

# AP PHYSICS 2

## CONTINUES WITH ANOTHER "M"

The following is an abbreviated list of things we hope to figure out in AP Physics 2

### MYSTERIES we hope to solve.

1. How do you throw a ball for maximum distance?
2. What's the difference between the mechanical forces and the fundamental forces?
3. What went wrong with the original Tacoma Narrows Bridge? What determines the tone of a guitar string?
4. How to determine the speed of a bullet without the benefit of a timing device?
5. What would happen if you were spinning on the rotating stool and you dropped the dumbbells?
6. How can it be so hot in the day and so cold in the night in the desert? What is Olympic Volleyball Sand and what makes it so special?
7. What's a potential well and could you fall into one? How did Robert Millikan determine the charge on a single electron?
8. Why do light bulbs burn out? How do three-way bulbs work?
9. How can you get current without using a battery? How do traffic lights know you're there?
10. What's the difference between a nearsighted eye and a farsighted eye?
11. How does an atom bomb work?

### MAGIC we hope to demystify.

1. Aiming the Banana Gun to "feed" a shy monkey!
2. Multiplying your force with a rope and a tree!
3. Sing a Wine Glass to Pieces!
4. The Ballistic Pendulum
5. The fastest Can in the West!
6. Another Day at the Wax Races!
7. More van de Graaff Generator Fun!
8. Three Bulb Soup • The Resistance Chain?
9. Down the Tubes (IntelliTube Explained!)
10. Starting a Fire by Using Ice!
11. Wavicle Madness: Waves are Particles and Particles are Waves!

### MYTHS we will debunk!

1. Wile E. Coyote-style free fall.
2. You can pull a string into a straight horizontal line.
3. Galileo's Lamp.
4. If you go twice as fast, you'll skid twice as far.
5. All merry-go-round riders move with a. the same speed, b. different speeds.
6. The east coast is a better place to live than the west coast. • The west coast is a better place to swim than the east coast.
7. A negative force cannot act in the positive direction.
8. When an object heats up, its resistance a. goes down, b. goes up, c. stays the same.
9. Motors and generators are entirely different devices. GMC, BMW, Ford Motor Company, Chrysler Motor Division.
10. In Lord of the Flies, Piggy's glasses could be used to start a fire.
11. Two magnets stuck together have as much mass as the same two magnets pulled apart. • Einstein won the Nobel Prize for his work on Relativity.

### MATH we will master.

1. Analytical Graphical Kinematics • Algebraic Kinematics • The Range Equation
2. Problem-Solving Using Free Body Diagrams
3. SHM Kinematics and Dynamics • Standing Wave Equations
4. Conservation of Momentum in 2D
5. Rotational Algebraic Kinematics • Rotational and Translational Kinetic Energy
6. The Laws of Thermodynamics
7. Coulombic Love Triangles
8. The Law of Resistance • Circuit Analysis
9. The Right Hand Rules • Faraday's Law
10. The Lens Equation and The Principal Rays
11. The Bohr Atom • de Broglie Wavelength