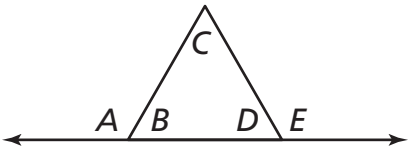
5.1 Start Thinking

If $m\angle A = 120°$, what is $m\angle B$? Explain. If $m\angle D = 40°$, what is $m\angle E$? Is your reasoning the same? If the sum of $m\angle B$, $m\angle C$, and $m\angle D$ is 180°, what is $m\angle C$?



5.1 Warm Up

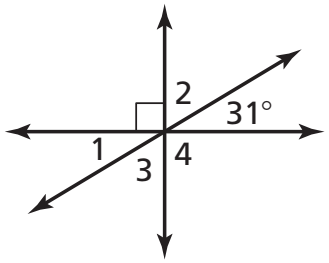
Find the measurement.

1. $m\angle 1$

2. $m\angle 2$

3. $m\angle 3$

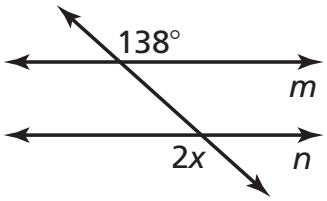
4. $m\angle 4$



5.1 Cumulative Review Warm Up

Find the value of *x* that makes *m* || *n*.

1.



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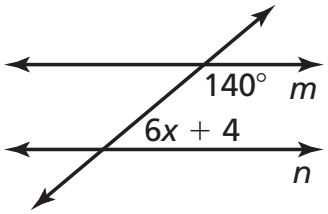

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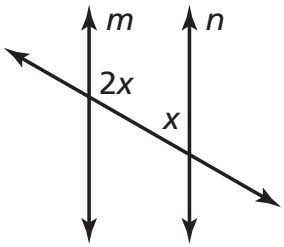
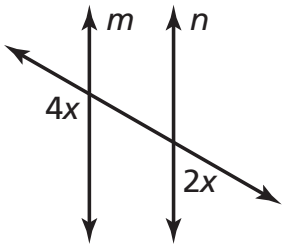


4.

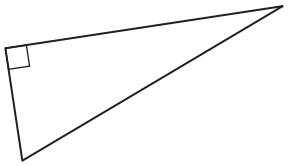


Name _____ Date _____

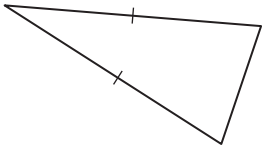
5.1 Practice A

In Exercises 1 and 2, classify the triangle by its sides and by measuring its angles.

1.



2.



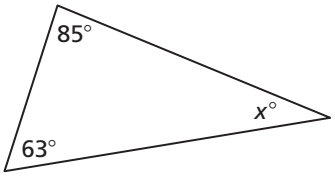
In Exercises 3 and 4, classify $\triangle QRS$ by its sides. Then determine whether it is a right triangle.

3. $Q(2, 2), R(1, -2), S(-4, -4)$

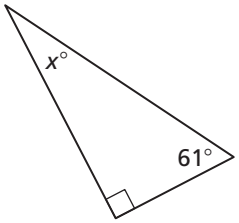
4. $Q(-1, 3), R(3, 2), S(-2, -1)$

In Exercises 5–8, find the value of *x*.

5.



6.



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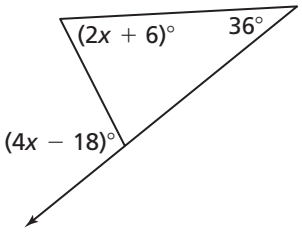
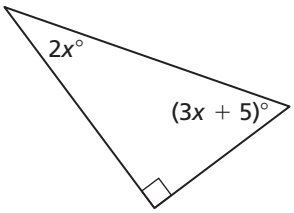


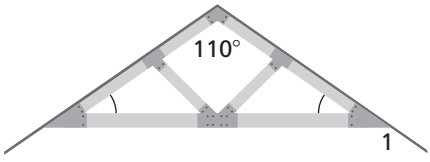
8.



9. The measure of one acute angle of a right triangle is 12 more than 3 times the measure of the other acute angle. Find the measure of each acute angle of the right triangle.

10. Your friend claims that the measure of an exterior angle of a triangle can never be acute because it is the sum of the two nonadjacent angles of the triangle. Is your friend correct? Explain your reasoning.

11. The figure shows the measures of various angles of a roof and its supports. Find the measure of $\angle 1$, the angle between an eave and a horizontal support beam.

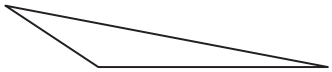


Name_____ Date _____

5.1 Practice B

In Exercises 1 and 2, classify the triangle by its sides and by measuring its angles.

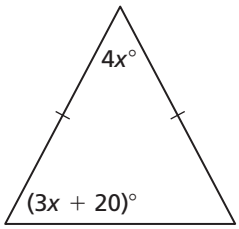
1.



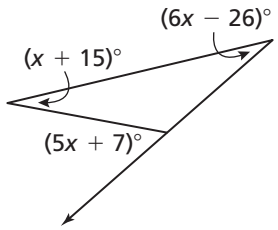
2. $J(1, 2), K(-4, 0), L(-2, 5)$

In Exercises 3–5, find the value of x.

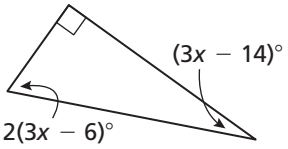
3.



4.

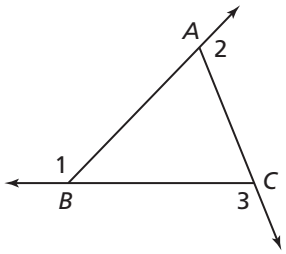


5.

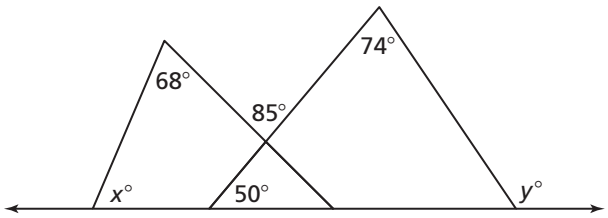


6. $\triangle ABC$ is equilateral, $m\angle A = (6x + 18)°$, and $m\angle B = (3x + 2y)°$. Solve for x and y.

7. The figure shows three exterior angles of $\triangle ABC$. Show that $m\angle 1 + m\angle 2 + m\angle 3 = 360°$.



8. In the figure, solve for x and y.



9. Is it possible for a triangle to have angle measures in an extended ratio of 1 : 4 : 7? If so, find the three angle measures. If not, explain why it is not possible.

10. Your friend says that an exterior angle can never be complementary to any of the interior angles in a triangle. Is your friend correct? Explain your reasoning.

11. In $\triangle ABC$ and $\triangle RST$, $\angle A \cong \angle R$ and $\angle B \cong \angle S$. What can you say about $\angle C$ and $\angle T$? Explain.

Name _____ Date _____

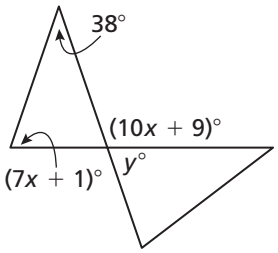
5.1 Enrichment and Extension

Angles of Triangles

1. The measures of the angles of a triangle are $\left(9\sqrt{2x + 17}\right)°$, $\left(9\sqrt{x}\right)°$, and $\left(12\sqrt{x} + 33\right)°$. Find the measure of each angle. Classify the triangle by its angles.

Find the values of *x* and *y*. Round your answer to the nearest tenth, if necessary.

2.



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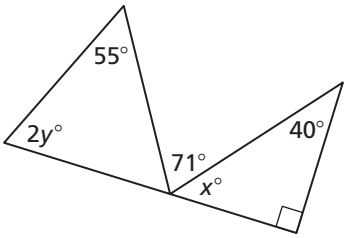

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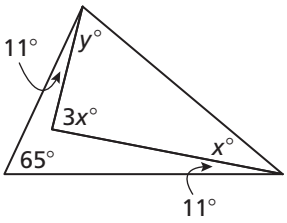

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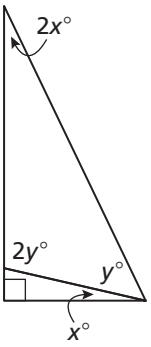
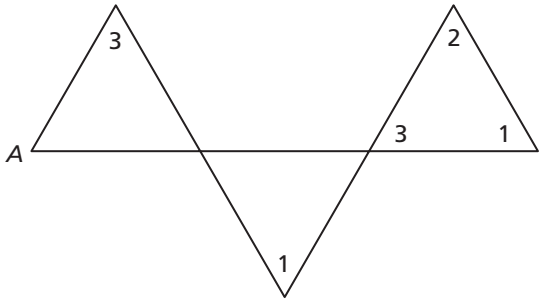


6. Find the measure of angle A in terms of the measure(s) of one or more of the other angles.



Name_____ Date _____

5.1 Puzzle Time

Did You Hear About The Race Between The Lettuce And The Tomato?

A	B	C	D	E	F
G	H	I	J	K	L

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

Identify the type of triangle by its sides.

A. has two congruent sides

B. has three congruent sides

C. has no congruent sides

Identify the type of triangle by its angles.

D. has three congruent angles

E. has one obtuse angle

F. has three acute angles

G. has one right angle

Complete the statement.

H. The measure of a(n) _____ angle of a triangle is equal to the sum of the measures of the two nonadjacent interior angles.

I. The acute angles of a right triangle are _____.

J. The sum of the measures of the _____ angles of a triangle is 180°.

Solve.

K. Two angles in a triangle measure 36° and 64°. Find the measure of the exterior angle opposite the two angles.

L. The measures of two angles of a triangle are 54° and 17°. Find the measure of the third angle.

bilateral SAUCE
scalene WAS
100° TO
acute AND
equiangular A
80° THE
inverse ROLL
skew SALAD
exterior TOMATO
opposite KNIFE
obtuse "HEAD"
109° "KETCHUP"

right THE
octagon TURTLE
71° RABBIT
equal AND
equilateral LETTUCE
complementary WAS
supplementary RED
triangular WIN
isosceles THE
cute FAST
interior TRYING