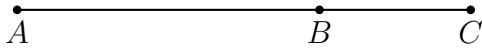


2.12 Test: Applying triangle theorems

1. Apply the Segment Addition postulate. Given \overline{ABC} with $AB = 11\frac{1}{2}$ and $BC = 6\frac{1}{4}$. Find AC .

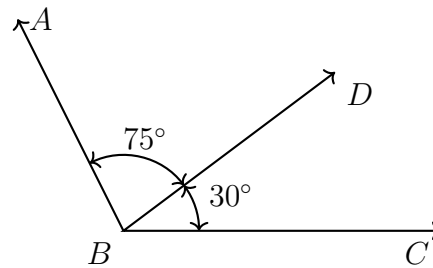


2. Apply the Angle Addition postulate. Write an equation to support your work.

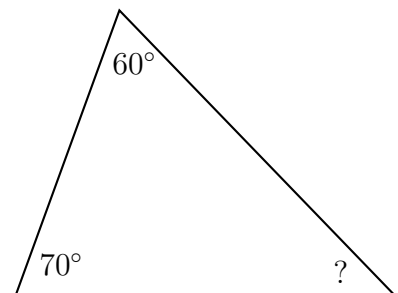
Given $m\angle ABD = 75^\circ$ and

$m\angle DBC = 30^\circ$.

Find $m\angle ABC$.

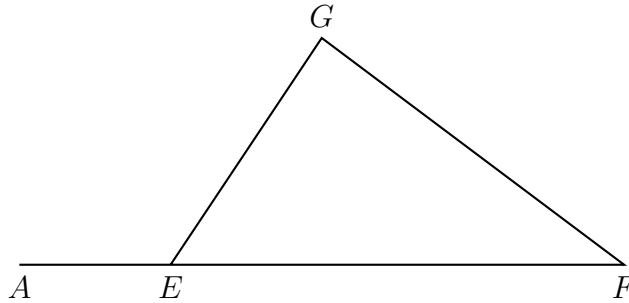


3. A triangle has two angles measuring 70° and 60° respectively. Find the measure of the third angle.

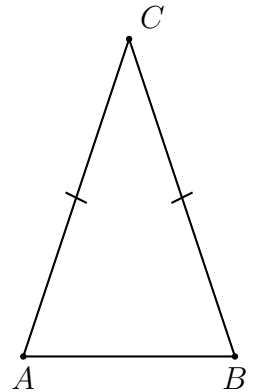


2

4. Given $\triangle EFG$ with \overline{EF} extended to A . If $m\angle F = 44^\circ$ and $m\angle G = 92^\circ$, find $m\angle AEG$.



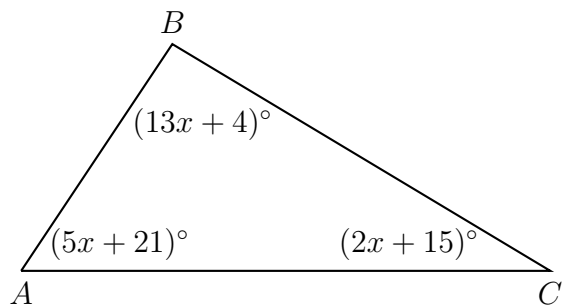
5. Given $\triangle ABC$. $\overline{AC} \cong \overline{BC}$, $m\angle A = 75$. Find $m\angle C$.



6. The measures in degrees of the three angles of a triangle are x , $\frac{1}{2}x$, and $\frac{3}{2}x$. Find the measures of the triangle's angles.

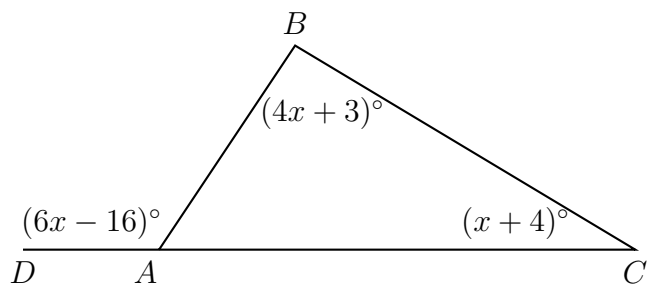
7. In $\triangle ABC$ shown below, $m\angle A = (5x + 21)^\circ$, $m\angle B = (13x + 4)^\circ$, and $m\angle C = (2x + 15)^\circ$.

What is $m\angle A$?



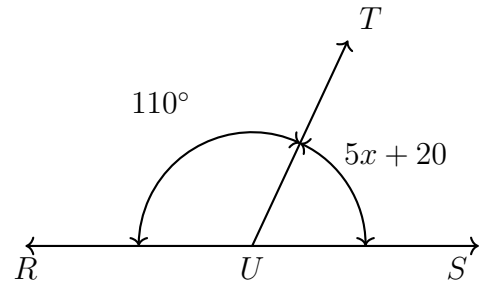
8. In $\triangle ABC$ shown below, side \overline{AC} is extended to point D with $m\angle DAB = (6x - 16)^\circ$, $m\angle C = (x + 4)^\circ$, and $m\angle B = (4x + 3)^\circ$.

Find $m\angle BAC$.

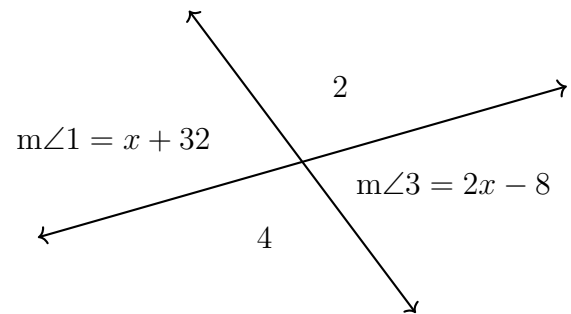


9. A linear pair is formed by two angles, $m\angle RUT = 110^\circ$ and $m\angle SUT = 5x + 20$.

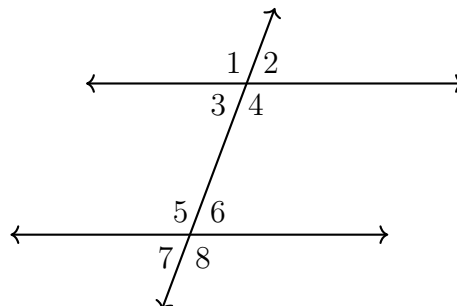
Write an equation, then solve for x .



10. As shown below, two lines intersect making four angles: $\angle 1$, $\angle 2$, $\angle 3$, and $\angle 4$. Given that $m\angle 1 = x + 32$ and $m\angle 3 = 2x - 8$, find $m\angle 1$.

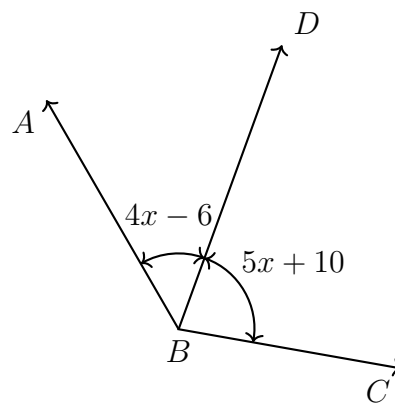


11. Given two parallel lines and a transversal, with $m\angle 1 = 3x - 10$ and $m\angle 8 = 2x + 32$. Write an equation, then solve for x .

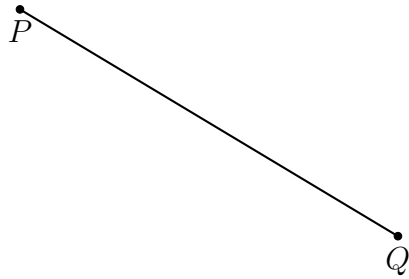


12. Given $m\angle ABD = 4x - 6$, $m\angle DBC = 5x + 10$, and $m\angle ABC = 130^\circ$, as shown.

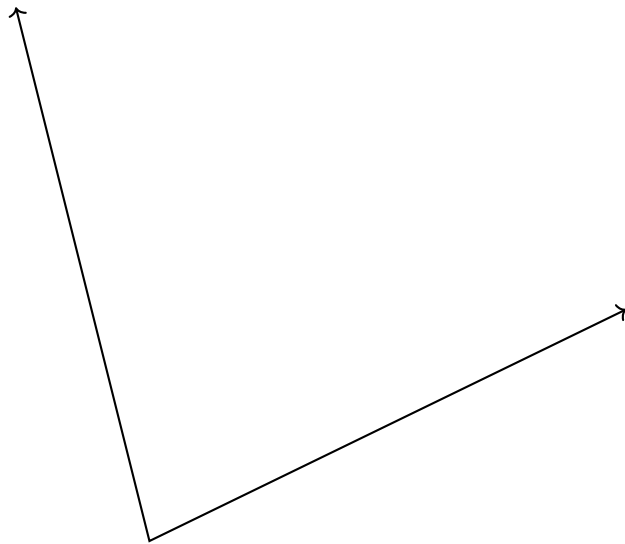
Model the situation with an equation, then solve for x . Check your solution for full credit.



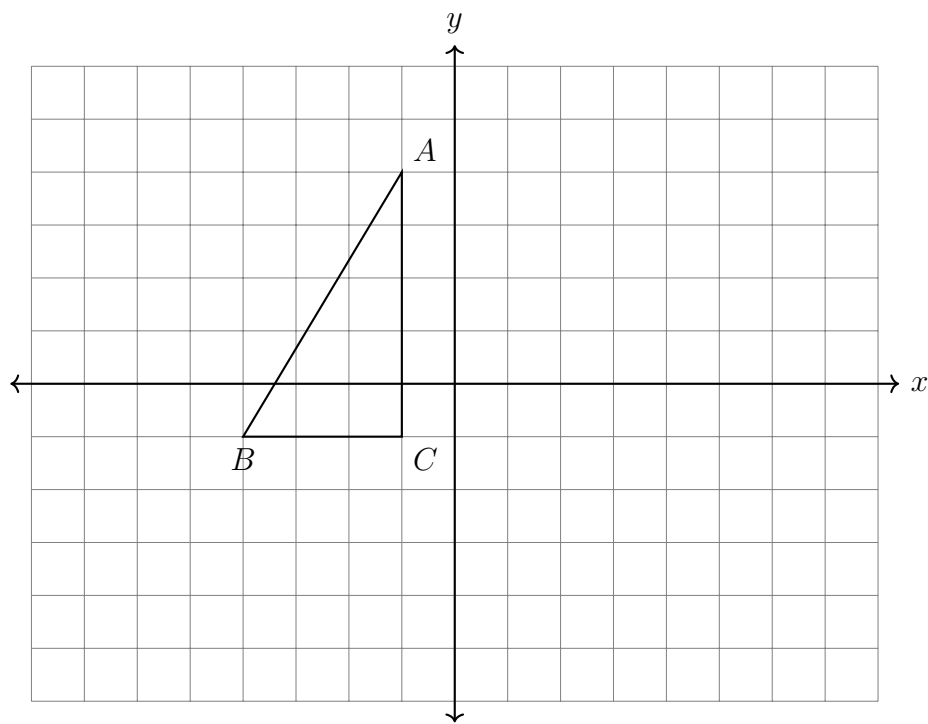
13. Construct a perpendicular bisector of \overline{PQ} .



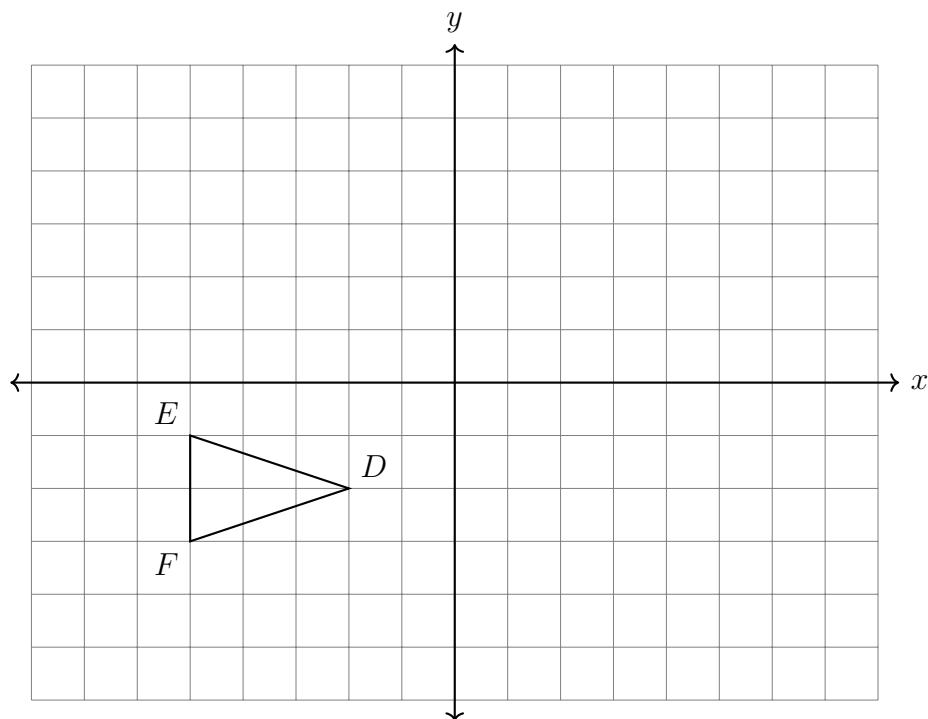
14. Construct an angle bisector of the given angle.



15. Reflect $\triangle ABC$ across the y -axis. Label the image $\triangle A'B'C'$.



16. Perform the translation $x \rightarrow x + 4, y \rightarrow y + 6$ on $\triangle DEF$. Label the image $\triangle D'E'F'$.

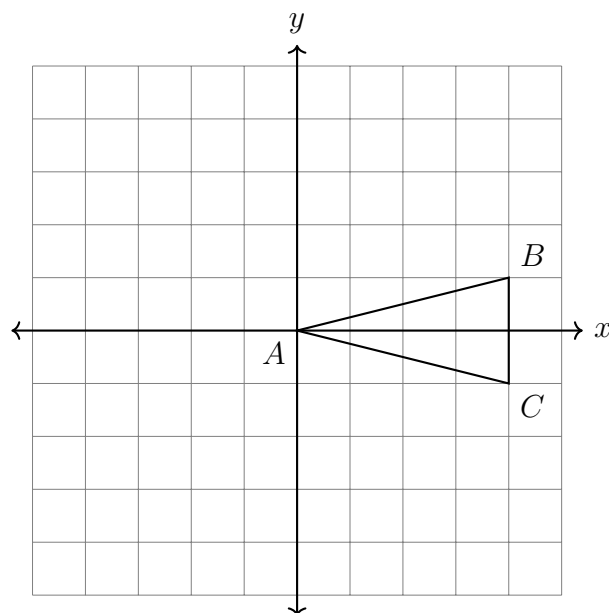


17. Rotate the triangle 180° counterclockwise around the origin, $\triangle ABC \rightarrow \triangle A'B'C'$. Complete the table of the coordinates and plot and label the image on the grid.

$$A(0, 0) \rightarrow$$

$$B(4, 1) \rightarrow$$

$$C(4, -1) \rightarrow$$



18. A translation is applied to $\triangle ABC$ moving it up 3 and to the left 2.

(a) Write as coordinate pairs the vertices of the image, $\triangle A'B'C'$

$$A(5, 2) \rightarrow$$

$$B(7, -2) \rightarrow$$

$$C(11, 5) \rightarrow$$

(b) Which triangle is larger, or are they the same size? Justify your answer.