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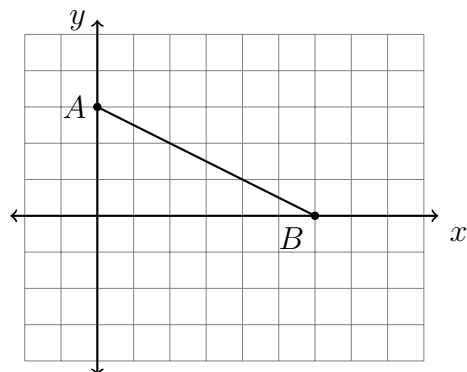
9.8b Classwork: Similarity ratios, dilation, transformations, symmetry

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

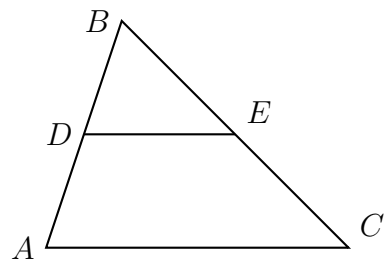
(a) Draw and label the image.

(b) What is the ratio of the length of $\overline{A'B'}$ to \overline{AB} ?

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



2. 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 $\overline{AC} \parallel \overline{DE}$?



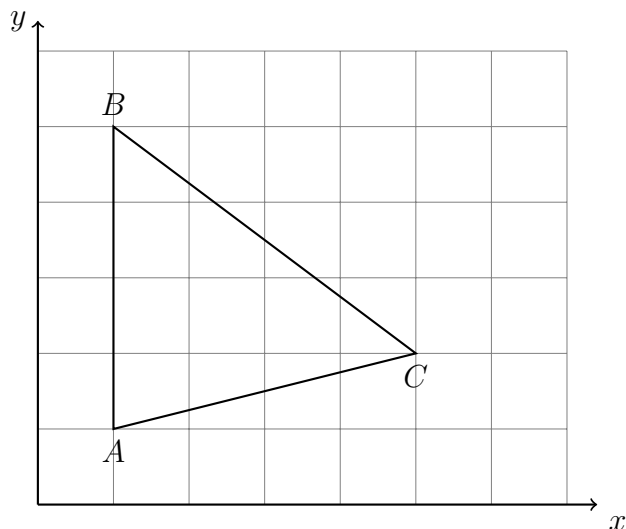
3. (a) In diagram below, each centimeter represents six inches. Find the length of each side in feet. (measure with a metric scale)

i. $AB =$

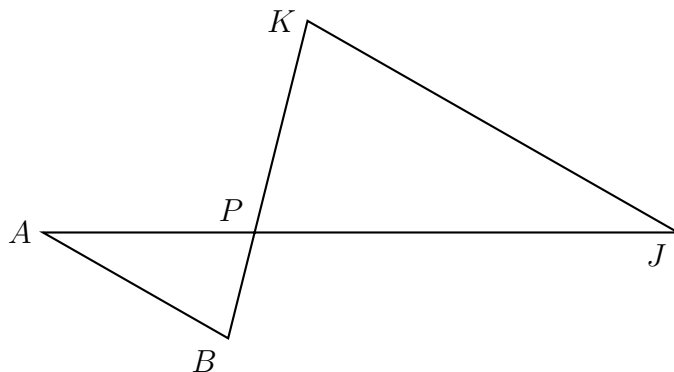
ii. $BC =$

iii. $AC =$

iv. Find the area of $\triangle ABC$

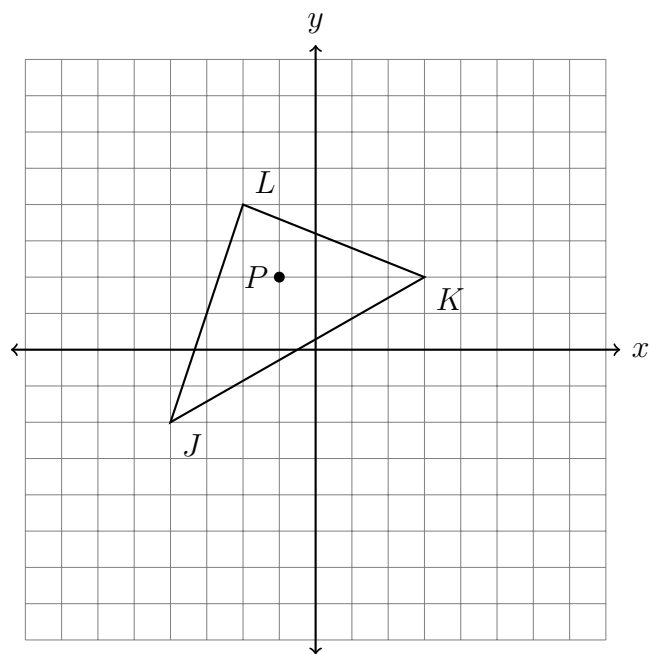


4. Given $\triangle ABP \sim \triangle JKP$ as shown below. $AB = 10.0$, $AP = 9.0$, $BP = 5$, and $AJ = 27.0$. Find JK .



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

Apply a dilation to $\triangle JKL \rightarrow \triangle J'K'L'$, 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.

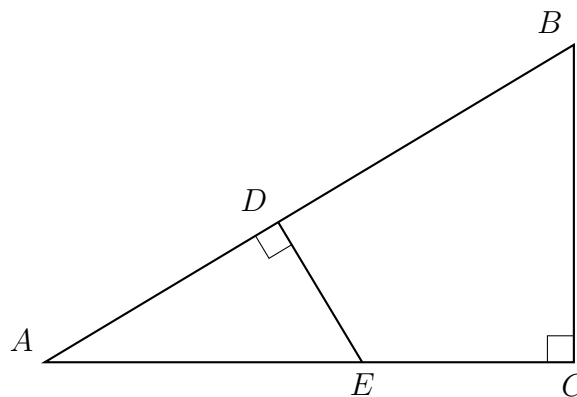


What is the ratio of the area of $\triangle JKL$ to $\triangle J'K'L'$?

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

7. Given $\triangle ABC \sim \triangle AED$ shown below, $\angle ACB$ is a right angle, E is a point on \overline{AC} , and \overline{ED} is drawn perpendicular to hypotenuse \overline{AB} .



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

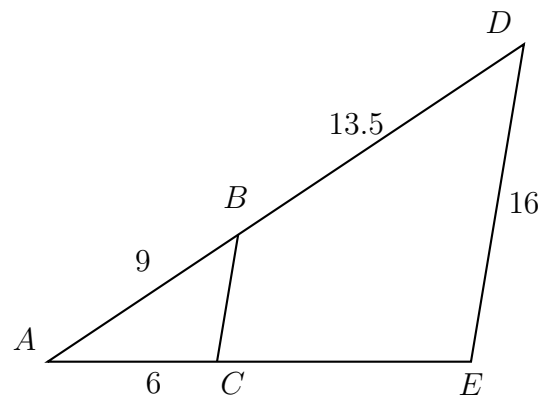
8. In the diagram below, $\angle ABC \cong \angle ADE$, $AB = 9$, $AC = 6$, $BD = 13.5$, and $DE = 16$. Find AD and the scale factor k . Then find AE and BC .

(a) $AD =$

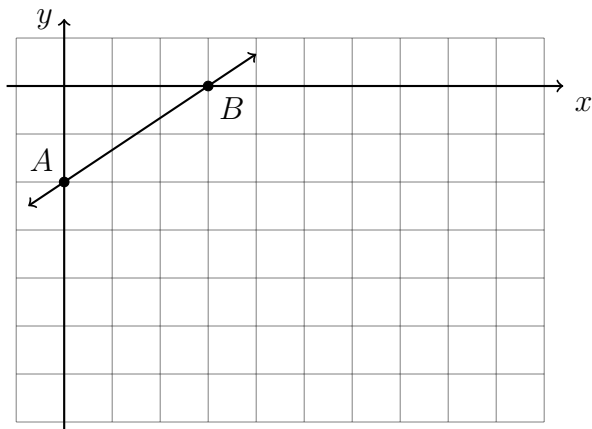
(b) $k =$

(c) $AE =$

(d) $BC =$



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

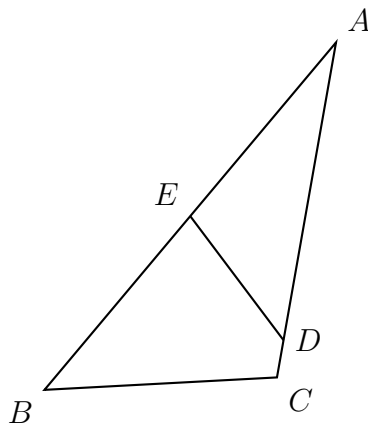


10. The diagram below shows $\triangle ABC$. E bisects \overline{AB} , and $\angle ACB \cong \angle AED$. $AB = 18$, $AC = 12$, and $DE = 7$. Find the scale factor k , BC , and AD .

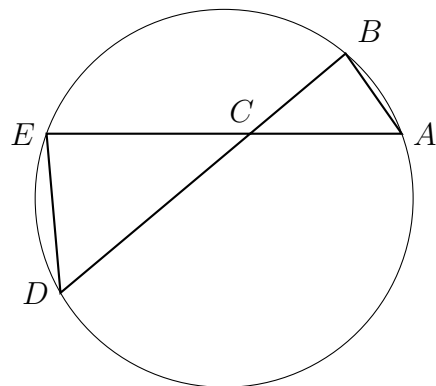
(a) $k =$

(b) $BC =$

(c) $AD =$

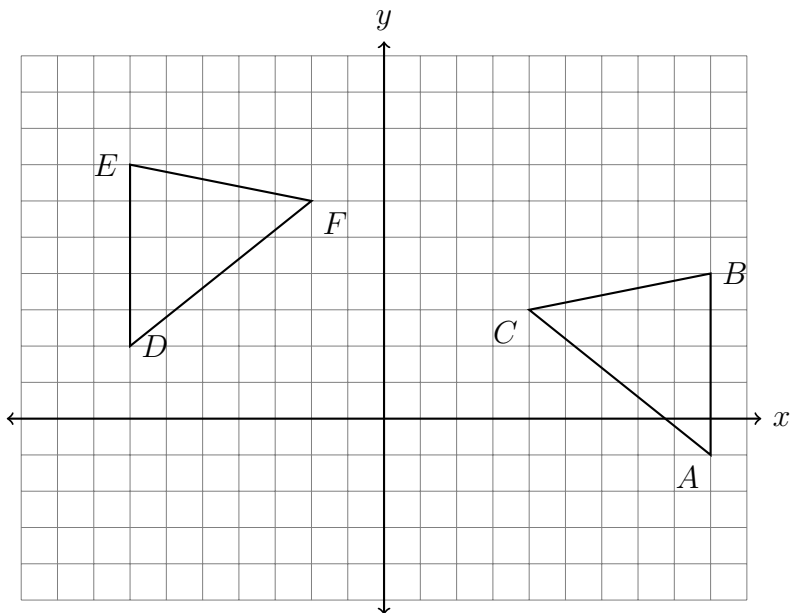


11. In the diagram below, the chords \overline{AE} and \overline{BD} intersect at C . Given $\triangle ABC \sim \triangle DEC$, $BC = 6$, $CD = 12$, and $CE = 10$. Determine the length of \overline{CA} .



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



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

