**Name:**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Period**:\_\_\_\_\_\_\_ **Gravity PHET Simulation**

Click the link on my website to open the PHET simulation. Click the play button. Select Model.

**Scenario 1**

Set-Up:

-Check the boxes that say ‘Gravity Force’ & ‘Path’ on the right side of the screen.

-Click and move the Earth in towards the sun until the blue arrows touch.

-Click the play button and observe.

Questions:

1. What do you notice about the blue arrows as the Earth orbits around the sun?

2. Where is gravity the strongest? How do you know?

3. What shape is the orbit?

-On the right side of the screen, click the 3rd picture down that has the moon and Earth.

-Click all 4 boxes to show Gravity Force, Velocity, Path, & Grid.

-Move the moon towards the Earth so that the blue arrows are touching and press play.

4. What shape is the orbit?

5. What phenomenon occurs on Earth when gravity is the strongest between the moon and Earth?

6. What happens to the moon if you switch the gravity from ‘on’ to ‘off’ while it is orbiting?

**Scenario 2**

Reset the simulation by clicking the orange button with the white arrow on the bottom right hand corner.

Set-Up:

-Check the 4 boxes on the right side of the screen.

-Click and move the Earth in towards the sun until the blue arrows touch.

-Click the play button and observe.

7. How does the velocity vector change as the Earth orbits the sun? Where is velocity the highest?

-Move the Earth back away from the sun so that the blue arrows are no longer touching and press play.

8. Compare and contrast this new orbit with the 1st. (Similarities & Differences)

9. What happens if you move the Earth even farther away?

10. What happens if the Earth is placed too close to the sun? What causes this to happen?

**Scenario 3**

Reset the simulation by clicking the orange button with the white arrow on the bottom right hand corner.

Set-Up:

-Check the 4 boxes on the right side of the screen.

-Click and move the Earth in towards the sun until the blue arrows touch.

-Click the play button and observe.

11. How many Earth days did it take for the Earth to rotate around the sun? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-Move the Earth towards the sun so that the Earth’s blue gravity arrow touches the edge of the sun.

12. How many Earth days did it take for the Earth to rotate around the sun? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-Click the orange button to reset and click all the boxes on the right.

-Move the Earth to the right, halfway to the next gridline and press play.

13. How many Earth days did it take for the Earth to rotate around the sun? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. Which orbit took the longest? Explain why there is a difference in the number of days it takes to orbit the sun at each position.