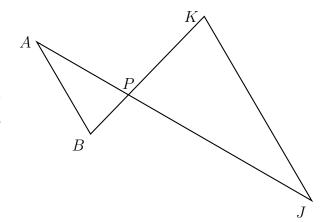
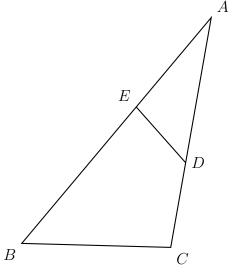
## 9.8 Classwork: Similarity ratios, dilation, transformations, symmetry

- 1. Two triangles are shown with P the intersection of  $\overline{AJ}$  and  $\overline{BK}$ .
  - (a) Justify  $\angle APB \cong \angle JPK$ .
  - (b) What angle must be congruent to  $\angle B$  to prove  $\triangle ABP \sim \triangle JKP$  by angle-angle similarity?

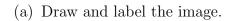


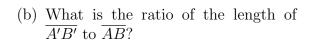
2. Given  $\triangle PQR \sim \triangle STU$ ,  $m \angle P = 37^{\circ}$ , and  $m \angle T = 46^{\circ}$ . Find  $m \angle Q$ .

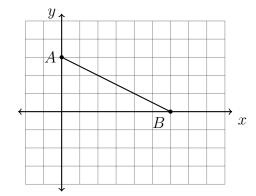
- 3. The diagram below shows  $\triangle ABC$ , with  $\overline{AEB}$  and  $\overline{ADC}$ .
  - (a) Justify  $\angle BAC \cong \angle DAE$ .
  - (b) What angle must be congruent to  $\angle AED$  to prove  $\triangle ABC \sim \triangle ADE$  by angle-angle similarity?



4. A dilation centered at the origin with scale factor  $k = \frac{4}{3}$  maps  $\overline{AB} \to \overline{A'B'}$ .

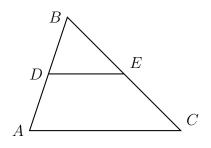






(c) What is the relationship of the slope of  $\overline{A'B'}$  and  $\overline{AB}$ ?

5. Given  $\triangle ABC$ , D is the midpoint of  $\overline{BA}$ , E is a point on  $\overline{BC}$ , and  $\overline{DE}$  is drawn. If BD=8 and BE=10, what is the length of  $\overline{BC}$  so that  $\overline{AC} \parallel \overline{DE}$ ?



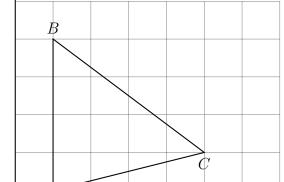
6. In diagram below, each centimeter represents six inches. Find the length of each side in feet. (measure with a metric scale)

(a) 
$$AB =$$



A

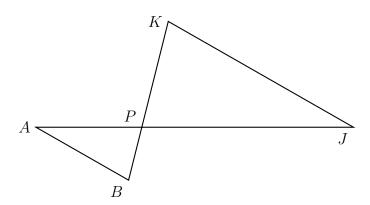




(c) 
$$AC =$$

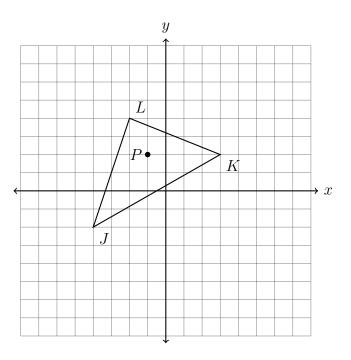
(d) Find the area of  $\triangle ABC$ 

7. Given  $\triangle ABP \sim \triangle JKP$  as shown below.  $AB=10.0,\ AP=9.0,\ BP=5,$  and AJ=27.0. Find JK.



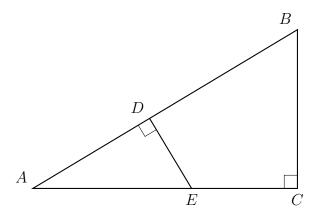
8. The vertices of  $\triangle JKL$  have the coordinates  $J(-4,-2),\ K(3,2),\ {\rm and}\ L(-2,4),\ {\rm as}$  shown.

Apply a dilation to  $\triangle JKL \to \triangle J'K'L'$ , centered at P(-1,2) and with a scale factor k=2. 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.



What is the ratio of the area of  $\triangle JKL$  to  $\triangle J'K'L'$ ?

9. In  $\triangle ABC$  shown below,  $\angle ACB$  is a right angle, E is a point on  $\overline{AC}$ , and  $\overline{ED}$  is drawn perpendicular to hypontenuse  $\overline{AB}$ .



If AB = 9, BC = 6, and DE = 4, what is the length of  $\overline{AE}$ ?

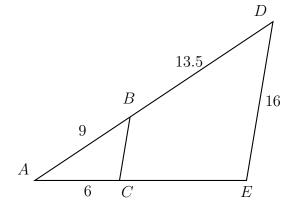
10. In the diagram below,  $\angle ABC \cong \angle ADE$ , AB = 9, AC = 6, BD = 13.5, and DE = 16. Find AD and the scale factor k. Then find AE and BC.

(a) 
$$AD =$$

(b) 
$$k =$$

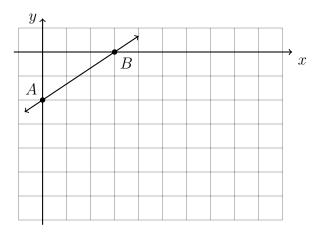
(c) 
$$AE =$$

(d) 
$$BC =$$



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11. The line  $\overrightarrow{AB}$  has the equation  $y = \frac{2}{3}x - 2$ . Apply a dilation mapping  $\overrightarrow{AB} \to \overrightarrow{A'B'}$  with a factor of k = 3 centered at the origin. Draw and label the image on the grid. Write the equation of the line  $\overrightarrow{A'B'}$ .

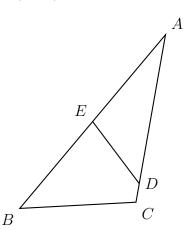


12. The diagram below shows  $\triangle ABC$ . E bisects  $\overline{AB}$ , and  $\angle ACB \cong \angle AED$ . AB = 18, AC = 12, and DE = 7. Find the scale factor k, BC, and AD.

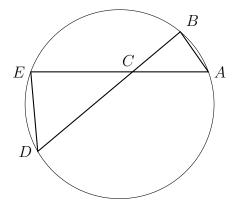
(a) 
$$k =$$



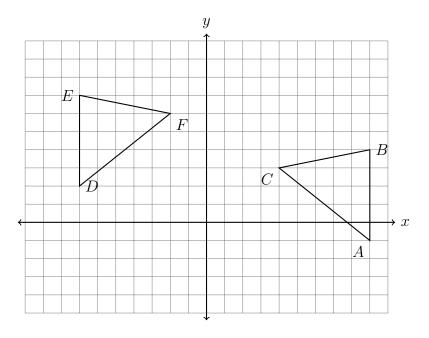
(c) 
$$AD =$$



13. In the diagram below, the chords  $\overline{AE}$  and  $\overline{BD}$  intersect at C. Given  $\triangle ABC \sim \triangle DEC$ , BC = 6, CD = 12, and CE = 10. Determine the length of  $\overline{CA}$ .



14. What transformation or series of transformations map  $\triangle ABC$  onto  $\triangle DEF$ , shown below? Fully specify the transformation(s).



15. Reflect  $\triangle ABC$  over the y-axis then dilate the resulting triangle by a factor of 2 centered at the origin.

