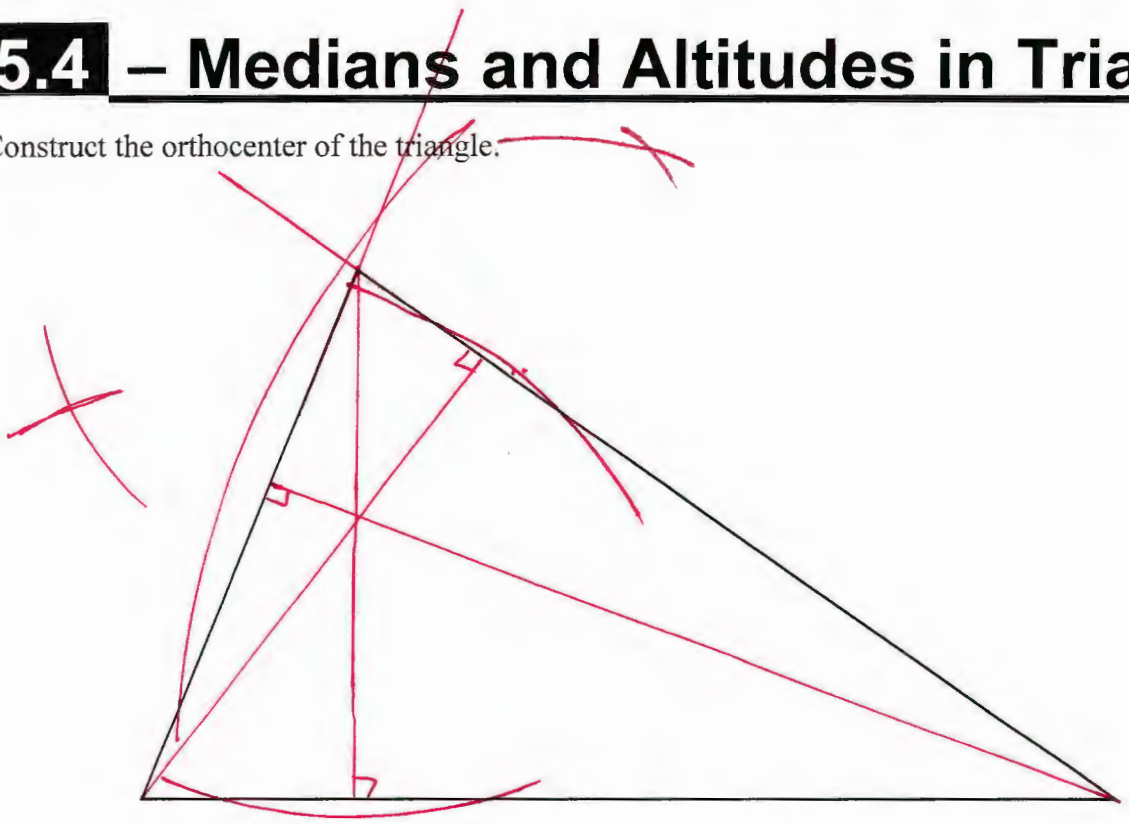
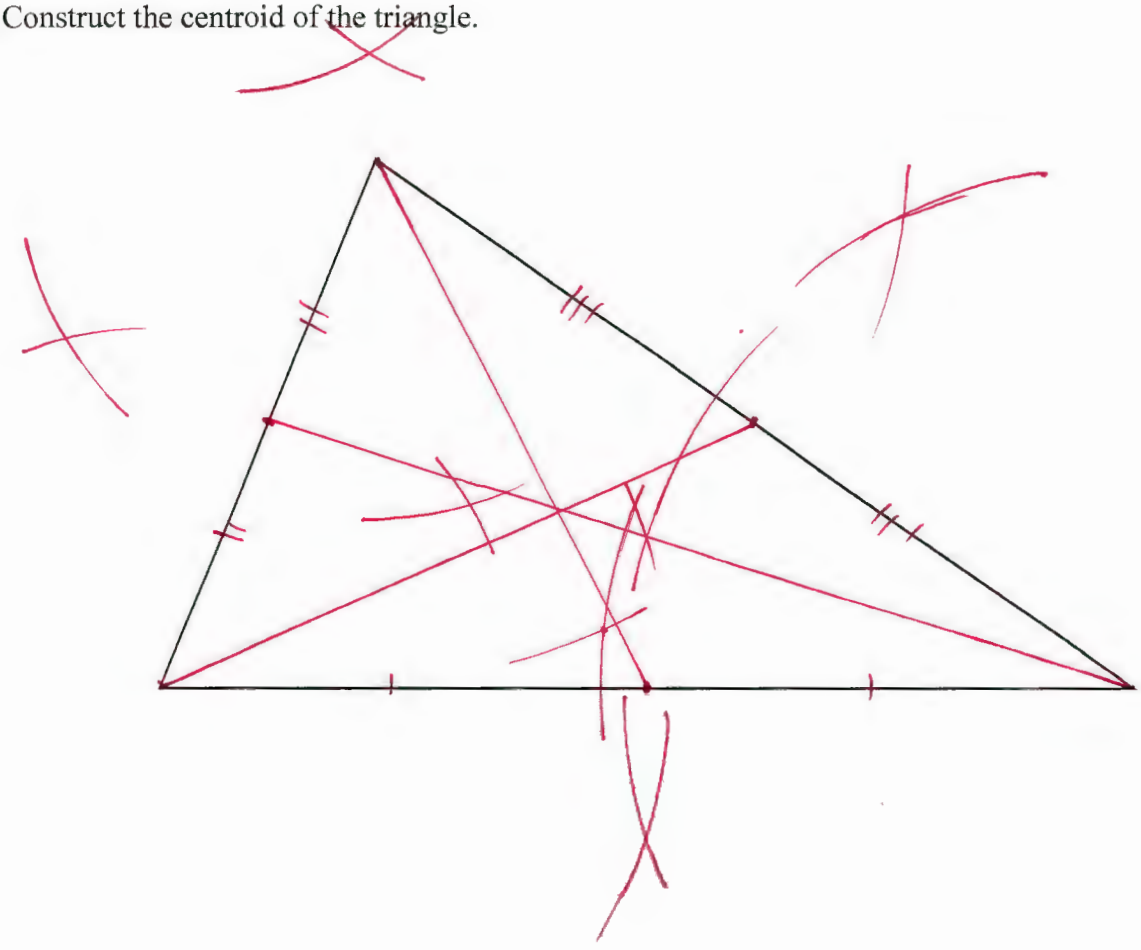
Name_____ Date_____

5.4 – Medians and Altitudes in Triangles

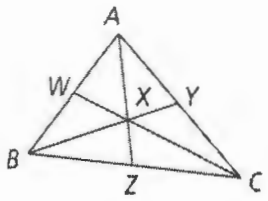
1) Construct the orthocenter of the triangle.



2) Construct the centroid of the triangle.



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



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

$CX = 10$
$XW = 5$

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

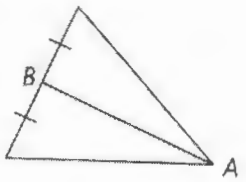
$BY = 12$
$XY = 4$

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

$AX = 6$
$AZ = 9$

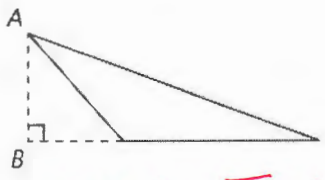
Is $\overline{AB}$ a *median*, an *altitude*, or *neither?* Explain.

6)



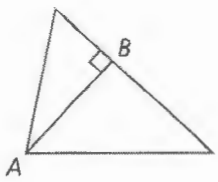
Median. $\overline{AB}$ bisects the opposite side.

7)



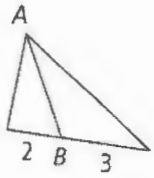
Altitude. $\overline{AB}$ is $\perp$ to the opposite side.

8)



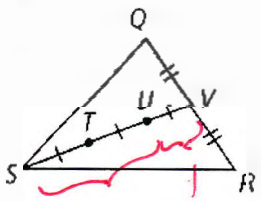
Altitude. $\overline{AB}$ is $\perp$ to the opposite side.

9)



Neither. $\overline{AB}$ is neither $\perp$ nor does it bisect the opposite side.

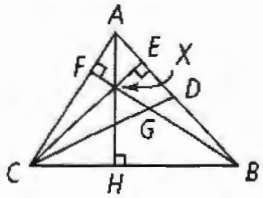
10) Name the centroid.



U

2 Ratio

11) Name the orthocenter.



X

In the following, name indicated segment

12) a median in ΔABC

$\overline{CJ}$

13) an altitude for ΔABC

$\overline{AH}$

14) a median in ΔAHC

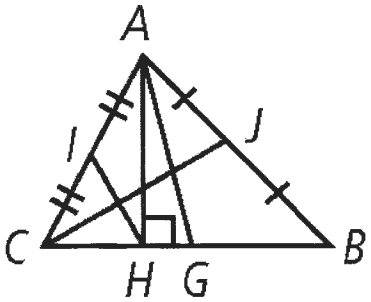
$\overline{IH}$

15) an altitude for ΔAHB

$\overline{AH}$

16) an altitude for ΔAHG

$\overline{AH}$



17) Point M is the centroid

$CM = 16$

$MO = 10$

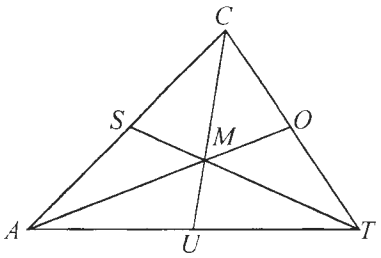
$TS = 21$

$AM =$ 20

$SM =$ 7

$TM =$ 14

$UM =$ 8



18) Point S is the centroid

$DS = 8$

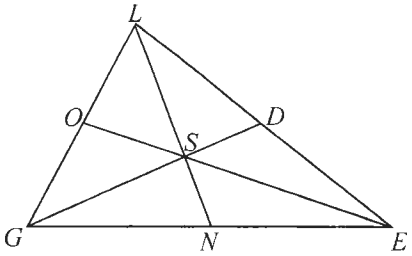
$LS = 18$

$ES = GS + 4$

$GS =$ 16

$OS =$ 10

$NS =$ 9



19) Point Z is the centroid

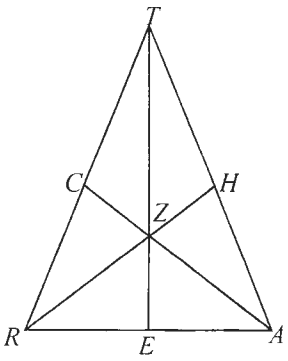
$CZ = 14$

$TZ = 30$

$RZ = AZ$

$RH =$ 42

$TE =$ 45



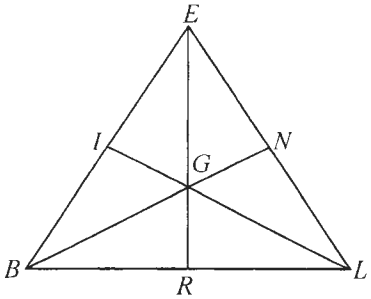
20) Point G is the centroid

$GI = GR = GN$

$ER = 36$

$BG =$ 24

$IG =$ 12



21) Identify each statement as describing the incenter, circumcenter, orthocenter, or centroid.

a. Incenter The point equally distant from the three sides of a triangle.

b. Circumcenter The point equidistant from the three vertices.

c. Circumcenter The intersection of the perpendicular bisectors of the sides of a triangle.

d. Orthocenter The intersection of the altitudes of a triangle.

e. Incenter The intersection of the angle bisectors of a triangle.

f. Centroid The intersection of the medians of a triangle.

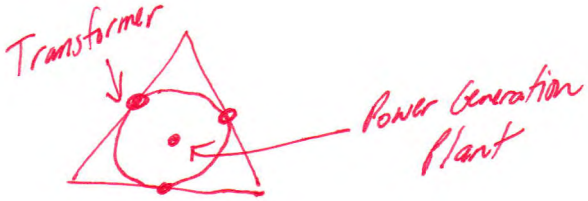
g. Circumcenter The midpoint on the hypotenuse of a right triangle.

h. Orthocenter 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?

Circumcenter

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?



Incenter

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?

Incenter