Name _____ Date _____ Class _____

LESSON 4-3

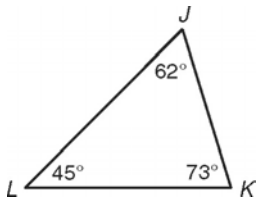
Reteach

Angle Relationships in Triangles

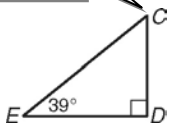
According to the **Triangle Sum Theorem,** the sum of the angle measures of a triangle is 180°.

$m\angle J + m\angle K + m\angle L = 62 + 73 + 45$

$= 180°$



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

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

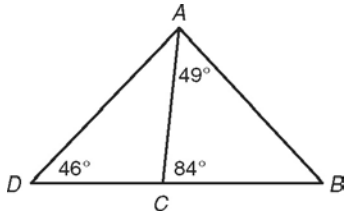
Use the figure for Exercises 1 and 2.

1. Find $m\angle ABC$.

_____

2. Find $m\angle CAD$.

_____



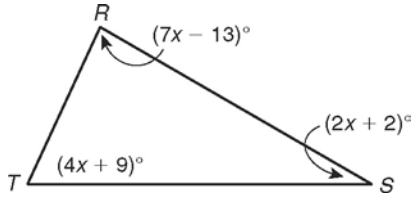
Use $\triangle RST$ for Exercises 3 and 4.

3. What is the value of x?

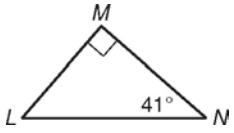
_____

4. What is the measure of each angle?

_____

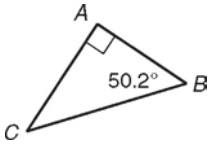


What is the measure of each angle?



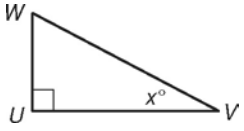
5. $\angle L$

_____



6. $\angle C$

_____



7. $\angle W$

_____

Name _____ Date _____ Class _____

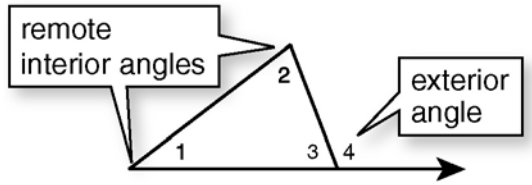
LESSON 4-3

Reteach

Angle Relationships in Triangles *continued*

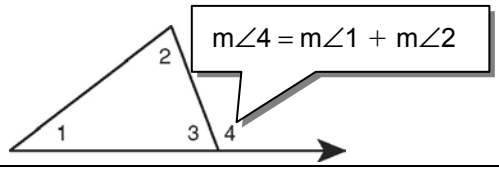
An **exterior angle** of a triangle is formed by one side of the triangle and the extension of an adjacent side.

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



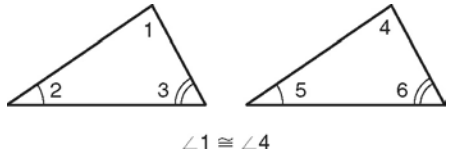
Exterior Angle Theorem

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

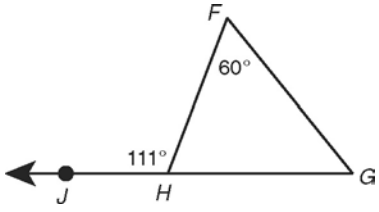


Third Angles Theorem

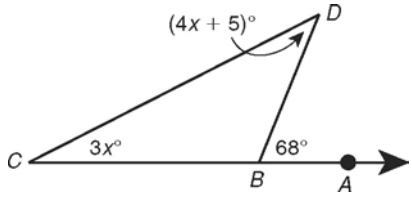
If two angles of one triangle are congruent to two angles of another triangle, then the third pair of angles are congruent.



Find each angle measure.

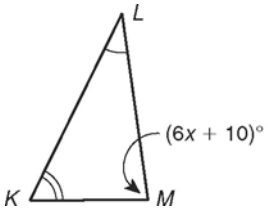


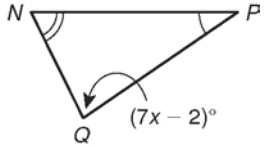
8. m∠*G*



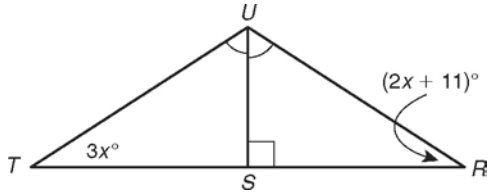
9. m∠*D*

Find each angle measure.





10. m∠*M* and m∠*Q*



11. m∠*T* and m∠*R*

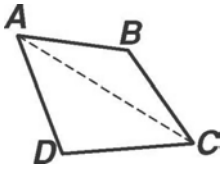
7. exterior angle
8. 115°
9. 70°
10. 60°
11. 65°
12. 35°
13. 120°
14. 110°

Practice B

1. 101.1°
2. 45°
3. 45.1°
4. $z°$
5. 89.7°
6. 60°
7. 47°
8. 33°; 66°; 81°
9. 44°; 44°
10. 108°; 108°
11. 55°
12. 54°; 72°; 54°

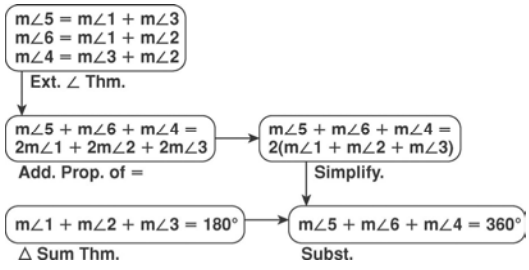
Practice C

1. Possible answer:



Statements	Reasons
1. Quadrilateral *ABCD*	1. Given
2. Draw $\overline{AC}$.	2. Construction
3. $m\angle D + m\angle DAC + m\angle DCA = 180°$, $m\angle B + m\angle BAC + m\angle BCA = 180°$	3. Triangle Sum Thm.
4. $m\angle D + m\angle DAC + m\angle DCA + m\angle B + m\angle BAC + m\angle BCA = 360°$	4. Add. Prop. of =
5. $m\angle DAC + m\angle BAC = m\angle DAB$, $m\angle DCA + m\angle BCA = m\angle DCB$	5. Angle Add. Post.
6. $m\angle D + m\angle DAB + m\angle B + m\angle DCB = 360°$	6. Subst.

2.



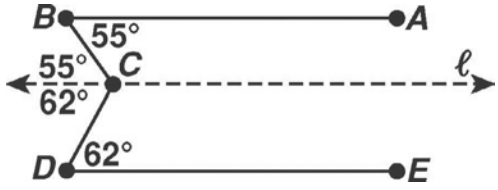
3. 360°
4. interior = 540°; exterior = 360°
5. $x = 93$; $y = 52$; $z = 35$

Reteach

1. 47°
2. 38°
3. 14
4. $m\angle R = 85°$; $m\angle S = 30°$; $m\angle T = 65°$
5. 49°
6. 39.8°
7. $(90 - x)°$
8. 51°
9. 41°
10. 82°; 82°
11. 33°; 33°

Challenge

1. 39°
2. 88°
3. Through *C,* draw line $\ell \parallel \overline{BA}$. So ℓ is also $\parallel DE$. Then apply the Alt. Int. $\angle$ Thm. twice, followed by the $\angle$ Add. Post. $x° = 55° + 62° = 117°$.

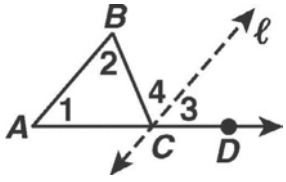


4. Additional Answer: Proofs will vary.

Given: $\triangle ABC$ with exterior angle $\triangle BCD$

Prove: $m\angle BCD = m\angle 1 + m\angle 2$

Proof:



Statements	Reasons
1. $\angle ABC$ with exterior angle $\angle BCD$	1. Given
2. Through *C*, draw line ℓ parallel to $\overline{AB}$.	2. Through a point outside a line, there is exactly one line parallel to the given line.
3. $m\angle 1 = m\angle 3$	3. $\parallel$ lines $\rightarrow$ corr. $\measuredangle$ $\cong$
4. $m\angle 2 = m\angle 4$	4. $\parallel$ lines $\rightarrow$ alt. int. $\measuredangle$ $\cong$
5. $m\angle BCD = m\angle 3 + m\angle 4$	5. $\angle$ Add. Post.
6. $m\angle BCD = m\angle 1 + m\angle 2$	6. Subst. Prop. of =