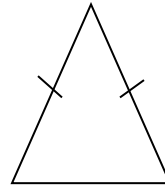


Notes 4-9: Isosceles and Equilateral Triangles

What is an isosceles triangle? _____

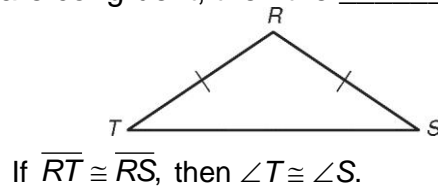
- The congruent sides are called the legs.
- The third side is called the base.
- The angle opposite the base is called the vertex angle.
- The angles opposite the congruent sides are called the base angles.
(These are the angles that are adjacent to the base.)



If a triangle has two congruent sides, does the triangle also have two congruent angles?

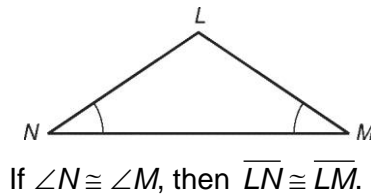
Isosceles Triangle Theorem

If _____ sides of a triangle are congruent, then the _____ the sides are congruent.



Converse of Isosceles Triangle Theorem

If _____ of a triangle are congruent, then the _____ those angles are congruent.



You can use these theorems to find angle measures in isosceles triangles.

Example

Find $m\angle E$ in $\triangle DEF$.

$m\angle D = m\angle E$

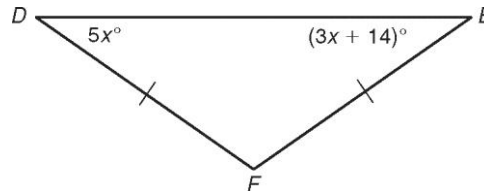
$5x = 3x + 14$

Isosceles \triangle Thm.

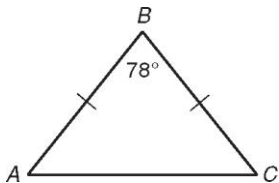
Substitute the given values.

Solve for x .

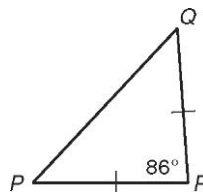
Find $m\angle E$



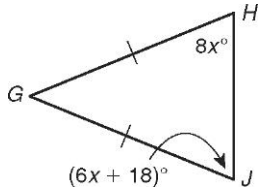
Find each angle measure.



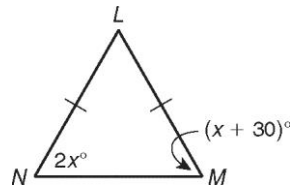
1. $m\angle C =$ _____



2. $m\angle Q =$ _____



3. $m\angle H =$ _____



4. $m\angle M =$ _____

Equilateral Triangle Corollary

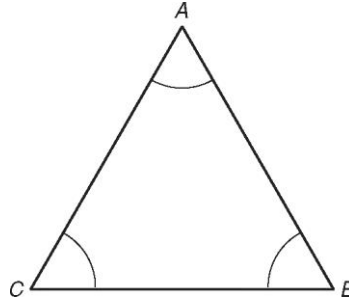
If a triangle is equilateral, then it is equiangular.

(equilateral $\triangle \rightarrow$ equiangular \triangle)

Equiangular Triangle Corollary

If a triangle is equiangular, then it is equilateral.

(equiangular $\triangle \rightarrow$ equilateral \triangle)



If $\angle A \cong \angle B \cong \angle C$, then $\overline{AB} \cong \overline{BC} \cong \overline{CA}$.

You can use these theorems to find values in equilateral triangles.

Example

Find x in $\triangle STV$.

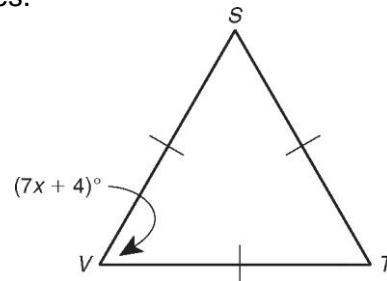
$\triangle STV$ is equiangular.

$7x + 4 = 60^\circ$

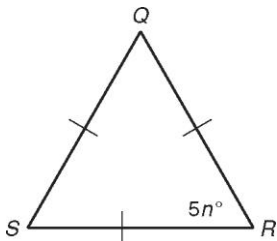
Equilateral $\triangle \rightarrow$ equiangular \triangle

The measure of each \angle of an equiangular \triangle is 60° .

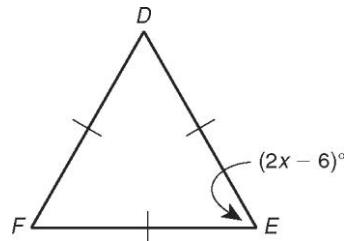
Solve for x .



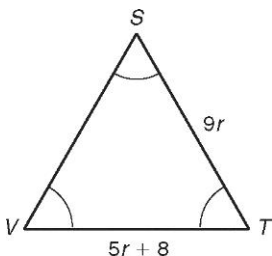
Find each value.



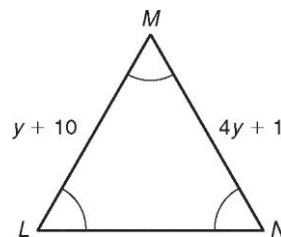
5. $n =$ _____



6. $x =$ _____



7. $VT =$ _____



8. $MN =$ _____