## Maze Game 1.01 Simulation 1

*****This activity will be graded on correctness and quality, not just effort and completeness.*****

**Each student is to work on his/her own computer and complete this worksheet individually. However, you may (and should) discuss the simulation and the questions with your neighbors.**

Learning Goals…
- You will recall that position, velocity and acceleration are vectors and why.
- You will learn how position, velocity and acceleration vectors can be used to move an object.
- You will gain better understanding of acceleration.

Log on to the computer and open up Firefox. Then, either type in http://phet.colorado.edu/ *OR* you can just Google "Phet" and click on the first search result.
Click on "SIMULATIONS." Then, click on "Motion" on the left side. Open up "Maze Game 1.01" by clicking on the picture. Maze Game may take up to 3 – 5 minutes to load. Do NOT click on the picture more than once out of impatience! That will only make it take longer.

**Step One:**
Spend five minutes playing around with all the simulation features. Make sure you understand what each button does.

**Step Two:**
In the bottom right-hand corner, you can control the Position, Velocity, or Acceleration vectors. Play around with these vectors to see how they make Mr. Red (that's the name of the red ball) move. Answer the questions below in complete sentences:
1. What is a vector? If you don't remember, ask one of your neighbors!


2. Why are position, velocity, and acceleration vectors and not scalars?


3. Describe how using the Position Vector moves Mr. Red. Be specific.


4. Describe how using the Velocity Vector moves Mr. Red. Be specific.


5. Describe how using the Acceleration Vector moves Mr. Red. Be specific.

**Step Three:**

    A. Using the Position Vector, play Level 1, Level 2, and then Certain Death.  Record your best times below.  If you are unable to succeed at one of the levels, put a ☹ on the blank.

        a. Level 1: _____

        b. Level 2: _____

        c. Certain Death: _____

    B. Using the Velocity Vector, play Level 1, Level 2, and then Certain Death.  Record your best times below.  If you are unable to succeed at one of the levels, put a ☹ on the blank.

        a. Level 1: _____

        b. Level 2: _____

        c. Certain Death: _____

    C. Using the Acceleration Vector, play Level 1, Level 2, and then Certain Death. Record your best times below.  If you are unable to succeed at one of the levels, put a ☹ on the blank.

        a. Level 1: _____

        b. Level 2: _____

        c. Certain Death: _____

**Step Four:**

    1. What makes using the Velocity Vector difficult?  What should you keep in mind when using it?  Be very specific.

    2. What makes using the Acceleration Vector difficult?  What should you keep in mind when using it?  Be very specific.