**Orbit and Gravity Questions from A5.3**

Use the value of G = 6.67x10-11 Nm2/kg2

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| 38,600 N44.5 kg2.53x1024 kg2.43x106 s | 1. a. What is the force of gravity between a 6.50x1016 kg asteroid and a 18,700 kg spaceship if their centers are 1,450 m distant?b. The centers of two lead spheres are separated by 6.70 m. If one sphere has a mass of 56.0 kg, and there is an attractive force of 3.70x10-9 N, what is the mass of the other sphere?c. You are orbiting the planet Qwrmczl at a radius of 1.45x107 m, at a velocity of 3410 m/s. What is its mass?d. What is the period of an orbit that is 3.90x108 m from earth's center? (m = 5.97x1024 kg) |
| 7.68 N175 m5.31x1023 kg5.38x1011 m | 2. a. What is the force of gravity between a 2.60x1013 kg asteroid and a 56,100 kg spaceship if their centers are 3,560 m distant?b. What distance separates the centers of two lead spheres if one has a mass of 123 kg, the other a mass of 12.0 kg and there is an attractive force of 3.20x10-12 N?c. You are orbiting the planet Wnnydrydrl at a radius of 7.80x106 m, and a period of 2.30x104  seconds. What is the planet’s mass?d. What is the radius of an orbit around earth (m = 5.97x1024 kg) that has an orbital velocity of 27.2 m/s? |
| 3,980 N2.84 kg2.51x108 m4.89x105 s | 3. a. What is the force of gravity between a 2.10x1015 kg asteroid and a 23,800 kg spaceship if their centers are 915 m distant?b. The centers of two lead spheres are separated by 1.35 m. If one sphere has a mass of 125 kg, and there is an attractive force of 1.30x10-8 N, what is the mass of the other sphere?c. What is the radius of the orbit that has an orbital velocity of 1260 m/s around the earth? (m = 5.97x1024 kg)d. What is the period of an orbit with a radius of 3.10x107 m around the moon? (Moon’s mass is 7.36x1022 kg) |
| 72.4 N1.67 m2.92x105 s7.54x1025 kg | 4. a. What is the force of gravity between a 2.30x1014 kg asteroid and a 12,700 kg spaceship if their centers are 1,640 m distant?b. What distance separates the centers of two lead spheres if one has a mass of 215 kg, the other a mass of 125 kg and there is an attractive force of 6.40x10-7 N?c. What is the period of the orbit that has a radius of 9.50x107 m around the earth? (m = 5.97x1024 kg)d. You orbit the planet Kssnndnnwrr at a radius of 8.20x107 m with a velocity of 7830 m/s. What is its mass? |
| 40.0 N9.60 kg986 m/s2.15x1023 kg | 5. a. What is the force of gravity between a 23.6x1012 kg asteroid and a 14,600 kg spaceship if their centers are 758 m distant?b. The centers of two lead spheres are separated by 4.90 m. If one sphere has a mass of 45.0 kg, and there is an attractive force of 1.20x10-9 N, what is the mass of the other sphere?c. What is the velocity of the orbit that has a radius of 4.10x108 m around the earth? (m = 5.97x1024 kg) d. You are in an orbit with a radius of 8.50x107 m and a period of 1.30x106 s around the planet Rjxnstdnnr. What is its mass? |

Questions: Answers:



In general, speeding up brings the far side out, slowing down brings the far side in. Speeding up brings the entire trajectory outside the old one, and slowing down brings entire trajectory inside the old one.