# Problem of the Week

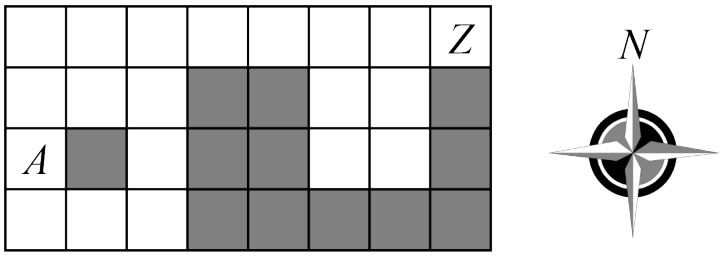
## Problem A

## Amazing Navigation

Juanita and AJ create mazes on grid paper. Each maze is a rectangular grid containing white squares and grey squares. One white square is marked $A$ and another is marked $Z$.

To complete a maze, they start at $A$ and need to reach $Z$ by moving one square at a time in one of the following directions: north ($N$), east ($E$), south ($S$), or west ($W$), where the top of the page is considered north. They *cannot* go through any of the grey squares and must go through each of the white squares *exactly once*. That is, they must go through all of the white squares but cannot go through any of them more than once.

(a) Determine the directions they need to follow to successfully complete the given maze.




(b) AJ creates another maze by changing where the grey squares are in the maze from part (a). (The locations of $A$ and $Z$ remain unchanged.) Juanita successfully completes this new maze by following these directions:

$$E,\ S,\ E,\ E,\ E,\ N,\ E,\ N,\ W,\ W,$$
$$W,\ W,\ N,\ E,\ E,\ E,\ E,\ E,\ E$$

What does AJ's maze look like?

**Themes:** Computational Thinking, Geometry & Measurement