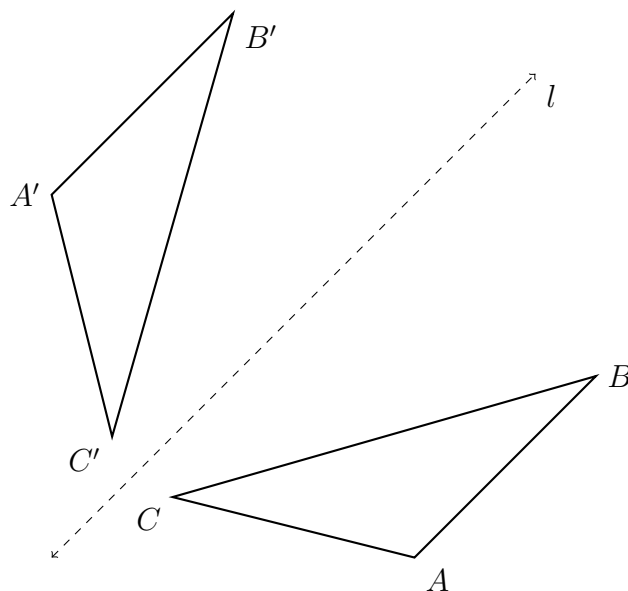


8. Determine and state the transformation or sequence of transformations applied to  $\triangle ABC$ , mapping it onto  $\triangle PQR$ , as shown.

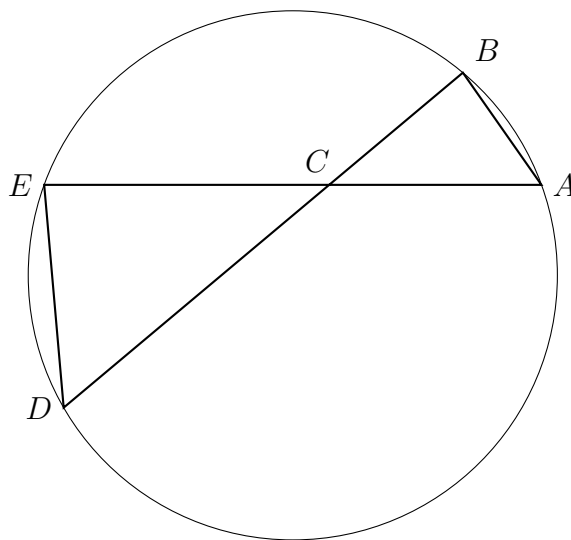


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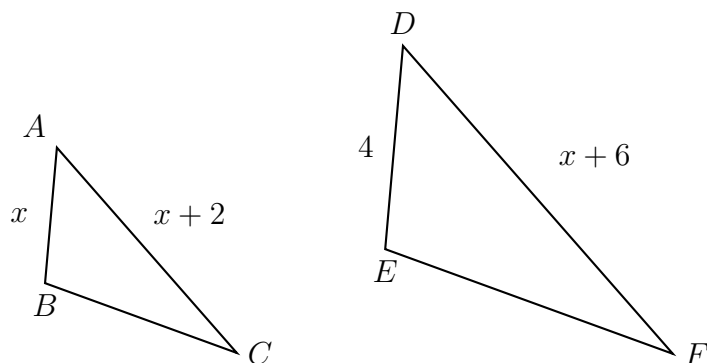
9. The  $\triangle ABC$  is reflected across  $l$  to yield  $\triangle A'B'C'$ .  $AB = x + 5$ ,  $A'B' = 2x - 1$ , and  $BC = 3x + 2$ . Find the length  $B'C'$ .



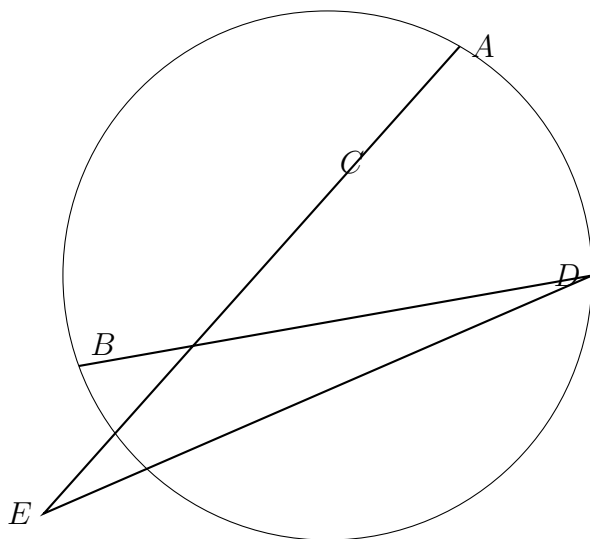
10. In the diagram below, the chords  $\overline{AE}$  and  $\overline{BD}$  intersect at  $C$ . Given that  $\triangle ABC \sim \triangle DEC$ ,  $AB = 2$ ,  $DE = 4$ , and  $AC = 3$ . Determine the length of  $\overline{CD}$ .



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



12. In the diagram below, the chords  $\overline{AE}$  and  $\overline{BD}$  intersect at  $C$ . Given that  $\triangle ABC \sim \triangle DEC$ ,  $AB = 2$ ,  $DE = 4$ , and  $AC = 3$ . Determine the length of  $\overline{CD}$ .



13. Given  $\triangle ABP$  and  $\triangle JKP$  as shown below.  $\overline{AB} \parallel \overline{JK}$  with  $AB = 5$ ,  $PA = 4$ ,  $PB = 2$ , and  $PK = 5$ .

Find  $PJ$  and  $JK$ .



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