

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

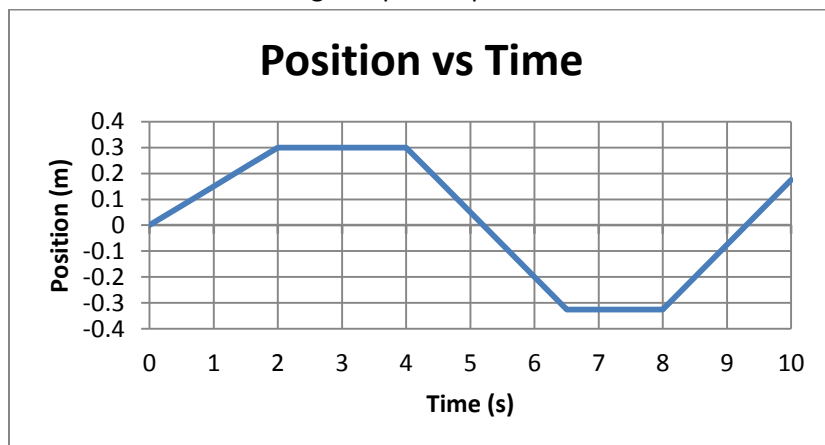
10

10

5

5

1. You observe a cart moving 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 | |

Average Speed (2 pts):

- b. What is the average speed of the cart?

- c. Sketch the *velocity versus time* for the cart:

Sketch (3 pts):

2. You want to determine the height of a mountain 200 km from your current position. You look around and notice that about 400 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.

- c. The tree is 150 m tall. Find the height of the mountain.

Mountain height
(5 pts):