

8 January 2020

7.5 Do Now: Similarity transformations and the tangent function

1. 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) $\overline{AE} \rightarrow$ _____

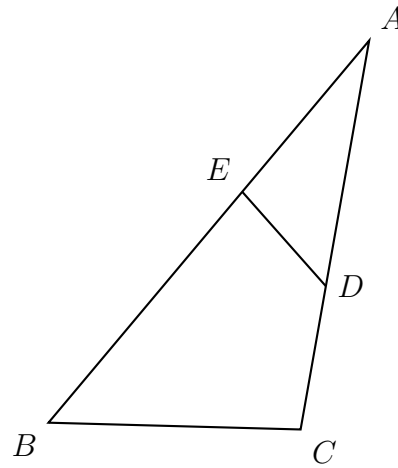
(b) $\overline{AD} \rightarrow$ _____

(c) $\triangle ADE \sim$ _____

(d) What is the scale factor?

$k =$ _____

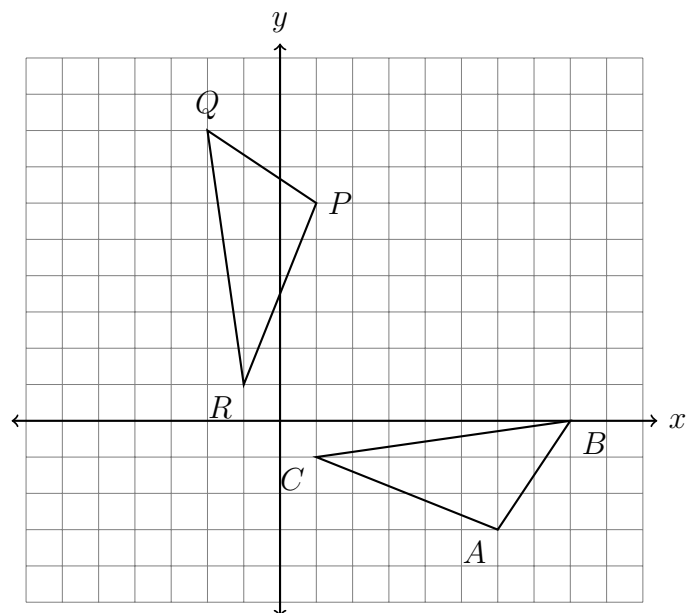
(e) What is the length of \overline{BC} ?



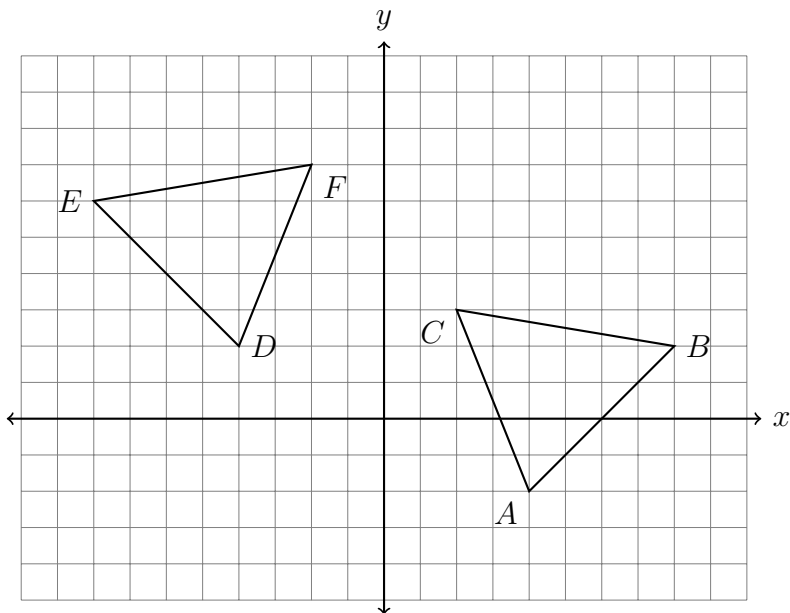
2. Given $\triangle JKL \sim \triangle MNO$. $m\angle J = 43^\circ$ and $m\angle L = 92^\circ$.

Find the measure of $\angle O$.

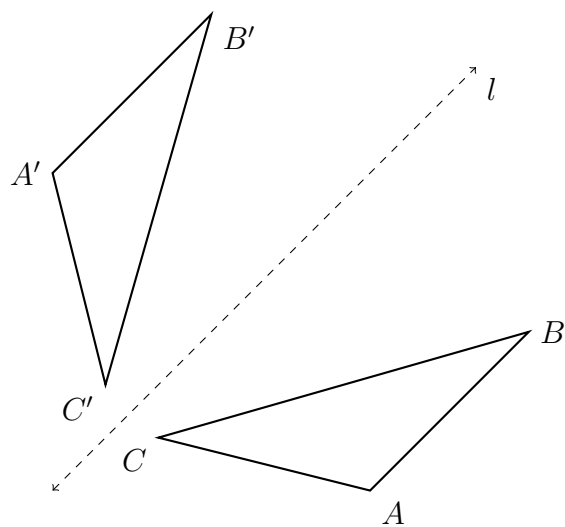
3. Determine and state the transformation or sequence of transformations applied to $\triangle ABC$, mapping it onto $\triangle PQR$, as shown.



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



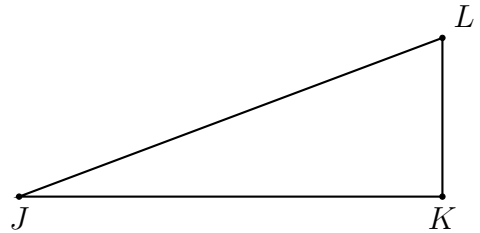
5. The $\triangle ABC$ is reflected across l to yield $\triangle A'B'C'$. $AB = 3x + 4$, $A'B' = 5x - 10$, and $BC = 4x + 12$. Find the length $B'C'$.



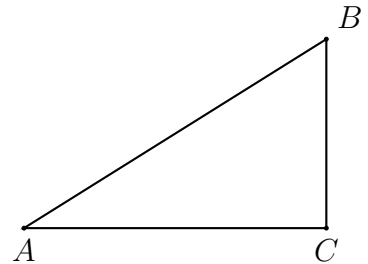
Modeling: Mark each diagram and write an equation. Do Not Solve!

6. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JK = 11$, $m\angle J = 18^\circ$. Let x be the length of the side opposite $\angle J$, $x = KL$.

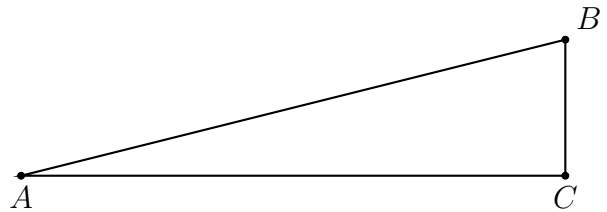
Write an equation expressing $\tan \angle J$ as a ratio of *opposite* over *adjacent*. (2 stars)



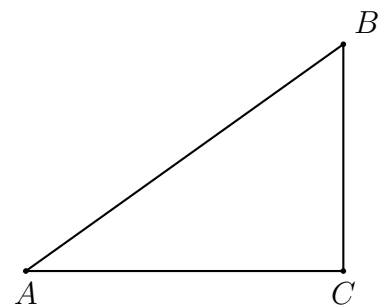
7. Given right $\triangle ABC$ with $m\angle C = 90^\circ$, $BC = 5$, $m\angle A = 38^\circ$. Let $x = AC$. (2 stars)



8. Given right $\triangle ABC$ with $m\angle C = 90^\circ$, $BC = 6$, $AC = 22$, and $m\angle A = x^\circ$. (2 stars)



9. Given right $\triangle ABC$ with $\overline{AC} \perp \overline{BC}$, $BC = 7$, $m\angle B = 55^\circ$. Let $x = AC$. (3 stars)



Mastery topic: Algebraic solution

Solve each equation for x , rounding to the nearest hundredth.

10. $\tan 75^\circ = \frac{x}{15}$

12. $\sin 46^\circ = \frac{x}{3.5}$

11. $\tan 26^\circ = \frac{4}{x}$

13. $\cos 35^\circ = \frac{x}{10}$

Solve for x , rounding to the nearest whole degree.

14. $x = \tan^{-1}\left(\frac{2}{3.5}\right)$

15. $\tan x^\circ = \frac{17}{9}$