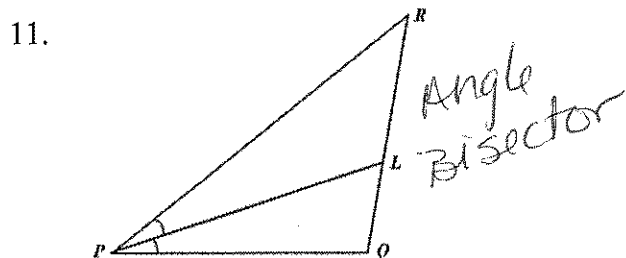
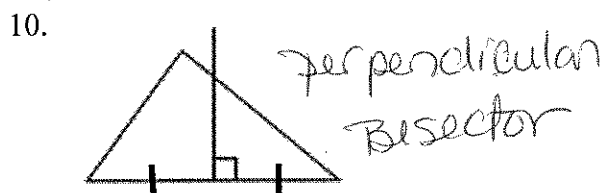
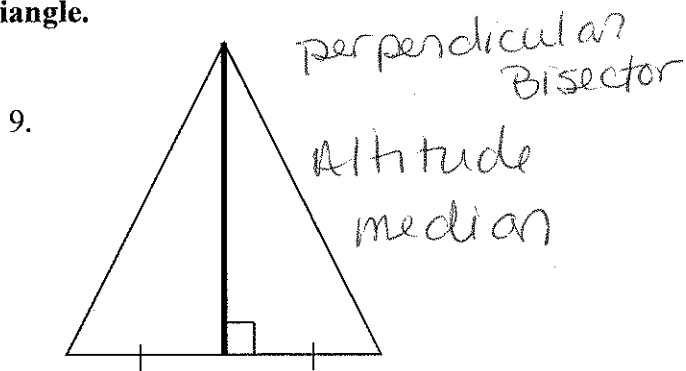
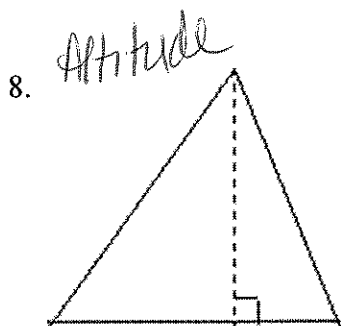


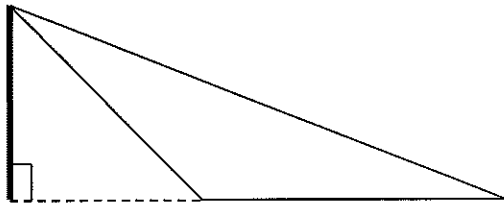
For #1-7, fill in the correct answer.

1. The point equidistant from the vertices of a triangle is the Circumcenter
2. The distance from the vertex to the centroid is two thirds the length of the median.
3. The point of concurrency for the medians is called the centroid.
4. The point of concurrency for the perpendicular bisectors is called the circumcenter
5. The point of concurrency for the lines containing the altitudes is called the orthocenter
6. The point of concurrency for the angle bisectors is called the Incenter.
7. The point equidistant from the sides of the triangle is the Incenter.

For #8-13, identify the type of segment in each triangle.



12. Altitude

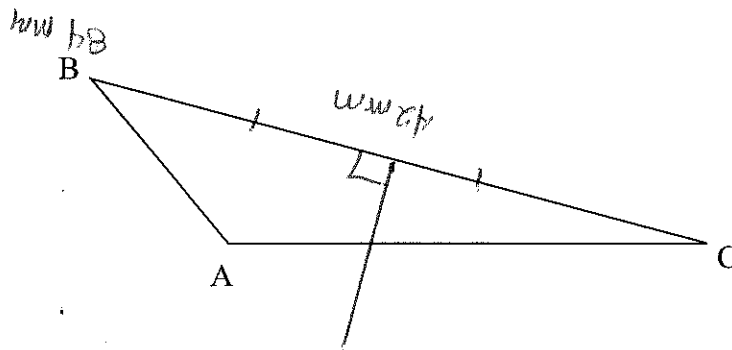


13. median

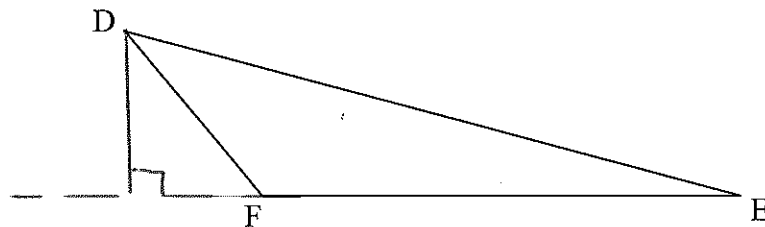


For #14 & 16, use a ruler to draw the indicated segments of the triangle. You must be accurate and show all correct markings.

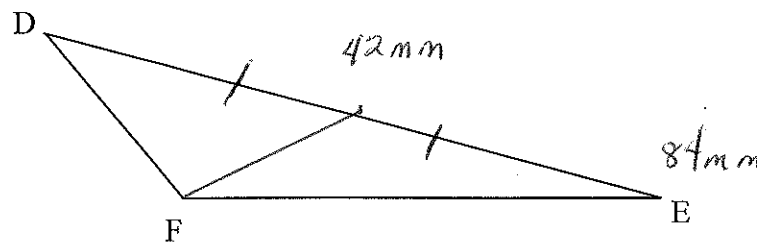
14. Perpendicular bisector of  $\overline{BC}$ .



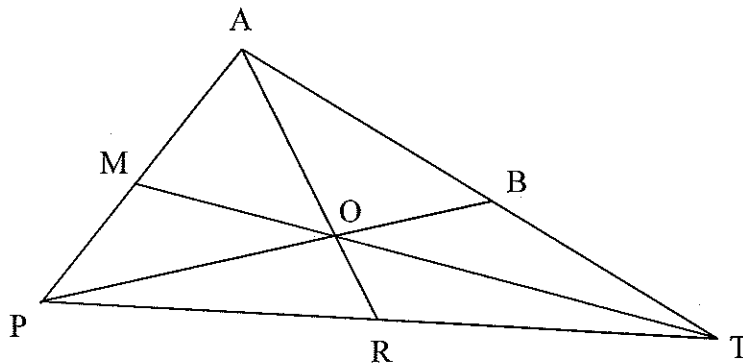
15. Altitude from D to  $\overline{EF}$ .



16. Median from F to  $\overline{DE}$ .



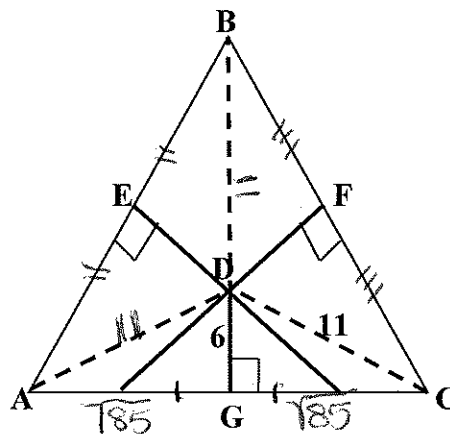
Use the following diagram for #17-21. T is the centroid of  $\triangle PAT$ .



17. If  $PB = 27$ , then  $PO =$  18.
18. If  $AO = 14$ , then  $OR =$  7.
19. If  $BO = 5$ , then  $BP =$  15.
20. If  $TO = 16$ , then  $TM =$  24.
21. If  $RO = 3$ , then  $OA =$  6.

Use the following diagram for #22 - 24. Point D is the circumcenter of  $\triangle ABC$ .  
 $DC = 11$ ,  $DG = 6$

22.  $GC =$   $\sqrt{85}$
23.  $AC =$   $2\sqrt{85}$
24.  $BD =$  11



$$a^2 + b^2 = c^2$$

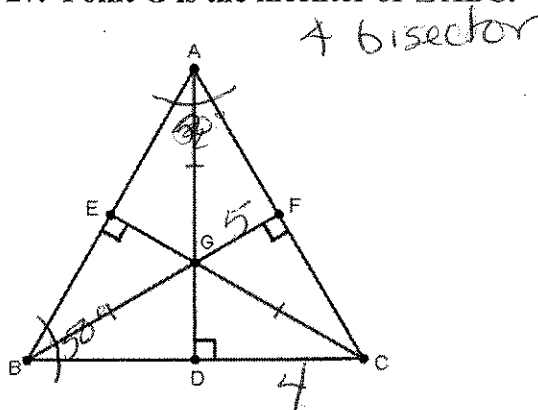
$$a^2 + 6^2 = 11^2$$

$$a^2 + 36 = 121$$

$$a^2 = 85 \quad a = \sqrt{85}$$

$$\begin{array}{r} 121 \\ - 36 \\ \hline 85 \end{array}$$

Use the following diagram for #25 - 27. Point G is the incenter of  $\triangle ABC$ .  
 $DC = 4$ ,  $GF = 5$ ,  $m\angle ABC = 50^\circ$

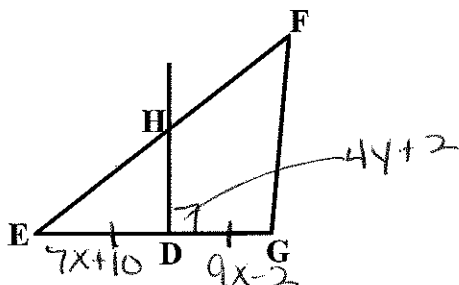


25.  $BC =$  8

26.  $m\angle ABF =$   $25^\circ$

27.  $GE =$  5

28. In  $\triangle EFG$ ,  $\overline{DH}$  is a perpendicular bisector of  $\overline{EG}$  with D on  $\overline{EG}$ . If  $ED = 7x + 10$ ,  $GD = 9x - 2$ , and  $m\angle HDG = (4y + 2)^\circ$ . Find the value of x and y. Show work.



$$4y + 2 = 90$$

$$4y = 88$$

$$y = 22$$

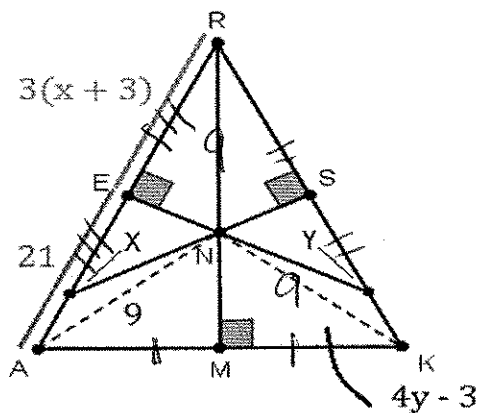
$$7x + 10 = 9x - 2$$

$$10 = 2x - 2$$

$$12 = 2x$$

$$x = 6$$

29. N is the circumcenter of  $\triangle ARK$ .



$$3(x + 3) = 21$$

$$3x + 9 = 21$$

$$3x = 12$$

$$x = 4$$

$$4y - 3 = 9$$

$$4y = 12$$

$$y = 3$$

$ER =$  21

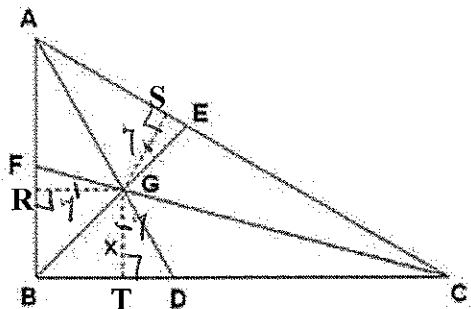
$x =$  4

$KN =$  9

$RN =$  9

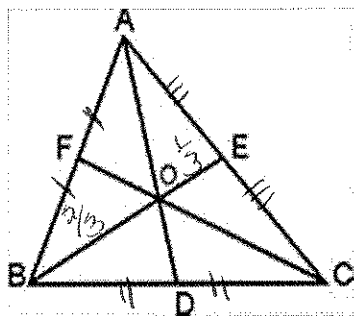
$y =$  3

30.  $G$  is the incenter of  $\triangle ABC$ .  $\overline{GR} \perp \overline{AB}$ ,  $\overline{GT} \perp \overline{BC}$ ,  $\overline{GS} \perp \overline{AC}$ ;  $GR = 7$ , and  $m\angle BAC = 60^\circ$ .



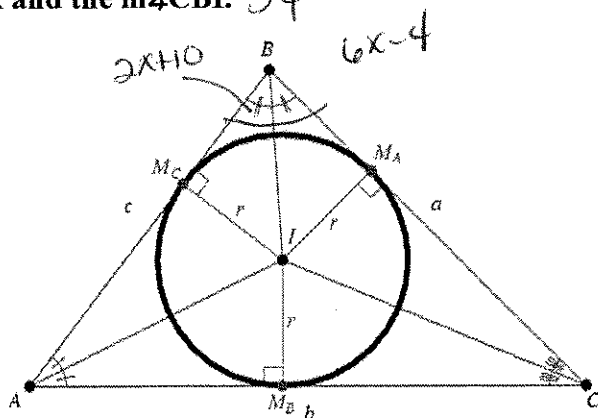
$GT = \underline{7}$        $m\angle BAG = \underline{30^\circ}$

31.  $O$  is the centroid of  $\triangle ABC$ . Each question is unrelated to the previous question.



- a. If  $CO = 6$ , then  $OF = \underline{3}$ .  
 b. If  $AD = 12$ , then  $AO = \underline{8}$  and  $OD = \underline{4}$ .  
 c. If  $BF = 4$ , then  $AF = \underline{4}$ .  
 d. If  $OE = 5$ , then  $BO = \underline{10}$ .

32.  $I$  is the incenter of  $\triangle ABC$ . Let  $m\angle ABC = (6x - 4)^\circ$  and  $m\angle ABI = (2x + 10)^\circ$ . Find  $x$  and the  $m\angle CBI$ .  $34^\circ$



$$2x + 10 + 2x + 10 = 6x - 4$$

$$4x + 20 = 6x - 4$$

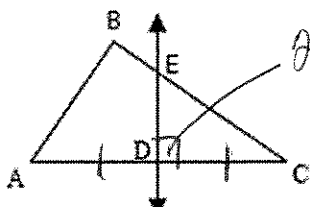
$$24 = 2x$$

$$x = 12$$

Geometry  
 Quiz Review  
 Special Segments & Points of Concurrency

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Period: \_\_\_\_\_



$24 + 12$

$24 + 12 = 96$   
 $24 = 78$   
 $y = 39$

In  $\triangle ABC$ ,  $\overline{DE}$  is a perpendicular bisector of  $\overline{AC}$  with D on  $\overline{AC}$ .

33. If  $m\angle EDC = (2y + 12)^\circ$ . Find the value of  $y$ .

$39^\circ$

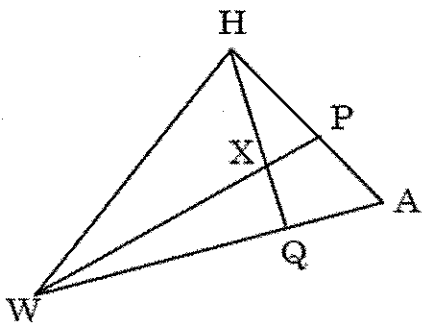
34. If  $AD = 2x + 6$  and  $DC = 4x - 42$ . Find the value of  $x$ .

$2x + 6 = 4x - 42$

$2x + 48 = 4x$

$2x = 48$

$x = 24$



35.  $\overline{WP}$  is a median and an angle bisector of  $\triangle HWA$ .

$m\angle HWP = (2x - 3)^\circ$  and  $m\angle HWA = (6x - 26)^\circ$ . Find  $x$ .

$2(2x - 3) = 6x - 26$

$2x - 3 + 2x - 3 = 6x - 26$

$4x - 6 = 6x - 26$

$20 = 2x$

$x = 10$