

Name: Key

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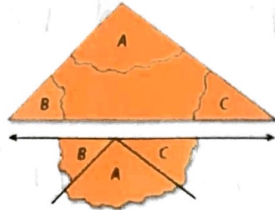
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Classwork 10.4

Triangle Sum Theorem

Aim: How do we find the measure of a missing angle of a triangle?

There is a special relationship between the measures of the interior angles of a triangle.

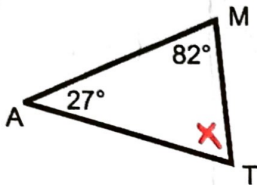


The **Triangle Sum Theorem** states that the sum of the interior angles of a triangle is 180°.

$$A + B + C = 180$$

Example 1: Find the measure of the missing angles. Solve algebraically.

a)



$$x + 27 + 82 = 180$$

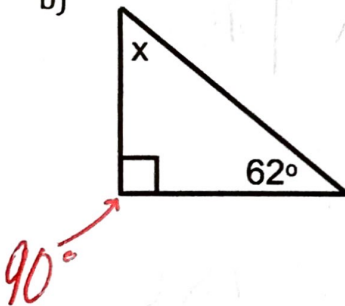
$$\begin{array}{r} x + 109 = 180 \\ -109 \quad -109 \\ \hline \end{array}$$

$$x = 71^\circ$$

Check

$$\begin{array}{r} 71 \\ 82 \\ + 27 \\ \hline 180 \end{array}$$

b)



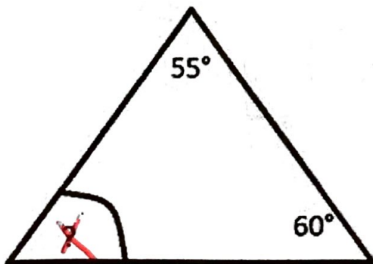
$$x + 90 + 62 = 180$$

$$\begin{array}{r} x + 152 = 180 \\ -152 \quad -152 \\ \hline \end{array}$$

$$x = 28^\circ$$

$$\begin{array}{r} 28 \\ 62 \\ + 90 \\ \hline 180 \end{array}$$

Try It: Find the measure of the missing angle. Solve algebraically.

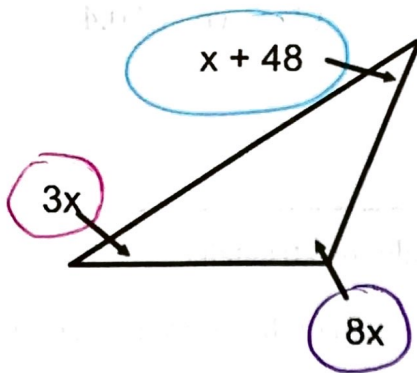


$$x + 55 + 60 = 180$$

$$\begin{array}{r} x + 115 = 180 \\ -115 \quad -115 \\ \hline \end{array}$$

$$x = 65^\circ$$

Example 2: Find the value of x . Solve algebraically.

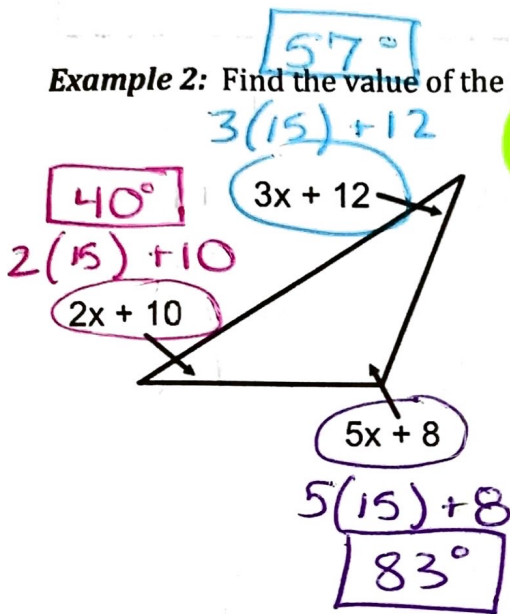


$$3x + 8x + 1x + 48 = 180$$

$$12x + 48 = 180$$

$$\begin{array}{r} 12x + 48 = 180 \\ -48 \quad -48 \\ \hline 12x = 132 \\ \hline x = 11 \end{array}$$

Example 2: Find the value of the missing angles. Solve algebraically.

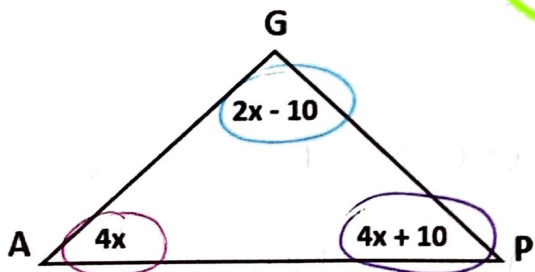


$$2x + 10 + 5x + 8 + 3x + 12 = 180$$

$$10x + 30 = 180$$

$$\begin{array}{r} 10x + 30 = 180 \\ -30 \quad -30 \\ \hline 10x = 150 \\ \hline x = 15 \end{array}$$

Try It: Find the value of x . Solve algebraically.



$$4x + 4x + 10 + 2x - 10 = 180$$

$$10x = 180$$

$$\begin{array}{r} 10x = 180 \\ \hline x = 18 \end{array}$$