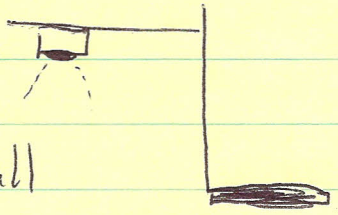
1) Air Cart on an incline

① Using a protractor tilt the track to 10°.
② Turn the track on & the cart should slide down.
③ Using the Sonic Ranging device or a good old ruler & stopwatch, create a graph of position vs. time.
④ You may want multiple trials to average.
⑤ ~~find~~ Create a chart of velocity for each interval.
- graph this data.
⑥ find the average acceleration using your velocity data. Check with the sonic ranging device if possible.
⑦ Determine
- What causes the cart to accelerate?
- What is the relationship between g & the acceleration you found?
⑧ Repeat for 20°
⑨ Create an equation for the acceleration of the cart in terms of the angle of incline.

## ② Vertical Motion

① Set up the sonic ranging device so it points straight down



② You will be dropping a basketball & Recording it's bounces.

③ Create Predictions (Sketch graphs) of x vs t, v vs t, & a vs t.

④ Explain why your graphs look this way.

⑤ Hold the ball just below the sensor, start it and release the ball.

⑥ Sketch the graphs of x, v, & a vs t produced by the sensor.

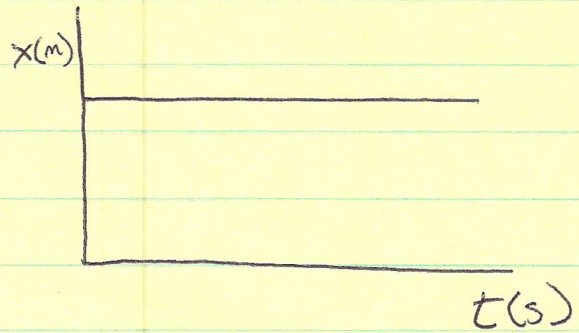
⑦ Explain how they compare to yours? Explain any differences.

⑧ Does the graph of a vs. t make sense? Why or Why not?

③ Graph Recreation #1

✱ Using the motion sensor, Recreate the following graphs. Explain how you moved to make them.

1)

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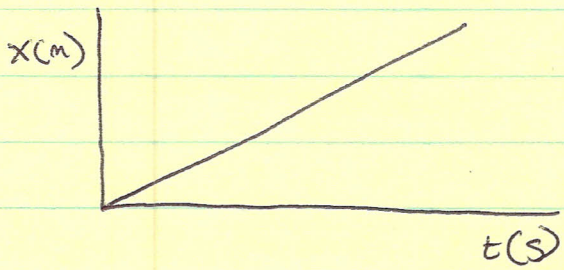


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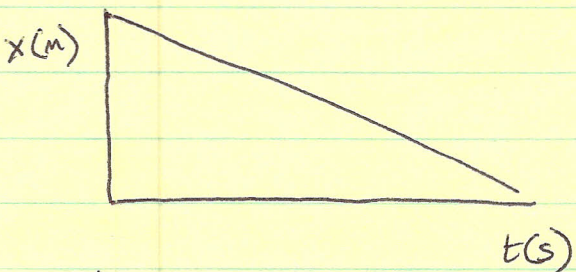


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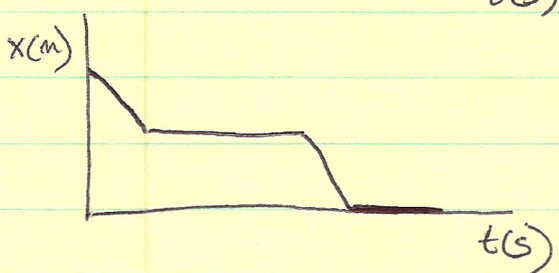
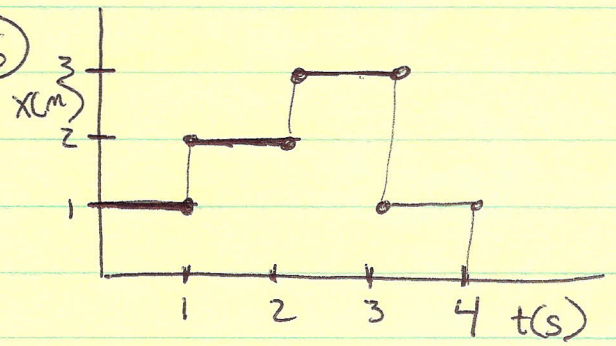



5)


6)

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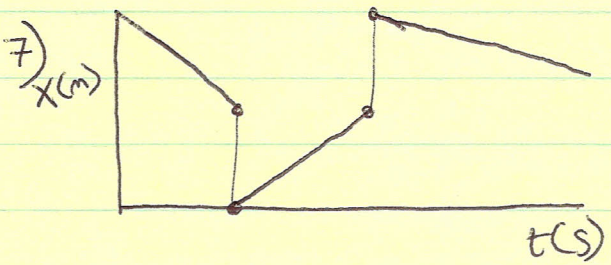
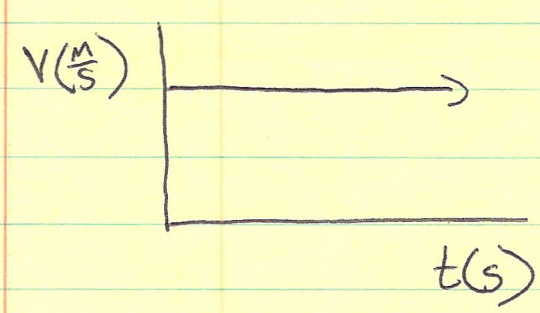
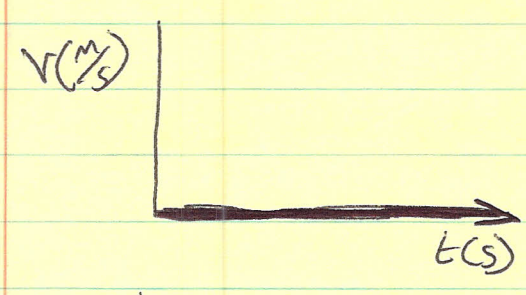
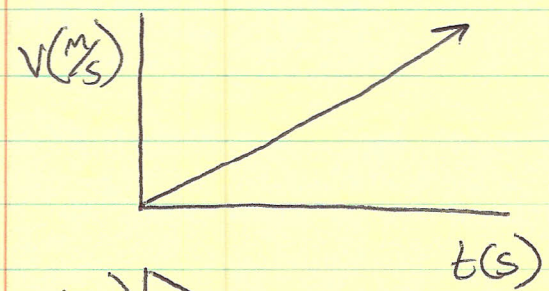


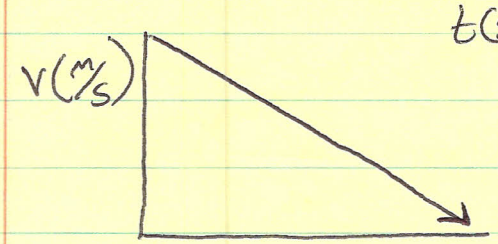
④ Graph Recreation #2

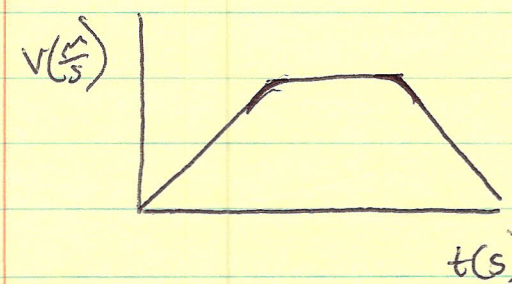
* Using the motion sensor, recreate the following graphs. Describe the motion required to make the graph.

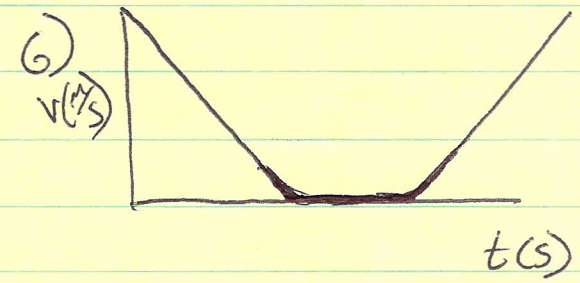
1) 


2) 


3) 


4) 


5) 


6) 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