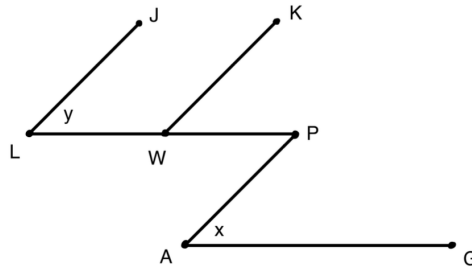


MATH BATTLE

1. Show that the sum of four angles of a quadrilateral is equal to 360 degrees. [10 points]
2. The vertices of a triangle are $A(4, 3)$, $B(6, -1)$, $C(-2, -5)$. L, M are midpoints of BC and CA. Find the coordinates of L and M and show that $LM = \frac{1}{2}BA$. [10 points]
3. Draw the graph of:
 - (a) $(x - 2)^2 + y^2 - 25 = 0$. [5 points]
 - (b) $x^2 + (y - 1)^2 - 81 = 0$. [5 points]
4. Sketch a graph of function $y = |x|$. Then shift it by 1 on the right and left side and perform mirror operations on these shifted functions. Also write equation for each of the cases. [2+4+4 points]
5. Assuming that $\overline{LJ} \parallel \overline{WK} \parallel \overline{AP}$ and that $\overline{PL} \parallel \overline{AG}$ in the following figure. If $m\angle x = 41^\circ$, find $m\angle y$ and $m\angle KWL$. [5 points]



6. Show that opposite angles of a parallelogram are equal. [10 points]
7. *Let ABCD be a quadrilateral such that opposite sides are equal: $AB = CD$, $AC = BD$. Then prove that ABCD is a parallelogram. [20 points]
8. Find the intersection of two lines $6x - 5y = -3$ and $x + y = 5$. After you find the intersection point, write equation of a line from intersection point to the origin. [5+5 points]
9. Write equation of a line passing through point (4,4) and parallel to the line $y = 7/4x - 4$. What is the equation for perpendicular line. [5+5 points]