**4.1 Newton's Second Law and Weight vs. Mass Questions**

(Use g = 9.81 N/kg - round to three digits total)

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| 63.8 N  12.9 m/s/s  16.7 kg  6.51 N  45.9 m/s | 1. *a. What is the weight of a 6.50 kg object on earth?*  b. What is the acceleration of a 2.80 kg object of there is 36.0 N of unbalanced force on it?  c. What mass on earth weighs 164 N?  **d. What net force would accelerate a 1.60 kg mass from rest a distance of 17.1 m in 2.90 s?**  **e. A 15.0 N net force acts on a 4.90 kg mass. If it accelerates from rest, what is the final velocity in 15.0 s?** |
| 91.9 N  6.68 kg  638 N  292 N  21.8 m | 2. a. What net force would accelerate a 37.5 kg mass at 2.45 m/s/s?  b. What mass accelerates at 2.98 m/s/s when a force of 19.9 N acts on it?  *c. What is the weight on earth of a 65.0 kg boy named Brennen?*  **d. A 58.2 kg mass accelerates from 5.70 m/s to 25.3 m/s in 3.90 s. What net force acted?**  **e. A net force of 46.7 N acts on a 8.80 kg mass. What distance has it covered from rest when it has reached a speed of 15.2 m/s?** |
| 65.2 kg  57.6 N  14.5 kg  10.1 s  47.0 N | 3. *a. What mass on earth weighs 640. N?*  b. What net force would accelerate a 18.0 kg mass at 3.20 m/s/s?  c. What mass would accelerate at 5.30 m/s/s when there is a net force of 77.0 N acting on it?  **d. A net force of 12.5 N acts on a 2.80 kg mass. After what time would the mass reach a speed of 45.0 m/s from rest?**  **e. A 7.20 kg mass accelerates from 4.10 m/s to 17.8 m/s over a distance of 23.0 m. What net force acted?** |
| 2.22 kg  22.0 N  0.704 m/s/s  27.3 N  17.3 m | 4. a. What mass accelerates at 8.75 m/s/s when there is a net force of 19.4 N acting on it?  *b. What is the weight of a 2.24 kg object on earth?*  c. What is the acceleration of a 6.12 kg mass if there is a net force of 4.31 N acting on it?  **d. A 5.10 kg mass accelerates from rest to a speed of 23.8 m/s in a distance of 53.0 m. What net force was needed?**  **e. A net force of 14.7 N acts on a 5.80 kg mass. What will be its displacement from rest if it accelerates for 3.70 s?** |
| 0.788 m/s/s  4.28 kg  5.925 N  3.14 s  102 N | 5. a. What is the acceleration of a 17.0 kg mass if there is a net force of 13.4 N acting on it?  *b. What mass weighs 42.0 N on earth?*  c. What net force would accelerate a 1.50 kg mass at 3.95 m/s/s?  **d. A net force of 47.0 N acts on a 16.5 kg mass. In what time will it cover a distance of 14.0 m from rest?**  **e. A 47.0 kg mass accelerates from 3.90 m/s to 12.8 m/s in 4.10 s. What net force acted?** |