Newton's Law of Gravitation

1. Determine the force of gravitational attraction between the earth ($m = 5.98 \times 10^{24}$ kg) and a 70-kg physics student if the student is standing at sea level, a distance of 6.38×10^{6} m from earth's center.

2. Determine the force of gravitational attraction between the earth ($m = 5.98 \times 10^{24}$ kg) and a 70-kg physics student if the student is in an airplane at 40000 feet above earth's surface. This would place the student a distance of 6.39×10^{6} m from earth's center.

3. Suppose that two objects attract each other with a gravitational force of 16 units. If the distance between the two objects is doubled, what is the new force of attraction between the two objects?

4. Suppose that two objects attract each other with a gravitational force of 16 units. If the distance between the two objects is reduced in half, then what is the new force of attraction between the two objects?

5. Suppose that two objects attract each other with a gravitational force of 16 units. If the mass of both objects was doubled, and if the distance between the objects remained the same, then what would be the new force of attraction between the two objects?

6. Suppose that two objects attract each other with a gravitational force of 16 units. If the mass of both objects was doubled, and if the distance between the objects was doubled, then what would be the new force of attraction between the two objects?

7. Suppose that two objects attract each other with a gravitational force of 16 units. If the mass of both objects was tripled, and if the distance between the objects was doubled, then what would be the new force of attraction between the two objects?