

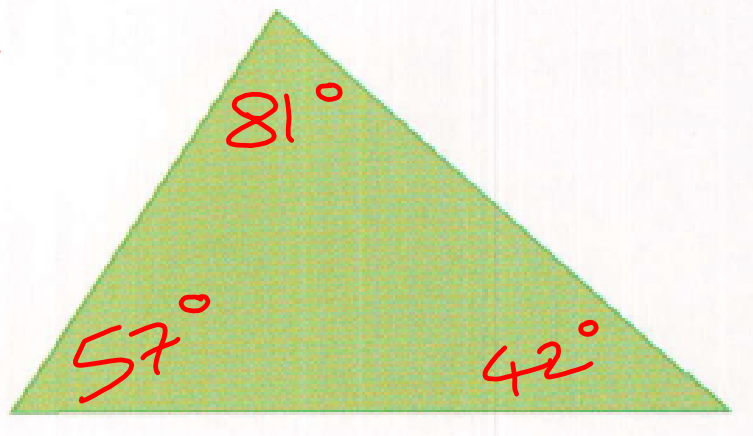
Internal Angles of a Triangle

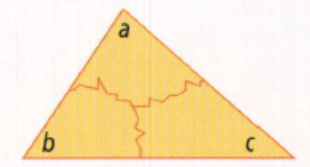
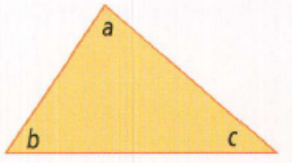
internal angle

- an angle inside a triangle or other polygon
- also called an interior angle

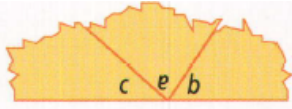
Use a protractor to measure the three **internal angles**. Record the three measures and find their sum.

$$\begin{array}{r} \text{Total} = \\ 81 \\ 57 \\ + 42 \\ \hline 180 \\ \hline \hline \end{array}$$





Tear one triangle into three pieces. Make sure each piece contains an angle of the triangle.

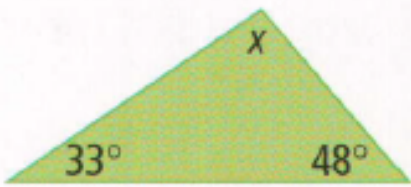


Place the three angles of the triangle so that their vertices are at the same point, as shown. What does this arrangement tell you? Explain.

Reflect Compare your results with those of your classmates. Write a general statement about how the internal angles of a triangle are related.

Example 1: Find an Angle Measure

Two angles in a triangle measure 33° and 48° . Find the third angle.

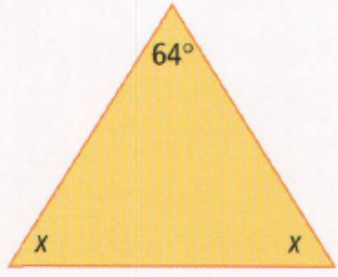


$$\begin{aligned} x + 33 + 48 &= 180 \\ x + 81 &= 180 \\ x + 81 - 81 &= 180 - 81 \\ x &= 99^\circ \end{aligned}$$

Verify $99 + 33 + 48 = 180$ ✓

Example 2: Find Two Equal Angle Measures

The glass pyramid at the Louvre art gallery has four triangular faces. The angle at the top of each face measures about 64° . The other two angles are equal. Find each of the equal angles.

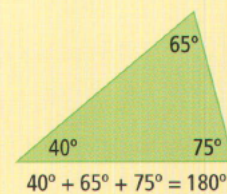


$$\begin{aligned}x + x + 64 &= 180 \\2x + 64 &= 180 \\2x + 64 - 64 &= 180 - 64 \\2x &= 116 \\ \frac{2x}{2} &= \frac{116}{2} \\x &= 58^\circ\end{aligned}$$

Verify $\Rightarrow 58 + 58 + 64 = 180$ ✓

Key Ideas

- The measures of the internal angles in a triangle add to 180° .
- You can use the sum of the internal angles to find unknown angle measures in triangles.



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