

Investigation 3
Parallel and perpendicular Lines

PURPOSE:

In this investigation, you will examine the slopes of parallel lines and perpendicular lines.

PROCEDURE:

- a) Draw the square *MATH*, with vertices $M(0, 5)$, $A(3, 9)$, $T(-1, 12)$, $H(-4, 8)$.
- b) Calculate the slope of each side of the square *MATH*. How do the slopes of opposite sides compare? How do the slopes of adjacent sides compare/
- c) Make a conjecture about the slopes of parallel lines. Make a conjecture about the slopes of perpendicular lines.

INVESTIGATION QUESTIONS:

- a) Test your conjectures on *GOLD*, given $G(-8, -6)$, $O(-3, 6)$, $L(9, 1)$ and $D(4, -11)$. Are the opposite sides parallel? Are the adjacent sides perpendicular?

Check Your Understanding:

- 1) The plans for the sidewalk around the complex indicate that the corners should be situated at $W(-13, -6)$, $A(-5, -14)$, $L(14, 5)$ and $K(6, 13)$. Make a sketch of the sidewalk on grid paper.
 - a. Verify for the architects that the opposite sides of the sidewalks are parallel.
 - b. Verify that all angles are 90 degree angles.