Rollin' Through the Solar System *Answer Key*

Instructions: You will be creating a scaled model of the solar system on your roll of toilet paper. In order for your scale model of the solar system to fit on your roll of toilet paper, the sun must be 10 millimeters. *To complete the table,* ***divide each number provided by 139,190****.* For the scaled orbit, convert millimeters to meters. Then calculate how far that planet is from the previous object. The first row has been done for you.

Object	**Actual Diameter (km)**	**Scaled Diameter (mm)** ***Round to the nearest tenth***	**Actual Orbit (km)**	**Scaled Orbit (mm)** ***Round to the nearest whole number***	**Metric Conversion** ***Round to the nearest hundredth***	**Distance from Previous Object**
Sun	1,391,900	10				
Mercury	4,866	***0***	57,950,000	***416***	***0.42 m***	***0.42 m***
Venus	12,106	***0.1***	108,110,000	***777***	***0.78 m***	***0.36 m***
Earth	12,742	***0.1***	149,570,000	***1,075***	***1.08 m***	***0.3 m***
Mars	6,760	***0***	227,840,000	***1,637***	***1.64 m***	***0.56 m***
Jupiter	142,984	***1***	778,140,000	***5,590***	***5.59 m***	***3.95 m***
Saturn	116,438	***0.8***	1,427,000,000	***10,252***	***10.25 m***	***4.66 m***
Uranus	46,940	***0.3***	2,870,300,000	***20,621***	***20.62 m***	***10.37 m***
Neptune	45,432	***0.3***	4,499,900,000	***32,329***	***32.33 m***	***11.71 m***
Pluto	2,274	***0***	5,913,000,000	***42,482***	***42.48 m***	***10.15 m***

Scale Factor- 1 mm=139,190 km

Now that you have the measurements for your scaled model, you are ready to create the model! You will need one roll of toilet paper, a metric ruler or meter stick, and markers.

1. Unroll the edge of your toilet paper; use your ruler to measure a line that is 10 mm long. Write "Sun" on the line.
2. Continue to unroll your toilet paper, and use your ruler or meter stick to measure 0.42 meters (42 cm)) from the "Sun". Once you have measured this distance, draw a *tiny* dot and write "Mercury" next to this dot.

Think…*Why did you only draw a <u>tiny</u> dot for Mercury?*

Answer: *Due to our scale factor, Mercury (along with Mars and Pluto) is so small, it can barely be seen!*

3. Continue to unroll your toilet paper as you make the rest of the measurements of your solar system.
4. Once you have completed your model solar system on your roll of toilet paper, answer the reflection questions related to this lab activity.