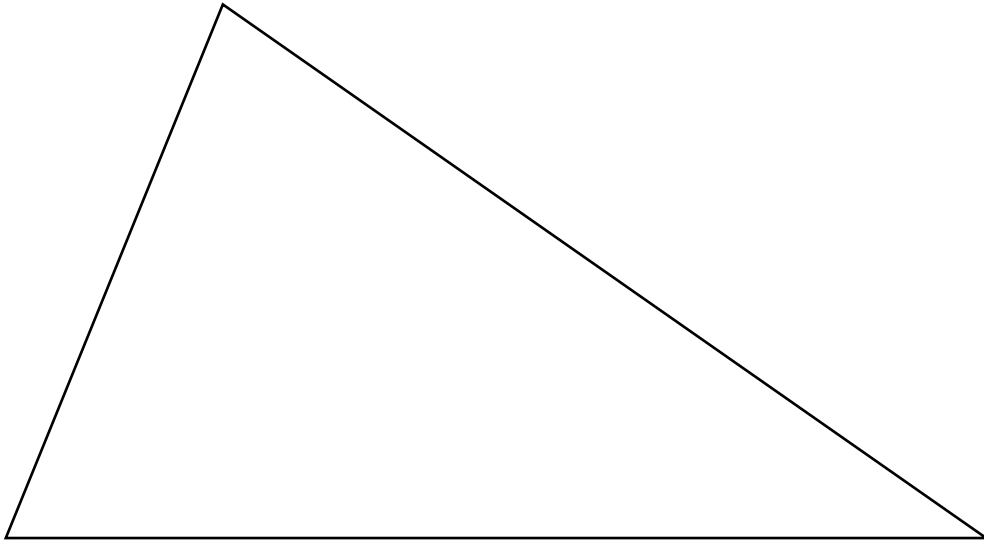
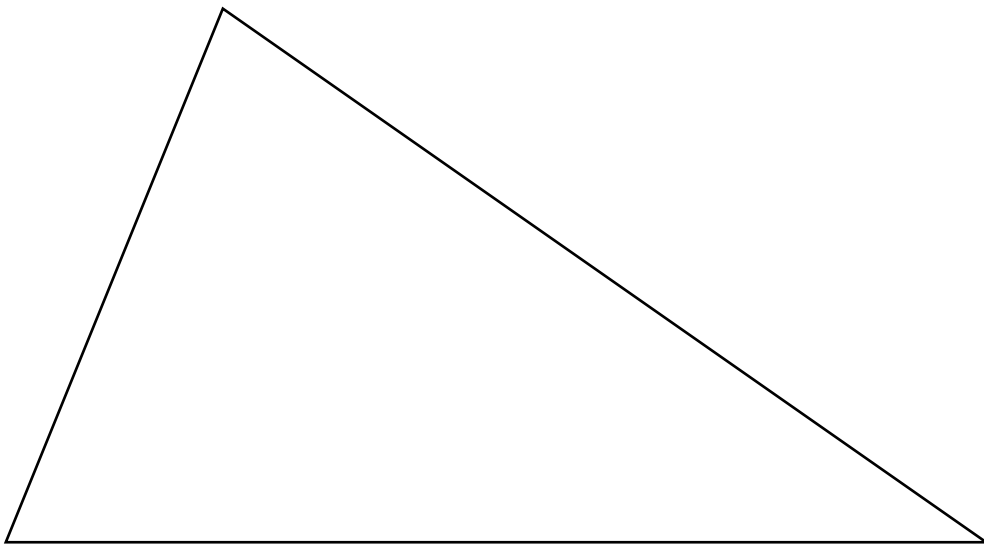


## **5.4** – Medians and Altitudes in Triangles

- 1) Construct the orthocenter of the triangle.



- 2) Construct the centroid of the triangle.

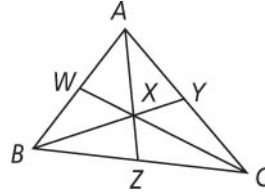


In  $\triangle ABC$ ,  $X$  is the centroid.

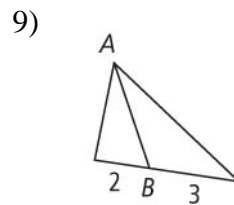
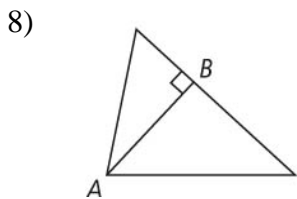
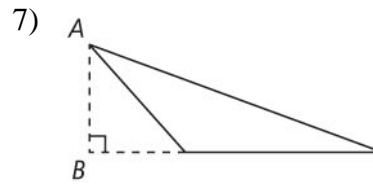
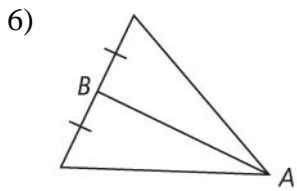
3) If  $CW = 15$ , find  $CX$  and  $XW$ .

4) If  $BX = 8$ , find  $BY$  and  $XY$ .

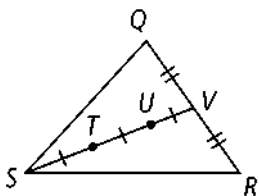
5) If  $XZ = 3$ , find  $AX$  and  $AZ$ .



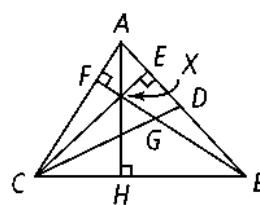
Is  $\overline{AB}$  a median, an altitude, or neither? Explain.



10) Name the centroid.



11) Name the orthocenter.



In the following, name indicated segment

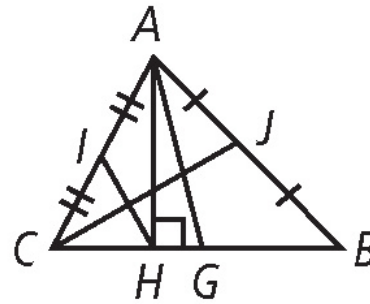
12) a median in  $\triangle ABC$

13) an altitude for  $\triangle ABC$

14) a median in  $\triangle AHC$

15) an altitude for  $\triangle AHB$

16) an altitude for  $\triangle AHG$



17) Point  $M$  is the centroid

$$CM = 16$$

$$MO = 10$$

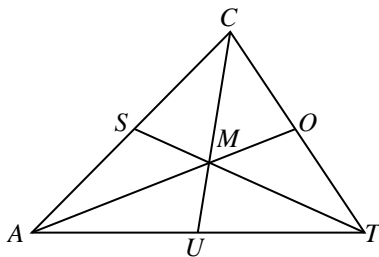
$$TS = 21$$

$$AM = \underline{\hspace{2cm}}$$

$$SM = \underline{\hspace{2cm}}$$

$$TM = \underline{\hspace{2cm}}$$

$$UM = \underline{\hspace{2cm}}$$



18) Point  $S$  is the centroid

$$DS = 8$$

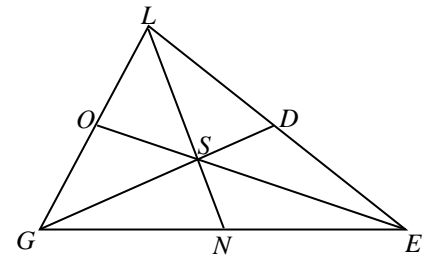
$$LS = 18$$

$$ES = GS + 4$$

$$GS = \underline{\hspace{2cm}}$$

$$OS = \underline{\hspace{2cm}}$$

$$NS = \underline{\hspace{2cm}}$$



19) Point  $Z$  is the centroid

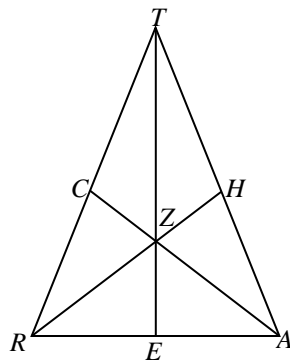
$$CZ = 14$$

$$TZ = 30$$

$$RZ = AZ$$

$$RH = \underline{\hspace{2cm}}$$

$$TE = \underline{\hspace{2cm}}$$



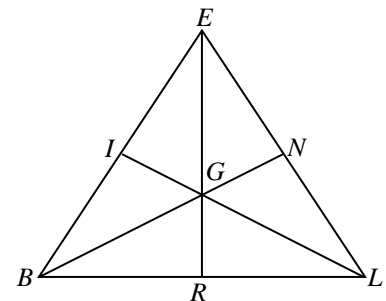
20) Point  $G$  is the centroid

$$GI = GR = GN$$

$$ER = 36$$

$$BG = \underline{\hspace{2cm}}$$

$$IG = \underline{\hspace{2cm}}$$



- 21) Identify each statement as describing the incenter, circumcenter, orthocenter, or centroid.
- a. \_\_\_\_\_ The point equally distant from the three sides of a triangle.
  - b. \_\_\_\_\_ The point equidistant from the three vertices.
  - c. \_\_\_\_\_ The intersection of the perpendicular bisectors of the sides of a triangle.
  - d. \_\_\_\_\_ The intersection of the altitudes of a triangle.
  - e. \_\_\_\_\_ The intersection of the angle bisectors of a triangle.
  - f. \_\_\_\_\_ The intersection of the medians of a triangle.
  - g. \_\_\_\_\_ The midpoint on the hypotenuse of a right triangle.
  - h. \_\_\_\_\_ The point at a vertex of a right triangle.
- 22) A circular revolving sprinkler needs to be set up to water every part of a triangular garden. Describe where the sprinkler should be located so that it reaches all the corners of the garden?
- 23) You need to supply electric power to three transformers, one on each of three roads enclosing a large triangular track of land. Each transformer should be the same distance from the power-generation plant and as close to the plant as possible. Sketch a figure and describe where you should build the power plant, and where should you locate each transformer?
- 24) Birdy wishes to decorate her glider with the largest possible circle within her large triangular hang glider. She needs to locate which point of concurrency?