PHYS 101 Homework on Gravitation Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Newton’s Law of Universal Gravitation is given by:



\_\_\_\_1. Express the SI unit of G.  
a. N.kg/m2 b. N.kg2/m2 c. N.m/kg2 d. N.m2/kg2 e. N/kg2 f. N.m/kg

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| |  |  |  | | --- | --- | --- | | ***Planet*** | ***Mass (kg)*** | ***Radius (m)*** | | Mercury | 3.30 x 1023 | 2.44 x 106 | | Venus | 4.87 x 1024 | 6.05 x 106 | | Earth | 5.98 x 1024 | 6.38 x 106 | | Moon | 7.35 x 1022 | 1.738 x 106 | | Mars | 6.42 x 1023 | 3.397 x 106 | | Jupiter | 1.90 x 1027 | 71.492 x 106 | | Saturn | 5.69 x 1026 | 60.268 x 106 | | Uranus | 8.66 x 1025 | 25.559 x 106 | | Neptune | 1.03 x 1026 | 24.764 x 106 | | Pluto | 1.31 x 1022 | 1.16 x 106 | |  |

2. The average Earth-Moon distance is 3.84x108 m. Calculate the gravitational force between the Earth and the Moon.

Surface gravity is given by: g=; M = mass of planet and R = radius of the planet.

3. Calculate the surface gravity of the planet Mars.