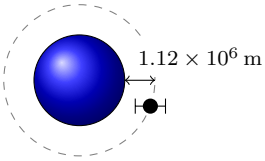
Name: Date: Period:

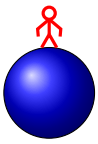
Circular #4

Reference Data	
Mass of Earth	5.98×10^{24} kg
Radius of Earth	6.38×10^{6} m
Mass of Moon	7.35×10^{22} kg
Radius of Moon	1.74×10^{6} m

1. A satellite orbits the earth at a distance 1,120 km (1.12×10^6 m) **above the Earth's surface**. If the force of gravity acting on the satellite is 2100 N, what is the mass of the satellite? (*Hint:* think carefully about what the radius is.)



2. A astronaut has a mass of 92 kg.
   (a) What is the force of gravity between the astronaut and the earth? (Use $F_G = Gm_1m_2/d^2$.)



   (b) Let's try it a different way. What is the astronaut's weight on earth using the equation $F_G = mg$?

   (c) The astronaut now travels to the moon. What is the force of gravity between the astronaut and the moon when he stands on its surface? (Use $F_G = Gm_1m_2/d^2$.)

   (d) Use the equation $F_G = mg$ to figure out what g (the acceleration of gravity) is on the surface of the