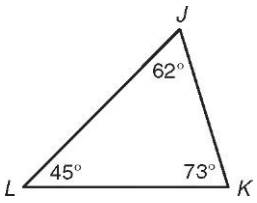
Notes 4–3: Angle Relationships in Triangles

Triangle Sum Theorem: _____.

$m\angle J + m\angle K + m\angle L = 180°$

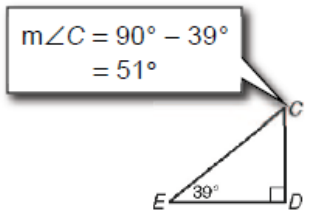
$62° + 73° + 45° = = 180°$



Corollary: _____

_____

The **corollary** below follows directly from the Triangle Sum Theorem.

Corollary	Example
The acute angles of a right triangle are_____.	$m\angle C = 90° - 39° = 51°$  $m\angle C + m\angle E = 90°$

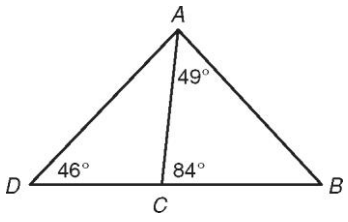
Use the figure for Exercises 1 and 2.

1. Find $m\angle ABC$.

_____

2. Find $m\angle CAD$.

_____



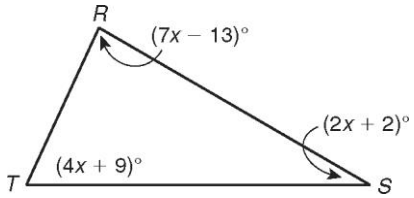
Use $\triangle RST$ for Exercises 3 and 4.

3. What is the value of x?

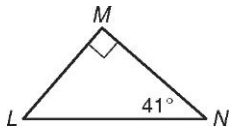
_____

4. What is the measure of each angle?

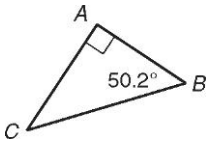
_____



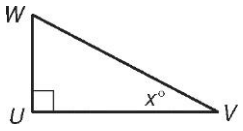
What is the measure of each angle?



5. $\angle L$



6. $\angle C$



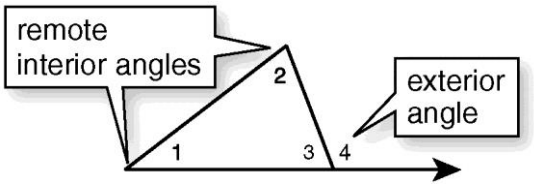
7. $\angle W$

_____ _____ _____

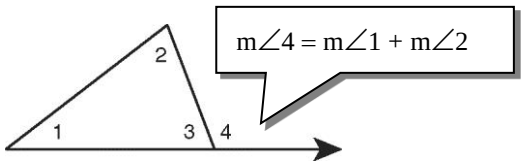
An exterior angle of a triangle is formed by_____

_____

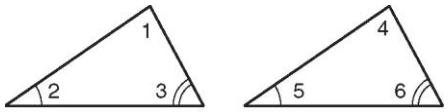
$\angle 1$ and $\angle 2$ are the remote interior angles of $\angle 4$ because they are not adjacent to $\angle 4$.



Exterior Angle Theorem: The measure of an exterior angle of a triangle is _____

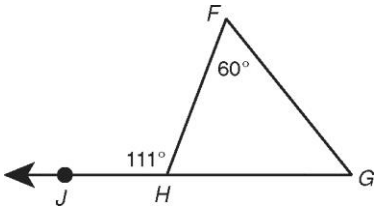


Third Angles Theorem: If two angles of one triangle are congruent to two angles of another triangle, then _____

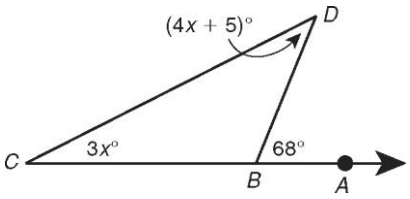


$\angle 1 \cong \angle 4$

Find each angle measure.



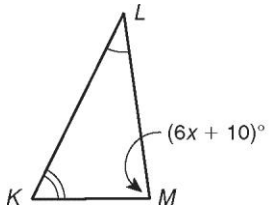
8. m$\angle G$

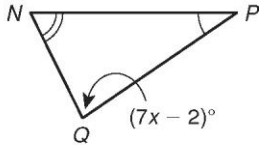


9. m$\angle D$

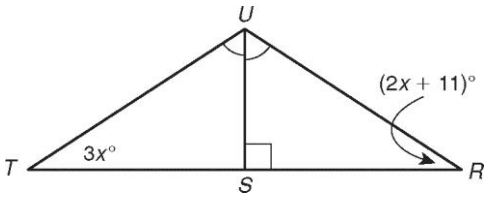
_____ _____

Find each angle measure.





10. m∠*M* and m∠*Q*

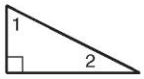


11. m∠*T* and m∠*R*

This graphic organizer describes the relationships of interior and exterior angles in a triangle.

Right Triangles

The *acute angles* of a right triangle are *complementary*.



m∠1 + m∠2 = 90°

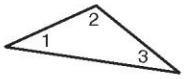
Equiangular Triangles

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

m∠1 = 60°, m∠2 = 60°, m∠3 = 60°

Triangle Sum Theorem

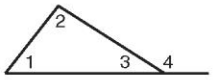
The sum of the angle measures of a triangle is 180°.



m∠1 + m∠2 + m∠3 = 180°

Exterior Angle Theorem

The measure of an *exterior angle* of a triangle is equal to the *sum of the measures of its remote interior angles*.



m∠1 + m∠2 = m∠4

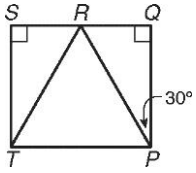
Third Angle Theorem

If two angles of one triangle are congruent to two angles of another triangle, then *the third pair of angles are congruent*.

If ∠1 ≅ ∠4 and ∠2 ≅ ∠5, then ∠3 ≅ ∠6.

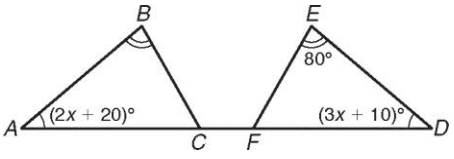
Use the given information to find the measures of the angles.

∠*S* and ∠*Q* are right angles.
m∠*QPR* = 30°
△*TRP* is equiangular.



12. Find m∠*QRP*. _____
13. Find m∠*TRP*. _____
14. Find m∠*RTS*. _____

Use the figure for Exercises 4–7.



15. Find m∠*A*._____
16. Find m∠*B*. _____
17. Find m∠*BCF*._____
18. Find m∠*EFD*._____