Constant Acceleration WS#1
Date: _____

Payton Physics
Name: _____ Pd.____

Sketching Graphs: Part 1

1. Speeding up, moving in the positive direction

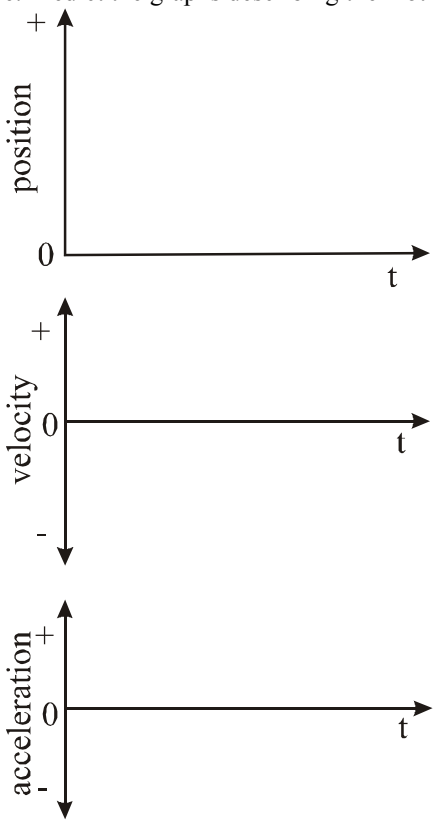
a. Predict the motion of the cart starting from rest and rolling down the incline.

b. Draw force diagram for the situation.

c. Is the velocity positive or negative?

d. Is the acceleration positive or negative?

e. Predict the graphs describing the motion.



Notes:

g. On the observed graphs, describe the slope as
a) constant, increasing or decreasing
b) positive or negative
c) state what the slope represents

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2. Slowing down, moving in the positive direction

a. Predict the motion of the cart slowing **after** an initial push.
Answer the following questions for the cart while <u>coasting</u>.

Give the cart an initial push up the ramp.

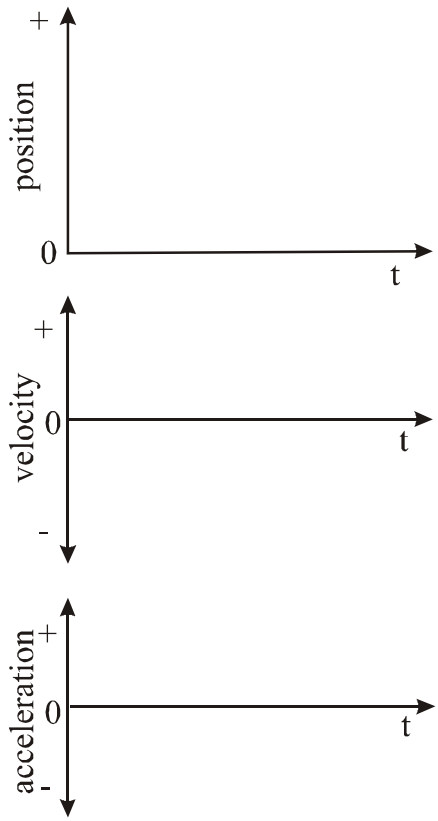
Stop the cart at Its highest point

b. Draw force diagram for the situation.

c. Is the velocity positive or negative?

d. Is the acceleration positive or negative?

e. Predict the graphs describing the motion.



<u>Notes:</u>

g. On the observed graphs, describe the slope as
a) constant, increasing or decreasing
b) positive or negative
c) state what the slope represents

Note: You may have to divide your graph into segments.

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3. Speeding up, moving in the negative direction

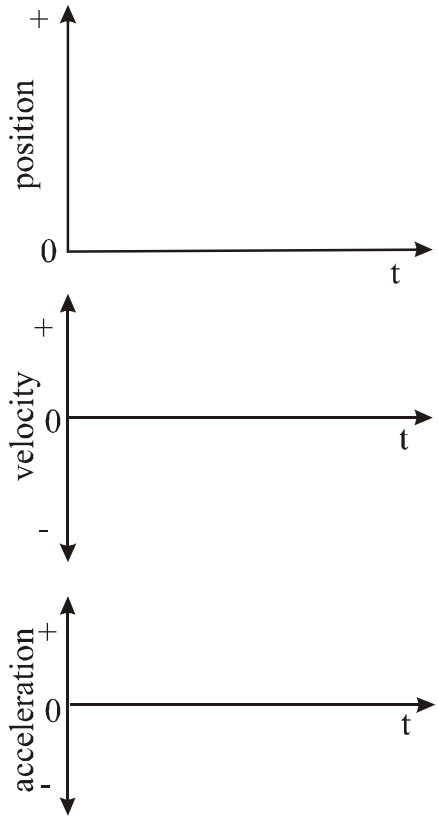
a. Predict the motion of the cart starting from rest and rolling down the incline.

b. Draw force diagram for the situation.

c. Is the velocity positive or negative?

d. Is the acceleration positive or negative?

e. Predict the graphs describing the motion.



Notes:

g. On the observed graphs, describe the slope as
a) constant, increasing or decreasing
b) positive or negative
c) state what the slope represents

Note: You may have to divide your graph into segments.

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4. Slowing down, moving in the negative direction

a. Predict the motion of the cart slowing **after** an initial push.
Answer the following questions for the cart while <u>coasting</u>.

Stop the cart at its highest point

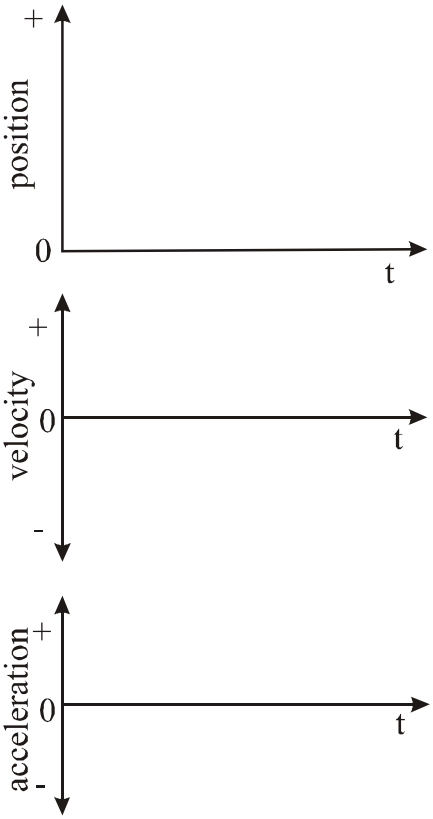
Give the cart an initial push up the ramp.

b. Draw force diagram for the situation.

c. Is the velocity positive or negative?

d. Is the acceleration positive or negative?

e. Predict the graphs describing the motion.



<u>Notes:</u>

g. On the observed graphs, describe the slope as
- a) constant, increasing or decreasing
- b) positive or negative
- c) state what the slope represents

Note: You may have to divide your graph into segments.

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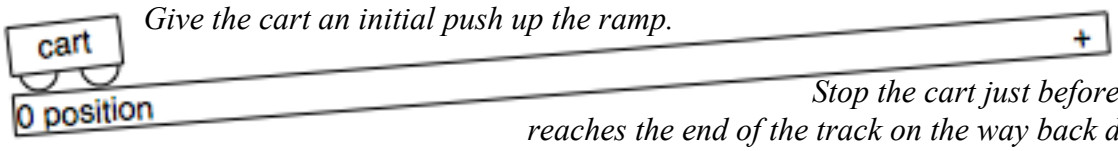
5. Up and down the ramp

a. Predict the motion of the cart **after** an initial push. Answer the following questions for the cart while <u>coasting</u>.



Give the cart an initial push up the ramp.

Stop the cart just before it reaches the end of the track on the way back down

b. Draw force diagram for the situation.

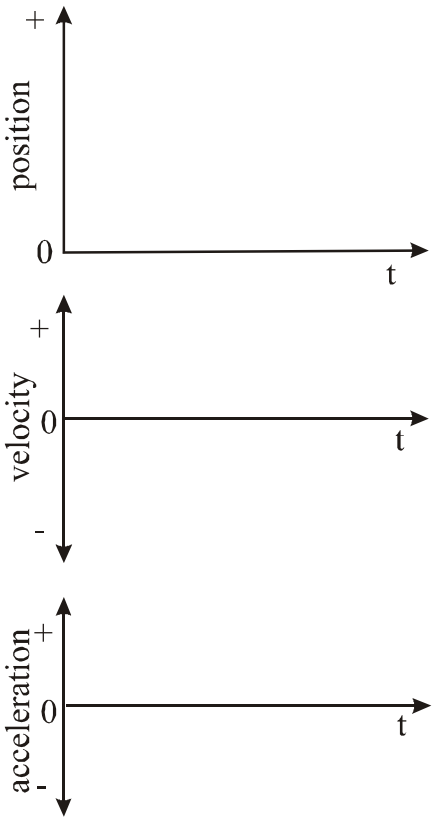
c. Is the velocity positive or negative?

Does the direction of the velocity change?

d. Is the acceleration positive or negative?

Does the direction of the acceleration change?

e. Predict the graphs describing the motion.



<u>Notes:</u>

g. On the observed graphs, describe the slope as

a) constant, increasing or decreasing

b) positive or negative

c) state what the slope represents

Note: You may have to divide your graph into segments.

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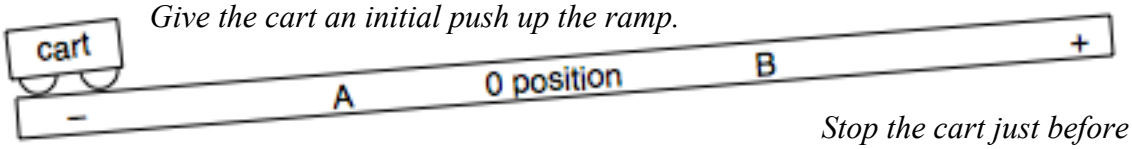
6. Up and down the ramp with a different zero position

a. Observe the motion of the cart **after** an initial push. Answer the following questions for the cart while coasting.

Give the cart an initial push up the ramp.



Stop the cart just before it reaches the end of the track on the way back down

b. Draw force diagram for the situation.

c. Is the velocity positive or negative?

Does the direction of the velocity change?

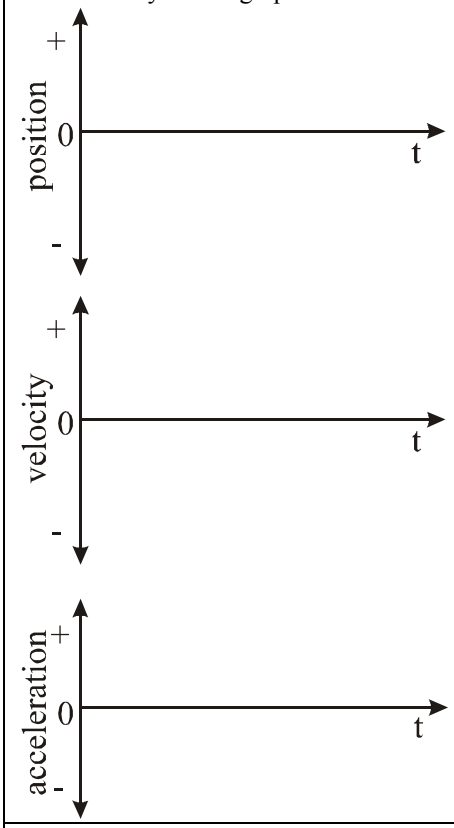
Is position A positive or negative?

d. Is the acceleration positive or negative?

Does the direction of the acceleration change?

Is position B positive or negative?

e. Predict the graphs describing the motion. Label points A and B on your x-t graph.



Notes:

g. On the observed graphs, describe the slope as
a) constant, increasing or decreasing
b) positive or negative
c) state what the slope represents

Note: You may have to divide your graph into segments.

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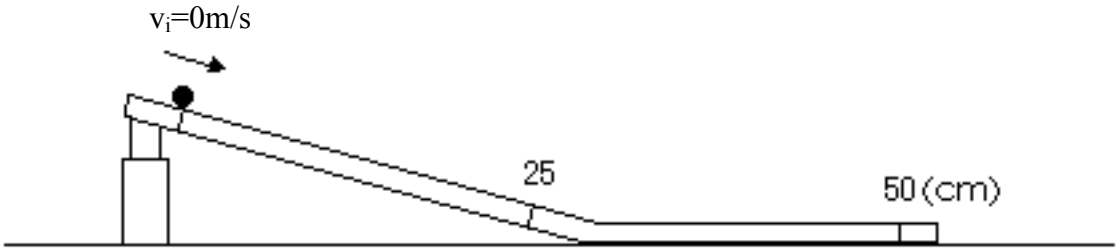
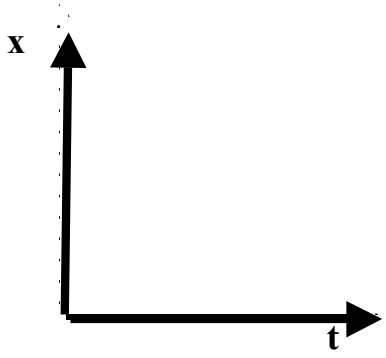
Sketching Graphs: Part 2

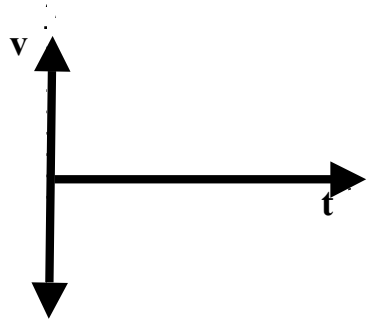
The following two problems ask you to apply what you have observed in the lab to two similar but new situations; instead of a cart and track we are looking at a ball and rail. When considering problems assume that the ball does not experience any change in velocity while it is on a horizontal portion of the rail.

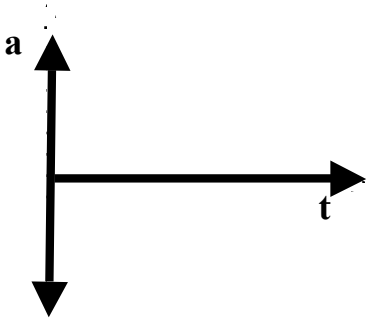
Please represent the motion that would result from the rail configuration indicated by means of a:
A) Qualitative graphical representation of **x** vs. **t**
B) Qualitative graphical representation of **v** vs. **t**
C) Qualitative graphical representation of **a** vs. **t**

4)









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5)