**Group Names:­­­­­­­­­**

**Period:**

**Other Worlds Modeling Lab**

Read through the instructions on pages 1 and 2 of the modeling lab. Play around with the size of the planet, the planet’s speed, the tilt of the orbit and the viewing distance and record any observations below:

*Student response*

**Challenge 1**: Read through the information on pages 3 and 4. On page 5, make a prediction graph of the light that we can see from the star from our point of view using the defaults. Read the instructions, then click on the line in the graph to drag it to where you think it should go. Take a screenshot of your graph and paste it below. Explain in your own words why you think this is a good representation of the default planet’s orbit.

*Student response*

Keep the same planet settings and switch from “predict” to “simulate.” Once your planet has completed its orbit, take a screenshot of the new graph and paste it below. Explain how your predicted graph is similar to and different from the graph from the simulation and what might account for the differences.

*Student response*

**Challenge 2**: What if the planet is bigger? Repeat challenge 1 using a larger planet; make a prediction graph of the light that we can see from the star from our point of view using the larger planet. Take a screenshot of your graph and paste it below. Explain in your own words why you think this is a good representation of the larger planet’s orbit.

*Student response*

Is it the planet’s width, area, or volume that determines how much starlight is blocked?

*Student response*

**Challenge 3**: What if the planet’s orbit is faster? Repeat challenge 1 using the default planet size and a faster orbit; make a prediction graph of the light that we can see from the star from our point of view using the faster planet. Take a screenshot of your graph and paste it below. Explain in your own words why you think this is a good representation of the larger planet’s orbit.

*Student response*

**Challenge 4**: What if the planet’s orbit it tilted? Repeat challenge 1 using the default planet size and a tilted orbit; make a prediction graph of the light that we can see from the star from our point of view using the tilted planet. Take a screenshot of your graph and paste it below. Explain in your own words why you think this is a good representation of the larger planet’s orbit.

*Student response*

In your models, did you take into account the dark sunspots? The light reflected off the planet? If so, how did you use that information? If not, how would that change your predictions and how would that influence the simulations?

*Student response*

What other examples can you find where the visual model or your graph(s) might not correspond to a real exoplanet?

*Student response*

\*\*\*\*\*\*\*\*\*\*\*When you are finished, save as pdf with YOUR NAMES in the file name and email to drjohnsonwpcp@gmail.com\*\*\*\*\*\*\*\*\*\*\*\*\*\*