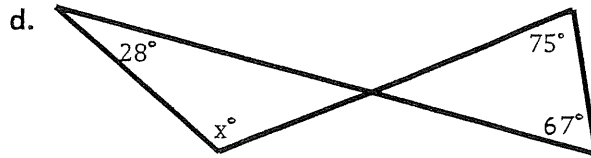Name: _Ch. 4.2_ Date: _11/12 Thurs_ Period: _____
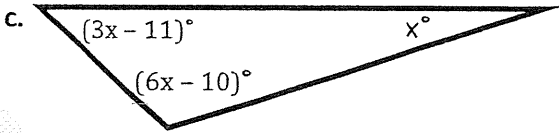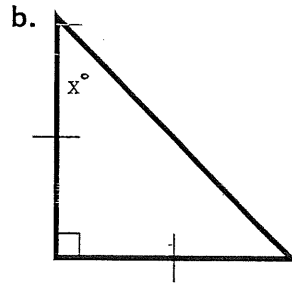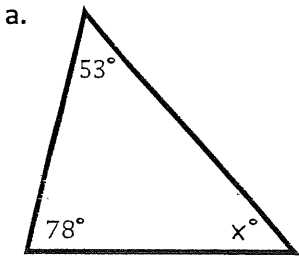
Geometry

Notes: Interior and Exterior Angles of Triangles

Homework: Attached worksheet

Essential Question: What are the steps to finding the measure of interior and exterior angles of a triangle?
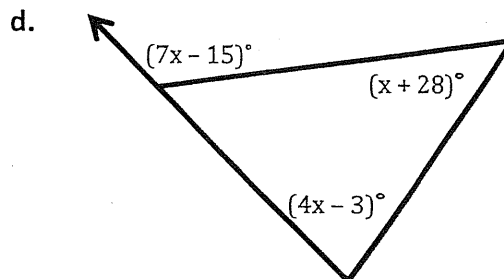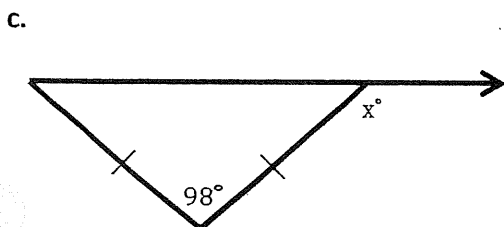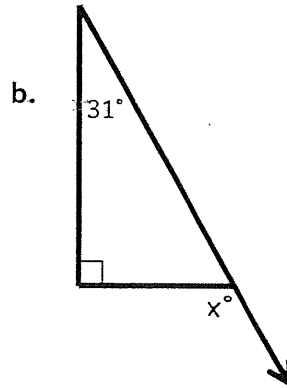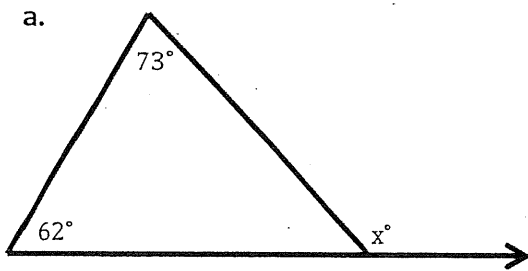
The **Triangle Angle Sum Theorem** states that the sum of the angles in a triangle is _____.

Examples: Find the value of x.

a.

b.

c.

d.

The **Exterior Angle Theorem** states that the measure of an exterior angle of a triangle is _____ to the sum of the measures of the two non-adjacent interior angles.
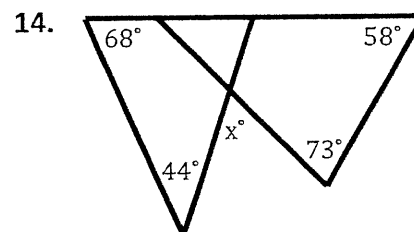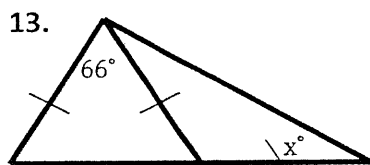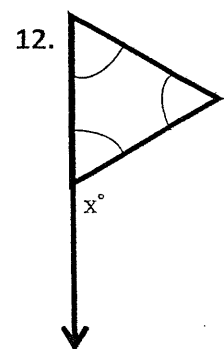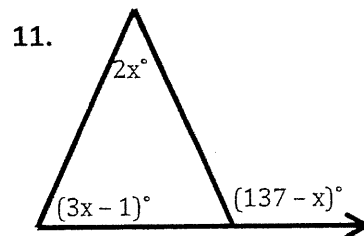
Examples: Find the value of x.

a.

b.

c.

d.

Name: _____ Date: _____ Period: _____

Homework: Interior and Exterior Angles of Triangles

Directions: Find the value of x.

1.

73°
42°
x°

2.

3x°
x°   2x°

3.

(2x – 8)°

(x – 7)°

4.

18°

x°

32°

5.

x°

x°   x°

6.

(2x + 5)°

(x + 17)°   (3x – 16)°

7.

x°
89°
40°   x°

8.

65°   80°

60°

x°

9.

x°

40°

10.

118°

x°

11.

2x°

(3x – 1)°   (137 – x)°

12.

x°

13.

66°

x°

14.

68°   58°

x°
44°   73°

Name: __Notes__   Date: _____   Period: __Key__

Geometry

Notes: Interior and Exterior Angles of Triangles

Homework: Attached worksheet

Essential Question: What are the steps to finding the measure of interior and exterior angles of a triangle?

The **Triangle Angle Sum Theorem** states that the sum of the angles in a triangle is ___$180°$___.

Examples: Find the value of x.

a.

$53°$

$78°$ $x°$

$x = 49°$

b.

$x°$

$x°$

$x + x + 90 = 180$

$2x = 90$

$x = 45$

c.

$(3x - 11)°$ $x°$

$(6x - 10)°$

$X = 20.1°$

$9x - 21 + x = 180$

$10x = 201$

d.

$28°$ $75°$

38 38

$x°$ $67°$

$28 + 38 + x = 180$

$x = 114$

The **Exterior Angle Theorem** states that the measure of an exterior angle of a triangle is ___equal___ to the sum of the measures of the two non-adjacent interior angles.

Examples: Find the value of x.

a.

$73°$

$62°$ $x°$

$X = 62 + 73$

$X = 135°$

b.

$31°$

$x°$

$x = 31 + 90$

$X = 121°$

c.

y

y $x°$

$98°$

$x = 98 + 41$

$x = 139°$

$2y + 98 = 180$

$2y = 82$ $y = 41$

d.

$(7x - 15)°$

$(x + 28)°$

$(4x - 3)°$

$7x - 15 = x + 28 + 4x - 3$
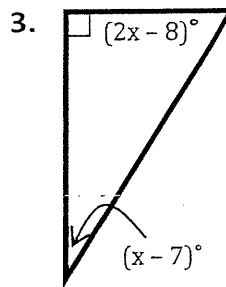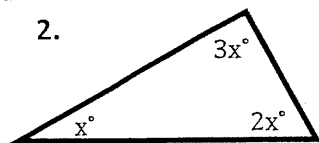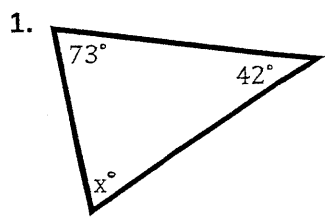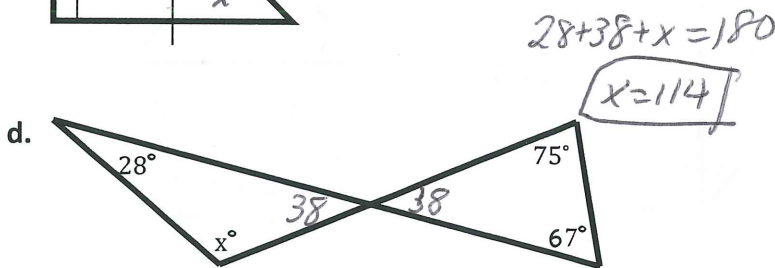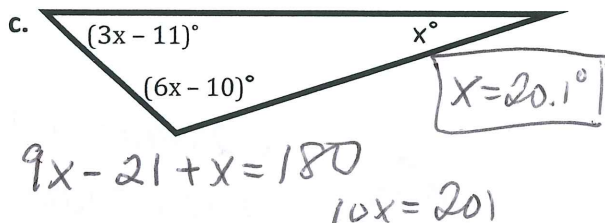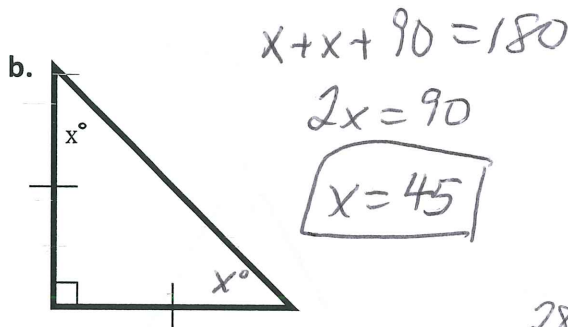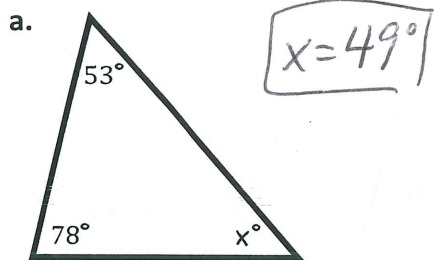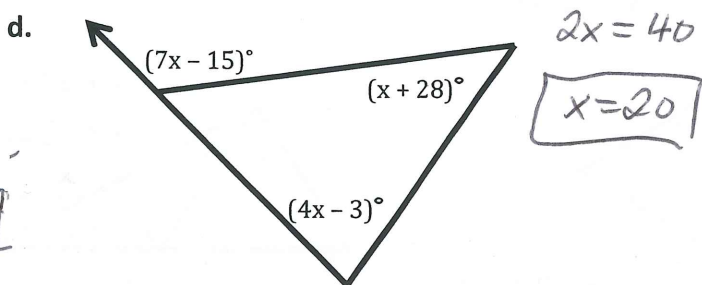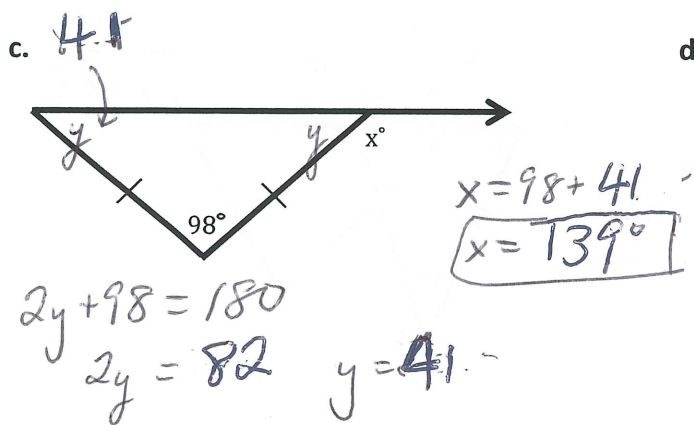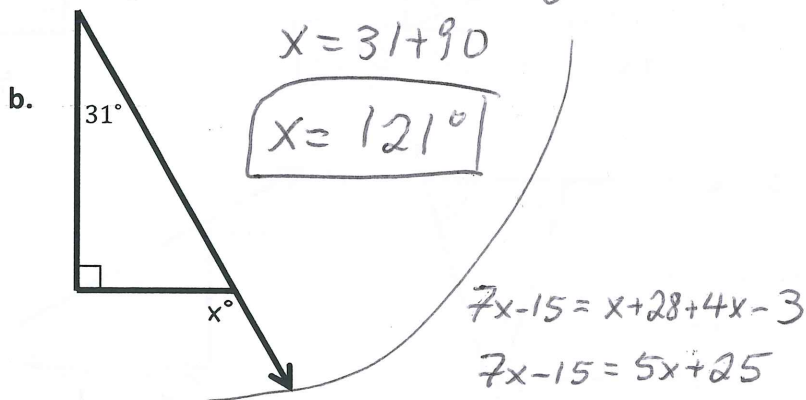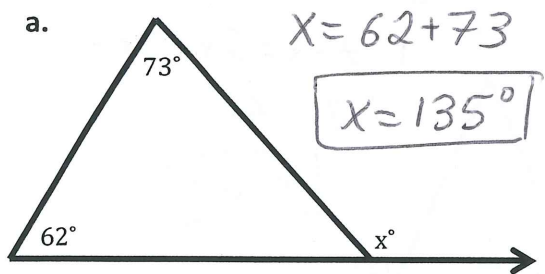
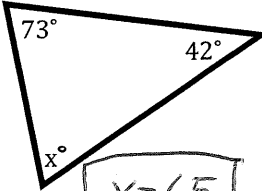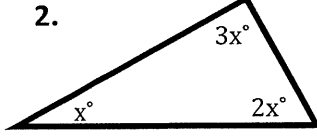$7x - 15 = 5x + 25$

$2x = 40$

$x = 20$

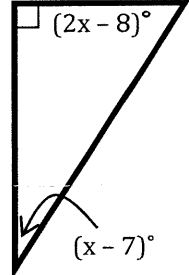Name: __Homework__ Date: _____ Period: _____

Geometry
Homework: Interior and Exterior Angles of Triangles
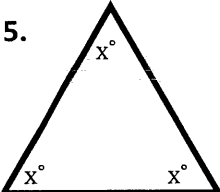
Directions: Find the value of x.
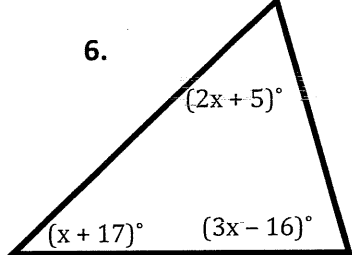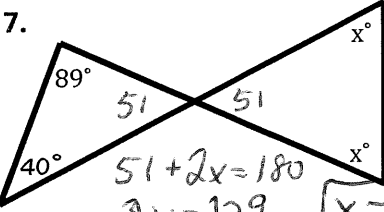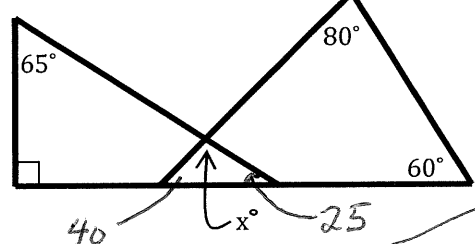
$3x - 15 + 90 = 180$

$3x - 15 = 90$

$3x = 105$

$\boxed{x = 35}$

1.

73° 42° x°

$\boxed{x = 65}$

2.

3x° x° 2x°

$6x = 180$

$\boxed{x = 30°}$

3.

(2x – 8)° (x – 7)°

4.

18° x° 32°

$50 + x = 180$

$\boxed{x = 130}$

5.

x° x° x°

$3x = 180$

$\boxed{x = 60}$

6.

(2x + 5)° (x + 17)° (3x – 16)°

$6x + 6 = 180$

$6x = 174$

$\boxed{x = 29}$

7.

89° x° 51 51 40° x°
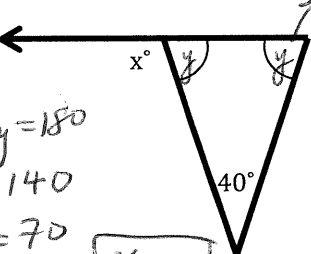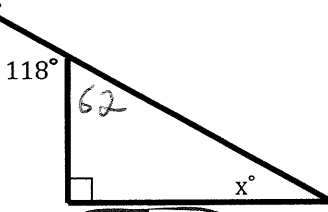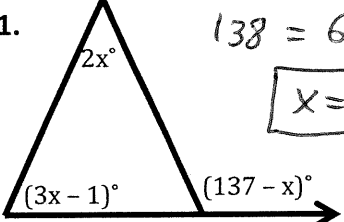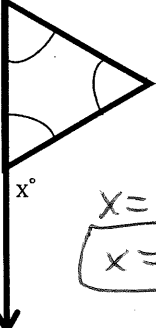
$51 + 2x = 180$

$2x = 129$

$\boxed{x = 64.5}$

8.

65° 80° 60° 40 x° 25
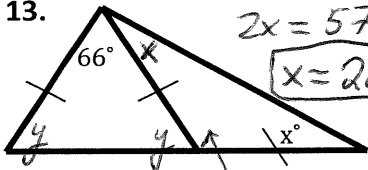
$x + 25 + 40 = 180$

$x + 65 = 180$

$\boxed{x = 115}$

9.

x° y y 170 40°
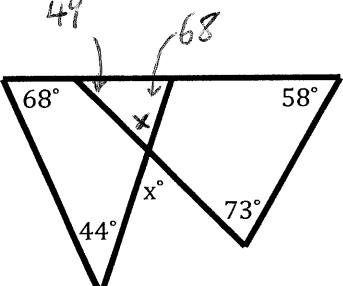
$40 + 2y = 180$

$2y = 140$

$y = 70$

$\boxed{x = 110}$

10.

118° 62 x°

$\boxed{x = 28}$

11.

2x° (3x – 1)° (137 – x)°

$137 - x = 2x + 3x - 1$

$138 = 6x$

$\boxed{x = 23}$

12.

x°

$x = 60 + 60$

$\boxed{x = 120}$

13.

66° x y y x°

$2x + 123 = 180$

$2x = 57$

$\boxed{x = 28.5}$

$66 + 2y = 180$ 123

$2y = 114$

$y = 57$

14.

49 68 68° 58° x x° 44° 73°

$\boxed{x = 63}$