FALLING OBJECTS

Presented by:

Edna DIOLATA Brooklyn Technical H.S.

David LATMAN Clara Barton H.S.

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How do mass and surface area affect descent?

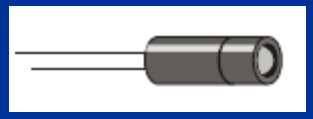
- When an object falls through air, it usually encounters some degree of air resistance. Air resistance is the result of an object plowing through a layer of air and colliding with air molecules. The greater the cross-sectional area of an object, the greater the amount of air resistance it encounters since it collides with more air molecules.
- When a falling object has a large mass, it weighs more and will encounter a greater downward force of gravity. It will have to accelerate for a longer period of time before there is enough upward air resistance to balance the downward force of gravity.

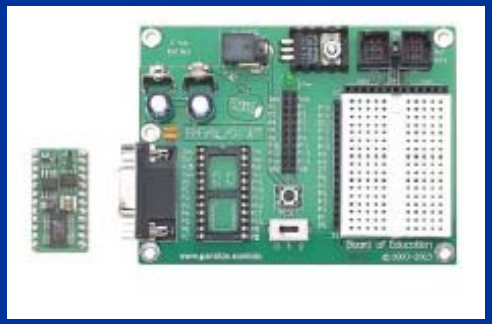
Addressing the Standards

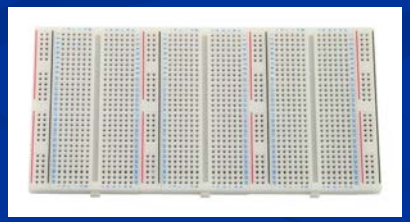
- Standard 4 Science
  Explain and predict different patterns of motion of objects (eg. Linear and angular motion, velocity and acceleration, momentum and inertia.

- Standard 5 Technology
  Explain how complex technological systems involve the confluence of numerous systems
  Explain how computers and automation have changed the nature of work
  Describe and model methods (including computer based methods) to control system processes and monitor system outputs

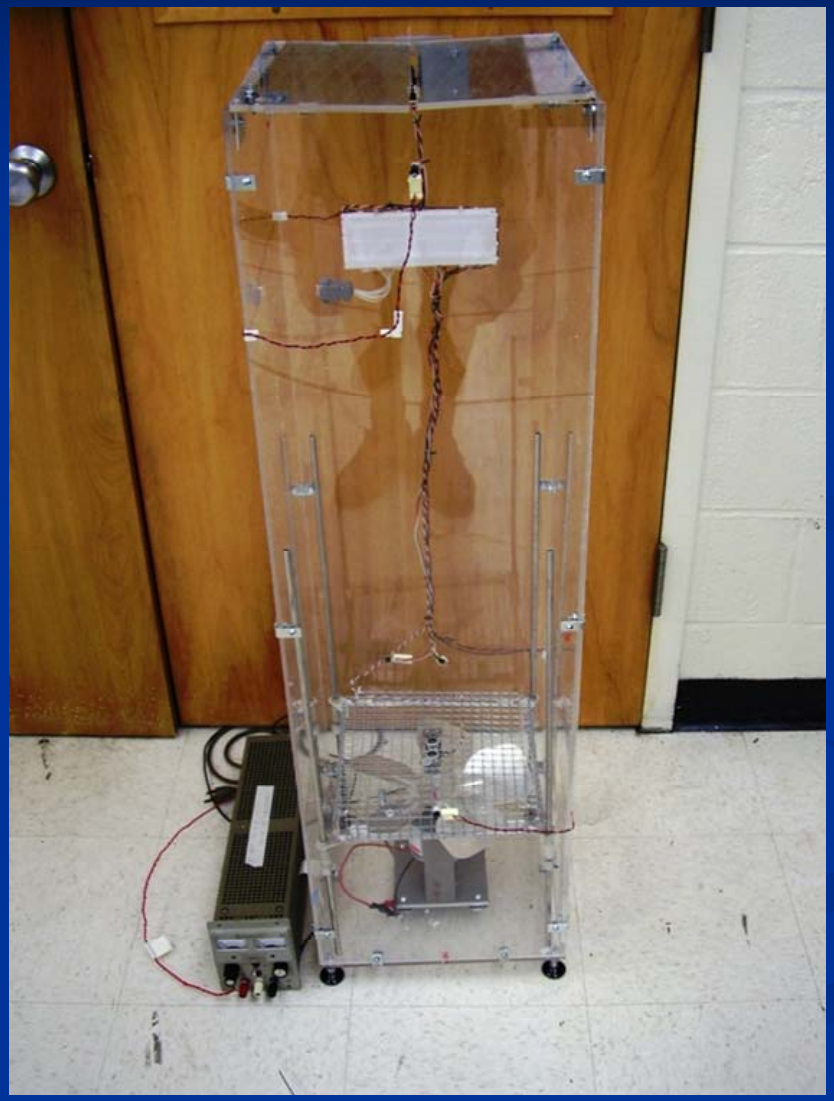
Materials Used



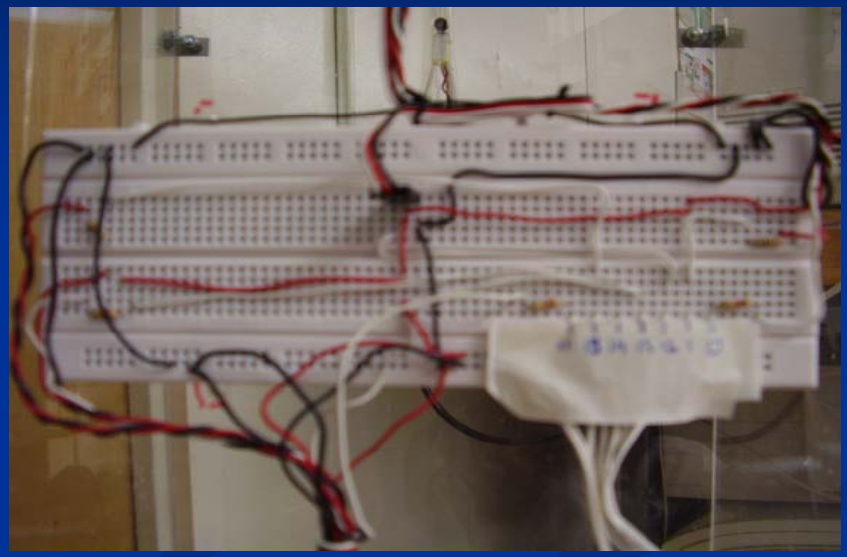




The Device



Breadboard, IR LED, PING, Servo



Results
(time expressed in milliseconds)

- Experiment 1:

	With Air Flow	W/O Air Flow
Disk shape	33	32
Box	30	31
Cup	28	28

- Experiment 2:

	With Air Flow	W/O Air Flow
Obj.1(1.8g)	94	46
Obj.2(3.3g)	65	40
Obj.3(6.6g)	35	33

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