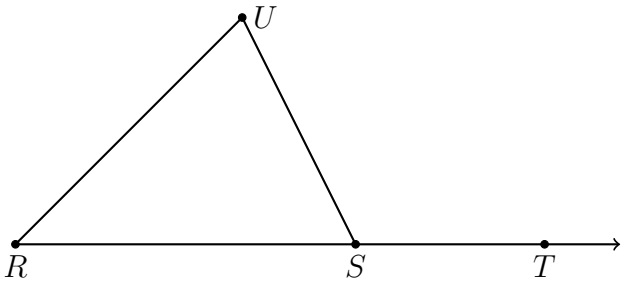
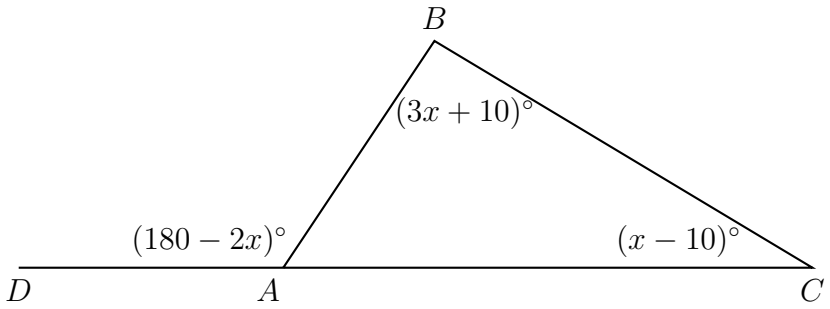
9-3 Do Now: Triangle external angles

1. Given $m\angle R = 47°$ and $m\angle UST = 103°$. Find $m\angle U$.



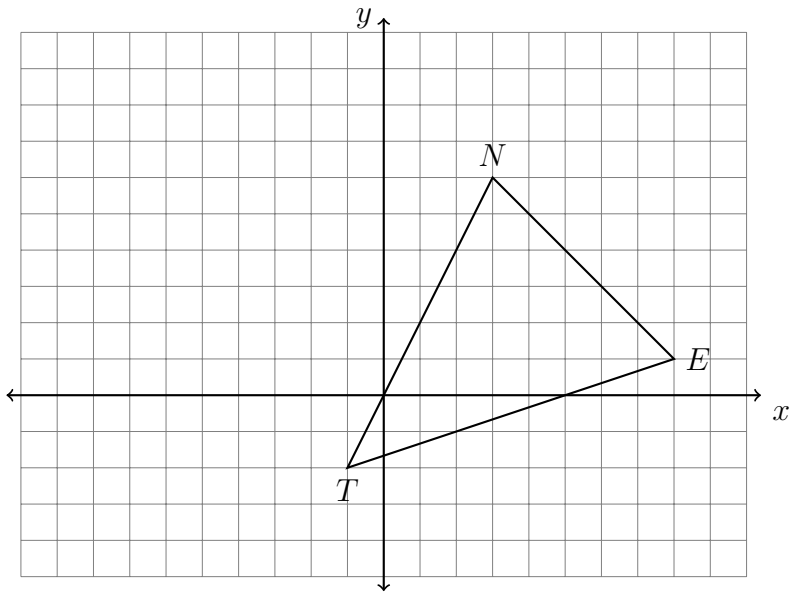
2. In $\triangle ABC$ shown below, side $\overline{AC}$ is extended to point D with $m\angle DAB = (180-2x)°$, $m\angle C = (x-10)°$, and $m\angle B = (3x+10)°$.



What is $m\angle BAC$?

3. Given $P(3, 0)$ and $Q(9, -2)$, find the length of $\overline{PQ}$. Leave the result as a simplified radical.

4. Triangle $\triangle TEN$ is graphed on the set of axes below. The vertices of $\triangle TEN$ have the coordinates $T(-1, -2)$, $E(8, 1)$, and $N(3, 6)$.



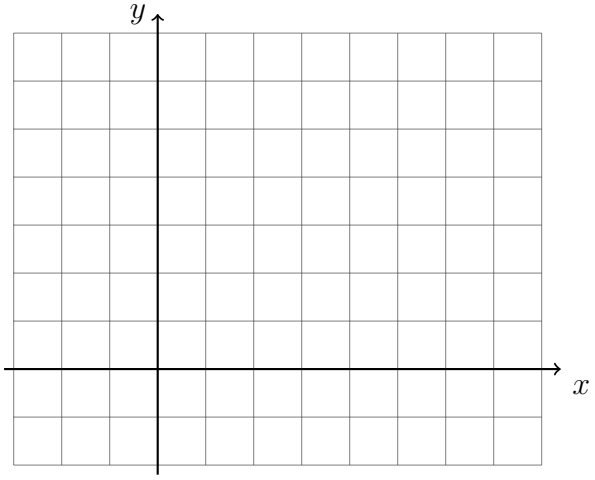
(a) Find the slope of the line segment $\overline{TE}$.

(b) What is the slope of a line perpendicular to $\overline{TE}$?

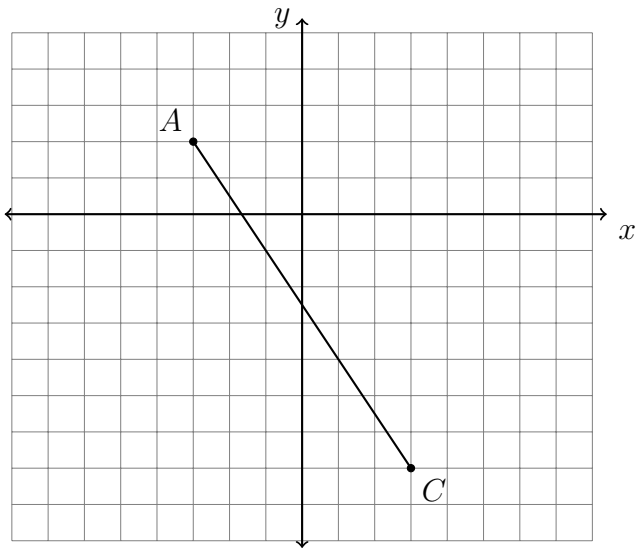
(c) Write down the equation of a line through N perpendicular to $\overline{TE}$. (use the point slope formula, $y - y_N = m_\perp(x - x_N)$).

9-3 Homework: Triangle external angles

1. On the graph below, draw $\overline{AB}$, with $A(-1, 5)$ and $B(7, 0)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{AB}$ and mark and label it on the graph.

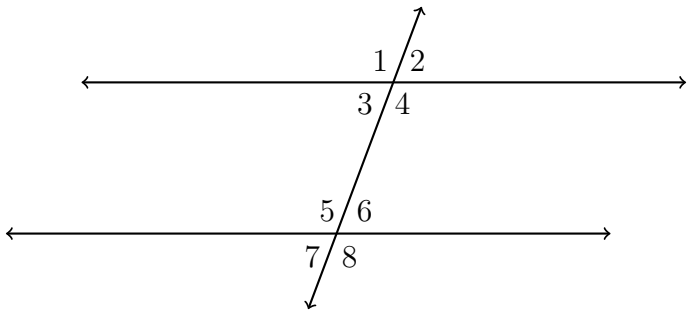


2. In the diagram below, $\overleftrightarrow{AC}$ has endpoints with coordinates $A(-3, 2)$ and $C(3, -7)$.



If B is a point on and $AB{:}BC = 1{:}2$, what are the coordinates of B?

3. Given two parallel lines and a transversal, as shown. Apply the theorem, "If a transversal intersects two parallel lines, then corresponding angles are congruent."



   (a) State the angle corresponding with $\angle 2$.

   (b) Given $m\angle 4 = 115^\circ$ and $m\angle 6 = 5x^\circ$. Find x.

   (c) Given $m\angle 7 = 65^\circ$. Find $m\angle 2$.

   (d) In a proof, what reason would justify $\angle 4 \cong \angle 5$? _____

4. The image of triangle ABC after a translation is $\triangle A'B'C'$. Is the area of the triangle greater, smaller, or the same after the translation? Justify your answer.