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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
| ***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=$\frac{GM}{R^{2}}$; M = mass of planet and R = radius of the planet.

3. Calculate the surface gravity of the planet Mars.