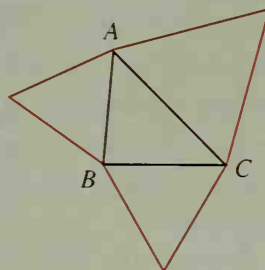
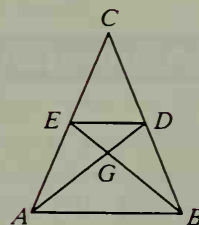
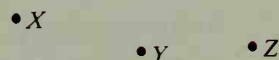


6. Use a ruler and a protractor to draw a regular pentagon. Then construct the perpendicular bisectors of the five sides.
7. Draw a regular pentagon as in Exercise 6. Construct the angle bisectors.
8. Draw any large  $\triangle ABC$  and construct equilateral triangles on each of the sides as shown.
  - a. In each of the three equilateral triangles, construct any two medians and find their point of intersection.
  - b. Draw the three segments connecting these three points of intersection.
  - c. What appears to be true about the triangle you drew in part (b)?

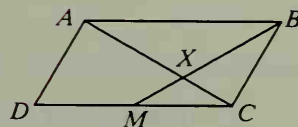
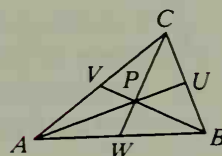


- B**
9. Three towns, located as shown, plan to build one recreation center to serve all three towns. They decide that the fair thing to do is to build the hall equidistant from the three towns. Comment about the wisdom of the plan.
  10. See Exercise 9. Locate three towns so that it isn't possible to find a spot equidistant from the three towns.
  11. In the figure,  $\overline{AD}$  and  $\overline{BE}$  are congruent medians of  $\triangle ABC$ .
    - a. Explain why  $GD = GE$ .
    - b.  $GA = \underline{\hspace{1cm}}$
    - c. Name three angles congruent to  $\angle GAB$ .



$\overline{AU}$ ,  $\overline{BV}$ , and  $\overline{CW}$  are the medians of  $\triangle ABC$ .

12. If  $AP = x^2$  and  $PU = 2x$ , then  $x = \underline{\hspace{1cm}}$ .
13. If  $BP = y^2 + 1$  and  $PV = y + 2$ , then  $y = \underline{\hspace{1cm}}$  or  $y = \underline{\hspace{1cm}}$ .
14. If  $CW = 2z^2 - 5z - 12$  and  $CP = z^2 - 15$ , then  $z = \underline{\hspace{1cm}}$  and  $PW = \underline{\hspace{1cm}}$ .
15.  $ABCD$  is a parallelogram with  $M$  the midpoint of  $\overline{CD}$ . If  $\overline{BM}$  intersects  $\overline{AC}$  at  $X$ , prove that  $CX = \frac{1}{3}AC$ .  
(Hint: Draw  $\overline{BD}$ .)
16. Prove that if two of the medians of a triangle are congruent, then the triangle is isosceles.



- C**
17. In the plane figure, point  $P$  is equidistant from  $R$ ,  $S$ , and  $T$ . Describe the location of the following points in the plane.
    - a. Points farther from both  $R$  and  $S$  than from  $T$
    - b. Points closer to both  $R$  and  $S$  than to  $T$

