**GRAVITATIONAL FIELDS EXPLORATION**

**Station 1: Gravity and Orbits Simulation**

Go to <http://phet.colorado.edu/en/simulation/gravity-and-orbits>. Run the simulation.

Consider:

1. How does changing the mass of the Sun affect the orbits?
2. How does changing the mass of the Earth affect the orbits?
3. How does changing the mass of the moon affect the orbits?

**Station # 2: My Solar System Simulation**

Go to <http://phet.colorado.edu/en/simulation/my-solar-system>. Run the simulation.

Consider:

1. ‘Analyze and Evaluate’ Questions on p. 309 in the textbook.

**Station # 3: Inside Black Holes**

Go to <http://jila.colorado.edu/~ajsh/insidebh/index.html>. Enter the site and from the choices at the top of the page choose:

1. Waterfall: Read the Definition, Ren and Stimpy, A Misleading Picture, Wormhole Waterfall
2. Schwarzschild and Reissner-Nordstr$\ddot{o}$m: Scan through the pages, watch some of the simulations of black holes.
3. 4-D Perspective: Read and compare the 3-D Perspective with the 4-D Perspective.

**Station # 4: Gravity Launch**

Go to <http://sciencenetlinks.com/interactives/gravity.html>. Try to win the game!

Consider:

1. What combination of launch angles and speeds are successful?
2. What effect did ‘slingshotting’ around the moon or Earth have?

**Station # 5: Angry Birds Space**

Use an i-pad to play Angry Birds Space.

Consider:

1. What was necessary for establishing an orbit?

**Station # 6: Gravitation App**

Use an i-pad to complete Activity 2: Firing Newton’s Orbital Cannon and Activity 3: Putting a Satellite into Orbit.

Consider:

1. What force keeps objects in orbit?

**Station # 7: Worksheet 6.4-1 Black Holes**

Read and complete the worksheet.