

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 in 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	

Average Speed (2 pts):

b. What is the average speed of the cart?

c. Sketch the velocity versus time for the cart (you may use the blank page at the end):

Sketch (3 pts):

2. You want to determine the height of a mountain  $100 \text{ km}$  from your current position. You look around and notice that about  $500 \text{ m}$  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.

- c. The tree is  $10 \text{ m}$  tall. Find the height of the mountain.

Mountain height  
(5 pts):

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