NAME

GEOMETRY

HOMEWORK: CENTROID

Show all work on loose leaf.

In exercises 1-3, find the coordinates of the centroid of the triangle with the given vertices.
1. (-5,4), (1,9), (7,2)  
2. (-2,-5), (-1,0), (9,2)  
3. (1,-1), (2,6), (7,3)

4. Given \( \triangle DEF \) with D(-4,3), E(3,-8), and F(10,2), show that the medians of \( \triangle DEF \) intersect at (3,-1).

5. In what kind of triangle does the centroid lie outside of the triangle?

6. N is the centroid of \( \triangle HIJ \). If HL = 7, IM = 5, and HN = 10,
   a) find the length of HM
   b) find the length of NK
   c) find the ratio of IN to NL
   d) find the ratio of IN to IL
   e) given HI = IJ, find the perimeter of \( \triangle HIJ \)

7. Given \( \triangle PQR \) with medians \( \overline{PT}, \overline{QU}, \) and \( \overline{RS} \) which intersect at point V:
   a) If RS = 12, find RV and VS
   b) If VT = 6, find PT and PV
   c) If QU = \( \sqrt{72} \), find QV and VU

8. In \( \triangle ABC \), medians \( \overline{AD} \) and \( \overline{CE} \) are concurrent at F. If AF = 4x - 12 and FD = x, find AF, FD, and AD.
9. In $\triangle RST$, medians $\overline{RV}$ and $\overline{TU}$ are concurrent at $W$. If $TU = 3x + 3$ and $WU = 2x - 3$, find $TW$, $WU$, and $TU$.

10. In $\triangle MNP$, medians $\overline{NQ}$ and $\overline{PR}$ are concurrent at $O$. If $NQ = 4x - 10$ and $NO = x + 5$, find $NO$, $OQ$, and $NQ$. 