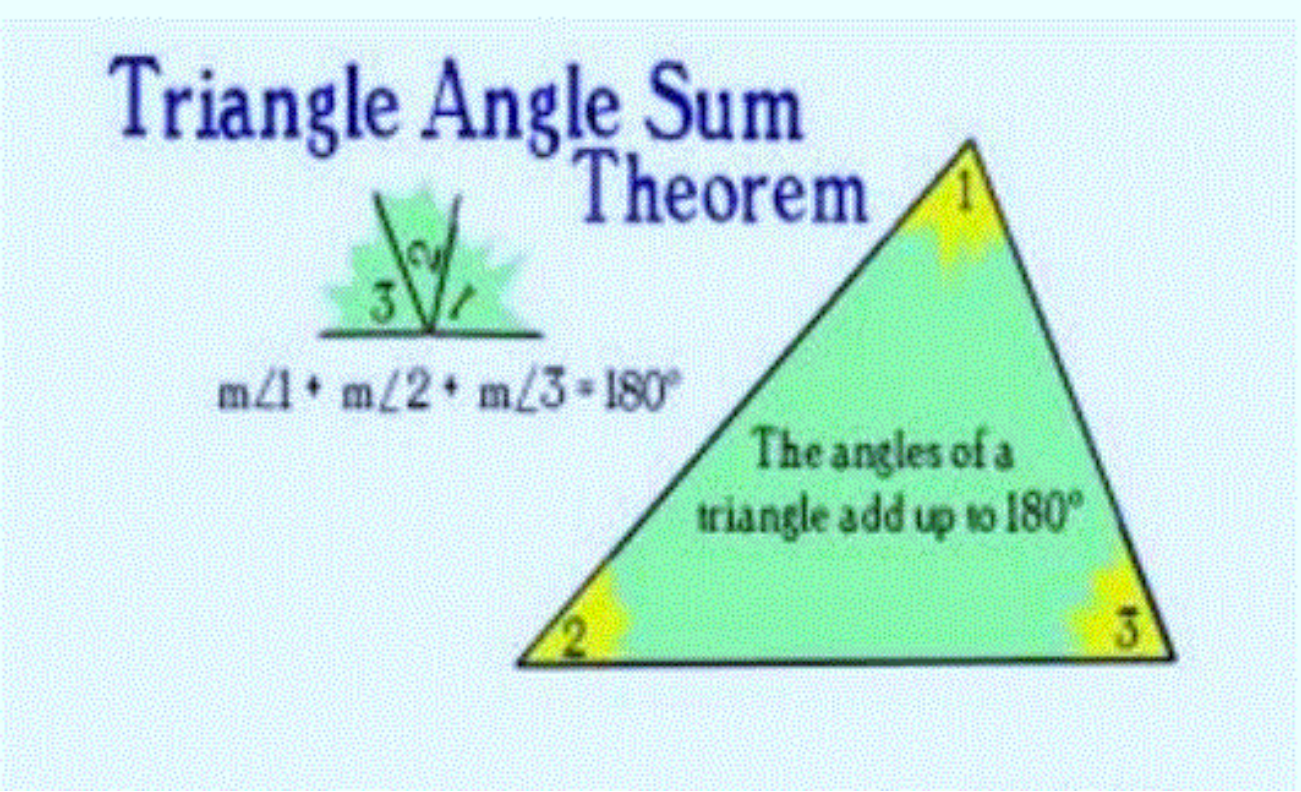
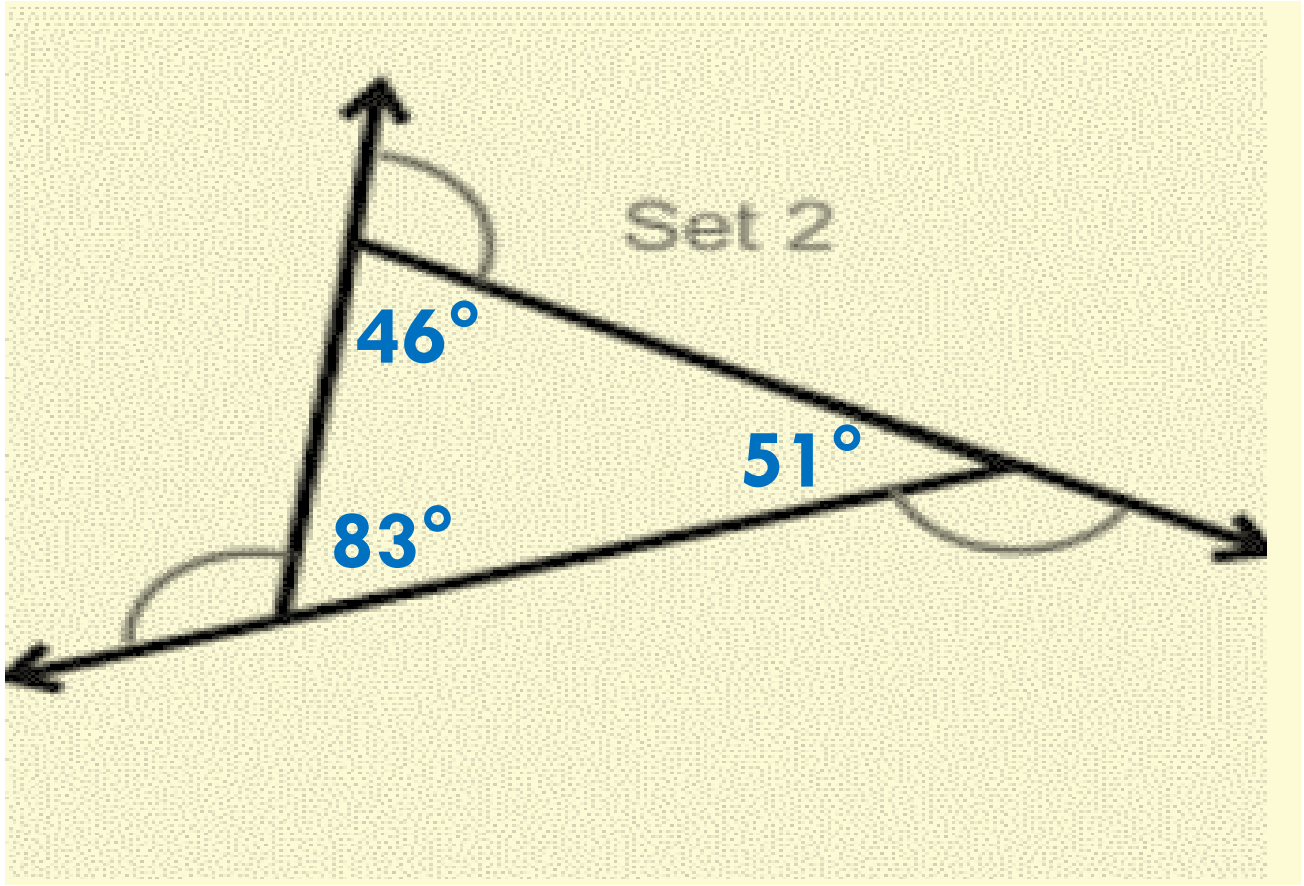


The sum of the interior angles of a triangle equals 180°.

TRIANGLE ANGLE SUM THEOREM



$46° + 51° + 83° = 180°$

TRIANGLE ANGLE SUM THEOREM

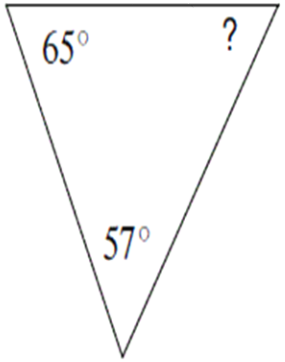
The sum of the interior angles of a triangle equals 180°.

GUIDED PRACTICE

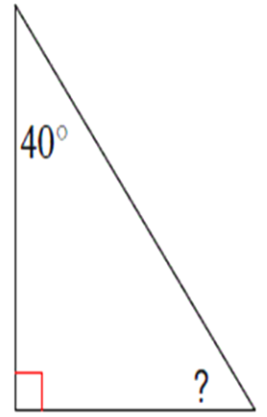
How would you find the missing interior angle of the triangles?

Find the measure of each angle indicated.

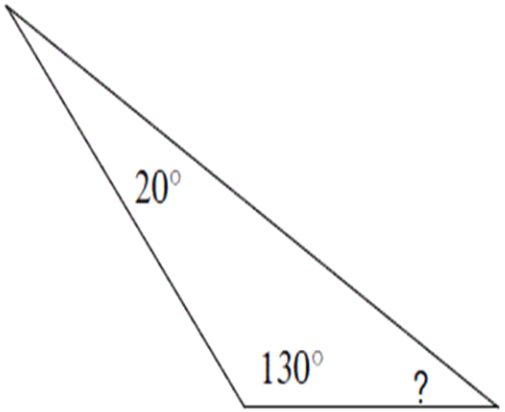
1)



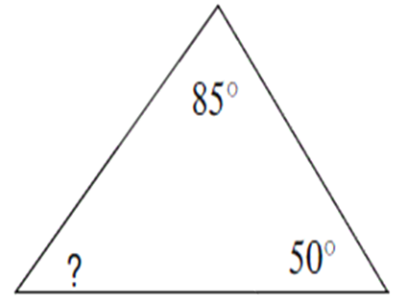
2)



3)



4)

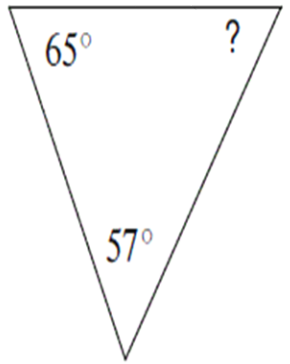


GUIDED PRACTICE

Add the measures of the 2 given angles. Then subtract their sum from 180°.

Find the measure of each angle indicated.

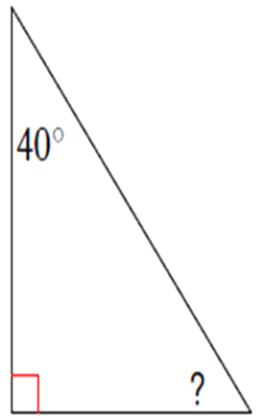
1)



$65° + 57° = 122°$

$180° - 122° = 58°$

2)



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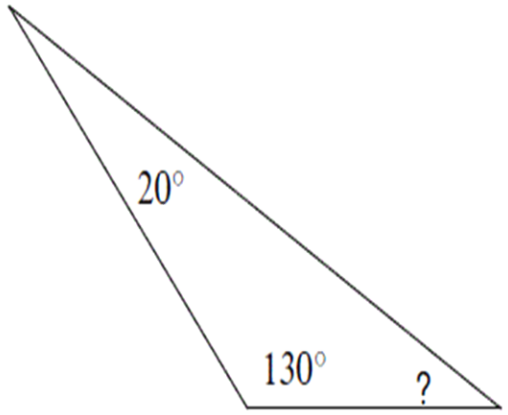
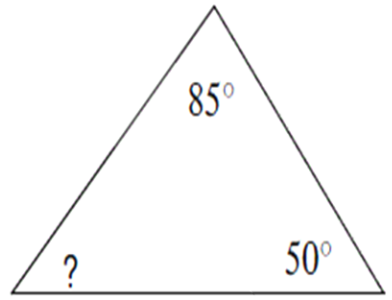


4)

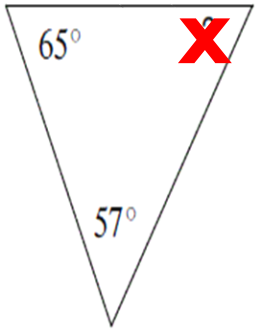


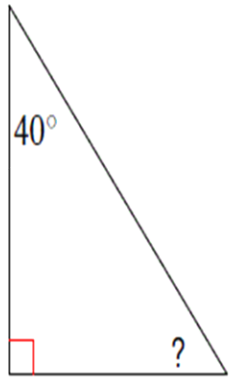
ANGLE + ANGLE + ANGLE = 180°

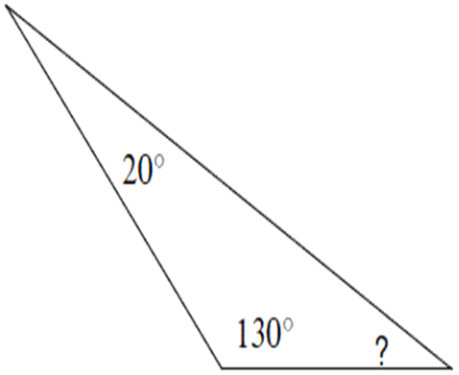
GUIDED PRACTICE

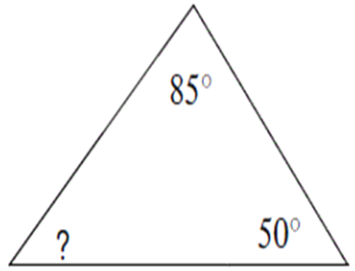
Write an equation. Let x be the measure of the missing angle and set equal to 180°

Find the measure of each angle indicated.

1) 

2) 

3) 

4) 

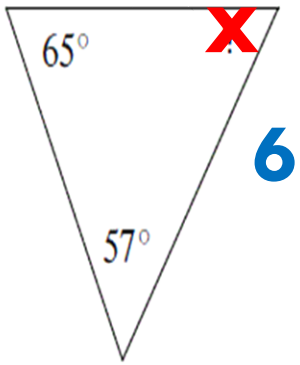
ANGLE + ANGLE + ANGLE = 180°

GUIDED PRACTICE

Write an equation. Let x be the measure of the missing angle and set equal to 180°

Find the measure of each angle indicated.

1)



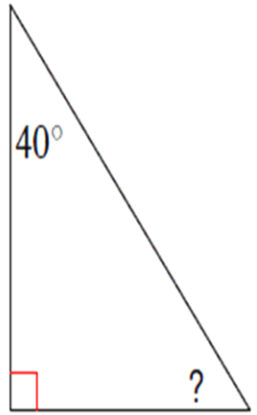
$65 + 57 + x = 180$

$x + 122 = 180$

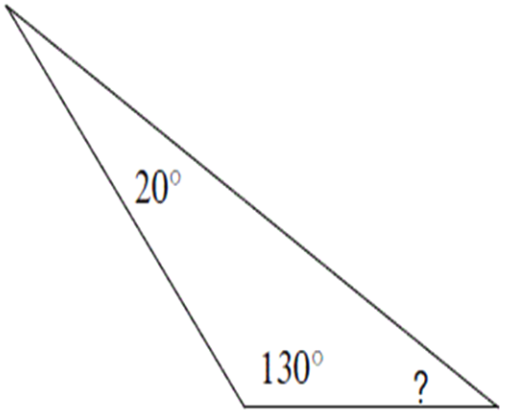
$-122 = -122$

$x = 58°$

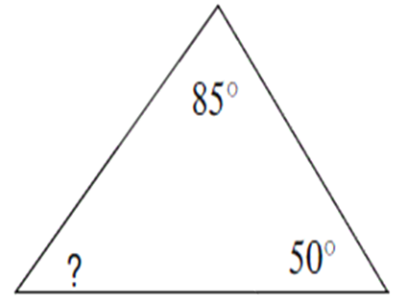
2)



3)



4)

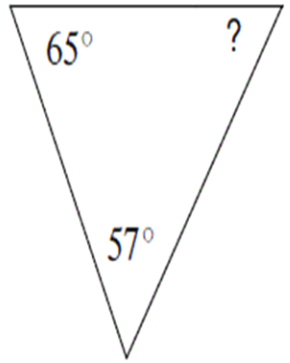


GUIDED PRACTICE

Add the measures of the 2 given angles. Then subtract their sum from 180°.

Find the measure of each angle indicated.

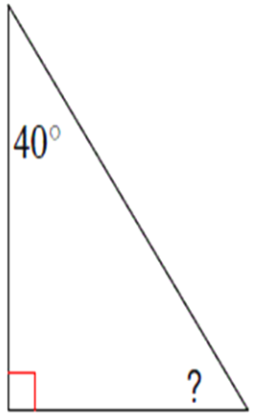
1)



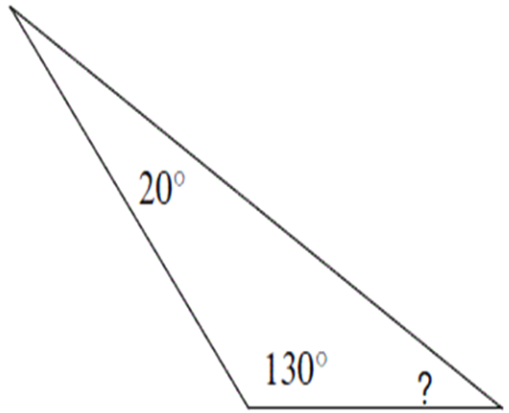
40°
+ 90°
130°

180°
- 130°
50°

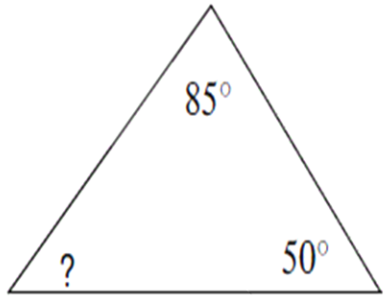
2)



3)



4)

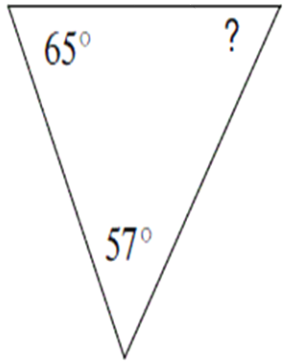


GUIDED PRACTICE

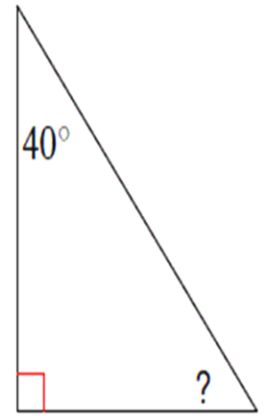
Add the measures of the 2 given angles. Then subtract their sum from 180°.

Find the measure of each angle indicated.

1)

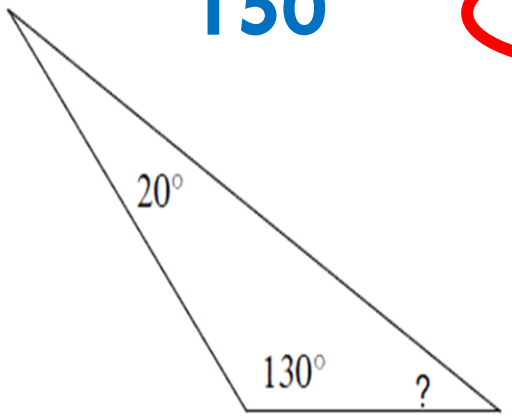


2)

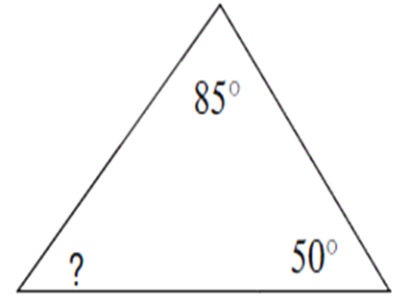


$$\begin{array}{r} 130° \\ +\ 20° \\ \hline 150° \end{array} \qquad \begin{array}{r} 180° \\ -\ 150° \\ \hline 30° \end{array}$$

3)



4)

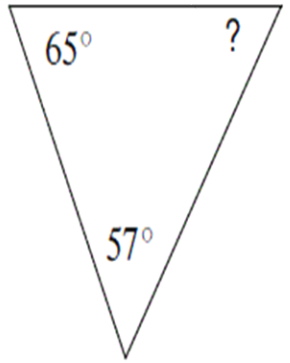


GUIDED PRACTICE

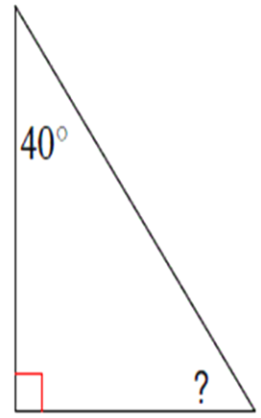
Add the measures of the 2 given angles. Then subtract their sum from 180°.

Find the measure of each angle indicated.

1)

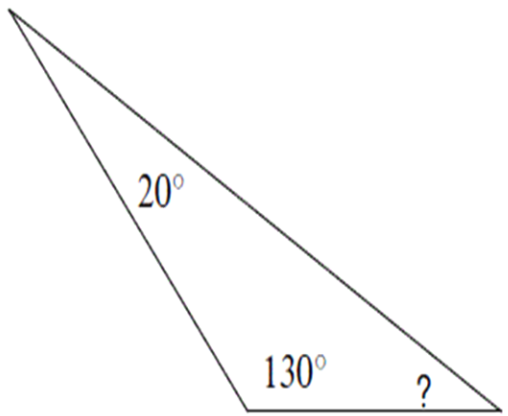


2)



$$\begin{array}{r} 85^\circ \\ +\ 50^\circ \\ \hline 135^\circ \end{array} \qquad \begin{array}{r} 180^\circ \\ -\ 135^\circ \\ \hline 45^\circ \end{array}$$

3)



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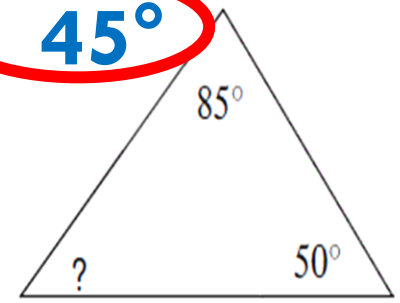
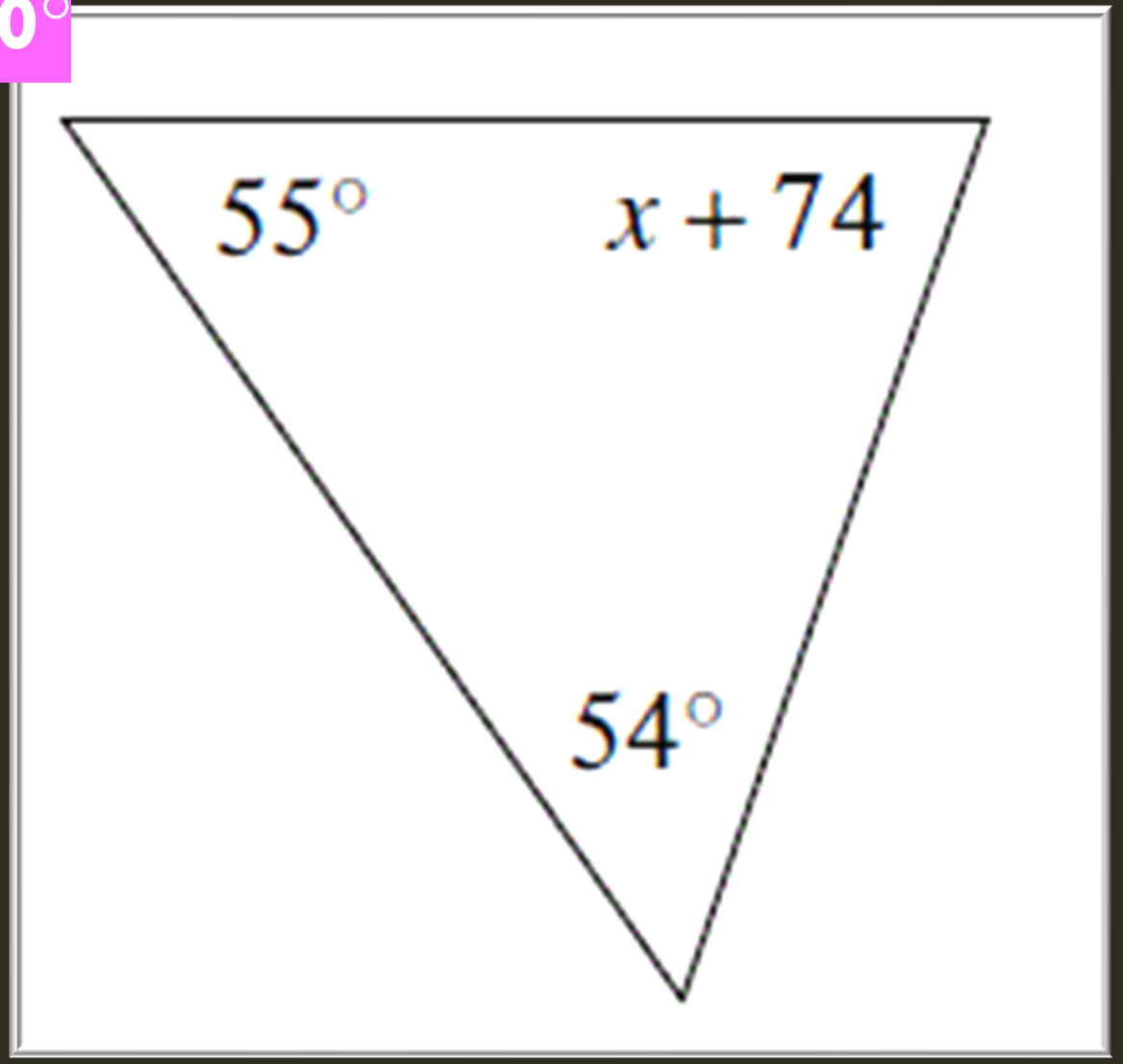


Set Up an Equation.

ANGLE + ANGLE + ANGLE = 180°

GUIDED PRACTICE

Find the value of x.



GUIDED PRACTICE

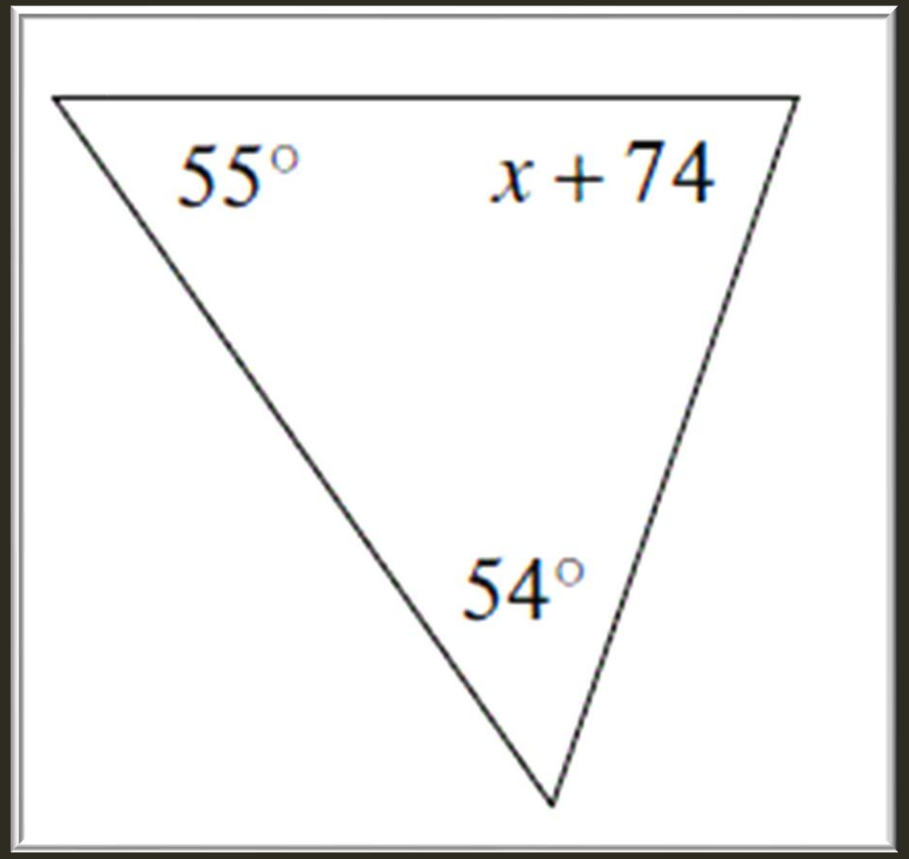
$x + 74 + 55 + 54 = 180$

$x + 183 = 180$

$-183 = -183$

$x = -3$

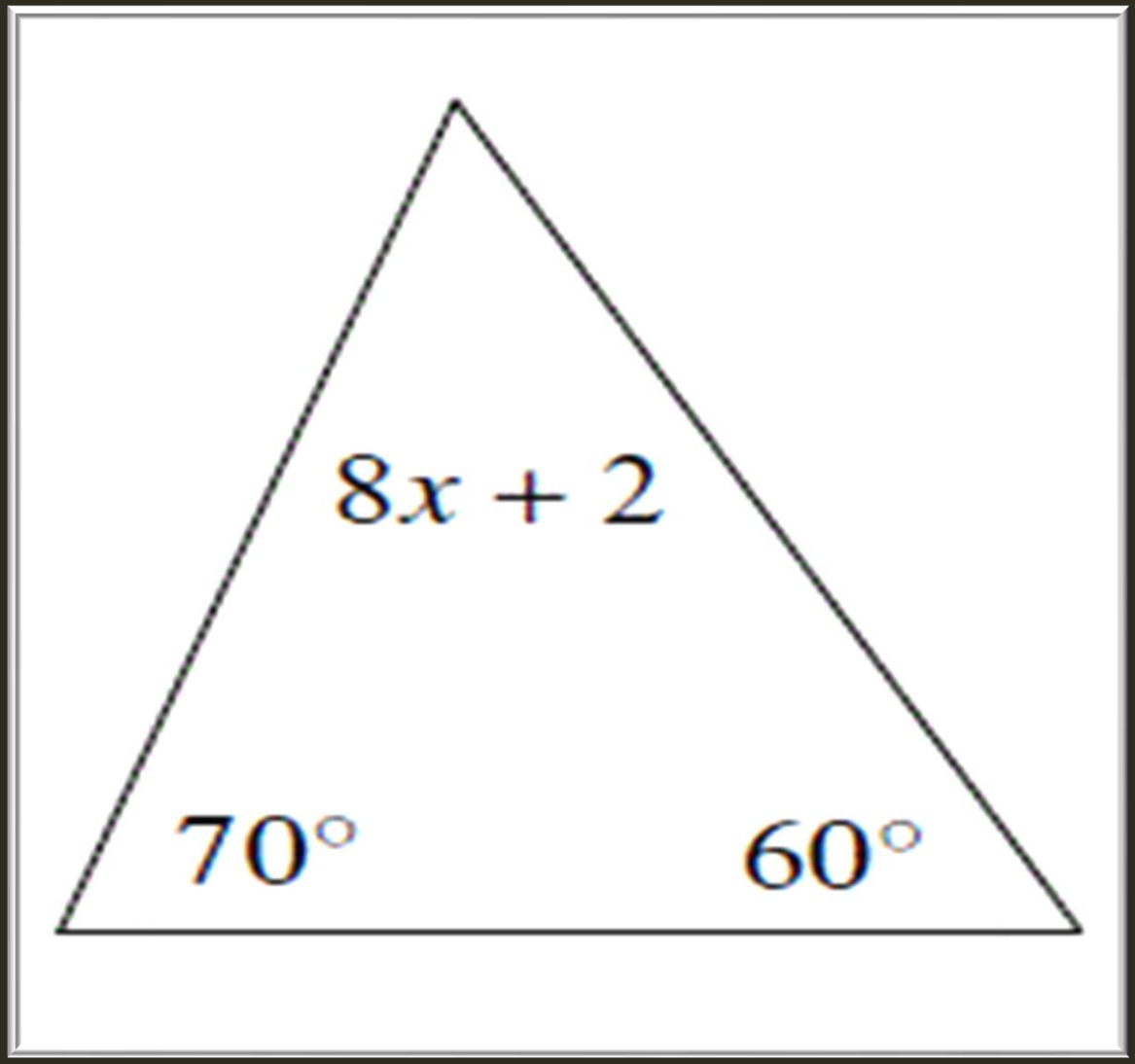
Find the value of x.



Set Up an Equation.

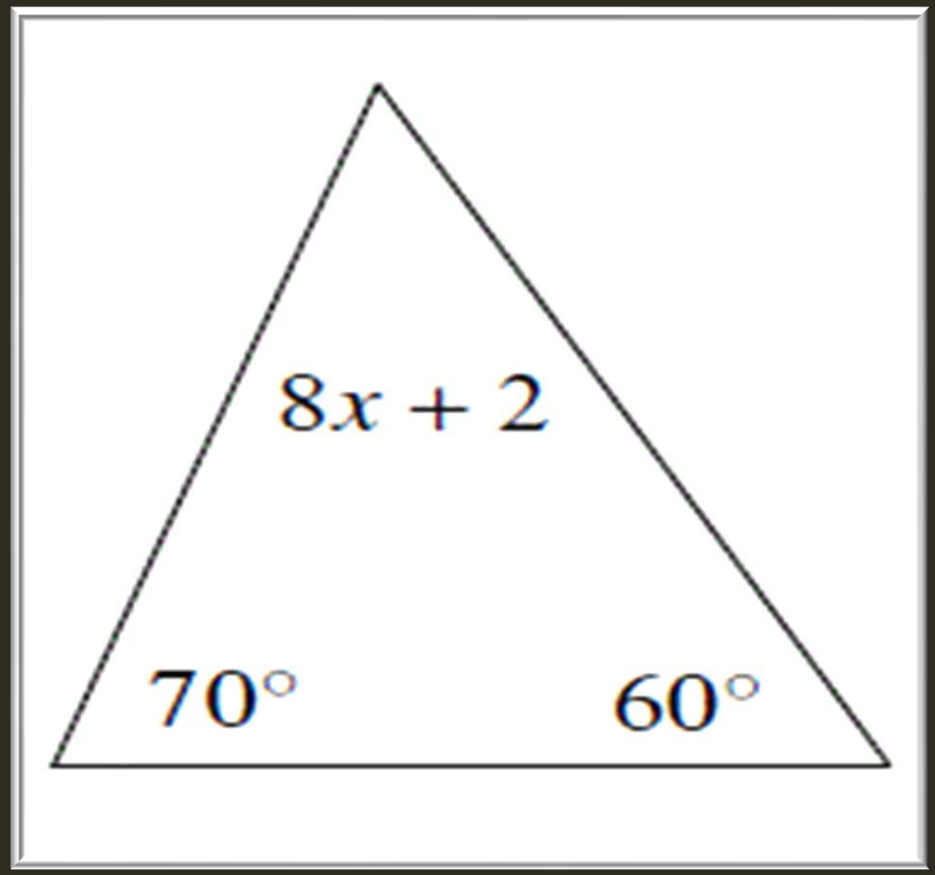
ON YOUR OWN

Find the value of x.



ANGLE + ANGLE + ANGLE = 180°

Find the value of x.



ON YOUR OWN

$8x + 2 + 70 + 60 = 180$

$8x + 132 = 180$

$-132 = -132$

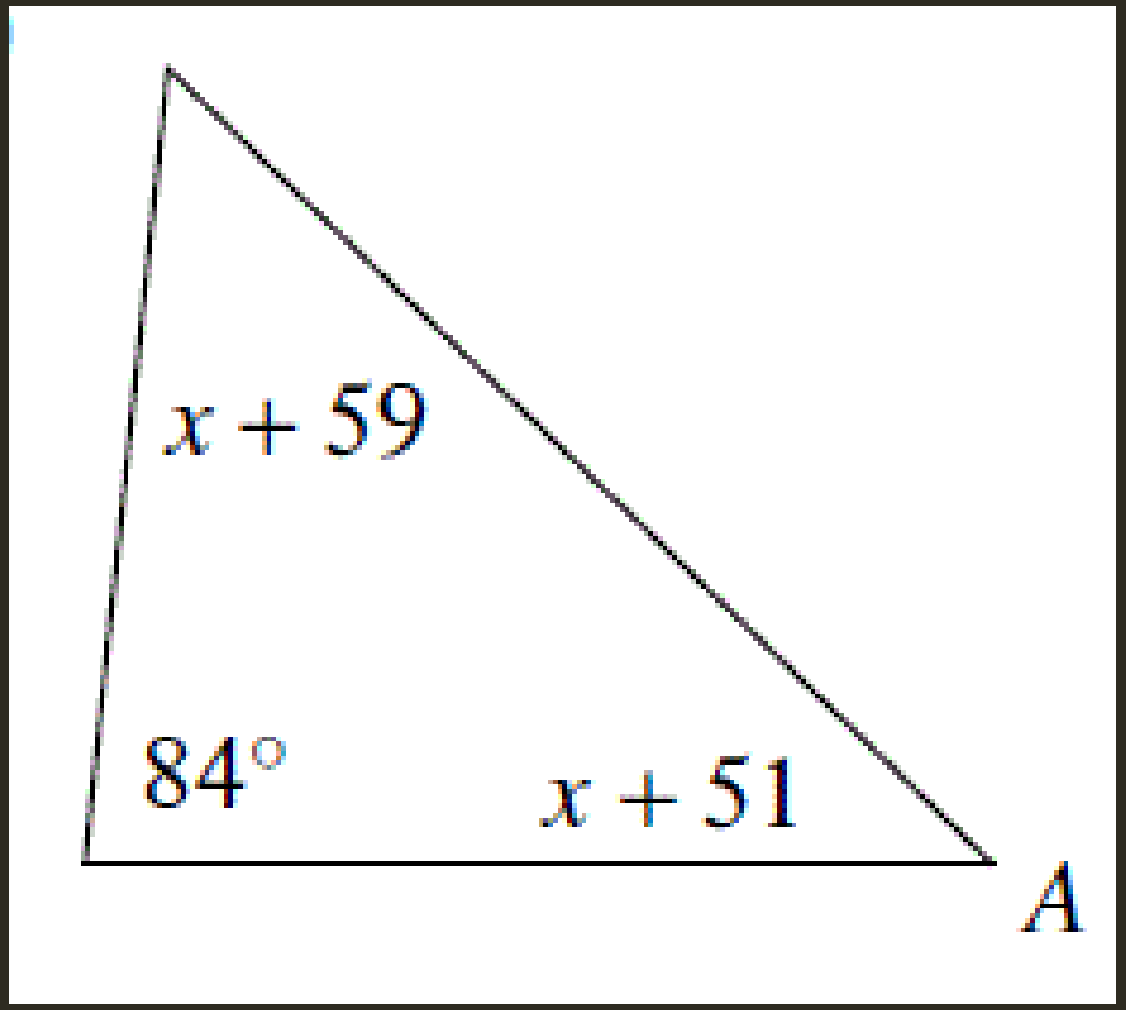
$\frac{8x}{8} = \frac{48}{8}$

$x = 6$

Find x. Then, plug x back in to find the angle measure.

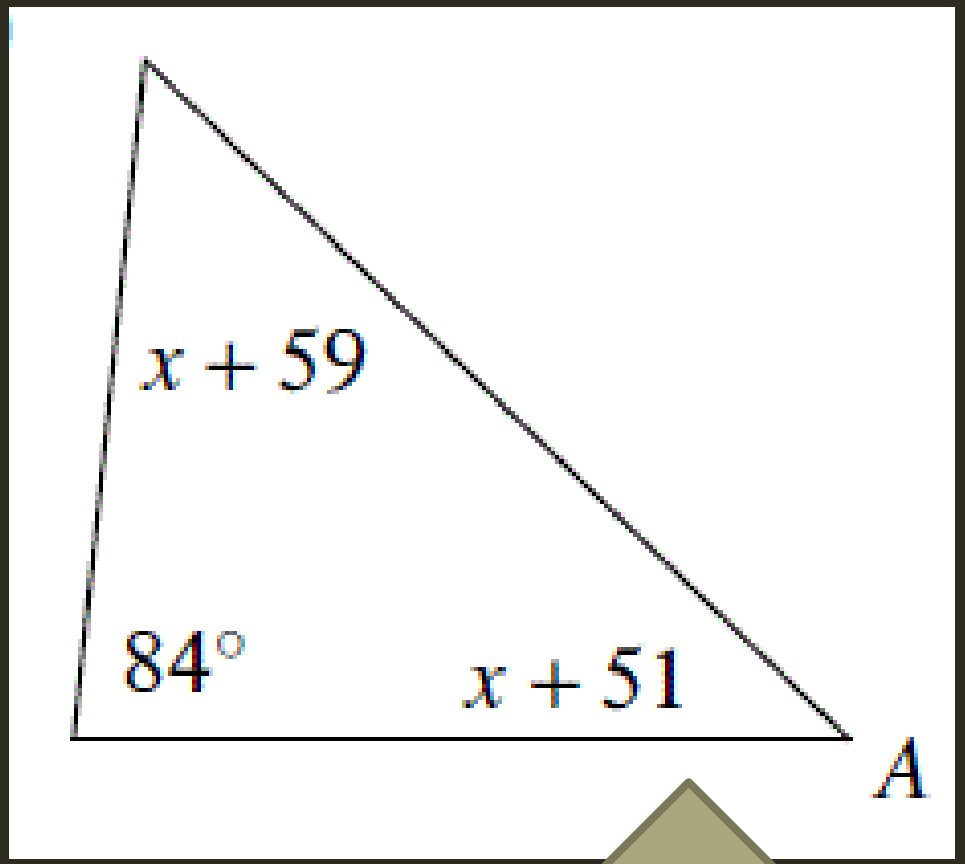
GUIDED PRACTICE

Find the measure of $\angle A$.



GUIDED PRACTICE

Find the measure of $\angle A$.



$84 + x + 59 + x + 51 = 180$

$2x + 194 = 180$

$-194 = -194$

$\frac{2x}{2} = \frac{-14}{2}$

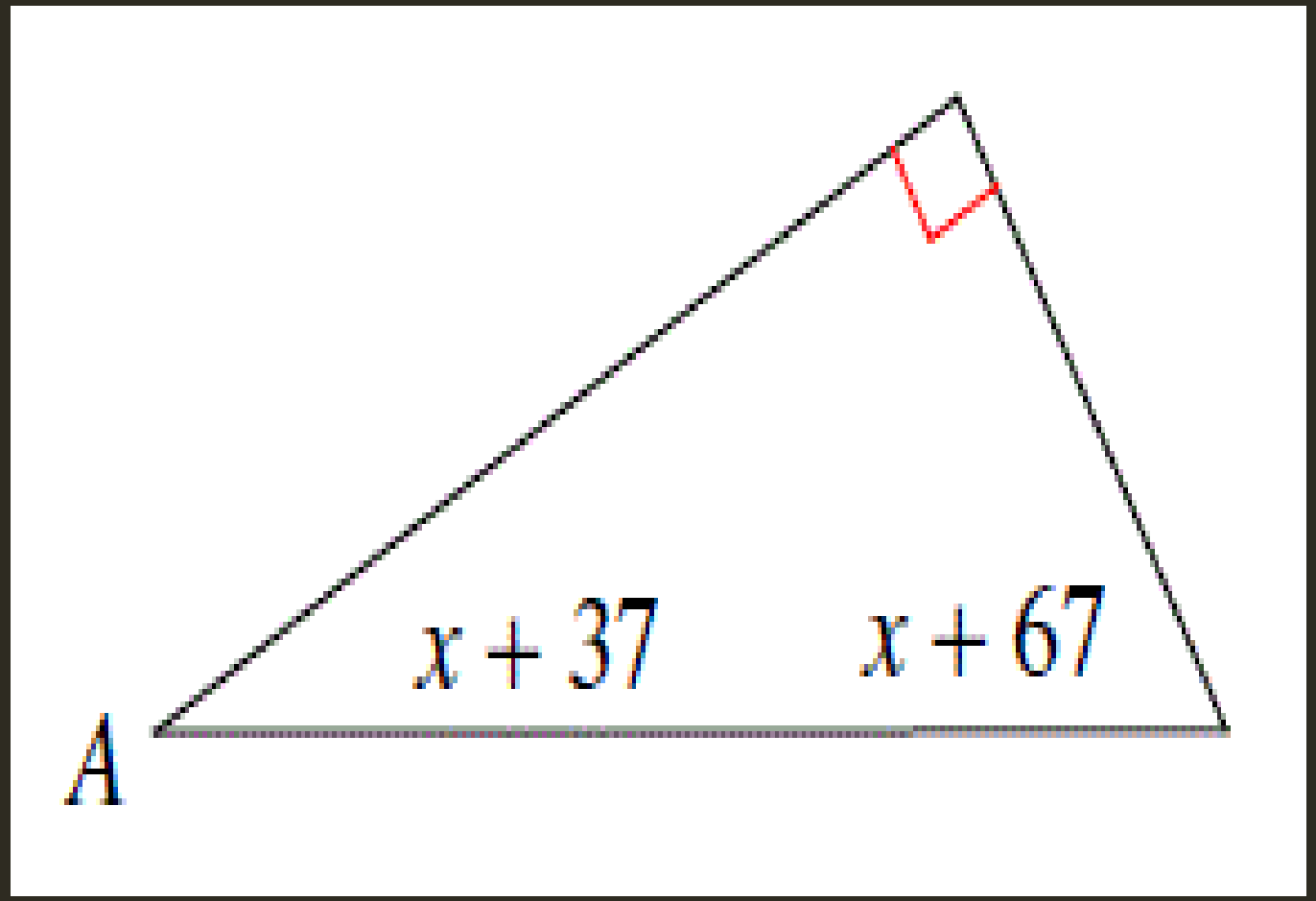
$x = -7$

$x + 51 = -7 + 51$ $4°$

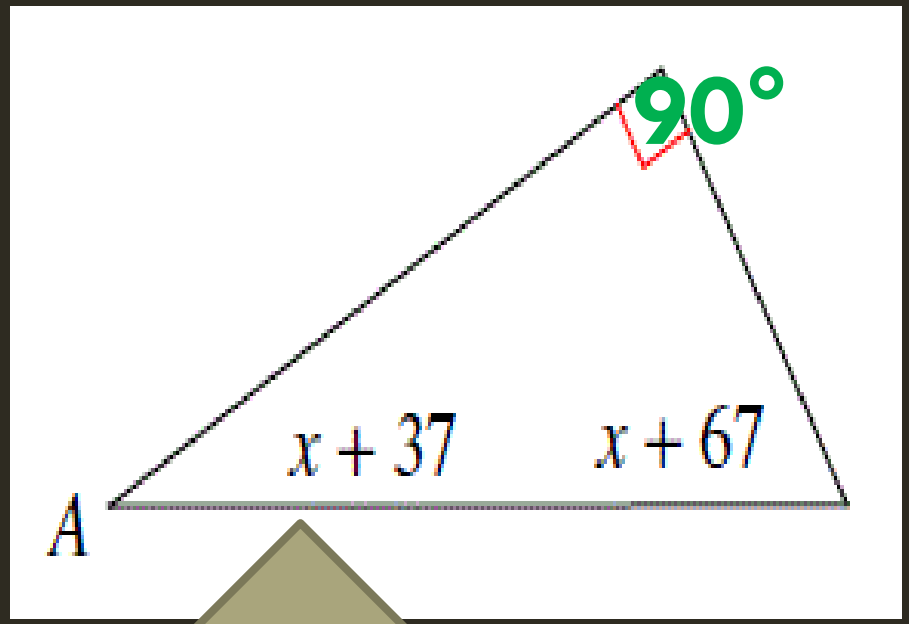
Find x. Then, plug x back in to find the angle measure.

ON YOUR OWN

Find the measure of $\angle A$.



Find the measure of $\angle A$.



ON YOUR OWN

$90 + x + 37 + x + 67 = 180$

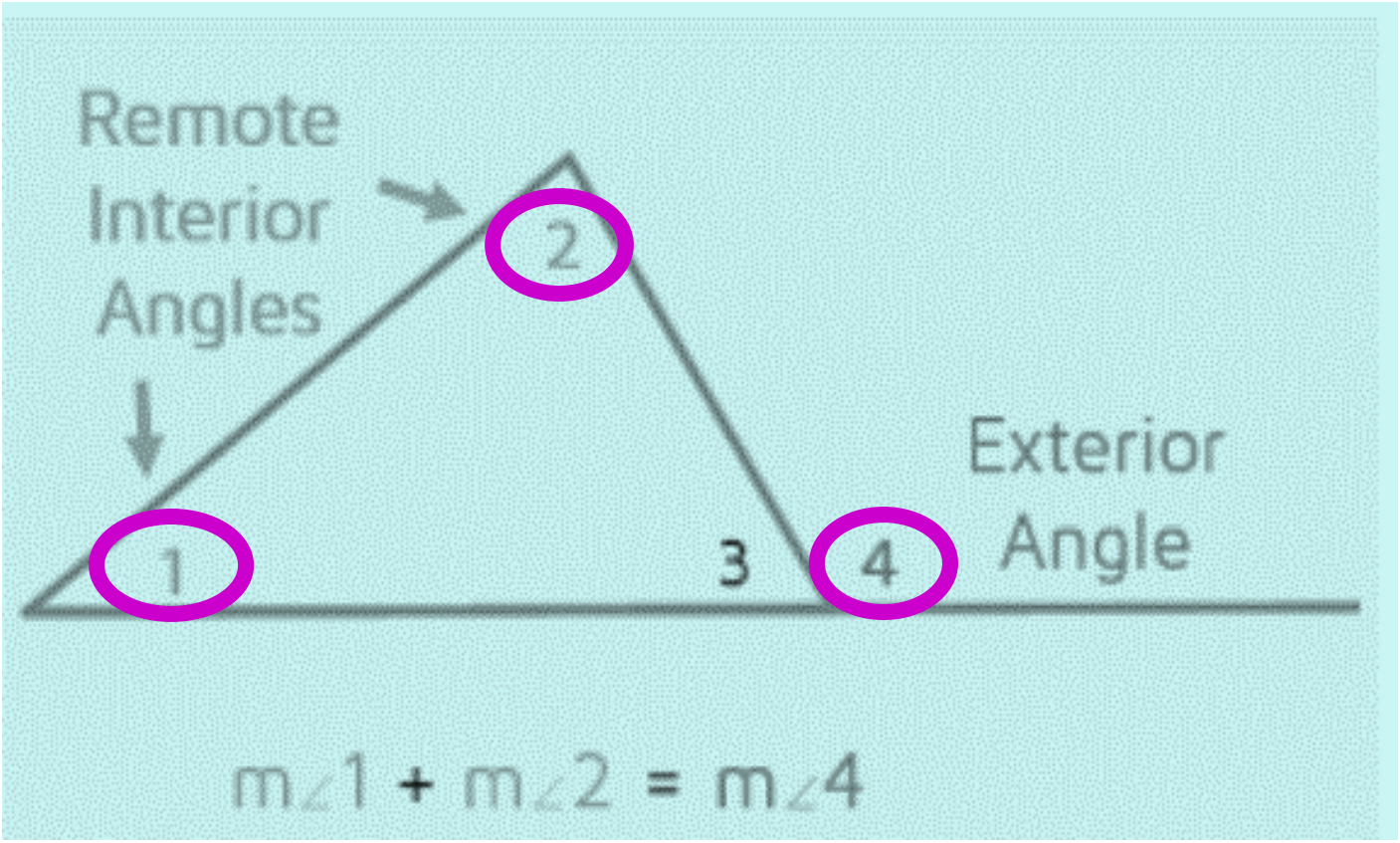
$2x + 194 = 180$

$-194 = -194$

$\frac{2x}{2} = \frac{-14}{2}$

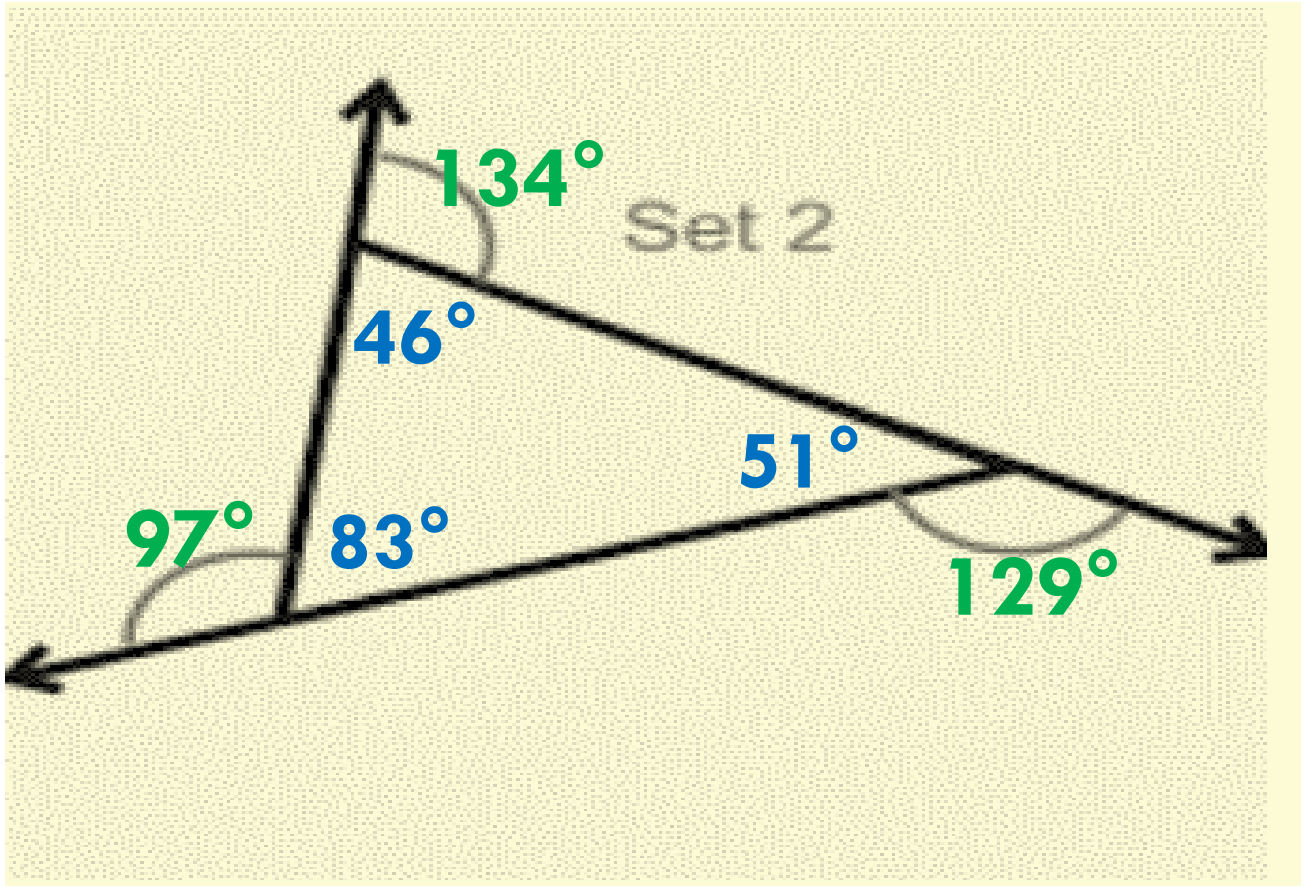
$x = -7$

$x + 37 \quad - 37 =$ 30°



EXTERIOR ANGLES THEOREM

The exterior angle of a theorem equals the sum of the two remote interior angles.



EXTERIOR ANGLES THEOREM

The exterior angle of a theorem equals the sum of the two remote interior angles.

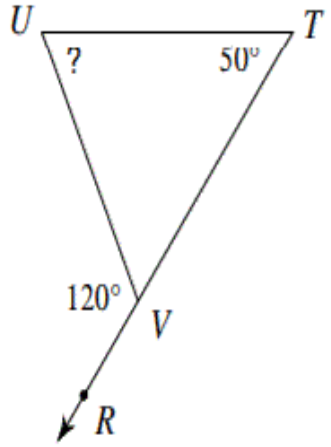
- $46° + 51° = 97°$
- $83° + 46° = 129°$
- $83° + 51° = 134°$

GUIDED PRACTICE

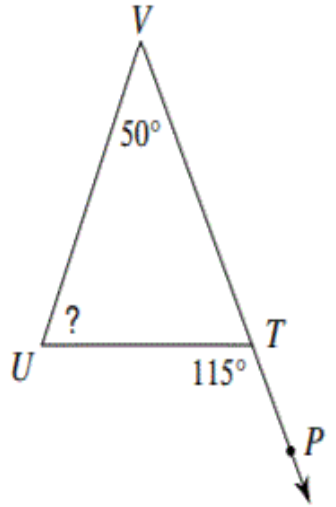
How would you find the missing angle of the triangles?

Find the measure of each angle indicated.

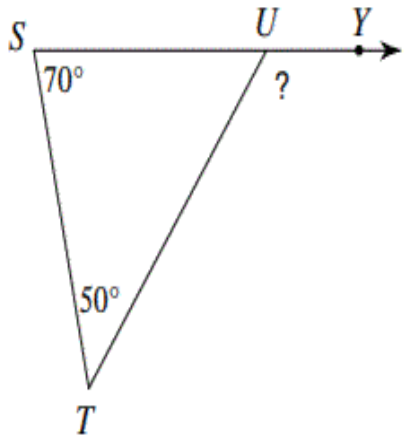
1)



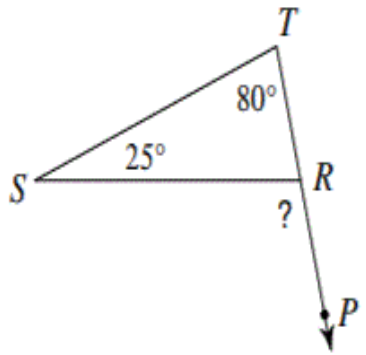
2)



3)



4)

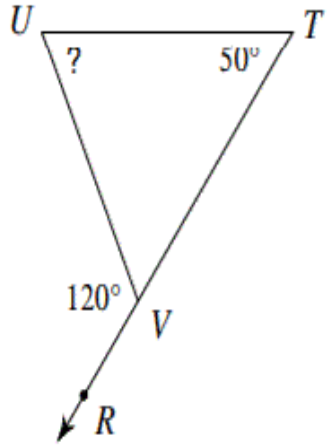


GUIDED PRACTICE

SUBTRACT to find the interior angle.
ADD to find the exterior angle.

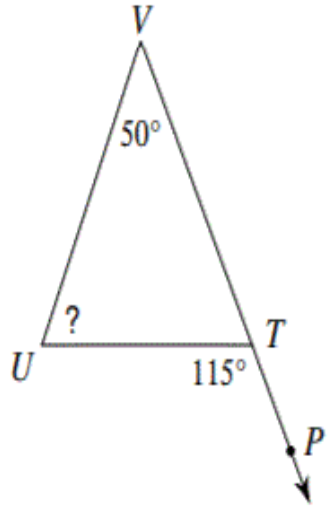
Find the measure of each angle indicated.

1)

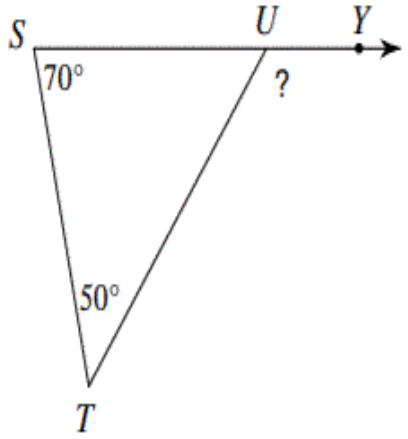


120°
- 50°
70°

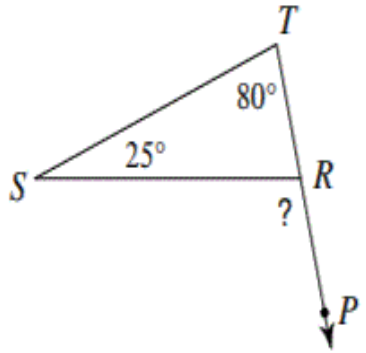
2)



3)



4)

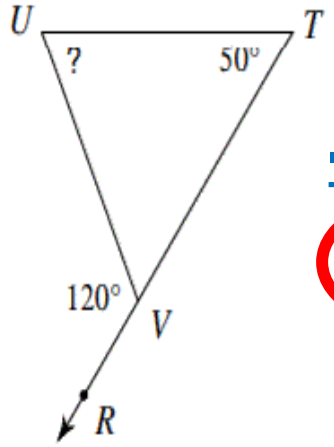


GUIDED PRACTICE

SUBTRACT to find the interior angle.
ADD to find the exterior angle.

Find the measure of each angle indicated.

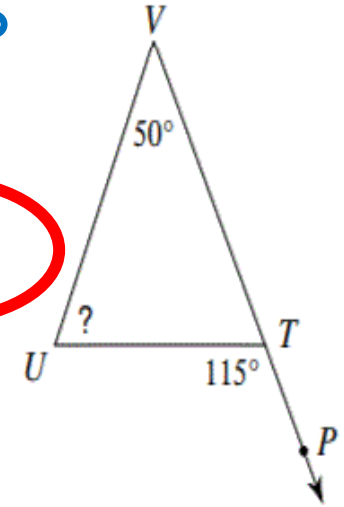
1)



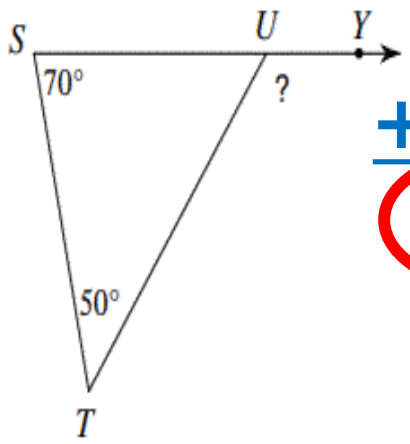
120°
- 50°
70°

2)

115°
- 50°
65°



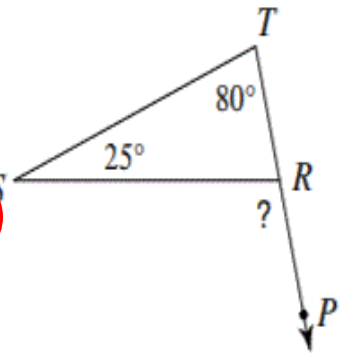
3)



70°
+50°
120°

4)

25°
+ 80°
105°

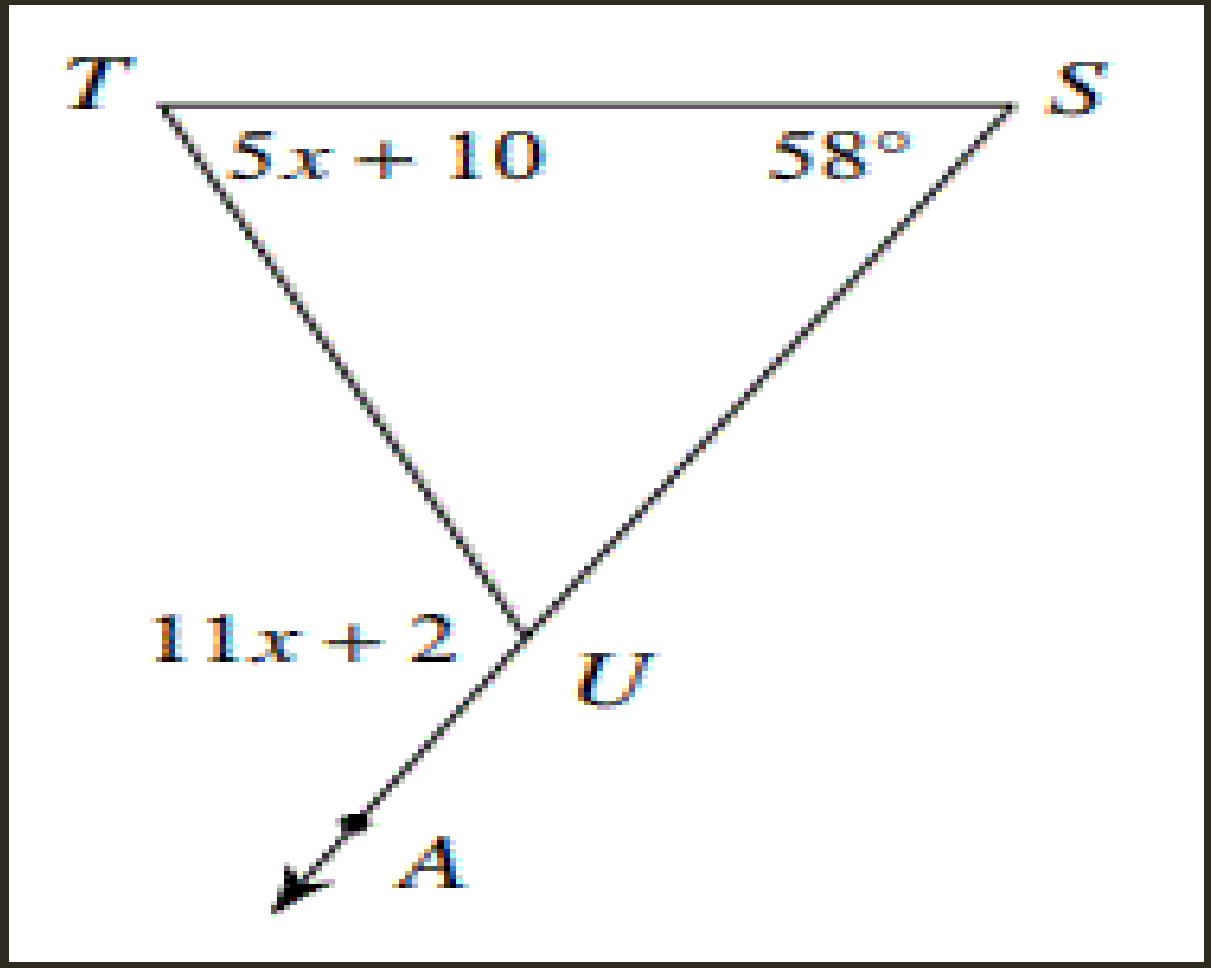


Set up an equation.

INTERIOR + INTERIOR = EXTERIOR

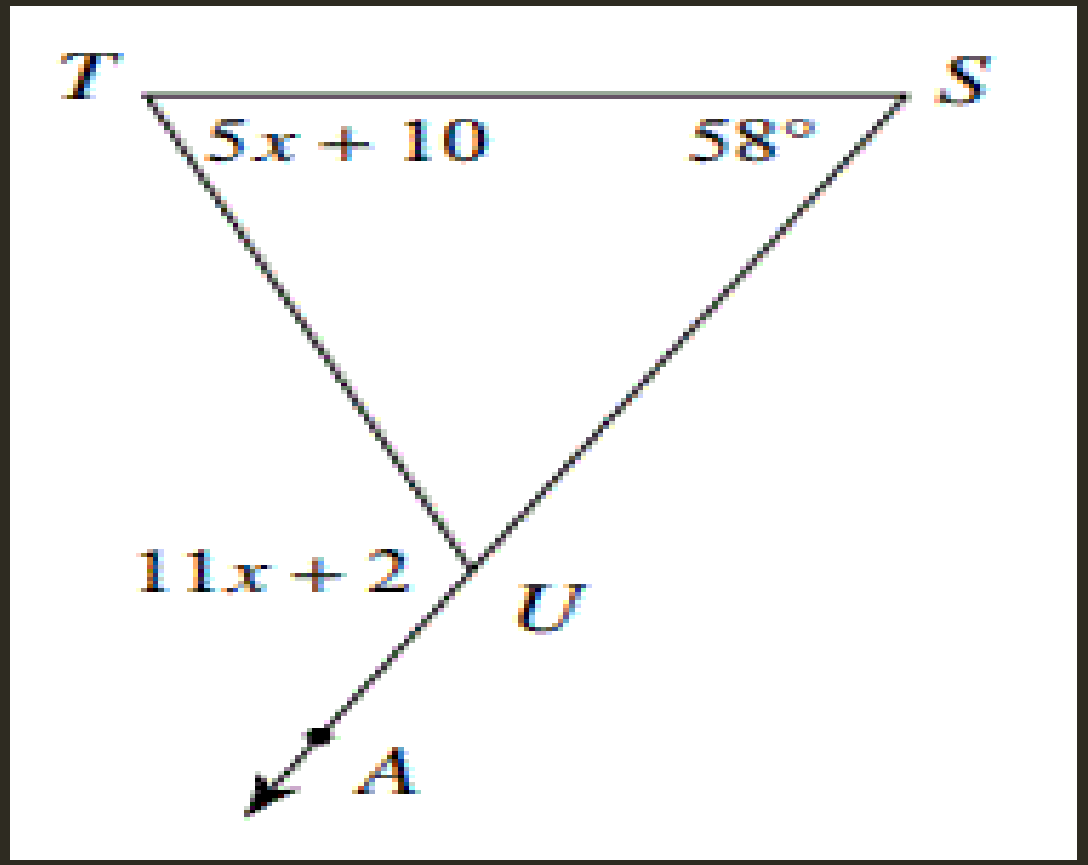
CHALLENGE

Solve for x.



CHALLENGE

Solve for x.



INTERIOR + INTERIOR = EXTERIOR

$5x + 10 + 58 = 11x + 2$

$5x + 68 = 11x + 2$

$-5x \quad = -5x$

$68 = -6x + 2$

$-2 \quad -2$

$66 = -6x$

$-6 \quad -6$

$x = -11$