

Name: \_\_\_\_\_

DISC: \_\_\_\_\_

Score: \_\_\_\_ / 20

## Instructions:

- Do your own work.
- Answer the questions below in the space provided.
- Make sure you show all your work and any equations that you use.
- Please place a box around your answers.
- Remember to give the correct units with all numerical answers.

Q1

Q2

Q3

Q4

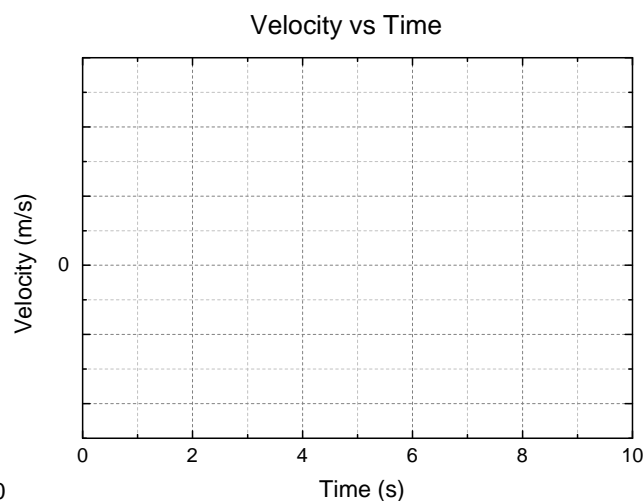
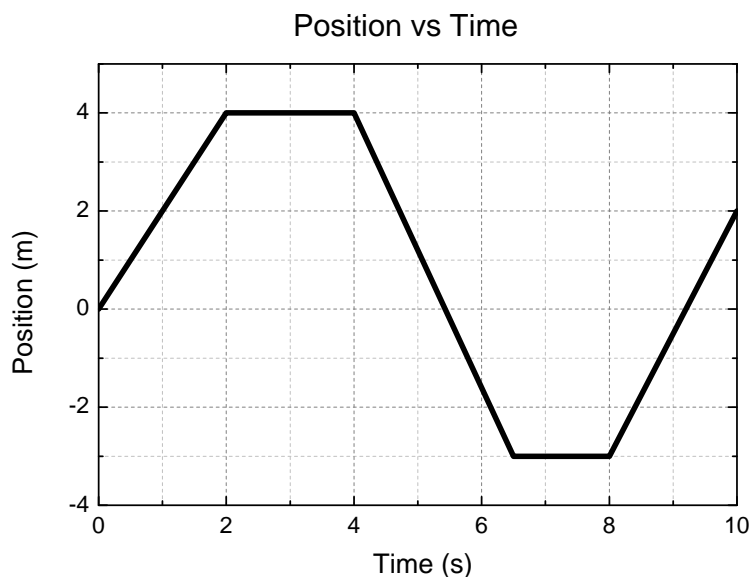
10

10

5

5

1. You observe a cart moving along a straight line and plot its position versus time as shown in the graph:



Speeds: 1 pt each

- a. Using the graph fill in the following table of velocities:

TIME	VELOCITY
From 0 s to 2 s	
From 2 s to 4 s	
From 4 s to 6.5 s	
From 6.5 s to 8 s	
From 8 s to 10 s	

Sketch (2 pts):

- b. Sketch the *velocity versus time* for the cart in the blank graph provided above. Make sure to add tick labels on the y-axis as appropriate.

Average velocity &amp; speed (3 pts):

- c. What is the average velocity of the cart? And what is the average speed?

2. You want to determine the height of a mountain  $28\text{ km}$  from your current position. You look around and notice that about  $700\text{ m}$  away from you is a tall tree. You look up and notice that the peak of the mountain and the top of the tree are aligned.

Sketch (3 pts):

- a. Make a sketch of this system. Remember to label all features.

Description (2 pts):

- b. Since you cannot measure the height of the mountain directly, describe the technique or techniques you would use to determine the height of the mountain.

Mountain height  
(5 pts):

- c. The tree is  $100\text{ m}$  tall. Find the height of the mountain.