Gravitational Fields Worksheet

1. What is the force of gravitational attraction between two 1.8×10^8 kg supertankers moored so that their centers are located 94 m apart? (245 N)

2. A woman standing on the surface of the earth has a mass of 70.0 kg. Calculate the force of gravity acting on the woman? (686 N)

3. The force of gravitational attraction between two masses is 36 N. What will the force be if one mass is doubled and the distance between them is tripled? (8.0 N)

4. Mars has a radius 0.54 times that of Earth and a mass 0.11 times that of Earth. If the force of gravity on you is 600 N on Earth, what will it be on Mars? (226 N)

5. Calculate the acceleration due to gravity on Jupiter. (24 m/s^2)

6. Two balls of mass 5.9 kg and 0.047 kg are separated by a distance of 0.055 m. Calculate the force of attraction between them. (6.1×10^{-9})

7. Calculate the gravitational force the sun exerts on Jupiter. (4.2×10^{23} N)

8. Two spherical balls are placed so their centers are 2.6 m apart. The force between the two balls is 2.75×10^{-12} N. What is the mass of each ball if one ball is twice the mass of the other ball? (0.4 kg and 0.8 kg)

9. Four masses are located on a plane as illustrated below. What is the magnitude of the net gravitational force on m_1 due to the other three masses? (6.8×10^{-12} N)