3.6 Unit 3 Quiz Review Key   Geometry
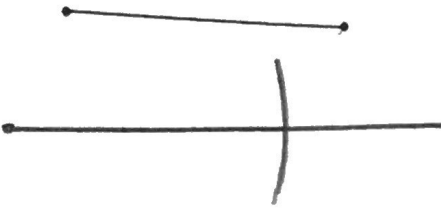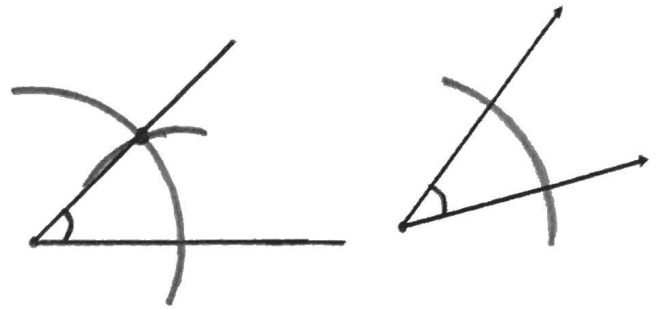
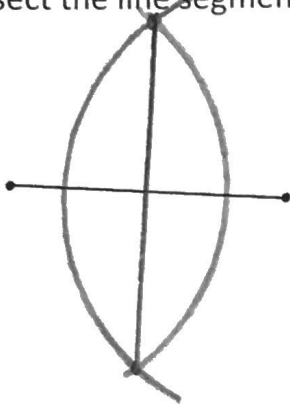**Directions: Complete each construction using a compass and a straightedge.**
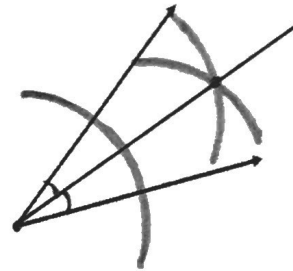
1) Copy the line segment.

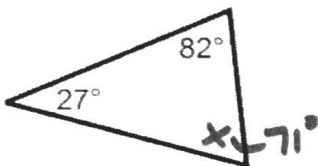**2)** Copy the angle.

3) Bisect the line segment.

4) Bisect the angle.

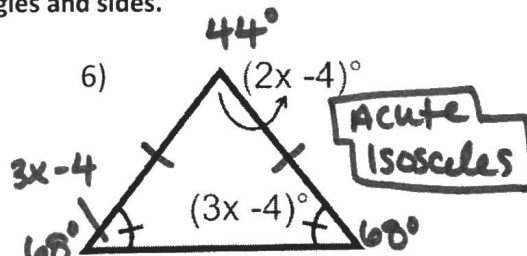**Directions: Classify the triangle by its angles and sides.**

5)

82°
27°
x 71°

$27 + 82 + x = 180$
$109 + x = 180$ **Acute**
$-109 \quad -109$ **Scalene**
$\quad x = 71$

6)

44°
$(2x - 4)°$
$3x - 4$ **Acute**
$(3x - 4)°$ **Isosceles**
68°   68°

$2x - 4 + 3x - 4 + 3x - 4 = 180$
$8x - 12 = 180$
$\quad +12 \quad +12$
$\dfrac{8x}{8} = \dfrac{192}{8}$ $x = 24$
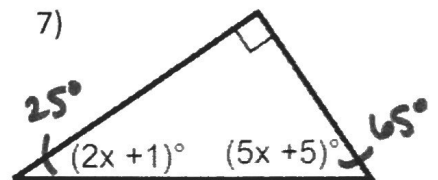
7)   **Right Scalene**

25°
$(2x + 1)°$ $(5x + 5)°$ 65°

$90 + 2x + 1 + 5x + 5 = 180$
$7x + 96 = 180$
$\quad -96 \quad -96$
$\dfrac{7x}{7} = \dfrac{84}{7}$ $x = 12$

Directions: Write the triangle angles and sides in order from least to greatest.

8) $m\angle D = (x - 15)°$
$m\angle E = 90°$
$m\angle F = (2x - 165)°$

E
90°
$2x - 165$
$x - 15$ 15°
D 75°   F
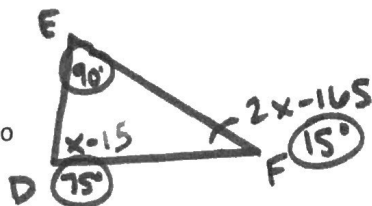
$90 + x - 15 + 2x - 165 = 180$
$3x - 90 = 180$
$\quad +90 \quad +90$
$\dfrac{3x}{3} = \dfrac{270}{3}$ $x = 90$

$\angle F, \angle D, \angle E$
$\overline{DE}, \overline{EF}, \overline{DF}$

9)

C
44 ft
29 ft
B
50 ft
A
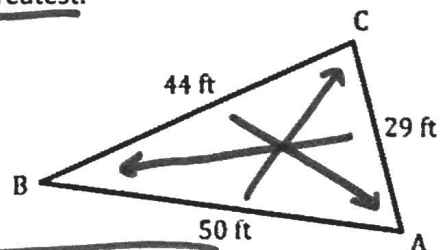
$\overline{CA}, \overline{BC}, \overline{BA}$

$\angle B, \angle A, \angle C$

Directions: Solve for x.

10)

(9x +16)°
(6x +15)°
(19x +3)°

Ext. ∠'s Theorem

$$9x + 16 + 6x + 15 = 19x + 3$$
$$15x + 31 = 19x + 3$$
$$\underline{-15x \qquad\quad -15x}$$
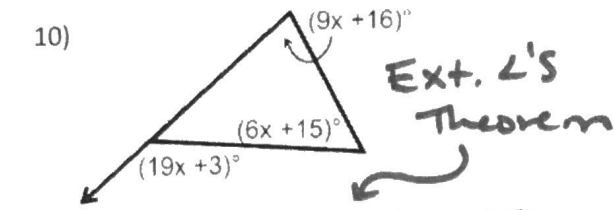$$31 = 4x + 3$$
$$-3 \qquad\quad -3$$
$$\frac{28}{4} = \frac{4x}{4} \qquad \boxed{x = 7}$$

11)

63°
86°
91°   x°
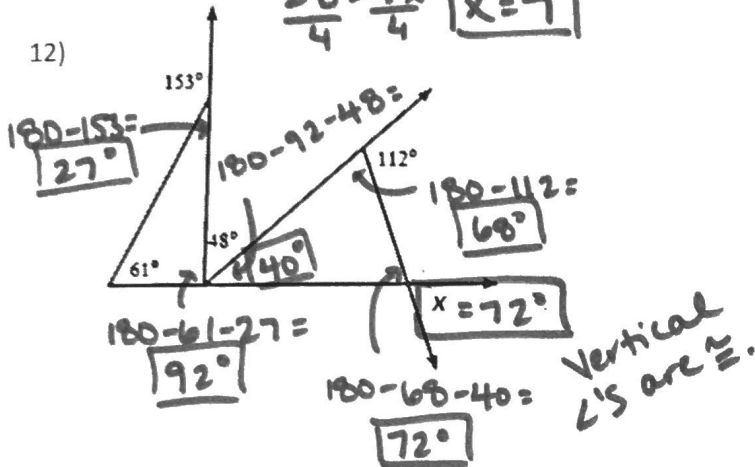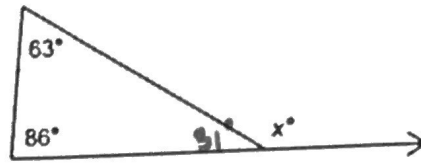
option 1: $63 + 86 = x$ (Exterior ∠'s Theorem)
$$\boxed{149 = x}$$

option 2: $31 + x = 180$ (Linear pair)
$$\boxed{x = 149}$$

12)

153°
$180 - 153 = $
$\boxed{27°}$
$180 - 92 - 48 = $
112°
$180 - 112 = $
$\boxed{68°}$
48°
$\boxed{40°}$
61°
$180 - 61 - 27 = $
$\boxed{92°}$
$180 - 68 - 40 = $
$\boxed{72°}$
$\boxed{x = 72°}$

Vertical ∠'s are ≅.

13)

125°
x + 29   55°
x+104
A
x + 104

option 2:
$x + 29 + 55 + x + 104 = 180$
$x = -4$

option 1: $x + 29 + x + 104 = 125$
$$2x + 133 = 125$$
$$\underline{-133 \quad -133}$$
$$\frac{2x}{2} = \frac{-8}{2}$$
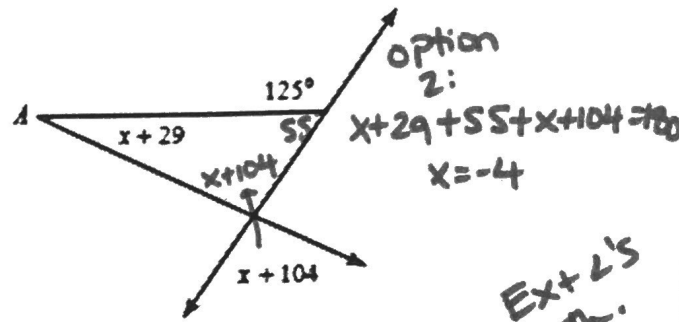$$\boxed{x = -4}$$

Ex + ∠'s Th.

Directions: Determine if the following sides can make a triangle.

14) 5, 6, 7
$$5 + 6 = 11$$
$$11 > 7 ?$$
$$\boxed{yes}$$

15) 1, 1, 2
$$1 + 1 = 2$$
$$2 > 2 ?$$
$$\boxed{NO}$$

16) 21, 21, 21
$$21 + 21 = 42$$
$$42 > 21 ?$$
$$\boxed{yes}$$

Directions: Determine the range of values for the third side of a triangle if the following lengths are two sides.

17) 7, 12
$$7 + 12 = 19$$
$$12 - 7 = 5$$
$$\boxed{5 < x < 19}$$

18) 12, 14
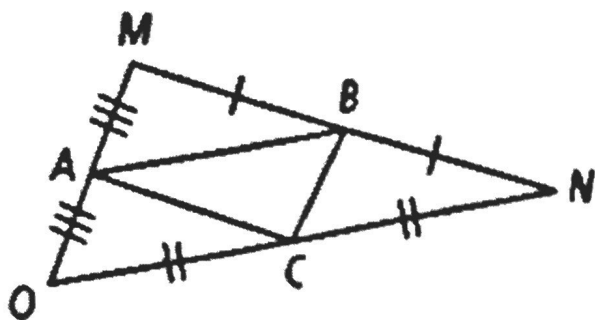$$12 + 14 = 26$$
$$14 - 12 = 2$$
$$\boxed{2 < x < 26}$$

19) 5, 16
$$5 + 16 = 21$$
$$16 - 5 = 11$$
$$\boxed{11 < x < 21}$$

Directions: Use the figure to solve each problem.

[figure: triangle MON with midpoints, points M, B, A, N, O, C labeled with tick marks]

20) $\overline{MN}$ ∥ ?

$$\overline{MN} \parallel \overline{AC}$$

21) What midsegment is parallel to $\overline{MO}$?

$$\overline{BC}$$

22) If AB = 17.5, what is NO?
~~the value of x?~~

$$17.5 \times 2 = 35$$
$$\boxed{\overline{NO} = 35}$$

23) If MB = 2x − 5 and BN = 19, what is the value of x?

$$2x - 5 = 19$$
$$\underline{+5 \quad +5}$$
$$2x = 24$$
$$\boxed{x = 12}$$

$\overline{MB} \cong \overline{BN}$
so we equal them to each other.

24) If AB = 3x − 1 and ON = 34, what is the value of x?

$$2(3x - 1) = 34$$
$$6x - 2 = 34$$
$$\underline{+2 \quad +2}$$
$$\frac{6x}{6} = \frac{36}{6}$$
$$\boxed{x = 6}$$

AB is midsegment so we have to mult. by 2 to set equal to side length.

25) If m∠AOC = 37°, what is m∠BCN?

$$\boxed{m\angle BCN = 37°}$$

∠AOC & ∠BCN are corresponding ∠'s so they have same meas.

26) If m∠BCN = 48°, what is m∠CBA?

$$m\angle CBA = 48$$

∠BCN ≅ ∠CBA because they are alt. int ∠'s.

27) If MO = 32, MN = 45, and ON = 81, what is the perimeter of △ABC?

Perimeter of △MON =
$$32 + 45 + 81 = 158.$$

The perimeter of △ABC will be **half** of that.

$$\frac{158}{2} = \boxed{79}$$