

Name: _____ Period: _____ Date: _____

Gravity and Orbits PhET Simulation

<http://phet.colorado.edu/en/simulation/gravity-and-orbits>

In this activity, we are going to use this PhET simulation to gain an understanding for how gravity, mass, and distance affect movement in our Earth-Sun-Moon system. With a partner, use the simulation above and answer the following questions.

1. What does the simulation allow you to manipulate?
2. Talk amongst your group and decide how you would define the word orbit

After playing around with the simulation press the “Reset All” button. Before answering these questions, make sure you are on the Cartoon tab of the simulation and have the option displaying the Earth, Sun, and Moon clicked. Gravity, Gravity Force, and Path should also be selected unless the question says to do otherwise.

3. What do you notice about the Earth’s orbit when you change the mass of the sun?
4. What do you notice about Earth’s orbit when you change the mass of the Earth?
5. What happens when you move the Earth closer to the sun? Farther from the sun?
6. a) What observations did you make about the path the Earth takes around the Sun?
b) Moon around the Earth?
c) Moon around the Sun?
7. What does the Moon orbit around?
8. What does the Earth orbit around?

9. What did you notice when you turned gravity off in the simulation?
10. What happens when you turn gravity off then back on? Do this 3 times to see several different scenarios.
11. What does that tell you about gravity?
12. How do characteristics such as mass and distance affect an object's gravity and orbit?
13. Has your definition of the term 'orbit' changed at all? If so, how?