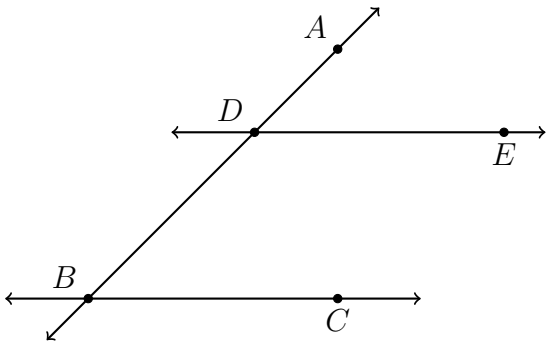
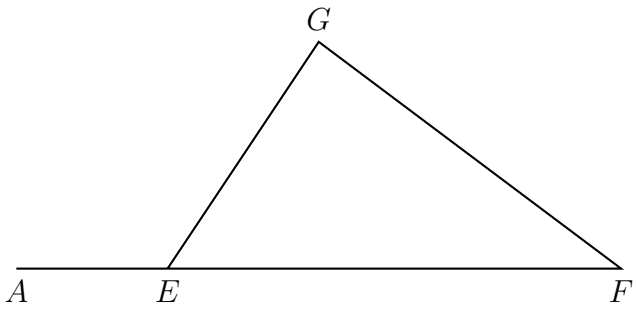
Homework: Triangle relationships

1. Given two parallel lines that intersect a transversal, $\overleftrightarrow{DE} || \overleftrightarrow{BC}$. $m\angle ABC = 3x - 5$ and $m\angle BDE = 6x + 5$.
   Find $m\angle ADE$.



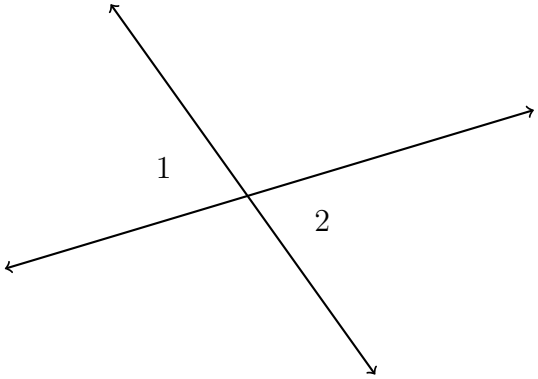
2. Given $\triangle EFG$ with $\overline{EF}$ extended to A. If $m\angle F = 38°$ and $m\angle AEG = 133°$, what is $m\angle EGF$?



3. Given two vertical angles as shown, $m\angle 1 = 5x + 5$, $m\angle 2 = 7x - 17$.

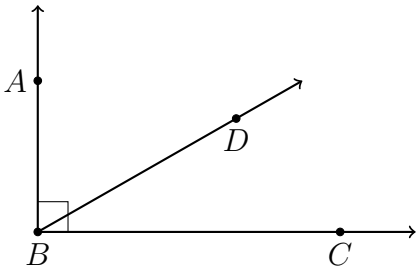
   Find $m\angle 1$.

   For full credit find the $m\angle 2$ as a check.



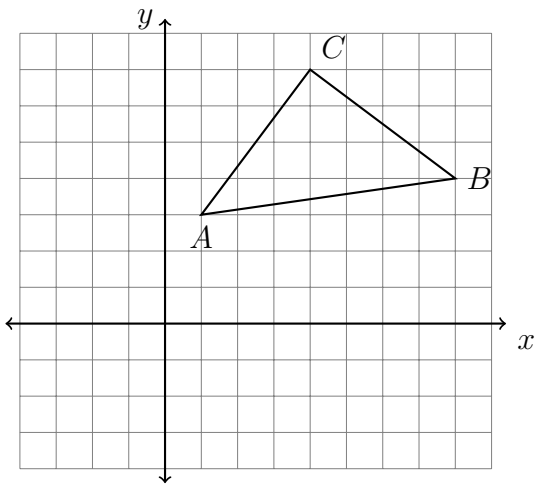
4. Given $\overrightarrow{BA} \perp \overrightarrow{BC}$, $m\angle ABD = 5x + 47$, and $m\angle DBC = 2x + 22$. Find $m\angle DBC$.

   For full credit, show the check using both angle measures.



5. $A(2, 10)$ is one endpoint of $\overline{AB}$. The segment's midpoint is $M(5, 7)$. Find the other endpoint, B.

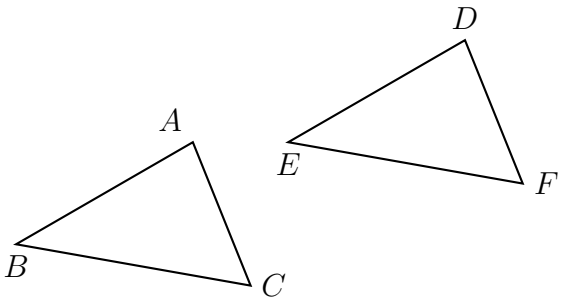
6. In the diagram below, $\triangle ABC$ has vertices with coordinates $A(1, 3)$, $B(8, 4)$ and $C(4, 7)$.



Find the length of each side of $\triangle ABC$, showing that it is isosceles and not equilateral.

$AC =$	$BC =$	$AB =$
$\sqrt{(x_C - x_A)^2 + (y_C - y_A)^2}$	$\sqrt{(x_C - x_B)^2 + (y_C - y_B)^2}$	$\sqrt{(x_B - x_A)^2 + (y_B - y_A)^2}$

7. A translation maps triangle ABC onto triangle DEF.



Fill in the blank with the corresponding object.

(a) $A \rightarrow$ _____

(b) $\angle ABC \cong$ _____

(c) _____ $\cong \overline{EF}$

8. The vertices of $\triangle JKL$ have the coordinates $J(-4,-2)$, $K(-1,-1)$, and $L(-2,3)$, as shown below.

Apply a translation of $(x,y) \rightarrow (x+7, y+4)$ to $\triangle JKL$ and then reflect the image across the x-axis. Draw both images $\triangle J'K'L'$ and $\triangle J''K''L''$ on the set of axes below, labeling the vertices.