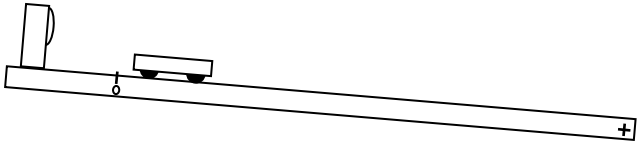
Unit 2: Uniform Acceleration
Lab 2, Speeding Up and Slowing Down

Name_____

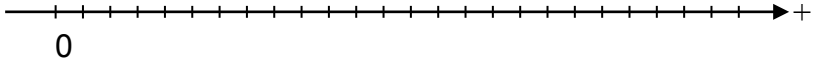
Date_____Period_____

1. Speeding up, moving in the positive direction

a. Observe the motion of the cart starting from rest and rolling down the incline without using the motion detector.

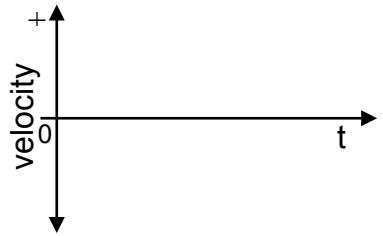
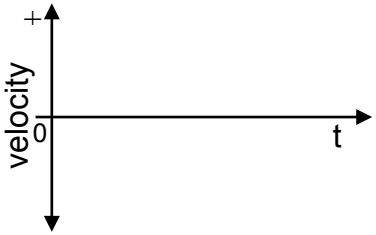
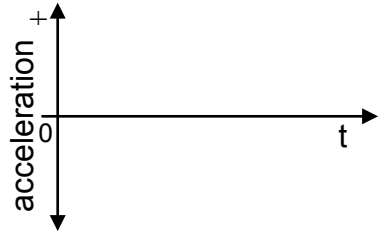
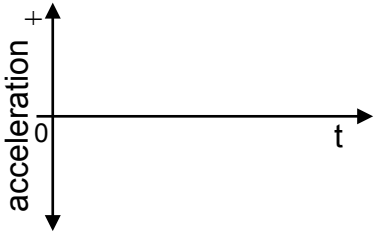


b. Draw a motion map including both velocity and acceleration vectors. (6 dots)



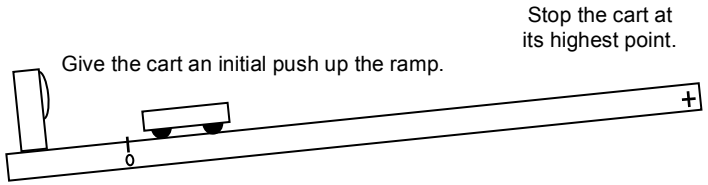
c. Is the direction of the velocity positive or negative? _____

d. Is the direction of the acceleration positive or negative? _____

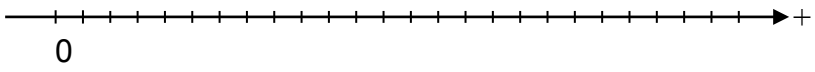
e. Predict the graphs describing the motion	f. Record the graphs displayed by the motion detector.	g. Examine the *slope* of each graph and answer the following questions: write the answer
		g.a Is the *slope* of the x vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the x vs. t graph positive, negative, or zero? g.c What does the *slope* of the x vs. t graph represent?
		g.a Is the *slope* of the v vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the v vs. t graph positive, negative, or zero? g.c. What does the *slope* of the v vs. t graph represent?
		g.a Is the *slope* of the a vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the a vs. t graph positive, negative, or zero? g.c. What does the *slope* of the a vs. t graph represent?

2. Slowing down, moving in the positive direction

a. Observe the motion of the cart slowing after an initial push without using the motion detector. Answer the following questions for the cart while coasting.

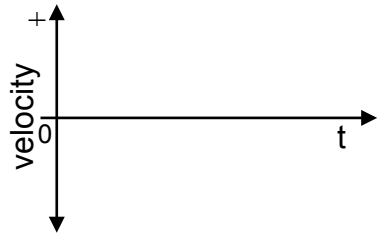
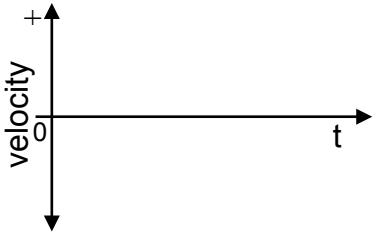
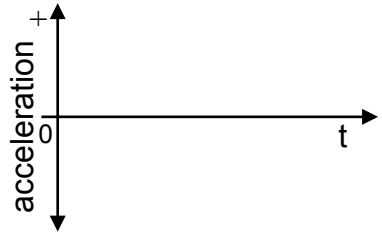
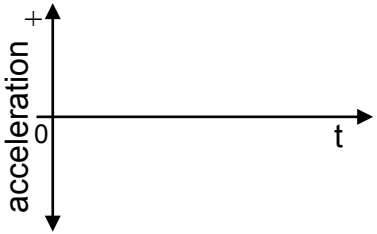


b. Draw a motion map including both velocity and acceleration vectors. (6 dots)



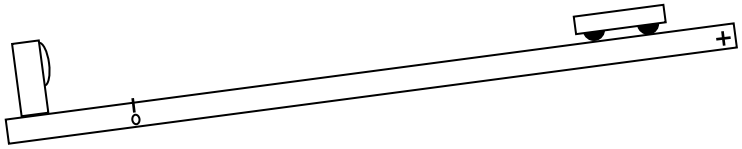
c. Is the direction of the velocity positive or negative? _____

d. Is the direction of the acceleration positive or negative? _____

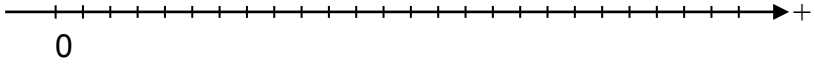
e. Predict the graphs describing the motion	f. Record the graphs displayed by the motion detector.	g. Examine the *slope* of each graph and answer the following questions: write the answer
		g.a Is the *slope* of the x vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the x vs. t graph positive, negative, or zero? g.c What does the *slope* of the x vs. t graph represent?
		g.a Is the *slope* of the v vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the v vs. t graph positive, negative, or zero? g.c. What does the *slope* of the v vs. t graph represent?
		g.a Is the *slope* of the a vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the a vs. t graph positive, negative, or zero? g.c. What does the *slope* of the a vs. t graph represent?

3. Speeding up, moving in the negative direction

a. Observe the motion of the cart starting from rest and rolling down the incline without using the motion detector.

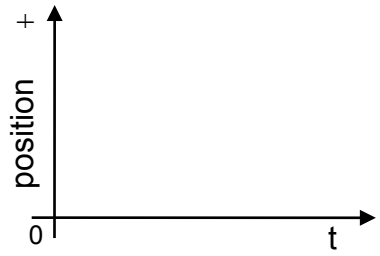
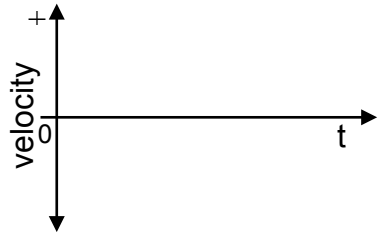
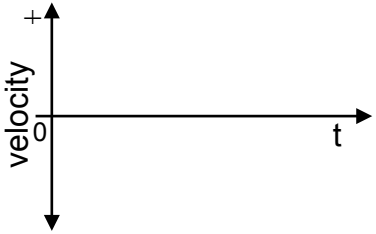
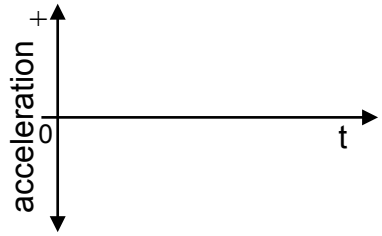
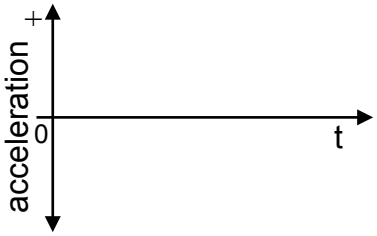


b. Draw a motion map including both velocity and acceleration vectors. (6 dots)



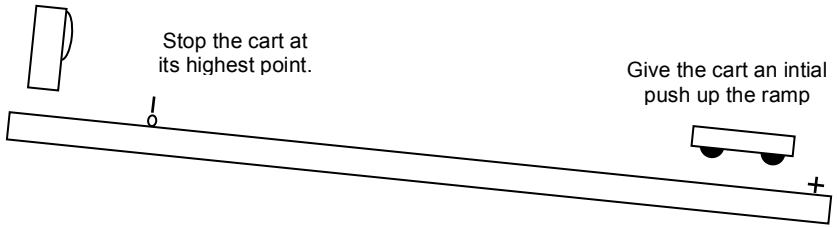
c. Is the direction of the velocity positive or negative? _____

d. Is the direction of the acceleration positive or negative? _____

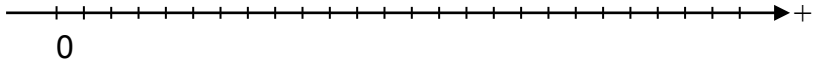
e. Predict the graphs describing the motion	f. Record the graphs displayed by the motion detector.	g. Examine the *slope* of each graph and answer the following questions: write the answer
		g.a Is the *slope* of the x vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the x vs. t graph positive, negative, or zero? g.c What does the *slope* of the x vs. t graph represent?
		g.a Is the *slope* of the v vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the v vs. t graph positive, negative, or zero? g.c. What does the *slope* of the v vs. t graph represent?
		g.a Is the *slope* of the a vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the a vs. t graph positive, negative, or zero? g.c. What does the *slope* of the a vs. t graph represent?

4. Slowing down, moving in the negative direction

a. Observe the motion of the cart slowing after an initial push without using the motion detector. Answer the following questions for the cart while coasting.

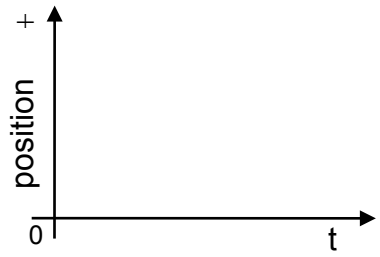
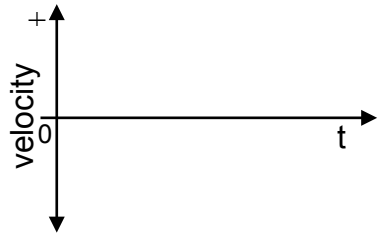
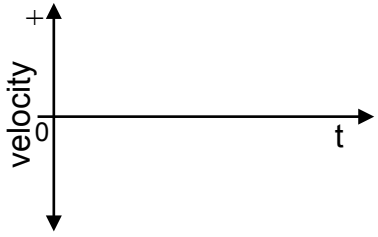
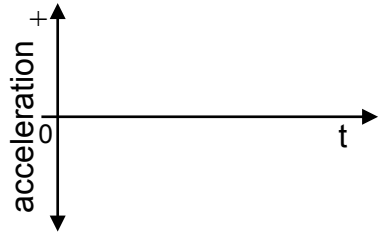
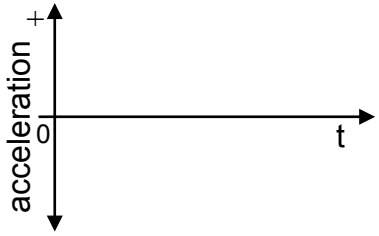


b. Draw a motion map including both velocity and acceleration vectors. (6 dots)



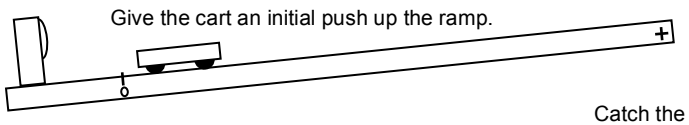
c. Is the direction of the velocity positive or negative? _____

d. Is the direction of the acceleration positive or negative? _____

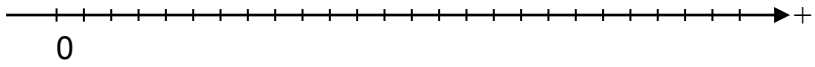
e. Predict the graphs describing the motion	f. Record the graphs displayed by the motion detector.	g. Examine the *slope* of each graph and answer the following questions: write the answer
		g.a Is the *slope* of the x vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the x vs. t graph positive, negative, or zero? g.c What does the *slope* of the x vs. t graph represent?
		g.a Is the *slope* of the v vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the v vs. t graph positive, negative, or zero? g.c. What does the *slope* of the v vs. t graph represent?
		g.a Is the *slope* of the a vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the a vs. t graph positive, negative, or zero? g.c. What does the *slope* of the a vs. t graph represent?

5. Up and down the ramp

a. . Observe the motion of the cart after an initial push without using the motion detector. Answer the following questions for the cart while coasting.



b. Draw a motion map including both velocity and acceleration vectors.

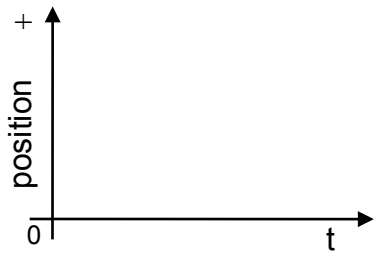
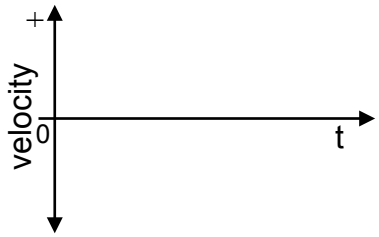
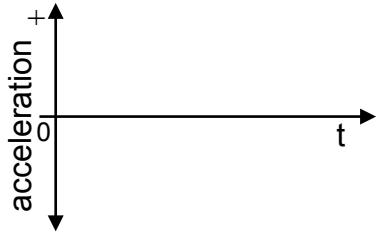
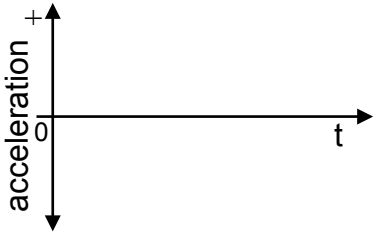


c. Is the direction of the velocity positive or negative? _____

Does the direction of the velocity change?

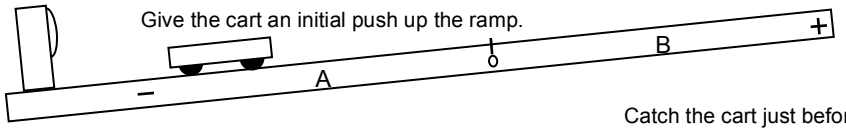
d. Is the direction of the acceleration positive or negative? _____

Does the direction of the acceleration change?

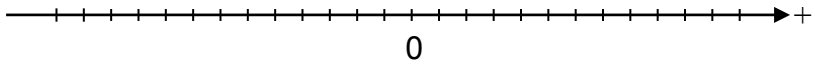
e. Predict the graphs describing the motion	f. Record the graphs displayed by the motion detector.	g. Examine the *slope* of each graph and answer the following questions: write the answer
		g.a Is the *slope* of the x vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the x vs. t graph positive, negative, or zero? g.c What does the *slope* of the x vs. t graph represent?
		g.a Is the *slope* of the v vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the v vs. t graph positive, negative, or zero? g.c. What does the *slope* of the v vs. t graph represent?
		g.a Is the *slope* of the a vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the a vs. t graph positive, negative, or zero? g.c. What does the *slope* of the a vs. t graph represent?

6. Up and down the ramp

a. . Observe the motion of the cart after an initial push without using the motion detector. Answer the following questions for the cart while coasting.



b. Draw a motion map including both velocity and acceleration vectors.

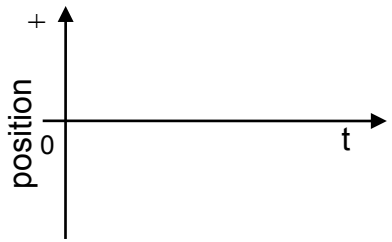
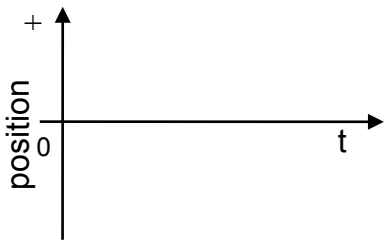
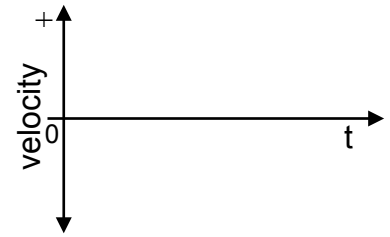
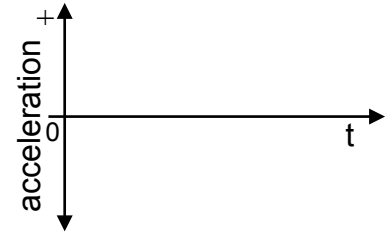
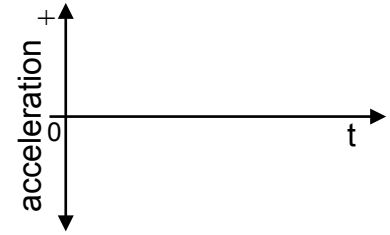


c. Is the direction of the velocity positive or negative? _____

Does the direction of the velocity change?

d. Is the direction of the acceleration positive or negative? _____

Does the direction of the acceleration change?

e. Predict the graphs describing the motion	f. Record the graphs displayed by the motion detector.	g. Examine the *slope* of each graph and answer the following questions: write the answer
		g.a Is the *slope* of the x vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the x vs. t graph positive, negative, or zero? g.c What does the *slope* of the x vs. t graph represent?
		g.a Is the *slope* of the v vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the v vs. t graph positive, negative, or zero? g.c. What does the *slope* of the v vs. t graph represent?
		g.a Is the *slope* of the a vs. t graph increasing, decreasing, or constant? g.b Is the *slope* of the a vs. t graph positive, negative, or zero? g.c. What does the *slope* of the a vs. t graph represent?