

Module 1: Topic 3 Lesson 1 — Pulling a One-Eighty!

WRITE: Using the word bank, write the term that best completes each statement.

- The Triangle Sum Theorem states that the sum of the measures of the interior angles of a triangle is 180° .
- The Exterior Angle Theorem states that the measure of an exterior angle of a triangle is equal to the sum of the measures of the remote interior angles of the triangle.
- The Remote Interior Angles are the two angles that are non-adjacent to the specified exterior angle.
- A(n) Exterior Angle is formed by extending a side of a polygon.

Word Bank
Remote Interior Angle
Exterior Angle
Triangle Sum Theorem
Exterior Angle Theorem

PRACTICE: Use the figure shown to answer each question.

1. a. Explain how you can use the Exterior Angle Theorem to calculate the measure of $\angle PMU$.

Add the two remote interior angles ($\angle mPB$ & $\angle mBP$) to find exterior angle $\angle PMU$

- b. Calculate the measure of $\angle PMU$. 66°

$\angle PMU = 21 + 35$

- c. Explain how you can use the Triangle Sum Theorem to calculate the measure of $\angle UPM$.

The sum of all of the measures in a Δ is 180° . Add measures of the two given angles and subtract from 180° .

- d. Calculate the measure of $\angle UPM$. 52°

$66 + 62 = 128$
 $180 - 128 = 52^\circ$

- e. List the sides of ΔPMB in order from shortest to longest.

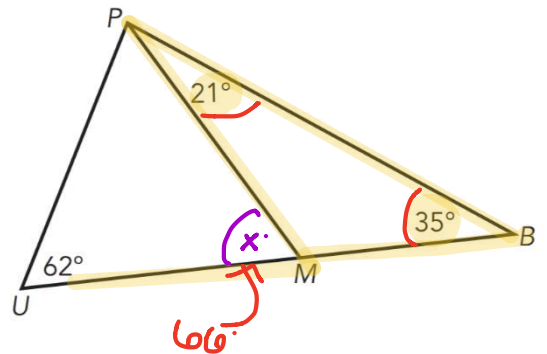
- \overline{MB}
- \overline{PM}
- \overline{BP}

\leftarrow * shortest side across from smallest angle
 longest side is across from largest angle.

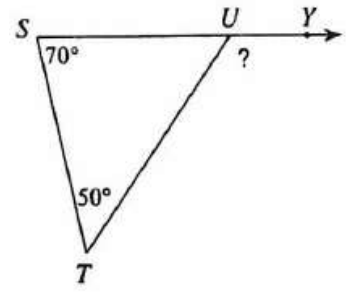
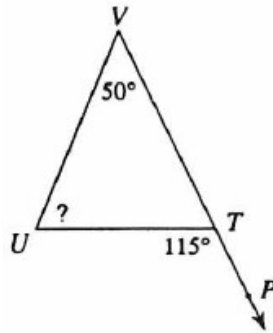
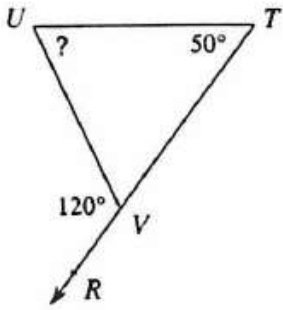
- f. List the sides of ΔPUB in order from shortest to longest.

- \overline{UM}
- \overline{MP}
- \overline{UP}

\leftarrow



2. Write an equation and find the measure of each missing angle.



Equation: $x + 50 = 120$

Solve:

$$\begin{array}{r} x + 50 = 120 \\ -50 \quad -50 \\ \hline x = 70 \end{array}$$

$x = 70^\circ$

Equation: $x + 50 = 115$

Solve:

$$\begin{array}{r} x + 50 = 115 \\ -50 \quad -50 \\ \hline x = 65 \end{array}$$

$x = 65$

Equation: $70 + 50 = x$

Solve:

$$\begin{array}{r} 70 + 50 = x \\ 120 = x \end{array}$$

$x = 120$

3. Determine the measure of the unknown angle in each triangle. Show your work for each problem.

<p>a.</p> <p>$78 + 37 = 115$ $180 - 115 = 65$</p> <p>65</p>	<p>b.</p> <p>$80 + 66 = 146$ $180 - 146 = 34$</p> <p>34</p>	<p>c.</p> <p>$28 + 35 = 63$ $180 - 63 = 117$</p> <p>117</p>	<p>d.</p> <p>$90 + 32 = 122$ $180 - 122 = 58$</p> <p>58</p>
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4. List the side lengths in order from **shortest to longest** in each triangle.

<p>a.</p> <p>$118 + 28 + x = 180$ $x + 146 = 180$ $-146 \quad -146$ $x = 34$</p> <p>ΔKLM</p> <p><u>l</u></p> <p><u>m</u></p> <p><u>k</u></p>	<p>b.</p> <p>$67 + 27 = 94$ $180 - 94 = 86$</p> <p>$79 + 64 = 143$ $180 - 143 = 37$</p> <p>ΔWXY</p> <p><u>b</u></p> <p><u>a</u></p> <p><u>c</u></p> <p>ΔWYZ</p> <p><u>c</u></p> <p><u>d</u></p> <p><u>e</u></p>
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