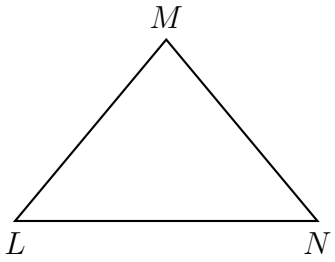
8.1 Classwork: External angles

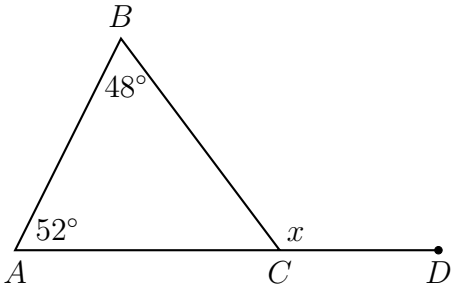
1. A triangle has two angles measuring $70°$ and $60°$ respectively. Find the measure of the third angle.

2. Given $\triangle LMN$ with $m\angle L = 2x + 20$, $m\angle N = 3x - 5$, and $m\angle M = x + 15$. Find x.

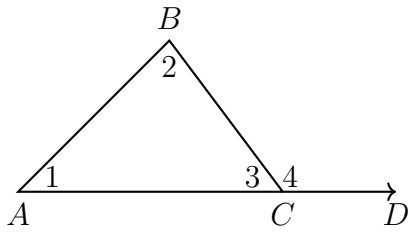


3. The measures in degrees of the three angles of a triangle are $2x$, $x + 10$, and $3x - 40$. Find x.

4. As shown below, triangle ABC has $m\angle A = 52°$ and $m\angle B = 48°$. Find the measure of the external angle $\angle BCD = x$.



5. Given $\triangle ABC$ with $\overrightarrow{ACD}$.



Which equation is always true?

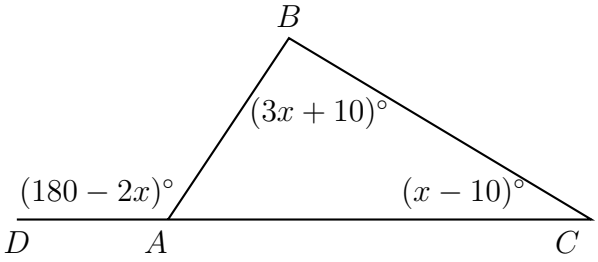
(a) $m\angle 3 = m\angle 1 + m\angle 2$

(b) $m\angle 3 = m\angle 1 - m\angle 2$

(c) $m\angle 4 = m\angle 1 + m\angle 2$

(d) $m\angle 4 = m\angle 3 - m\angle 2$

6. 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 $m\angle B = (3x + 10)°$. Solve for x.



7. A regular hexagon is rotated about its center. Which degree measure will carry the regular hexagon onto itself?

(a) 45°

(b) 90°

(c) 120°

(d) 135°

8. What is the smallest non-zero angle of rotation about its center that would map the octagon onto itself?