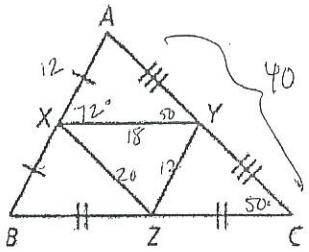
ANSWERS is a triangle master! Period____Date____ 22

Geometry 22: 5.1-5.4, 5.6 MORE Extra Practice

Use the diagram at the right and the given information to find the following;
Given that $AX = 12$, $m\angle AXY = 72°$, $AC = 40$, $XY = 18$, $m\angle C = 50°$



1) $m\angle A =$ 58°

2) $YZ =$ 12

3) $m\angle B =$ 72°

4) $XZ =$ 20

5) $\overline{XZ} \parallel$ $\overline{AC}$

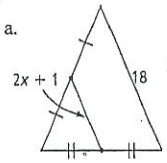
6) $\overline{AX} \cong$ $\overline{XB}$ $\cong$ $\overline{YZ}$

7) perimeter of $\Delta XYZ =$ 50

8) $BC =$ 36

9) Solve for x.

a.



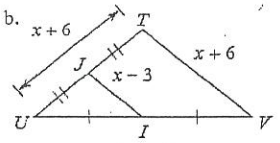
$2(2x+1) = 18$

$4x + 2 = 18$

$4x = 16$

$x = 4$

b.



$2(x-3) = x+6$

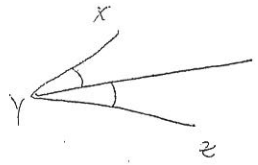
$2x - 6 = x + 6$

$x = 12$

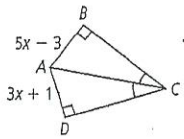
Draw and label the following:

10) perpendicular bisector of $\overline{AB}$

11) angle bisector of $\angle XYZ$



12) Solve for x.



$5x - 3 = 3x + 1$

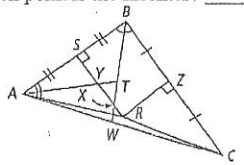
$2x = 4$

$x = 2$

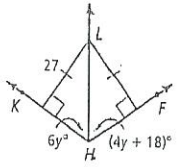
Using ΔABC below, name the following.

13) Which point is the circumcenter? R

14) Which point is the incenter? T



15) How does $\overline{HL}$ relate to $\angle KHF$? What is the value of y?



$6y = 4y + 18$

$2y = 18$

$y = 9$

16) To find the point that is equidistant from the 3 vertices of the triangle, you would find the point where the 3 Perpendicular bisectors intersect.

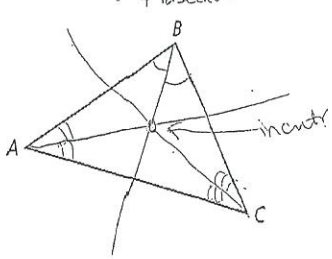
17) This point (from #16) is called the circumcenter

18) The incenter is the center of the **inscribed**, or circumscribed circle (choose one).

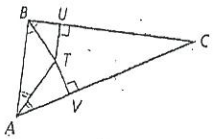
19)

Column A	Column B
concurrent	the point of intersection of three or more lines (1)
1. point of concurrency	the intersection point of the three angle bisectors of a triangle (4)
2. circumcenter of a triangle	when a circle is tangent to the three sides of a triangle (5)
3. circumscribed about	when three or more lines intersect at a single point
4. incenter of a triangle	when a circle passes through the three vertices of a triangle (3)
5. inscribed in	the intersection point of the three perpendicular bisectors of a triangle (2)

20) Using the triangle below, create the incenter of the triangle. Be sure to label any congruent parts!!!



21) In the figure below, $TV = 3x - 12$ and $TU = 5x - 24$. What is the value of x?



$3x-12 = 5x-24$

$12 = 2x$

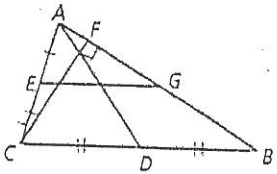
$x = 6$

22) For ΔABC, is each segment a *median*, an *altitude*, or *neither*?

a. $\overline{AD}$ Median

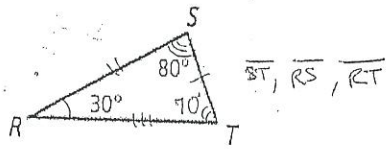
b. $\overline{EG}$ neither

c. $\overline{CF}$ altitude



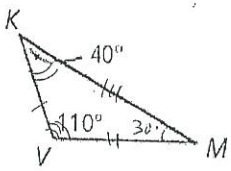
23) List the sides from shortest to longest.

a.



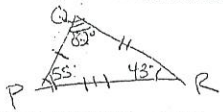
$\overline{ST}, \overline{RS}, \overline{RT}$

b.



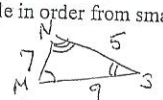
$\overline{KV}, \overline{VM}, \overline{KM}$

24) In ΔPQR, $m\angle P = 55$, $m\angle Q = 82$, and $m\angle R = 43$. List the sides of the triangle in order from shortest to longest.



$\overline{PQ}, \overline{QR}, \overline{PR}$

25) In ΔMNS, $MN = 7$, $NS = 5$, and $MS = 9$. List the angles of the triangle in order from smallest to largest.



$\angle M, \angle S, \angle N$

26) Is it possible for a triangle to have sides with the given lengths? Explain.

a. *6 in, 13 in, 7 in*

$6+7=13$

$13=13$ No — sum needs to be greater than 3rd side

b. *25 cm, 20 cm, 10 cm*

$20+10=30$

$30>25$ yes

27) The lengths of two sides of a triangle are *17 ft* and *22 ft*. Find the range of possible lengths for the third side.

17, 22, x

$22-17$ $22+17$

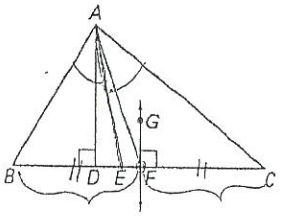
$5 < x < 39$

28) Match the special segment drawn for the following diagram.

$\angle BAE \cong \angle EAC$ and $\overline{BF} \cong \overline{FC}$

1. median (C)
2. altitude (A)
3. perpendicular bisector (D)
4. angle bisector (B)

A. $\overline{AD}$
B. $\overline{AE}$
C. $\overline{AF}$
D. $\overline{GF}$

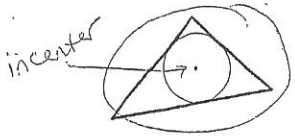


29) Fill in the table

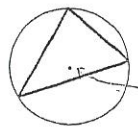
	Must pass through vertex	Must pass through midpoint	Must form a right angle	The point of concurrency is always inside the triangle	Sketch
Median	(Yes)/No	(Yes)/No	Yes/(No)	(Yes)/No	
Altitude	(Yes)/No	Yes/(No)	(Yes)/No	Yes/(No)	
Angle Bisector	(Yes)/No	Yes/(No)	Yes/(No)	(Yes)/No	
Perpendicular Bisector	Yes/(No)	(Yes)/No	Yes/(No)	Yes/(No)	

30) All of the special points of concurrency in a(n) equilateral triangle, intersect at the same point.

31) The circle that is inscribed in the triangle below is.... (circle it). Then, for both triangles, name the point of concurrency.



incenter



circumcenter