Geometry
Triangle Angles

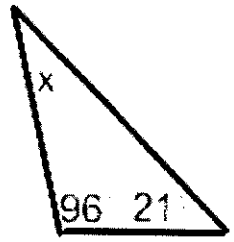
Name: Keys
Date: _____

TRIANGLE SUM

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

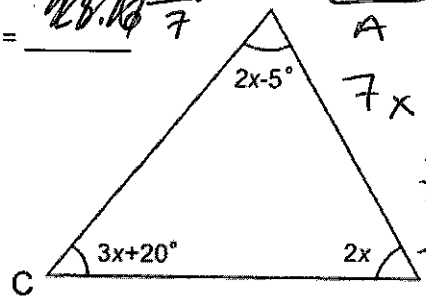
Find the value of x in each figure.

1. x = 63°



$x+96+21=180$
$x+117=180$
$-117\ \ -117$
$x=63°$

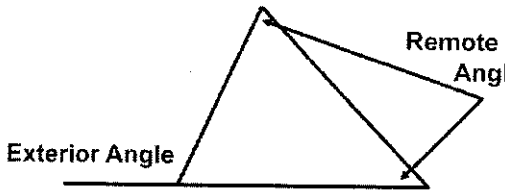
2. x = 23



$2x-5+2x+3x+20=180$
A B C
$7x+15=180$
$-15\ \ -15$
$\frac{7x}{7}=\frac{165}{7}$
$x=\frac{165}{7}$ (Doesn't Simplify)

EXTERIOR ANGLE THEOREM

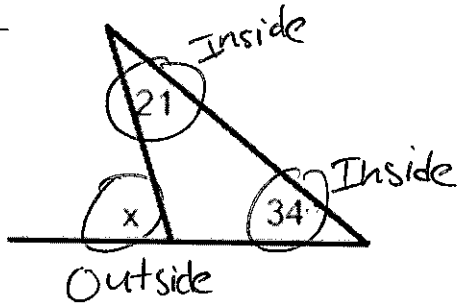
The measure of an exterior angle of a triangle is equal to the **sum** of the measures of the two remote interior angles.



"INSIDE + INSIDE=OUTSIDE"

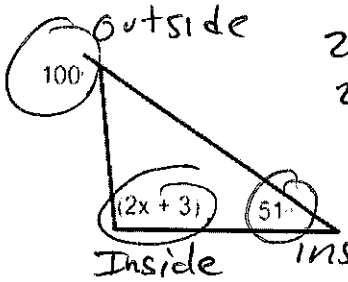
Find the value of x in each figure.

3. x = 55°



$21+34=x$
$55=x$

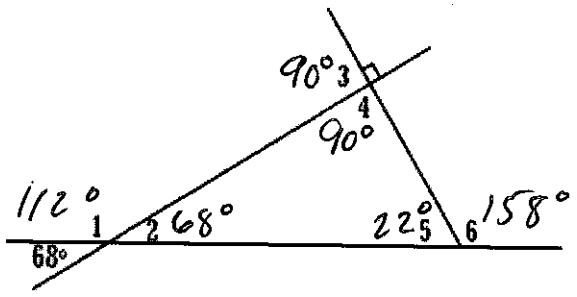
4. x = 23



$2x+3+51=100$
$2x+54=100$
$-54\ \ -54$
$\frac{2x}{2}=\frac{46}{2}$
$x=23$

Find the value of each numbered angle.

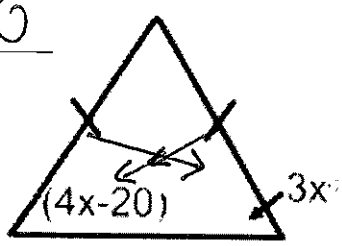
5. m∠1 = 112°
6. m∠2 = 68°
7. m∠3 = 90°
8. m∠4 = 90°
9. m∠5 = 22°
10. m∠6 = 158°



Isosceles Triangles & Base Angles

If two ***sides*** of a triangle are congruent, then the **angles opposite** those sides are **congruent.**

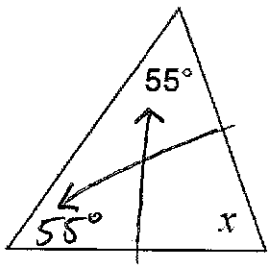
5. x = 20



$3x = 4x - 20$
$-4x \quad -4x$
$-x = -20$

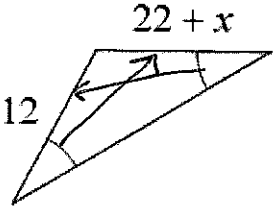
6. x = 70°

$55 + 55 + x = 180$
$110 + x = 180$
$-110 \quad -110$
$x = 70°$



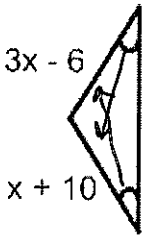
If two ***angles*** of a triangle are congruent, then the **sides opposite** those angles are **congruent**

7. x = -10



$12 = 22 + x$
$-22 \quad -22$
$-10 \quad x$

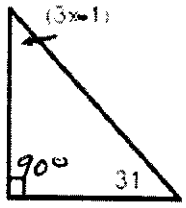
8. x = _____



$x + 10 = 3x - 6$
$-10 \quad -10$
$x = 3x - 16$
$-3x \quad -3x$
$-2x = -16$
$\frac{-2x}{-2} = \frac{-16}{-2}$
$x = 8$

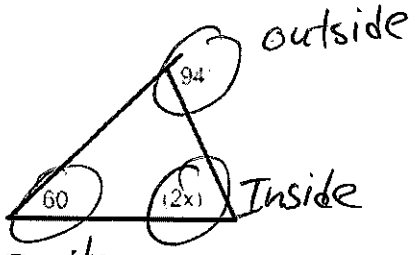
PRACTICE!!!

1. x = 20



$3x - 1 + 31 + 90 = 180$
$3x + 120 = 180$
$-120 \quad -120$
$3x = 60$

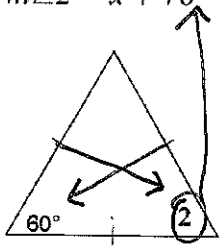
2. x = 17



$60 + 2x = 94$
$-60 \quad -60$
$2x = 34$
$\frac{2x}{2} = \frac{34}{2}$

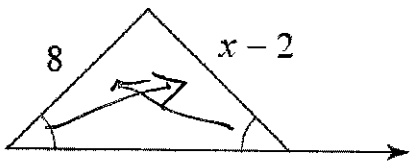
3. x = -10

$m\angle 2 = x + 70$



$60 = x + 70$
$-70 \quad -70$
$-10 = x$

4. x = 10



$x - 2 = 8$
$+2 \quad +2$
$x = 10$

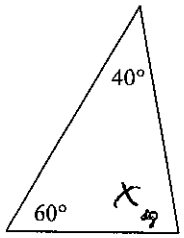
Geometry Name_____ ID: 1

Triangle Sums

Date_____ Period____

Find the measure of each angle indicated.

1)



$60+40+x=180$

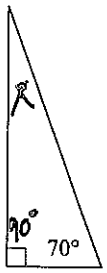
$100+x=180$

$-100 \quad -100$

$x=80$

$x=80°$

2)



$x+90+70=180$

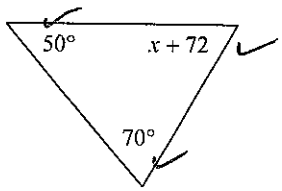
$x+160=180$

$-160 \quad -160$

$x=20°$

Solve for *x*.

3)

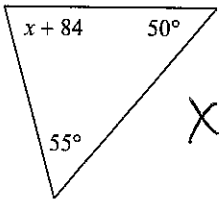


$50+70+x+72=180$

$192+x=180$

$x=-12$

4)



$x+84+50+55=180$

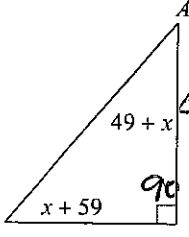
$x+189=180$

$-189 \quad -189$

$x=-9$

Find the measure of angle A.

5)



$49+(-9)=40°=m\angle A$

$x+59+90+49+x=180$

$2x+198=180$

$-198 \quad -198$

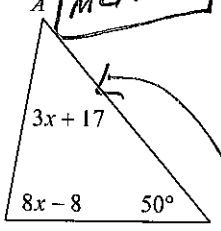
$\frac{2x}{2}=\frac{-18}{2}$

$x=-9$

6)

$3(11)+17=50°$

$m\angle A=58°$



$3x+17+50+8x-8=180$

$11x+59=180$

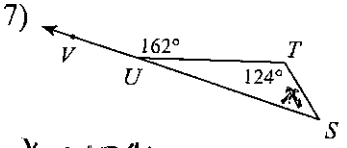
$-59 \quad -59$

$\frac{11x}{11}=\frac{121}{11}$

$x=11$

Find the measure of each angle indicated. INSIDE+INSIDE=OUTSIDE

7)

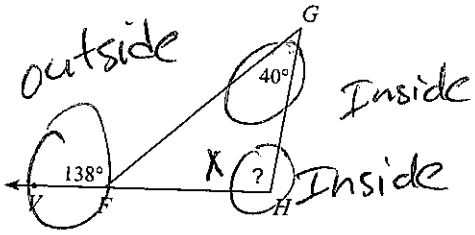


$X + 124 = 162$

$-124 \quad -124$

$X = 38$

8)



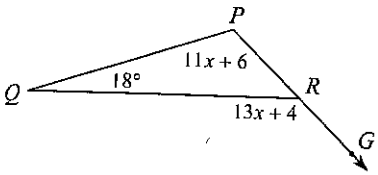
$40 + x = 138$

$-40 \quad -40$

$x = 98$

Solve for *x*.

9)



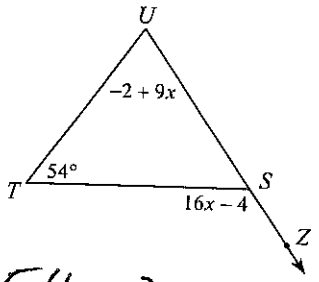
$18 + 11x + 6 = 13x + 4$

$11x + 24 = 13x + 4$

$-11x - 4 \quad -11x - 4$

$\frac{20}{2} = \frac{2x}{2}$ $\quad x = 10$

10)



$54 + -2 + 9x = 16x - 4$

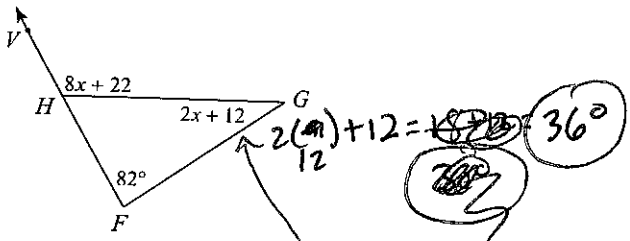
$52 + 9x = 16x - 4$

$+4 \quad -9x \quad -9x \quad +4$

$56 = 7x$ $\quad x = 8$

Find the measure of the angle indicated.

11) Find $m\angle G$.



$2(12) + 12 = 36°$

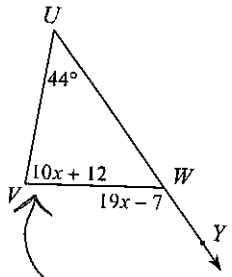
$82 + 2x + 12 = 8x + 22$

$2x + 94 = 8x + 22$

$-2x - 22 \quad -2x - 12$

$\frac{72}{6} = \frac{6x}{6}$ $\quad x = 12$

12) Find $m\angle V$.



$44 + 10x + 12 = 19x - 7$

$10x + 56 = 19x - 7$

$-10x + 7 \quad -10x + 7$

$\frac{63}{9} = \frac{9x}{9}$

$x = 7$

$10(7) + 12 = 82°$

Geometry

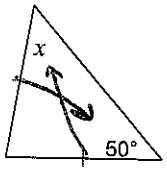
Name_____ ID: 1

Base Angle Theorem Classwork

Date_____ Period____

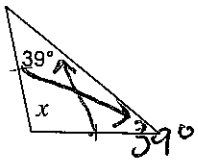
Find the value of x.

1)



$x = 50°$

2)



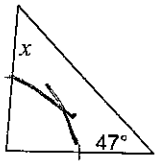
$39 + 39 + x = 180$

$78 + x = 180$

$-78 \quad -78$

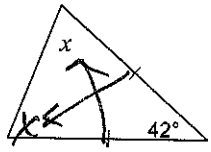
$x = 102°$

3)



$x = 47°$

4)



$x + x + 42 = 180$

$2x + 42 = 180$

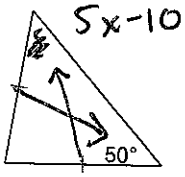
$-42 \quad -42$

$2x = 138$

$\frac{2x}{2} = \frac{138}{2}$

$x = 69°$

5) $m\angle 2 = 5x - 10$



$5x - 10 = 50$

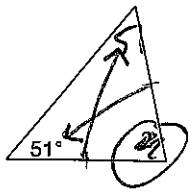
$+10 \quad +10$

$5x = 15$

$\frac{5x}{5} = \frac{15}{5}$

$x = 3$

6) $m\angle 2 = 8x - 10$



$51 + 51 + 8x - 10 = 180$

$102 + 8x - 10 = 180$

$92 + 8x = 180$

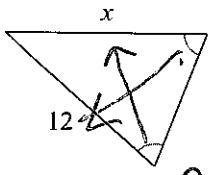
$-92 \quad -92$

$8x = 88$

$\frac{8x}{8} = \frac{88}{8}$

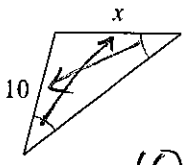
$x = 11$

7)



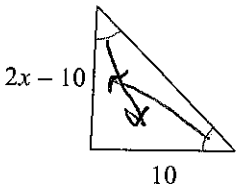
$x = 12$

8)



$x = 10$

9)



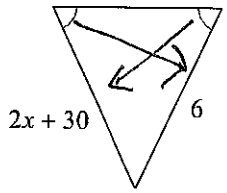
$2x - 10 = 10$

$+10 \quad +10$

$\frac{2x}{2} = \frac{20}{2}$

$x = 10$

10)



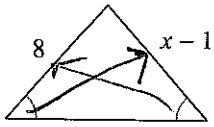
$2x + 30 = 6$

$-30 \quad -30$

$\frac{2x}{2} = \frac{-24}{2}$

$x = -12$

11)

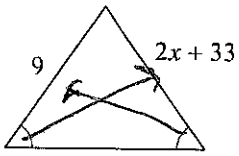


$8 = x - 1$

$+1 \quad +1$

$x = 9$

12)



$9 = 2x + 33$

$-33 \quad -33$

$\frac{-24}{2} = \frac{2x}{2}$

$x = -12$