

## Maze Game: A Velocity & Acceleration Comparison

### Objectives:

- TSW accurately compare strategies for a “Velocity” goal to strategies for an “Acceleration” goal.
- TSW apply these strategies to the kinematics concepts of vector diagrams, speed, velocity, and acceleration paying special attention to vector direction for the descriptions “speeding up” and “slowing down.”

### Directions:

1. Use the **Practice** level of *Maze Game* to understand the controls for the game.
2. Play Level 1 using each of the 3 methods for control. Be sure to “Start Game” before the ball begins to move. The game is not over until “Goal” is reached, and time has stopped. Note: The ball has to be taken BACKWARDS through your collision point to eliminate that point and turn a “No Goal” into a “Goal.”

R, V, or A	Time	# of Collisions	Score
R			
V			
V			
A			
A			

3. Play Level 1 using the Velocity arrow. DO NOT HOLD MOUSE DOWN THE ENTIRE TIME. Describe the strategies/adjustments that had to be made to get the ball to: 1.) turn 2.) move faster/slower 3.) hover over the “Goal” position. (2 – 3 sentences)
4. Play Level 1 using the Acceleration arrow. Describe the strategies/ adjustments that had to be made to get the ball to: 1.) turn 2.) move faster/slower. (2 – 3 sentences)
5. In 2-3 clear, concise sentences, use your knowledge of vector diagrams to explain WHY your strategies in #3 worked.

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6. Remember, *The Physics Tutorial* (<http://www.physicsclassroom.com/class/1DKin/Lesson-1/Acceleration>), described acceleration vectors in the following manner:

*Since acceleration is a [vector quantity](#), it has a direction associated with it. The direction of the acceleration vector depends on two things:*

- whether the object is speeding up or slowing down*
- whether the object is moving in the + or - direction*

*The general principle for determining the acceleration is:*

- If an object is slowing down, then its acceleration is in the opposite direction of its motion.*

In 3-4 clear, concise sentences explain HOW this description applies to the strategies that you employed in #4.

7. Using your answers to #5 & #6, compare and contrast velocity & acceleration in 2-3 clear, concise statements.