Physics 10
Exam Review Problems
Fall 2010

1) $a = +4.0\ m/s^2$ $\Delta d = 30\ m$

2) $\Delta d = -31\ m$ $v_f = -25\ m/s$

3) $v_x = +5.6\ m/s$

4) F_g = weight = 50 N down, F = 70 N up, F = 50 N up, F = 30 N up

5) $F_f = -6.0\ N$ $a = +7.0\ m/s^2$ $F = +14\ N$

6) $p = 60\ kgm/s$ $\Delta t = 10\ s$

7) (a) -7.5 N (b) 4 seconds

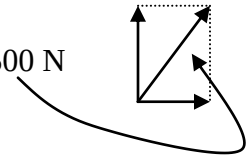
8) $v_f = +8.0\ m/s$

9) $\Delta d = +2.5m$, W= 75 J

10) x = 2.64 m

11) h = 8.8 m $v_f = -12\ m/s$

12) $F_{net} = 500\ N$



13) velocity is constant, acceleration is zero
velocity is increasing at a constant rate, acceleration is constant

14) The middle of the mattress should be 4.4 m from Clay

15) -2.8 m/s

16) 680 N East

17) -6 m/s

18) Because the Δp is the same for an egg with or without the padding, the net impulse is the same. Therefore, the padding increases the time of impact and lessens the force on the egg. The parachute causes the egg to reach terminal velocity and thus is moves down at a slower constant velocity. Therefore, this changes the Δp during the impact, decreases the impulse, and lessens the force on the egg.

19) graphs; see class

20) 3.6 miles, 56° N of E

21) 52 m

22) a) 1.5 sec b) 3.0 sec c) 11 m d) 30 m

23) a) 2.9 sec b) 8.8 m

24) v = 9.1 m/s, $a = 2.75\ m/s^2$, W=0

25) 1.22 m

26) 4.33 s, 54.1 m, 23.44 m.

27) net Work = 187.5 J, puller Work = 1000 J, friction force = 40.6 N