NAME _____ Period _____

Physical Science
Mass and Weight

Use the following formula to solve for weight:

Weight (W) = Mass (m) x gravity (g) **W = mg**

Mass is measured in kilograms (kg)
Gravity on earth is a constant: 9.8 m/s^2
Weight is measured in Newton's (1 N = 1 kg • m/s^2)

Answer the following questions – show **ALL WORK** and **UNITS**

1. Define Mass –

2. Define Weight –

3. Describe what will happen (if anything) to mass and weight when you go to the moon.

    a. Why would this happen?

4. Find the weight of a 60 kg astronaut on earth

    a. Find the weight of the same object on a planet where the gravitational attraction has been reduced to 1/10 of the earth's pull. Show all work.

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5. A backpack weighs 8.2 newtons and has a mass of 5 kg on the moon. What is the strength of gravity on the moon? (Be careful with units, remember 1N= 1 kg • m/s^2)

6. A physical science test book has a mass of 2.2 kg
   a. What is the weight on the Earth?

   b. What is the weight on Mars ($g = 3.7\ m/s^2$)

   c. If the textbook weights 19.6 newtons on Venus, What is the strength of gravity on Venus?

7. Of all the planets in our solar system, Jupiter has the greatest gravitational strength.
   a. If a 0.5 kg pair of running shoes would weigh 11.55 newtons on Jupiter, what is the strength of gravity there?

   b. If he same pair of shoes weighs 0.3 newtons on Pluto, what is the strength of gravity on Pluto?

   c. What does the pair of shoes weigh on earth?

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