

Lesson 19 -- Uniformly Accelerated Motion and Review

Name _____ Box _____

Day One - Lecture

Day Two

1. You travel forward 250 m and then backward for 150 m. What is your displacement?

2. You travel east 340 m, then west 470 m, then east 100 m.
 - a) What is your displacement?

 - b) What is your distance traveled?

3. You travel along the x-axis: forward 12 m, backward 29 m, then forward 88 m. This takes you 64 sec.
 - a) What is your average velocity?

 - b) What is your average speed?

4. You travel west 36 m, east 126 m, then west 176 m. This takes you 1 min 30 sec. What is your average velocity in m/sec?

5. You run at 1.2 m/sec half way around a circular track with a radius of 14 m. When you are at the other side,
 - a) What is the distance traveled?

 - b) What is your displacement?

 - c) What is your average speed?

 - d) What is your average velocity?

6. You go east 18 miles in 3 hours and then south 24 miles in 1 hour.
 - a) What is your distance traveled?

 - b) What is your displacement?

 - c) What is your average speed?

 - d) What is your average velocity?

Day Three: Uniformly accelerated motion

1. Find acceleration if $v_0 = 2.3$ m/sec, $v = 5.8$ m/sec, and $x - x_0 = +45.2$ m
2. Find acceleration if $v_0 = 5.6$ m/sec, $v = -1.2$ m/sec, and $t = 1.88$ sec.
3. Find v_0 if $x - x_0 = -4.13$ m, $t = 0.562$ sec, and $a = 0.034$ m/sec²
4. Find initial speed if $v = 34.1$ m/sec, acceleration is 2.33 m/sec² and displacement is $+45.8$ m.
5. Find the displacement when the starting speed is 2.33 m/sec, the final speed is 0.231 m/sec, and the acceleration is -0.225 m/sec².
6. A car accelerates from zero to 22 m/sec in 4.3 sec. What is the acceleration?
7. A car traveling at 42 m/sec slides to a stop in 102 m. What is the acceleration?

Day Four Vertical Motion – Gravitational Acceleration

1. You drop a watermelon from rest, how fast is it moving after 2.3 sec?

2. You drop a watermelon from the top of a tall building (102m). How fast is it moving when it hits the ground?

3. How long does a watermelon take to fall 58.2 m when dropped from rest?

4. Use these data to determine the acceleration of gravity on Mars.
You drop a watermelon a distance of 2.36 m and it takes 1.13 sec to reach the ground.

5. You throw a watermelon up at 3.44 m/sec.
 - a) How high does it rise?

 - b) How long does it take to get back to your hands?

6. You are on the roof (+3.06 m) and throw a watermelon up at 1.92 m/sec.
 - a) How long does it take to hit the ground?

 - b) How fast is it moving when it hits the ground?

7. You throw a watermelon downward from the top of a building 12.2 m tall and it reaches the ground in 0.773 sec. What speed did you throw the melon?

8. How fast must you throw the melon upward to get it onto a roof 4.72 m tall?

9. How far does a melon fall
 - a) during the first second of fall?

 - b) during the second second?

 - c) during the third second?

 - d) What is the answer(b)/answer(a)? What is answer(c)/answer(a)?

 - e) What pattern do you observe in the distances?

Day Five

Handout on graphical interpretation of motion