

1. Two objects attract each other gravitationally with a force of 2.5×10^{-10} N when they are 0.25 m apart. If their total mass is 4.0 kg, their individual masses are:
 - a. 1.5 and 2.5 kg
 - b. each 2 kg
 - c. 0.5 and 3.5 kg
 - d. need more information
2. Two objects have mass m and $2m$ respectively and are separated by a distance d . At what distance from the lighter object along the line joining the two objects would the net gravitational force on a third object be zero?
 - a. $0.25 d$
 - b. $0.41 d$
 - c. $0.5 d$
 - d. $0.81 d$
3. Three 5 kg masses sit at the vertices of an equilateral triangle of side 1 m. The magnitude of the gravitational force on any of the masses due to the other two is
 - a. 1.2×10^{-11} N
 - b. 2.5×10^{-10} N
 - c. 2.9×10^{-9} N
 - d. 3.4×10^{-8} N
4. An object of mass 5 kg weighs 49 N at the surface of the Earth. At an altitude equal to twice the Earth's radius its weight is
 - a. 12.3 N
 - b. 24.5 N
 - c. 49 N
 - d. 98 N
5. The gravitational acceleration g at the surface of two hypothetical planets has the same value, but planet #1 has twice the radius of planet #2. The ratio of the mass of planet #1 to that of #2 is
 - a. 2:1
 - b. 1:2
 - c. 4:1
 - d. 1:4
6. The period of a satellite orbiting the Earth 2000 km above the surface is
 - a. 3.5×10^3 s
 - b. 7.6×10^3 s
 - c. 8.5×10^3 s
 - d. 9.0×10^3 s
7. A satellite orbits the Earth with a speed of 4500 m/s. Its period is
 - a. 1.5×10^3 s
 - b. 2.1×10^4 s
 - c. 2.7×10^4 s
 - d. 3.5×10^4 s
8. Which of the following statements is true regarding satellites in circular orbits about a planet?
 - a. The period depends on the mass of the satellite
 - b. The period is independent of the radius of the orbit
 - c. The speed of the satellite can change as it maintains its circular orbit
 - d. The period increases with increasing orbital radius
9. A satellite of mass 5000 kg orbits the Earth (mass = 6.0×10^{24} kg) and has a period of 6000 s. The magnitude of the Earth's gravitational force on the satellite is
 - a. 7.9×10^{-3} N
 - b. 7.9×10^{-2} N
 - c. 7.9 N
 - d. 7.9×10^3 N
10. The period of a satellite orbiting just above the Earth's surface is
 - a. 2500 s
 - b. 5040 s
 - c. 7500 s
 - d. 86,400 s

