# Sample Use of PhET Activities for High School

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## Physics

### Mechanics

| Unit 1: **Introduction to Motion** | Activity: Moving Man  
Game: Estimation |
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| Unit 2: **More on motion**       | Activity: Vector Addition  
Activity: Projectile Motion |
| Unit 3: **Forces and the Laws of Motion** | Activities: Forces in 1 Dimension  
1 Predicting speed and directions changes  
2 Relating graphs and free body diagrams  
Activities: The Ramp  
1 Using Free Body Diagrams  
2 Quantitative Activity  
Activity: Maze Game  
1 Using Vector Representations to Move through a Maze  
Activity: Curve Fitting: How well does the curve describe the data?  
Demo: Friction |
| Unit 4: **Work, Energy, Momentum and Collisions** | Activities: Masses & Springs:  
1 Homework activity  
2 Conservation of Energy  
Activities: Energy Skate Park  
1 Intro to Conservation of Mechanical Energy *  
2 Relating Graphs, Position and Speed (no time graphs)*  
3 Calculating Speed and Height (no time graphs) *  
4 Calculations with Conservation of Mechanical Energy Using Time Graphs |
| Unit 5: **Circular Motion**      | Activity: Ladybug Revolution  
Activity: Maze Game  
2 Vector Controls for Circular Motion |

### Electricity & Magnetism

| Unit 1: **Heat and Thermodynamics** | Demo: Friction  
Activity: Microwaves and Gas Properties for understanding KMT  
Activity: States of Matter  
Activity: The Greenhouse Effect |
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| Unit 2: **Waves: Introduction to light and sound** | Activity: Waves on a String  
Activity: Sound  
Activities: Fourier: Making Waves  
1 Wave Representation  
2 Superposition of Waves  
Activity: Geometric Optics  
Games: Fourier has a game tab |
| Unit 3: **Electric and Magnetic Forces and Fields** | Activity: Introduction to Electric Fields: uses both Electric Field Hockey Charges and Fields  
Activity: Faraday’s Electromagnet Lab  
1 Introduction to Magnets  
Games: Electric Field Hockey  
Demo: Balloons & Static Electricity and John Travoltage |
| Unit 4: **Current, Resistance, Circuits, and Circuit Elements** | Demo: Introduction to Electric Fields: Charges and Fields  
Activity: Circuit Construction CCK and equipment set:  
1 Some Properties of electric circuits using equipment and CCK  
2 Series and Parallel Circuits using equipment and CCK  
3 Combo Circuits using equipment and CCK |
| Unit 5: **Induction, Alternating Current, Modern Electronics** | Activity: Faraday’s Electromagnet Lab  
2 Induction  
Demos: Conductivity, Semiconductors, Photoelectric effect |

Hint: Scroll to *Teaching Ideas* section of individual simulation page to find sample activities.
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Chemistry Activities *

Introduction to Atoms, Molecules and Ions
- Salts & Solubility
  - Activity 1: Introduction to Salts
- Microwaves
- Friction
- Gas Properties: Review of KMT demo

Formulas, Composition, Measuring chemicals, Stoichiometry
- Reactions and Rates
  - Activity 1: Introduction to Reactions

Chemical Reactions and Solution Stoichiometry
- Salts & Solubility
  - Activity 2: Solubility

Gases
- Gas Properties
  - Activity 1: Introduction to Gases
  - Activity 1a: Pressure Demonstration
  - Activity 2: Understanding Physical Properties of Gases
  - Activity 3: Using Laws and Theories to Explain Gas Behavior

Thermochemistry
- Reactions and Rates
  - Activity 2: Introduction to Reaction Kinetics

Atomic structure, Periodicity and General Bonding
- Alpha decay
- Microwaves
- Blackbody
- Models of Hydrogen Atom, Rutherford Scattering
- Neon Lights
- Photoelectric effect
- Nuclear Fission
- Greenhouse

Liquids and Solids
- States of Matter

Chemical Kinetics and Equilibrium
- Reaction and Rates
  - Activity 3: Energy Graphs and Reactions
  - Activity 4: College Version for Tab 3 -- Kinetics
- Salts & Solubility
  - Activity 3: Solution Equilibrium and Ksp

Acids, Bases and Electrolytes
- pH Scale

Math Activities (not sorted by topics)
- Arithmetic
- Curve Fitting
- Equation Grapher
- Estimation
- Forces in 1 Dimension
- Fourier: Making Waves
- Gas Properties
- Ladybug Revolution
- Masses & Springs
- Maze Game
- Motion in 2D
- My Solar System
- Pendulum Lab
- Plinko Probability
- Projectile Motion
- Ohm’s Law
- The Ramp
- Torque
- Vector Addition
- Waves on a String

* Scroll to Teaching Ideas section of individual simulation page to find activities designed specifically for that simulation.