Triangles

Lesson 7.3
Vocabulary:

**Triangle** -

a figure with 3 sides and 3 angles

**Congruent Segments** -
sides with the same lengths
Classify by Angles:

**Acute** - all angles are less than 90 degrees

**Right** - has one angle at 90 degrees

**Obtuse** - has one angle greater than 90 degrees
Classify by Sides:

- **Scalene** - no sides are congruent
- **Isosceles** - 2 sides are congruent
- **Equilateral** - all sides are congruent
1. **Example**

   **Draw a triangle with one obtuse angle and no congruent sides.**
   Then classify the triangle.

   Draw an obtuse angle.
   The two segments of the angle should have different lengths.

   Connect the two segments to form a triangle.

   **obtuse scalene triangle**
Got It? Do these problems to find out.

Draw a triangle that satisfies the set of conditions below. Then classify the triangle.

a. a triangle with one right angle and two congruent sides
b. Draw a triangle with three acute angles and two congruent sides. Classify the triangle.

![Acute Isosceles Triangle]
2. Classify the triangle on the house by its angles and by its sides.

The triangle has one obtuse angle and two congruent sides. So, it is an obtuse isosceles triangle.

obtuse isosceles triangle
Classify the marked triangle in each object by its angles and by its sides.

c. acute isosceles
d. right scalene
e. obtuse isosceles
The sum of the measures of the angles of a triangle is $180^\circ$. 

\[x + y + z = 180\]
3. Find $m\angle Z$.

Write an equation. 

$m\angle Z + 43^\circ + 119^\circ = 180^\circ$

Simplify. 

$m\angle Z + 162^\circ = 180^\circ$

Solve. 

$-162^\circ = -162^\circ$

$m\angle Z = 18^\circ$

18°
4. The Alabama state flag is shown. What is the missing measure in the triangle?

Write an equation.

\[ x + 110 + 35 = 180 \]

Simplify.

\[ x + 145 = 180 \]

\[ -145 = -145 \]

Solve.

\[ x = 35 \]

\[ 35^\circ \]
f. A triangle is used in the game of pool to rack the pool balls. Find the missing measure of the triangle.

\[ x + 60 + 60 = 180 \]
\[ x + 120 = 180 \]
\[ -120 \quad -120 \]
\[ x = 60 \]

\[ 60^\circ \]
g. In $\triangle ABC$, if $m\angle A = 25^\circ$ and $m\angle B = 108^\circ$, what is $m\angle C$?

\[
x + 25 + 108 = 180
\]
\[
x + 133 = 180
\]
\[
-133 -133
\]
\[
x = 47
\]

h. Find $m\angle T$ in $\triangle RST$ if $m\angle R = 37^\circ$ and $m\angle S = 55^\circ$.

\[
x + 37 + 55 = 180
\]
\[
x + 92 = 180
\]
\[
-92 - 92
\]
\[
x = 88
\]
Find the value of \(x\).

i. \[x + 90 + 53 = 180\]
\[x + 143 = 180\]
\[-143\]
\[x = 37\]

j. \[x + x + 25 = 180\]
\[2x + 25 = 180\]
\[-25\]
\[2x = 155\]
\[\frac{2x}{2} = \frac{155}{2}\]
\[77.5^\circ\]
Homework:

Pg. 559-560

# 1 - 14 (all)