

Chapter 12 Study Guide Problems

1. How much force is required to accelerate a 50 kg mass at 4 m/s^2 ?
2. What is the acceleration of a 7 kg mass being pulled by a 56 N force?
3. Given a force of 75 N and an acceleration of 3 m/s^2 , what is the mass?
4. What is the acceleration of a 7 kg mass pushed by a 3.5 N force?
5. Given a force of 100 N and an acceleration of 5 m/s^2 , what is the mass?
6. What is the acceleration of a 24 kg mass pushed by an 8 N force?
7. How much force is required to accelerate a 50 kg mass at 2 m/s^2 ?
8. What is the mass of a block accelerating at 2 m/s^2 and pushed by a 9 N force?
9. A 10 N force is applied to a 2 kg mass, how fast will it be going in 10 sec?
10. A 64 N force is applied to an 8 kg mass, how fast will it be going in 5 sec?
11. What force is necessary to accelerate a 5 kg mass to 10 m/s in 5 sec?
12. José has a mass of 70 kg, what is his weight?
13. On the surface of the earth, how much does a 10 kg mass weigh?
14. On the surface of the earth a box weighs 49 N. What is its mass?
15. The acceleration due to gravity on the moon is 1.6 m/sec^2 . What does a 10 kg mass weigh on the moon?
16. On the moon, Bob weighs 160 N while on earth Fred weighs 882 N. Who has the greater mass?
17. A 4 kg mass sits on a table that has 5 N of friction. If Maria applies a 25 N force to the mass, how fast will it accelerate?

18. How much force is required to accelerate an 8 kg mass at 5 m/s^2 if there is 14 N of friction?
19. Find the acceleration of the 3 kg block in the following diagram.
20. Compare the momentum of a motorcycle ($m = 250 \text{ kg}$, including rider) traveling at 25 m/s to that of a bullet ($m = 25 \text{ g}$) traveling at 450 m/s.
21. A cannon ($m = 550 \text{ kg}$) fires a cannon ball ($m = 4.5 \text{ kg}$) at a speed of 420 m/s.
22. What is the recoil speed of the cannon?
23. A rocket engine expels 875 kg of exhaust gasses at a speed of 3,200 m/s. As a result, the space ship increases its speed by 930 m/s. What is the mass of the spaceship?
24. Your friend ($m = 68 \text{ kg}$) unwisely attempts to jump from a canoe ($m = 43 \text{ kg}$) to the dock. If he jumps forward with a speed of 3.2 m/s, how fast will the canoe move backward?