Review Pak #4

"Why Can't I Force This Thing To Move?"

Multiple Choice Questions

1. D
2. C
3. D
4. B
5. B
6. A
7. C
8. A
9. D
10. D
11. B
12. B
13. B
14. C
15. D
16. D
17. C
18. C
19. A
20. B

Part B – Free Response Questions

1. A skater pushes with 30 N of force and accelerates at 0.5 m/s^2. What is the skater's mass?

$$F = ma$$
$$30 = m(0.5)$$
$$m = \frac{30}{0.5}$$
$$m = 60\ kg$$

2. What is the acceleration of a 6.4 kg bowling ball if a force of 12 N is applied to it?

$$F = ma$$
$$12 = (6.4)a$$
$$a = \frac{12}{6.4}$$
$$a = 1.9\ m/s^2$$

3. Using one or more of Newton's laws, explain why it is necessary to wear a seat belt to hold you in place if your car stops suddenly.

Newton's first law tells us that objects in motion remain in motion in a straight line unless acted on by an external unbalanced force. If the car stops suddenly, you will keep moving forward since you are in motion and will remain in motion. The seat belt provides an external unbalanced force to stop you from moving forward.

4. Using Newton's third law of motion, explain how you are able to walk forward.

You push backwards with your foot on the floor. This is the action force. The floor produces a reaction force pushing forward on your foot causing you to move forward.