Take out work
Answer notes that follow:
Make index card
Work on Rolling Lab… 2 class days to do
Make sure you've handed in Interactive Physics Sims 1-4
HW tonite: pg 49, 53 to go over…, then pg 55, 58

NOW THAT WE KNOW OUR DEFINITIONS

DISTANCE = average VELOCITY * TIME

Average VELOCITY is the middle of the INITIAL and FINAL VELOCITY

ACCELERATION is the CHANGE in VELOCITY over TIME.

D= Vavg * T

Vavg= (Vi +Vf)/2

A= (Vf-Vi)/T or Vf= Vi + A* T to make it easier….

Find:

What if we know Vi, A, T but don't know Vf and want the distance? (Like interactive physics when you know all the starting values, but not how the journey is going to end?)

Find the equation for this….. what does it look like on a D-T graph?
D=f (Vi,A,T)

What if you know nothing about time, but want the final velocity or distance?
Vf = f (Vi, A, D)

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D=f (Vi,A,T)

D= (Vi + Vf)/2 * T ***Vf= Vi+ A*T***

D= (Vi+(Vi+A*T))/2 * T

D= (2Vi+A*T)/2 * T

D= 2Vi/2*T + A*T/2*T

D= Vi*T + ½ *A*T^2

This is a parabola!!! Just like a D-T graph with constant acceleration!

What if you know nothing about time, but want the final velocity or distance?
Vf = f (Vi, A, D)

D=(Vi+Vf)/2*T ***Vf=Vi+A*T***

T= 2D/(Vi+Vf) ***T= (Vf-Vi)/A***

2D/(Vi+Vf) =(Vf-Vi)/A ***cross multiply to get***

2AD= (Vi+Vf)* (Vf-Vi)

2AD = Vf^2 - Vi^2

***or* Vf^2 = Vi^2 + 2*A*D no time…**

SO OUR INDEX CARD OF FORMULAS IS:

1) **D= VavgT** **D= $\frac{(Vi+Vf)}{2}$ T** ***no A***

2) **Vavg = $\frac{(Vi+Vf)}{2}$**

3) **A= $\frac{(Vf-Vi)}{T}$ or easier Vf =Vi +AT** ***no D***

4) **D = ViT + ½ A T^2** ***no Vf***

5) **Vf^2 =Vi^2 + 2AD** ***no T***

(note, these only work for a period of constant acceleration)

D = Change in displacement, Vi = initial velocity, Vf = final velocity,
A=Acceleration, T= Change in Time