Mass, Weight, and Gravity
Extra Credit

Name _____

Date _____

Period _____

DIRECTIONS:
Review the questions first, then read "Mass and Weight: What's the Difference?" in the EIS book Lesson 14, pgs. 206-209.   (A downloadable PDF can be found here: http://www.carolinacurriculum.com/premium_content/eBooks/Earth+Space/)

There are certain characteristics of the planets that explain why the weight of an object is different on each planet. Using the data table and the information in the reading, answer the questions.

Mass, Radius, and Surface Gravity of Each Planet

Planet	Mass (10^{22} kg)	Radius (km)	Surface Gravity (Earth = 1)
Mercury	33	2,439	0.38
Venus	487	6,051	0.91
Earth	597	6,378	1.00
Mars	64	3,396	0.38
Jupiter	189,900	71,492	2.36
Saturn	56,850	60,268	0.92
Uranus	8,683	25,559	0.89
Neptune	10,240	24,764	1.12

Questions:
(2) 1. What is a radius? How is a radius related to the size of a planet?

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(2) 2. Weight is a measure of the force of gravity on an object. In other words, the more surface gravity, the more something will weigh on that planet. What two characteristics work together to cause a planet's surface gravity to change?

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NEXT PAGE →

(2) 3. Planet "A" has a radius of 65,000 km and has a mass of 1,000 x 10^{22} kg.
      Planet "B" has a radius of 65,000 km but has a mass of 475 x 10^{22} kg.
      On which planet are you going to weigh more? **WHY?**

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(2) 4. Planet "C has a radius of 1,200 km with a mass of 2,300 x 10^{22} kg.
      Planet "D" has a radius of 6,500 km with a mass of 2,300 x 10^{22} kg.
      On which planet are you going to weigh more? **WHY?**

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(2) 5. Mercury and Mars have very different masses, but the same surface gravity. Why
do you think this is so?

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