

Exterior Angles

The exterior angle of a triangle is always equal to the sum of the opposite interior angles.

Example 1: Examine the figures below. Find the measure of the missing angle.

Figure A

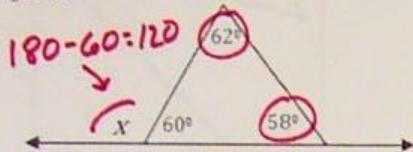
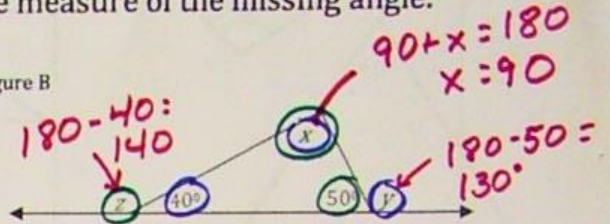


Figure B



- 1) Sum \angle 's in triangle = $180 = 62 + 60 + 58$
- 2) $x = 120^\circ$
- 3) Sum of interior angles opposite of angle "x" = $62 + 58 = 120^\circ$

- 1) $\angle x = 90$
- 2) $\angle y = 130^\circ$ $\angle z = 140^\circ$
- 3) Sum of interior angles opposite of angle "y" = $40 + 90 = 130^\circ$
Sum of interior angles opposite of angle "z" = $90 + 50 = 140^\circ$

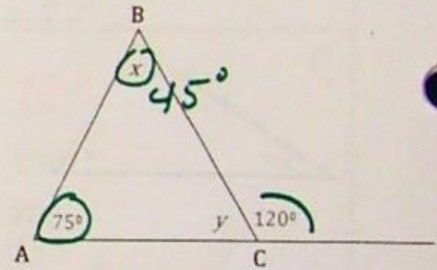
Example 2: Find the measure of $\angle x$ and $\angle y$.

Step 1: Use the rule for exterior angles to write equation.

$$120^\circ = \angle A + \angle B$$

$$120^\circ = 75^\circ + x$$

$$45^\circ = x$$



Step 2: The sum of the interior angles of a triangle equals 180° , and $\angle BCA$ supplements $\angle BCD$, so either equation:

SUM of INTERIOR ANGLES

$$180^\circ = 75^\circ + 45^\circ + y$$

$$180^\circ = 75^\circ + 45^\circ + y$$

$$180^\circ = 120^\circ + y$$

$$60^\circ = y$$

SUPPLEMENTAL ANGLES

$$180^\circ = 120^\circ + \angle y$$

$$60^\circ = y$$

Independent Practice

Part 1: Find the measure of the missing angle measures. Show an equation for each angle.

<p>1)</p> <p> $180 - 102 = x$ $x = 78^\circ$ $38 + y = 102$ $y = 64^\circ$ </p>	<p>2)</p>
<p>3)</p>	<p>4)</p>
<p>5)</p>	<p>6)</p>
<p>7)</p> <p> $w = 138^\circ$ $z = 42^\circ$ $y = 180 - 133 = 47^\circ$ $w = 91 + 47 = 138^\circ$ $z = 180 - 138 = 42^\circ$ </p>	
<p>8)</p> <p> $x + 82 = 2x + 45$ </p>	
<p>9)</p>	