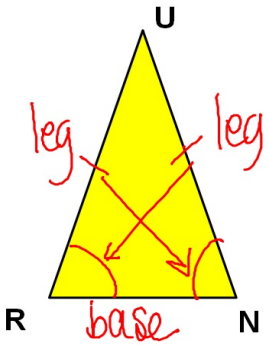
4-4 Isosceles Triangles

Oct 21



Isosceles ΔRUN

congruent legs: $\overline{RU}$, $\overline{NU}$

base: $\overline{RN}$

vertex angle: $\angle U$

base angles: $\angle R, \angle N$

$\angle R \cong \angle N$

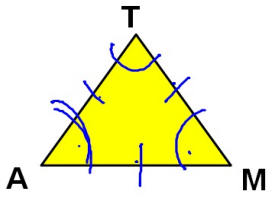
The Isosceles Triangle Theorem

If 2 sides of a triangle are congruent, then the angles opposite those sides are congruent.

In a Δ, $\cong$ sides opp $\cong$ $\angle$s.

Corollaries to the Isosceles Triangle Theorem

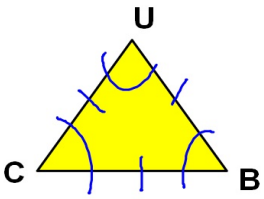
1. An equilateral triangle is also equiangular.



If $\overline{TA} \cong \overline{TM} \cong \overline{AM}$,

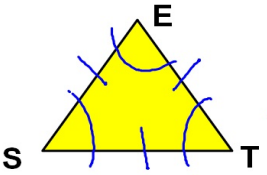
then $\angle M \cong \angle A \cong \angle T$

2. An equilateral triangle has 3 60° angles.



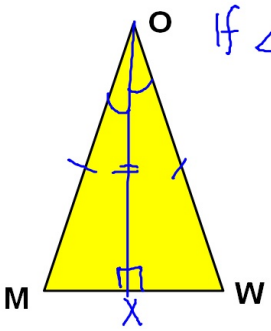
$180 \div 3 = 60^\circ$

3. **An equiangular triangle is also equilateral.**



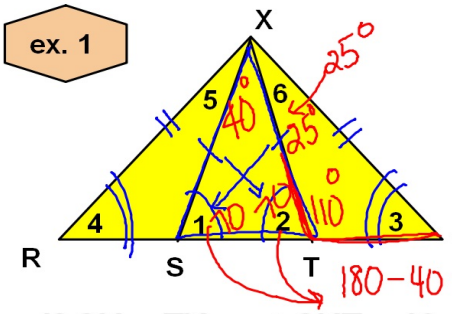
If $\angle S \cong \angle E \cong \angle T$,
then $\overline{ET} \cong \overline{ST} \cong \overline{SE}$

4. **The bisector of the vertex angle of an isosceles triangle is perpendicular to the base at its midpoint.**



If $\angle MOX \cong \angle WOX$ then
① $\overline{OX} \perp \overline{MW}$
② X is midpt of $\overline{MW}$ $(MX = WX)$

ex. 1



If $\overline{SX} \cong \overline{TX}$ then $\angle 2 \cong \angle 1$.

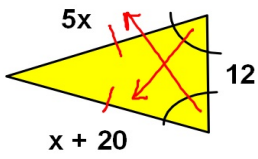
If $\angle 3 \cong \angle 4$ then $\overline{RX} \cong \overline{VX}$.

180 − 40 = 140; 140/2 = 70

If *SX* = *TX*, m∠ *SXT* = 40, and m∠ 6 = 25,

then m∠ 3 = 45 180 − 135

ex. 2



find x

$5x = x + 20$

$x = 5$