BECA / Dr. Huson / Geometry
Unit 8: YTD Regents review
13 February 2023

Name: Solutions

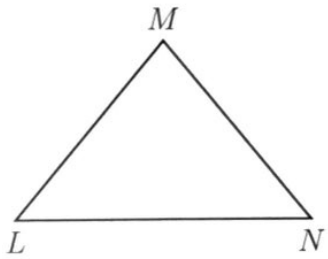
8.1 Classwork: External angles

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

$70 + 60 + x = 180$
$x = 50°$

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

$(2x+20) + (3x-5) + (x+15) = 180$
$6x + 30 = 180$
$6x = 150$
$x = 25$



check
$m\angle L = 2(25)+20 = 70$
$m\angle N = 3(25)-5 = 70$
$m\angle M = (25)+15 = 40$

$70+70+40 = 180$ ✓

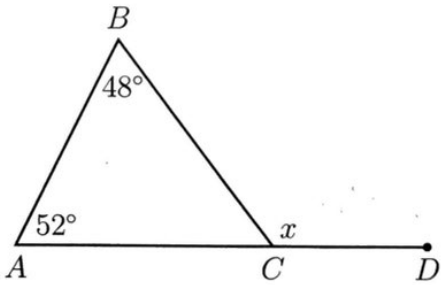
3. The measures in degrees of the three angles of a triangle are $2x$, $x + 10$, and $3x - 40$. Find x.

$2x + (x+10) + (3x-40) = 180$
$6x - 30 = 180$
$6x = 210$
$x = 35$

$2(35) = 70$
$(35)+10 = 45$
$3(35)-40 = 65$

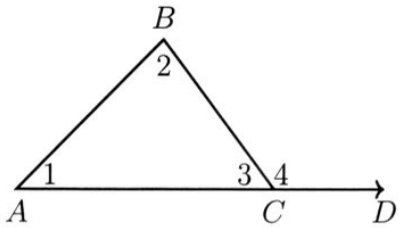
$70+45+65 = 180$

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



$x = 48 + 52$
$= 100°$

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



Which equation is always true?

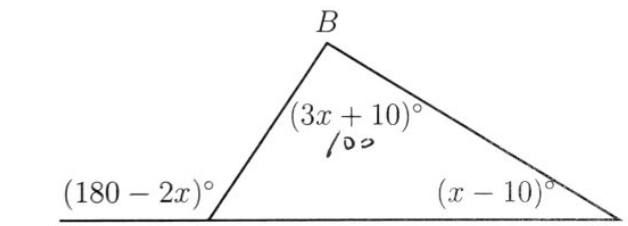
(a) $m\angle 3 = m\angle 1 + m\angle 2$

(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.



$180 - 2x = (3x+10) + (x-10)$

$180 - 2x = 4x$

$180 = 6x$

$x = 30$

$180 - 60 = 120$

$120 = 100 + 20$ ✓

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

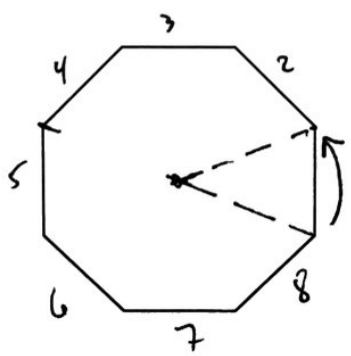
(a) 45°

(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?



$\frac{360}{8} = 45°$