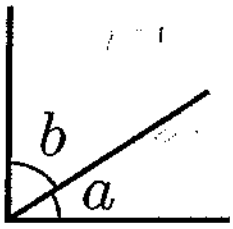
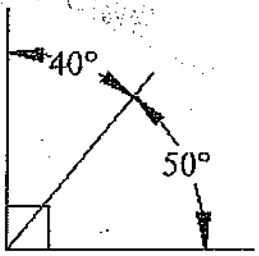
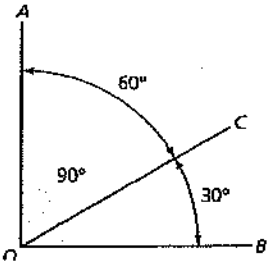
AK

Angles

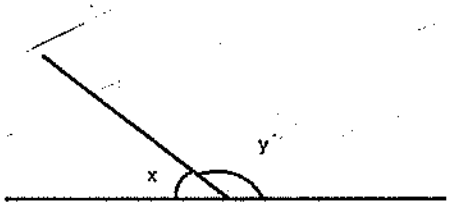
Complementary angles are angles that add up to 90°.

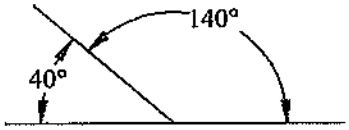


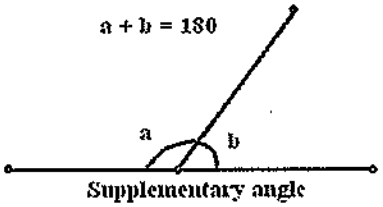




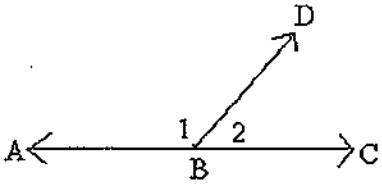
Supplementary angles are angles that add up to 180°.



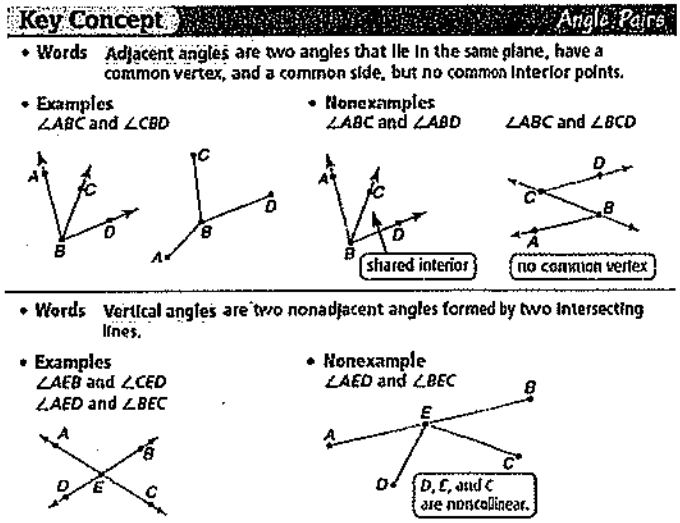




Supplementary angles can also be called a linear pair (a pair of angles that form a line and add up to 180°).

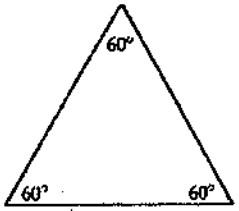


∢1 and ∢2 form a linear pair.

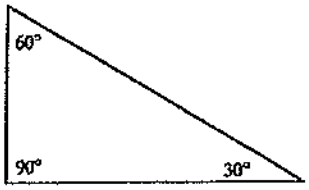


VERTICAL ANGLES ARE CONGRUENT

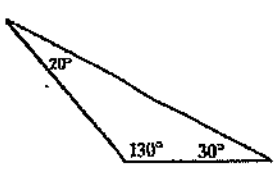
All 3 angles of a triangle add up to 180°.



60 + 60 + 60 = 180

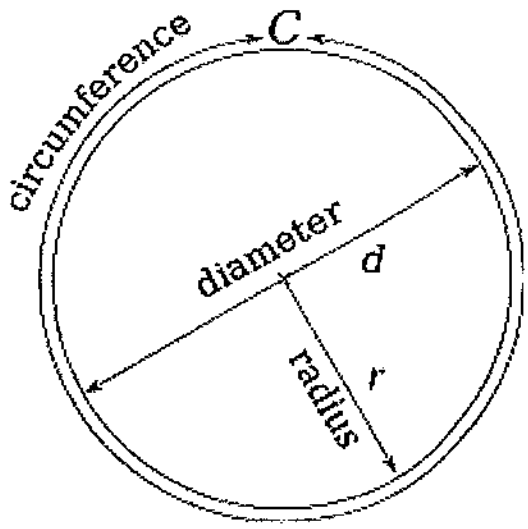


30 + 90 + 60 = 180



30 + 130 + 20 = 180

Circles



The diameter of a circle is 2 times the radius. d = 2r

π

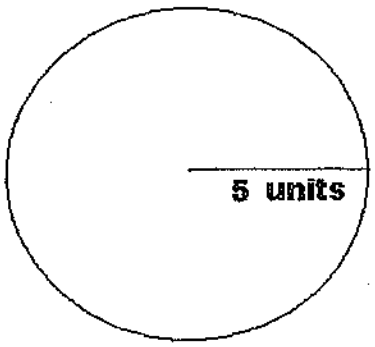
The circumference (perimeter of a circle) is found by the formula

$$\text{Circumference} = 2\pi r$$

The area of a circle is found by

$$\text{Area} = \pi r^2$$

Ex 1: If the radius of a circle is 5 what is the circumference and the area? (Use 3.14 for π)

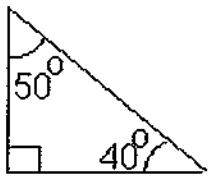


Sometimes you can express your answers in terms of π.
For example if the radius of a circle is 4, then the circumference is 8π and the A = 16π

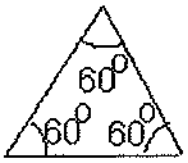
This is used when you do not have a calculator to insert the correct number for π.

Types of Triangles

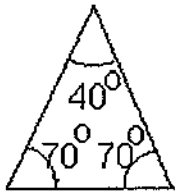
Right **triangle: Has one 90 degree angle**



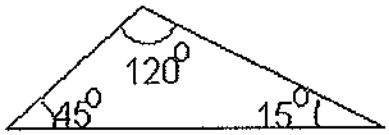
Equilateral **triangle: All angles are the same (60 degrees)**



Isosceles **triangle: Has two angles the same and two sides the same**



Scalene **triangle: Has all three angles and all three sides different**



Obtuse **triangle: Has one obtuse angle, greater than 90 degrees**

The sum of all angles in a triangle is 180° **degrees.**

NAME: _____

Complementary and Supplementary Word Problems

Show all work!

1) The supplement of an angle is thirty more than twice the angle. Find the measure of the angle and its supplement.

$2x+30$ / x

$2x+30+x=180$

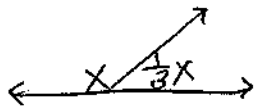
$3x+30=180$

$3x=150$

$x=50$

$50°, 130°$

2) An angle is one-third its supplement. Find the measure of the angle and its complement.



$\frac{1}{3}x+x=180$

$\frac{3}{4}x\ \frac{4}{3}x=180\times\frac{3}{4}$

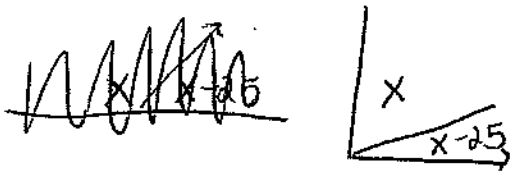
$x=135°$

$\frac{1}{3}x=45°$

$45°, 45°$

3) Find the measure of an angle whose complement and supplement sum to 194 degrees.

4) An angle is 25 less than its complement. Find the angle, and its complement.



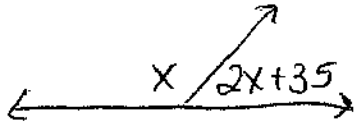
$x+x-25=90$

$2x=115$

$x=57.5$

$57.5°, 32.5°$

5) One of two supplementary angles is 35 degrees more than twice the other. Find each angle.



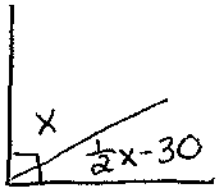
$3x+35=180$

$3x=145$

$x=48.\overline{3}°$

$48.\overline{3}°, 131.\overline{6}°$

6) An angle is 30 less than half its complement. Find the angle.



$x+\frac{1}{2}x-30=180$

$\frac{2}{3}x\ \frac{3}{2}x=210\times\frac{2}{3}$

$x=140°$

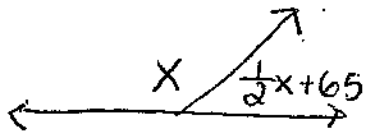
$\frac{1}{2}(140)-30$

40°

~~7)~~ Find the measure of an angle whose supplement measures 6 degrees more than four times its complement.

~~8)~~ What is the measure of an angle whose supplement measures 32 degrees more than twice its complement?

9) One of two supplementary angles measures 65 degrees more than half the other. Find each angle.



$x+\frac{1}{2}x+65=180$

$\frac{3}{2}x+65=180$

$\frac{2}{3}x\ \frac{3}{2}x=115\times\frac{2}{3}$

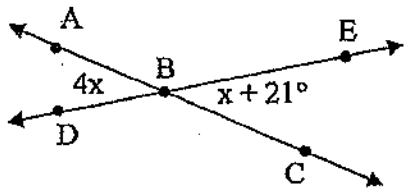
$x=76.\overline{6}$

$76.6°,\ 103.\overline{3}°$

Fun Geometry
Angle pairs worksheet

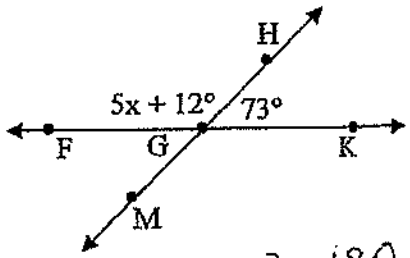
Name: _____

1. x = 7 m∠ABD = 28°



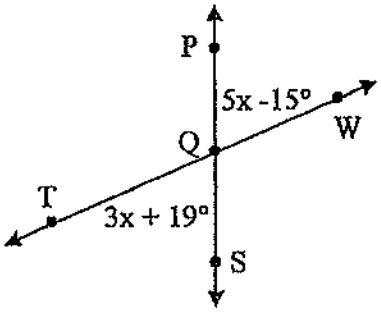
$4x = x + 21$
$3x = 21$
$x = 7$

2. x = 19 m∠FGH = 107°



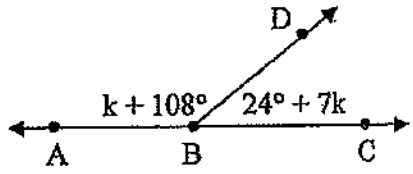
$5x + 12 + 73 = 180$
$5x + 85 = 180$
$5x = 95$
$x = 19$

3. x = 17 m∠PQW = 70°



$3x + 19 = 5x - 15$
$19 = 2x - 15$
$x = 17$

4. k = 6 m∠DBC = 66°

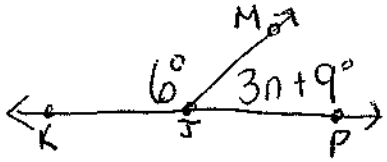


$k + 108 + 24 + 7k = 180$
$8k + 132 = 180$
$8k = 48$
$k = 6$

5. ∠KJM and ∠MJP are a linear pair.
Draw a picture.
m∠KJM = 6° and m∠MJP = 3n + 9°

$6 + 3n + 9 = 180$
$3n = 165$
$n = 55$

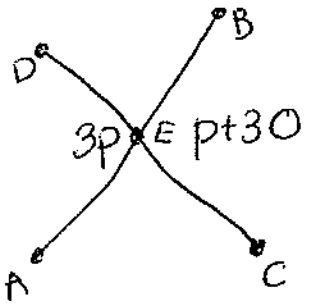
n = 55



6. $\overline{AB}$ and $\overline{DC}$ intersect at point E. E is between A and B. E is also between D and C
Draw a picture.
m∠AED = 3p and m∠CEB = p + 30°

$3p = p + 30$
$2p = 30$

p = 15



Geometry

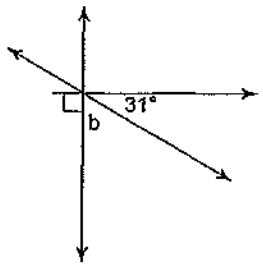
Name_____

Angles and Circles

Date_____

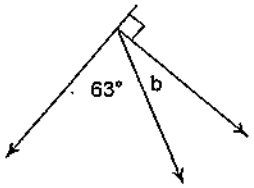
Find the measure of angle b.

1)



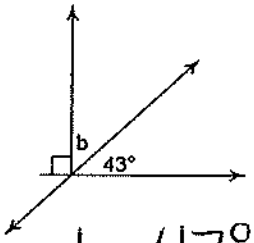
b= 59°

2)



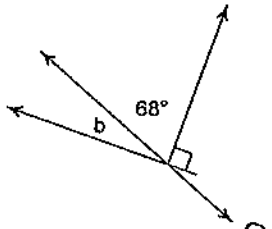
b = 27°

3)



b = 47°

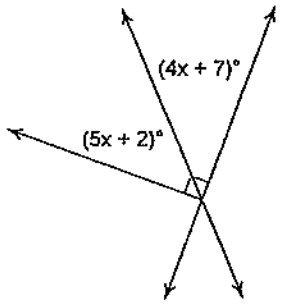
4)



b = 22°

Find the value of x.

5)

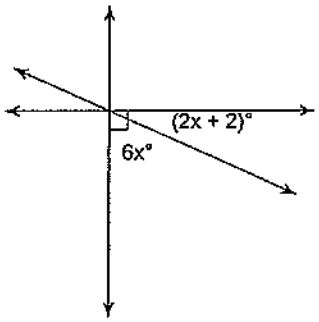


5x + 2 + 4x + 7 = 90

9x + 9 = 90

x = 9

6)

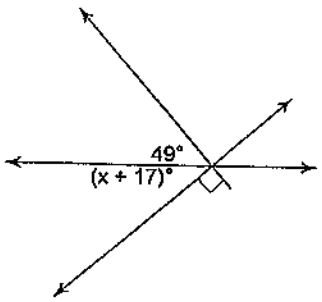


6x + 2x + 2 = 90

8x + 2 = 90

x = 11

7)

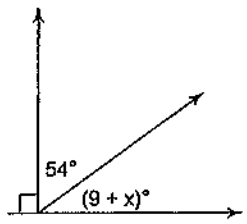


$x+17+49=90$

$x+66=90$

$x=24$

8)

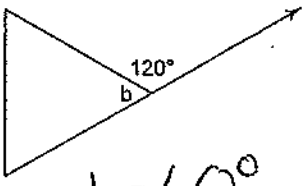


$54+9+x=90$

$x=27$

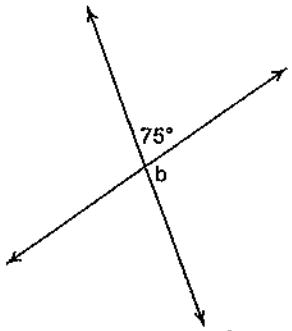
Find the measure of angle b.

9)



$b=60°$

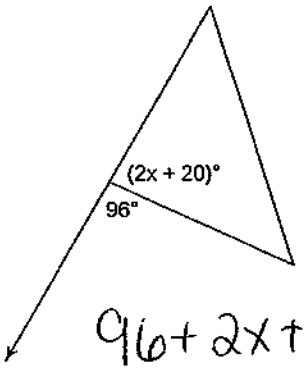
10)



$b=105°$

Find the value of x.

11)



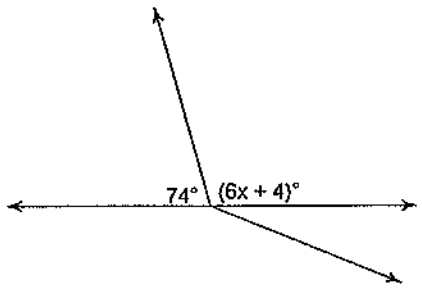
$96+2x+20=180$

$2x+116=180$

$2x=64$

$x=32$

12)

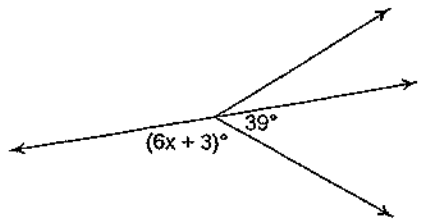


$74+6x+4=180$

$6x=102$

$x=17$

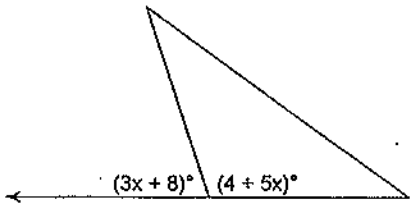
13)



$6x+3+39=180$

$x=23$

14)

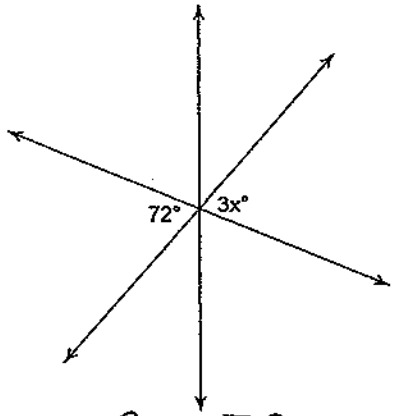


$3x+8+4+5x=180$

$8x+12=180$

$x=21$

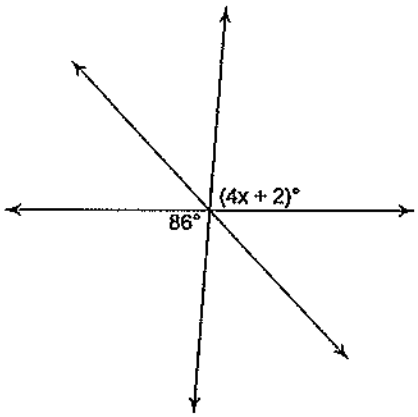
15)



$3x=72$

$x=24$

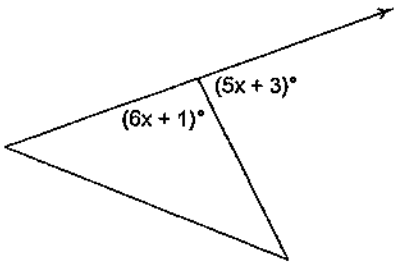
16)



$86=4x+2$

$x=21$

17)

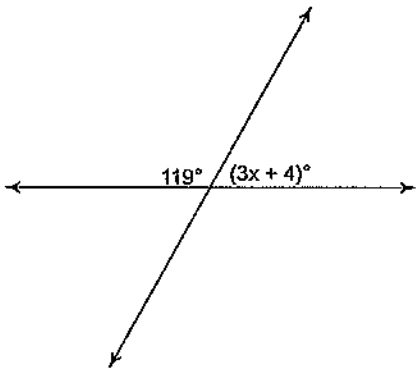


$5x+3+6x+1=180$

$11x+4=180$

$x=16$

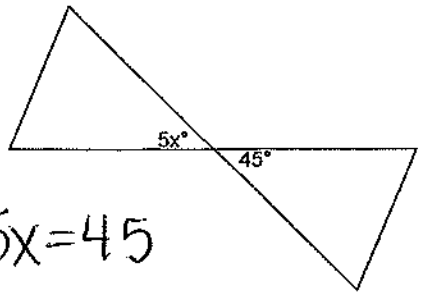
18)



$119+3x+4=180$

$x=19$

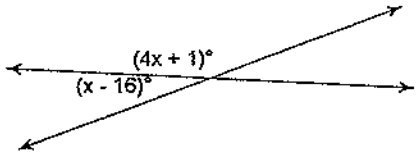
19)



$5x = 45$

$x = 9$

20)



$x - 16 + 4x + 1 = 180$

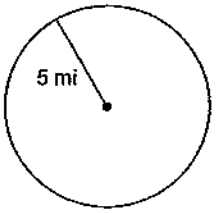
$5x - 15 = 180$

$x = 39$

Find the circumference of each circle. Use 3.14 for the value of π. Round your answer to the nearest tenth.

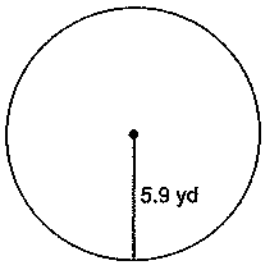
$C = 2\pi r$

21)



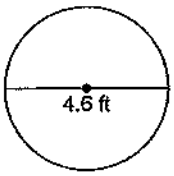
$C = 31.4$ mi

22)



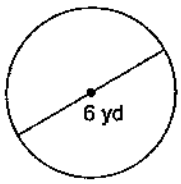
$C = 37.1$ yd

23)



$C = 14.4$ ft

24)



$C = 18.8$ yd

25) radius = 7 in

$C = 44$ in

26) radius = 10 cm

$C = 62.8$ cm

27) diameter = 4 ft

$C = 12.6$ ft

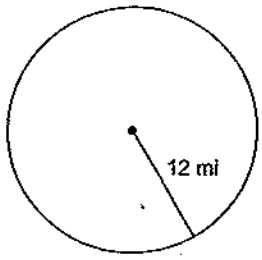
28) diameter = 22 ft

$C = 69.1$ ft

Find the area of each. Use 3.14 for the value of π. Round your answer to the nearest tenth.

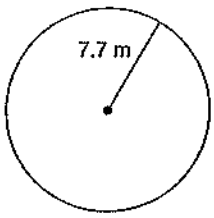
$A = \pi r^2$

29)



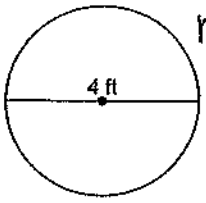
$A = 452.2\ mi^2$

30)



$A = 186.2\ m^2$

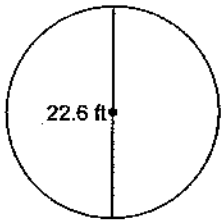
31)



$r = 2$

$A = 12.6\ ft^2$

32)



$r = 11.3$

$A = 401\ ft^2$

33) radius = 9.6 ft

$A = 289.4\ ft^2$

34) diameter = 21 km $r = 10.5$

$A = 346.2\ km^2$

Find the radius of each circle. Use 3.14 for the value of π. Round your answer to the nearest tenth.

~~36~~) area = 201 mi²

$201 = 3.14r^2$

$64.0 = r^2$

~~36~~) area = 28.3 m²

~~37~~) circumference = 12.6 mi

~~38~~) circumference = 60.9 cm

Triangle Review

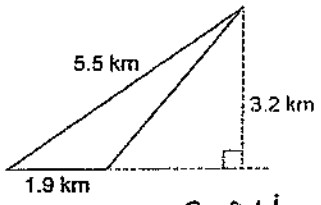
Name_____ ID: 1

Date_____ Period____

Find the area of each. The area of a triangle is found by taking one half of the base times the height. The height meets the base at a RIGHT ANGLE!

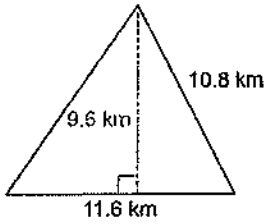
$A = \frac{1}{2} b \cdot h$

1)



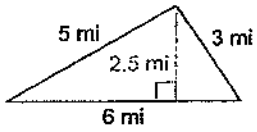
$A = 3.04 \text{ km}^2$

2)



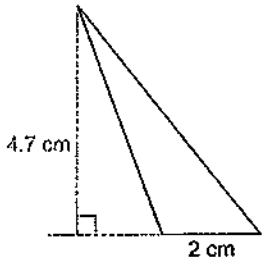
$A = 55.68 \text{ km}^2$

3)



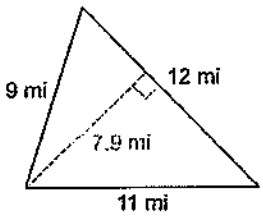
$A = 7.5 \text{ mi}^2$

4)



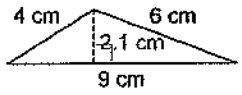
$A = 4.7 \text{ cm}^2$

5)



$A = 47.4 \text{ mi}^2$

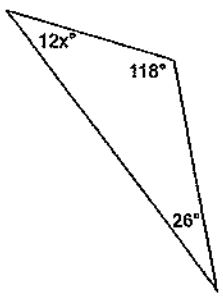
6)



$A = 9.45 \text{ cm}^2$

Find the value of x.

7)

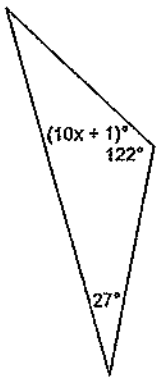


$12x + 118 + 26 = 180$

$12x + 144 = 180$

$x = 3$

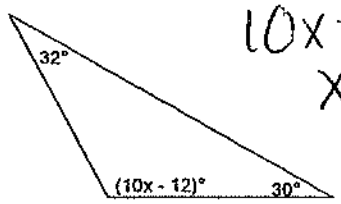
8)



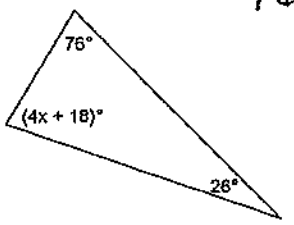
$10x + 1 + 122 + 27 = 180$

$10x + 150 = 180$

$x = 3$

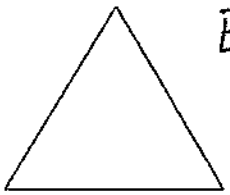
9) 

$32+30+10x-12=180$
$10x+50=180$
$x=13$

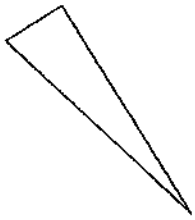
10) 

$76+4x+18+26=180$
$4x+120=180$
$x=15$

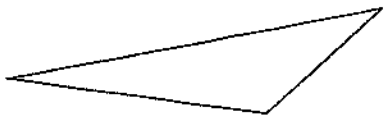
Classify each triangle by its angles and sides. Use your reference sheet to help you!

11) 

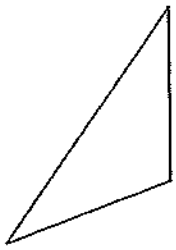
Equilateral △

12) 

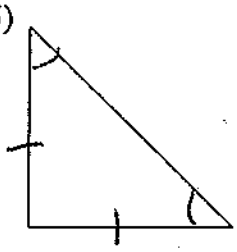
Scalene △

13) 

Obtuse △
Scalene △

14) 

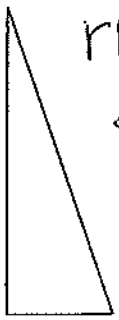
Obtuse △
Isosceles △

15) 

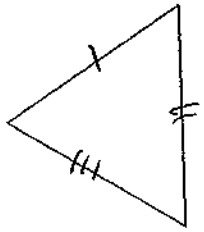
right △
Isosceles △

16) 

Isosceles △

17) 

right △
Scalene △

18) 

Scalene △