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

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

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?**