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

W = x

= kg x m/s

= N

   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.

W = x

= kg x m/s

= N

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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)

m/s2

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

N

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

N

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

m/s2

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?

m/s2

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

m/s2

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

N

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