# Chapter 11 Study Guide

Vocabulary Review

1. conservation of energy
2. reference level
3. mechanical energy
4. kinetic energy
5. gravitational potential energy
6. inelastic collision
7. rotational kinetic energy
8. thermal energy
9. elastic collision
10. elastic potential energy

7. b
8. a
9. a
10. b
11. c
12. b
13. c
14. b
15. d
16. a
17. b
18. true
19. true
20. increases
21. true
22. gravitational potential energy
23. elastic
24. b
25. c
26. d

Section 11.1
The Many Forms of Energy

1. b
2. c
3. a
4. a

5. and 6.
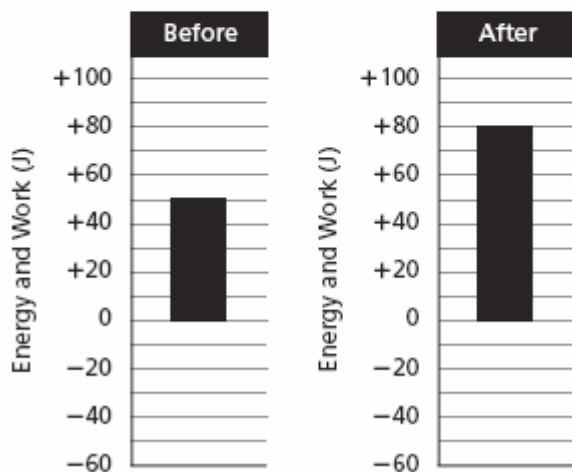
Section 11.2
Conservation of Energy

1. **a.** $PE = (mg)h = (622 \text{ N})(0.61 \text{ m}) = 380 \text{ J}$

   b. If you want to go twice as fast, you need four times as much kinetic energy, KE, so make the ramp four times higher. (KE is proportional to the square of velocity.) Because the potential energy of the ramp drop is converted to kinetic energy, you must have four times as much potential energy. Gravitational potential energy is
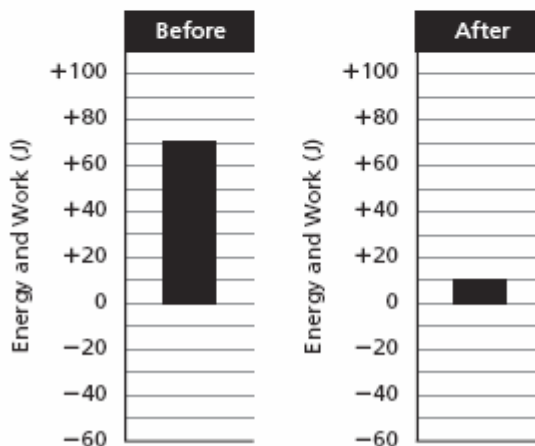
directly proportional to the height; so to get four times the potential energy you need four times the height. In simpler terms, the higher the ramp, the more potential energy the skateboarder has to turn into kinetic energy when he or she pushes off.

c. Use the conservation of mechanical energy here. The gravitational potential energy change is equal to the kinetic energy change:

is $(63.5\text{-kg})(9.80 \text{ m/s}^2)(0.61\text{m}) = 380 \text{ J}$

2. The path that an object follows in reaching the ground does not affect the final kinetic energy of the object.

$PE = 380 \text{ J}$

Weight = 622 N

$h = 0.61 \text{ m}$

$KE = 380 \text{ J}$ $KE = 380 \text{ J}$
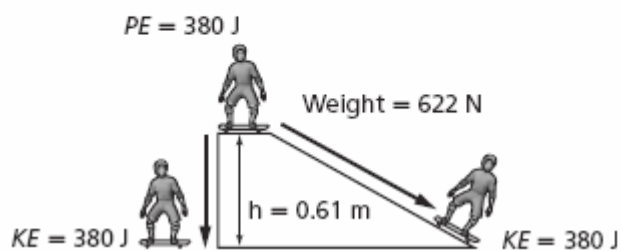
3. Some of the original mechanical energy in the system is converted to another form of energy within members of the system or transmitted to energy outside the system. For example, some of the energy is lost to friction or air resistance; some energy is converted into thermal energy, or sound energy.

4. d
5. a
6. b
7. c