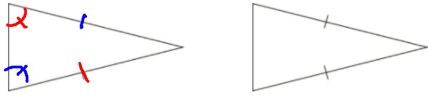


Isosceles Triangle Theorem & Its Converse

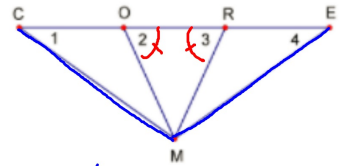
Isosceles Triangle: triangle with two sides of equal length



(ITT)

Isosceles Triangle Theorem: If 2 sides of a triangle are congruent, then the angles opposite the sides are \cong

Isosceles Triangle Theorem Converse: If 2 angles of a triangle are congruent, then the sides opposite the angles are \cong



1. If $\overline{CM} \cong \overline{EM}$, then $\angle 4 \cong \angle 1$ by

Isosceles Triangle Theorem

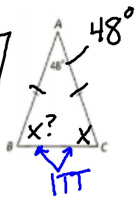
2. If $\angle 2 \cong \angle 3$, then $\overline{OM} \cong \overline{RM}$ by

ITT Converse



1. Find $m\angle B$

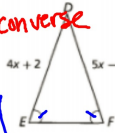
$$m\angle B = 66^\circ$$



$$\begin{array}{r} 48 + 2x = 180 \\ -48 \quad -48 \\ \hline 2x = 132 \\ \frac{2x}{2} = \frac{132}{2} \\ x = 66^\circ \end{array}$$

2. Find \overline{DF} By ITT converse

$$\begin{array}{l} 5(4) - 2 \\ 20 - 2 = \boxed{18} \end{array}$$



$$\begin{array}{r} 4x + 2 = 5x - 2 \\ -4x \quad -4x \\ \hline 2 = x - 2 \\ +2 \quad +2 \\ \hline 4 = x \end{array}$$

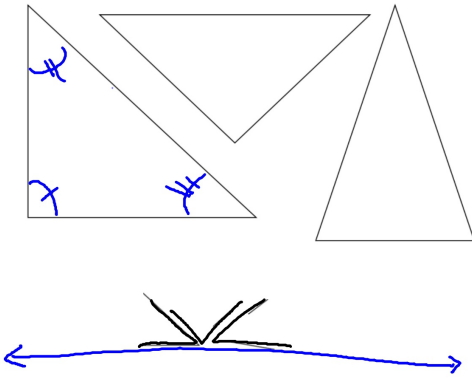
Triangle Sum Theorem

The Triangle Sum Theorem states that: the 3 interior angles of a triangle add to 180°

Triangle Ripping

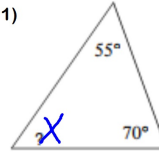
to prove the sum of the interior angles equals 180°

- Step 1:** Choose one triangle from below and cut it out.
Cut carefully on the lines (it's important for this activity!)
- Step 2:** Rip all 3 angles off of your triangle.
- Step 3:** Lay all 3 angles down on the table and connect their straight edges to make one straight line. A straight line (also known as a straight angle) equals 180° .
- Step 4:** Be amazed by your great discovery! :)



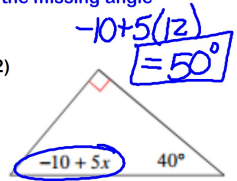
In each example, solve for the missing angle

1)



$$\begin{aligned}
 55 + 70 + x &= 180 \\
 125 + x &= 180 \\
 -125 \quad -125 & \\
 \hline
 x &= 55^\circ
 \end{aligned}$$

2)



$$\begin{aligned}
 40 - 10 + 5x + 90 &= 180 \\
 120 + 5x &= 180 \\
 -120 \quad -120 & \\
 \hline
 5x &= 60 \\
 \frac{5x}{5} &= \frac{60}{5} \\
 x &= 12
 \end{aligned}$$