Warm up
Solve.

1. $3x + 5 + 4x = 40$ $\boxed{x = 5}$

   $7x + 5 = 40$
   $\quad -5 \quad -5$
   _____
   $\dfrac{7x}{7} = \dfrac{35}{7}$

2. $-4x - 2 + 10x + 7 = 35$

   $6x + 5 = 35$
   $\quad -5 \quad\quad -5$
   _____
   $\dfrac{6x}{6} = \dfrac{30}{6}$ $\boxed{x = 5}$

3. $x + 5 + x - 15 = 76$

   $2x + 5 - 15 = 76$

   $2x - 10 = 76$
   $\quad\quad +10 \quad +10$
   _____
   $\dfrac{2x}{2} = \dfrac{86}{2}$

   $\boxed{x = 43}$

Vocabulary – Polygons:
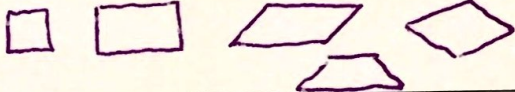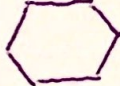
- the shape must be closed
- straight sides (no curves)
- 3 or more sides
- 2 dimensional

Naming Polygons:

# of sides	Name	Picture
3	Triangle	
4	Quadrilateral	
5	Pentagon	
6	Hexagon	
7	Heptagon	
8	Octagon	
9	Nonagon	
10	Decagon	
11	11-agon	
12	dodecagon	
13	13-agon	
n	n-agon	

Use the number of sides to tell what kind of polygon the shape is.

Ex. 1:
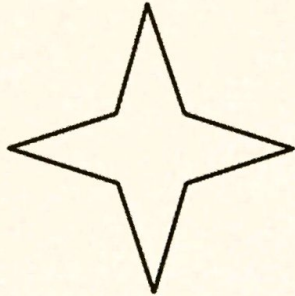
octagon

Ex. 2:

decagon

Ex. 3:

dodecagon

Ex 4: 5 sides

pentagon

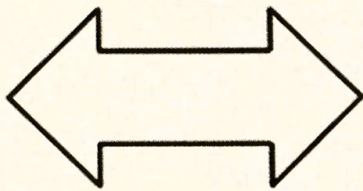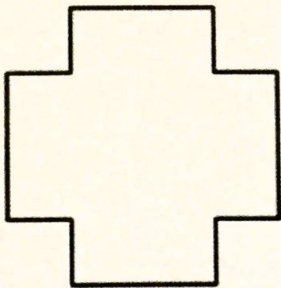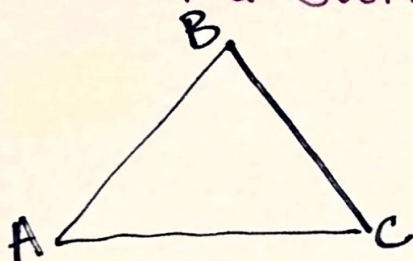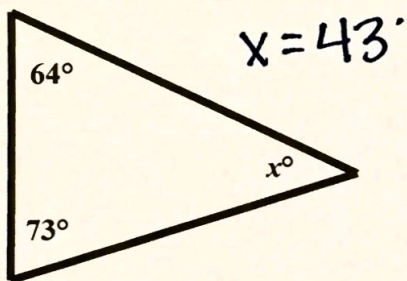**Interior Angles of a Triangle:**

the sum of the angles equals 180°

$$\angle A + \angle B + \angle C = 180°$$

Find the value of x.
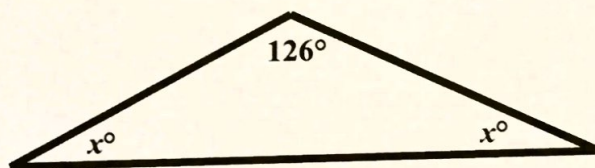
Ex. 5:

$x = 43°$

64°

$x°$

73°

$$64 + 73 + X = 180°$$
$$137 + x = 180°$$
$$\underline{-137 \qquad\qquad -137}$$
$$X = 43$$

Ex. 6:

80°

$x°$
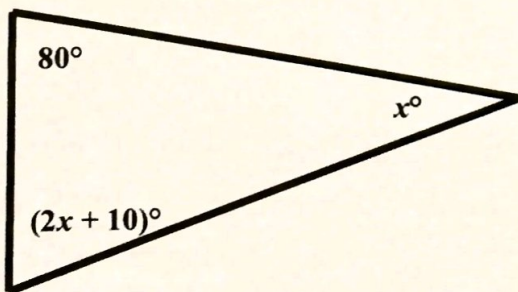
$(2x + 10)°$

$$80 + x + 2x + 10 = 180$$

$$3x + 90 = 180$$
$$\underline{-90 \qquad -90}$$
$$\frac{3x}{3} = \frac{90}{3} \qquad \boxed{X = 30}$$

Ex. 7:

126°

$x°$ $x°$

$$126 + x + x = 180$$

$$126 + 2x = 180$$
$$\underline{-126 \qquad\qquad -126}$$

$$\frac{2x}{2} = \frac{54}{2}$$

$$X = 27$$

Exterior Angles of a Triangle:

out side of $\triangle$

$\angle C + \angle 1 = 180°$

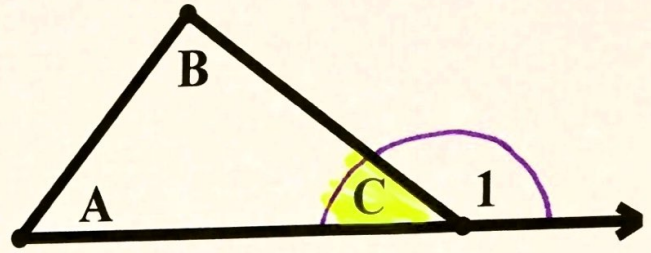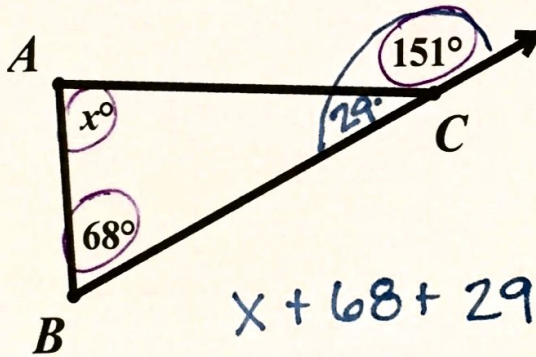$\angle 1 = \angle A + \angle B$

$\angle A + \angle B + \angle C = 180$

Find the value of x.

Ex. 8:

$$\begin{array}{r} 180 \\ -151 \\ \hline 29 \end{array}$$
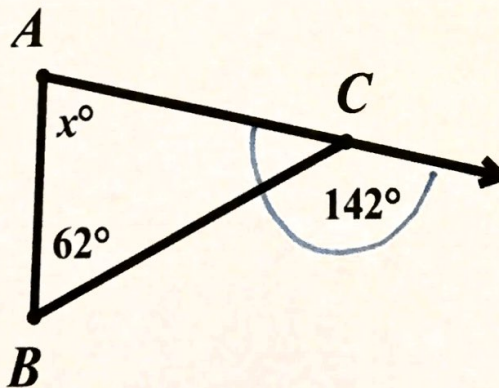
$$x + 68 + 29 = 180$$
$$x + 97 = 180$$
$$ -97 \quad -97$$
$$\overline{ x = 83}$$

$$x + 68 = 151$$
$$ -68 \quad -68$$
$$\overline{ x = 83}$$
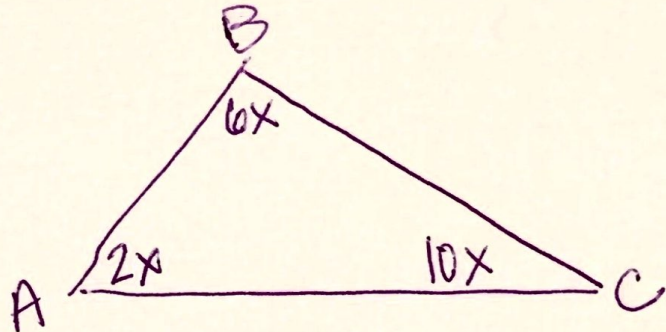
Ex. 9:

$x°$

$62°$

$142°$

Ex. 10:

The measures of the angles of $\triangle$ *ABC* are in the ratio **2 : 6 : 10**. What are the measures of the angles? (Hint: Draw a triangle)

$$2x + 6x + 10x = 180$$

$$\frac{18x}{18} = \frac{180}{18}$$

$$x = 10$$

$$\angle A = 20°$$
$$\angle B = 60°$$
$$\angle C = 100°$$

Ex. 11: Find the value of *x*.

$$5x - 30 + 40 + 25 = 180$$

$$5x + 35 = 180$$
$$\quad\; -35 \quad -35$$

$$\frac{5x}{5} = \frac{145}{5}$$

$$x = 29$$

$(5x - 30)°$

$40°$ $25°$