

Force Force Maze: Water and Air

This maze reviews how forces act on living things and objects moving through water and air, including thrust, drag, lift, weight, and buoyant force ([Outcome](#), [Knowledge](#), [Knowledge](#)). As you move through the maze, you will meet questions about opposing forces and about floating and sinking, ideas central to understanding flight and buoyancy ([Understanding](#), [Understanding](#), [PDF p.12](#), [PDF p.1](#)).

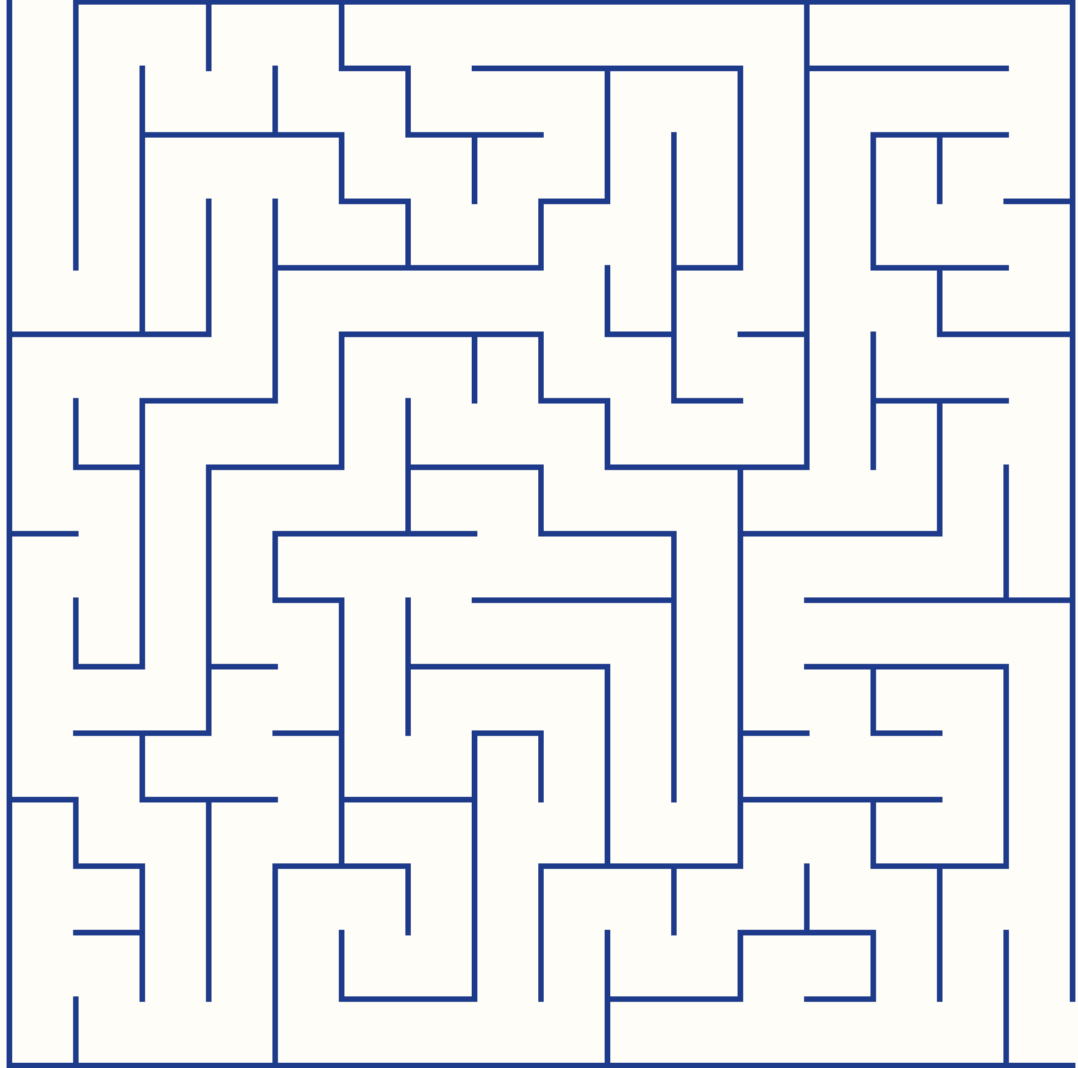
How to play

Start at the entrance and trace one path to the exit. At each checkpoint, answer the science question before moving on. There is only one correct route through the maze: wrong turns lead to dead ends. Use a pencil so you can retrace your steps if you hit a wall. When you finish, check your path against the answer key at the bottom of the page, but only after you have completed the maze on your own.

The maze

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START



END

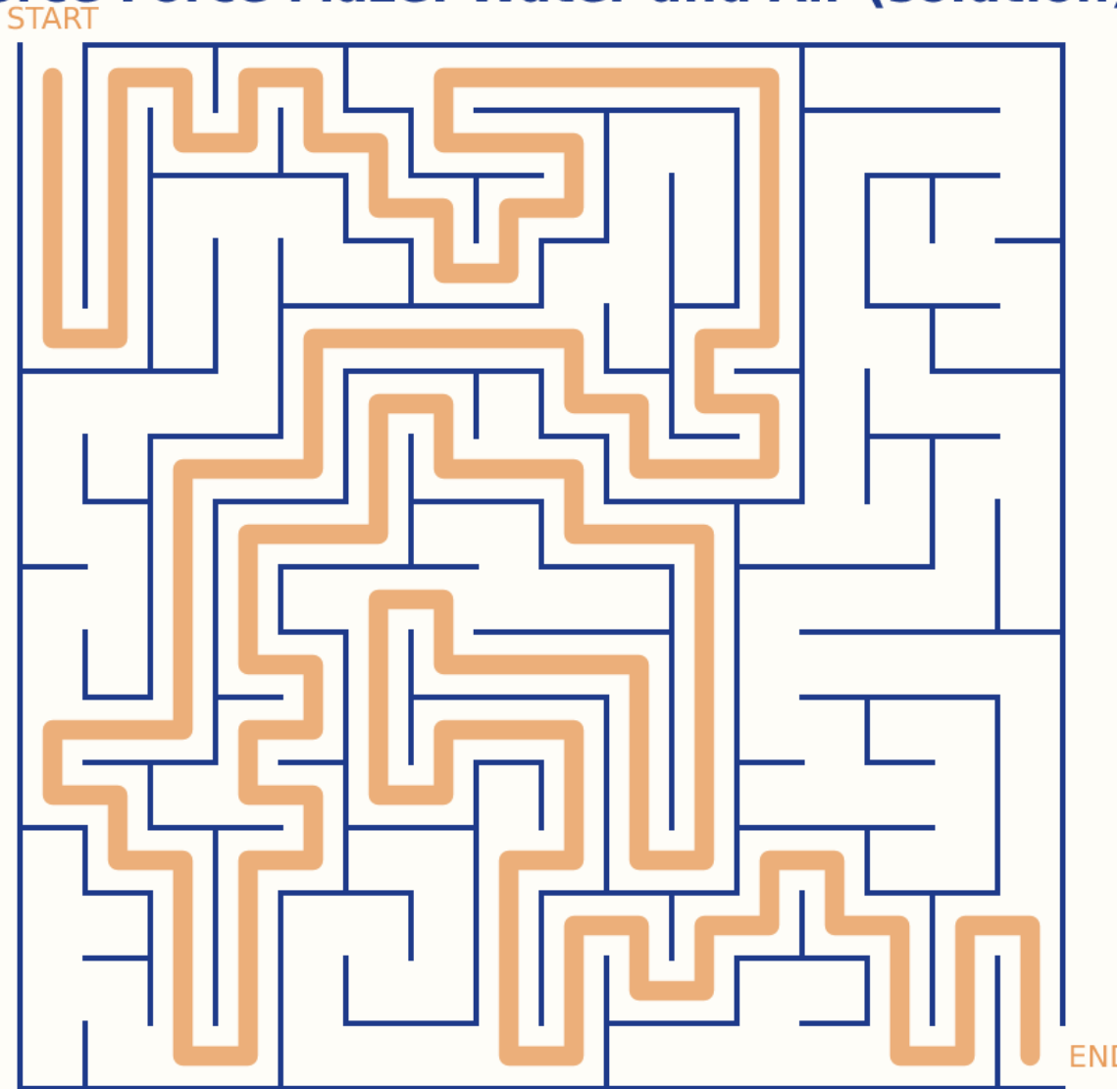
Maze

Checkpoint questions to answer as you travel the path:

1. Name the two forces that oppose each other in the horizontal direction during flight ([Knowledge](#)).
2. Name the two forces that oppose each other in the vertical direction during flight ([Knowledge](#)).
3. What force pushes an object upward when it is placed in a fluid ([Knowledge](#))?
4. What happens to an object when the buoyant force acting on it is greater than its weight ([Knowledge](#), [PDF p.1](#))?
5. What happens to an object when the buoyant force acting on it is less than its weight ([Knowledge](#), [PDF p.1](#))?
6. What force causes weight, and in which direction does weight act ([Knowledge](#))?
7. Name one traditional technology that reflects an understanding of forces affecting flight ([Knowledge](#)).
8. Why does a steel boat float even though steel itself is denser than water ([PDF p.9](#))?

Answer key

Force Force Maze: Water and Air (solution)



Maze solution

Path: down 4, right 1, up 4, right 1, down 1, right 1, up 1, right 1, down 1, right 1, down 1, right 1, down 1, right 1, up 1, right 1, up 1, left 2, up 1, right 5, down 4, left 1, down 1, right 1, down 1, left 2, up 1, left 1, up 1, left 4, down 2, left 2, down 4, left 2, down 1, right 1, down 1, right 1, down 3, right 1, up 3, right 1, up 1, left 1, up 1, right 1, up 1, left 1, up 2, right 2, up 2, right 1, down 1, right 2, down 1, right 2, down 5, left 1, up 3, left 3, up 1, left 1, down 3, right 1, up 1, right 2, down 2, left 1, down 3, right 1, up 2, right 1, down 1, right 1, up 1, right 1, up 1, right 1, down 1, right 1, down 2, right 1, up 2, right 1, down 2

1. Thrust and drag ([Knowledge](#), [PDF p.12](#))
2. Lift and weight ([Knowledge](#), [PDF p.12](#))
3. Buoyant force ([Knowledge](#))

4. The object floats ([Knowledge](#), [PDF p.1](#))
5. The object sinks ([Knowledge](#), [PDF p.1](#))
6. Gravity causes weight, and it acts downward ([Knowledge](#))
7. Bow and arrow, slingshot, or fishing spear ([Knowledge](#))
8. The boat's shape traps air, which lowers its overall density below that of water, so it floats even though steel alone is denser than water ([PDF p.9](#))