

# THE NEWTONIAN SHOT

## A DEMONSTRATION OF FORCE, MASS, AND ACCELERATION

Name: \_\_\_\_\_ Per: \_\_\_\_\_ Date: \_\_\_\_\_

### THE SET-UP

Two dart guns are aimed at the floor. One is loaded with a regular dart, the other is loaded with a dart that has a ball of lead attached to it.

### THE QUESTION

Which object hits the ground first: the light dart or the heavy dart?  
(Don't answer yet!)

### THE POSSIBILITIES

Name three hypothetical outcomes and present arguments in favor of each outcome (even the ones you don't believe are correct).

1. OUTCOME:  
RATIONALE:

2. OUTCOME:  
RATIONALE:

3. OUTCOME:  
RATIONALE:

### THE PREDICTION

Which outcome do you think is most likely?

-- STOP! -- Wait for the actual demonstration!  
*Do not pass GO; do not collect \$200!!!*

### THE RESOLUTION

Which outcome actually occurred?

On the diagram to the right, draw a "freeze-frame" showing the positions of both darts when the first dart hits the bottom surface.

Why? (And if your prediction wasn't correct, what required modification?)

