Name

Date

Universal Gravitation Practice

\*\*\*constant G = 6.67 x 10-11 Nm2/kg2\*\*\*

1. Given, the mass of the earth is 5.98 x 1024 kg, and the radius of the earth is 6.37 x 106 m, what is the force of gravity between the Earth and a 9 kg apple?

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| Units  ag-?  G-6.67 x 10-11  M1- 5.98 x 10 24  M2- 9 kg  r- 6.37 x 106 | Formula  Fg= G M1m2  r2 | Algebra  Fg= | Solve  Fg= 88.47 m/s2 |

*\*Remember that Fg= ma (newton’s 2nd law)…so really you are looking for ag in the above problem*

2. Lance Fortnight has a total mass of 140 kg when he lands on Mars. Mars has a mass of 6.42x1023 kg, and a mean radius of 3.40x106 m. Find Mar’s acceleration of gravity.

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| Units  M1-6.42 x 1023  r- 3.40 x 106  ag-?  G- 6.67 x 10-11 | Formula  ag= G M1  r2 | Algebra  ag= | Solve  ag= 3.7 m/s2 |

3. Lance Fortnight has a total mass of 140 kg when he lands on Mars. Mars has a mass of 6.42x1023 kg, and a mean radius of 3.40x106 m. Find the force of gravity between Mars and Lance.

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| Units  Fg-?  G-6.67 x 10-11  M1- 6.42 x 10 23  M2- 140 kg  r- 3.40 x 106 | Formula  Fg= G M1m2  R2 | Algebra  Fg= | Solve  Fg= 518.60 N |