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.
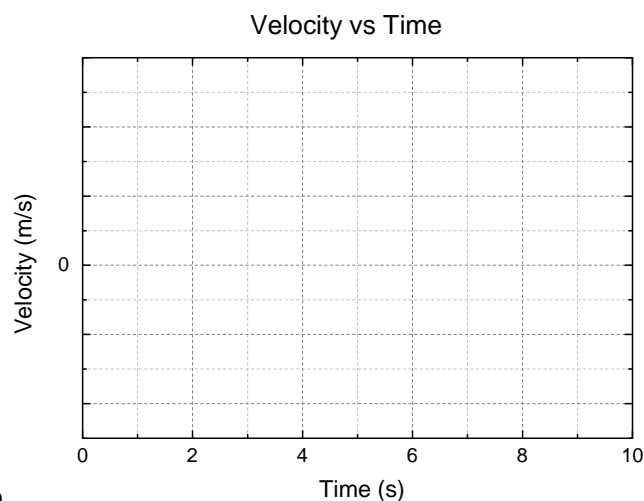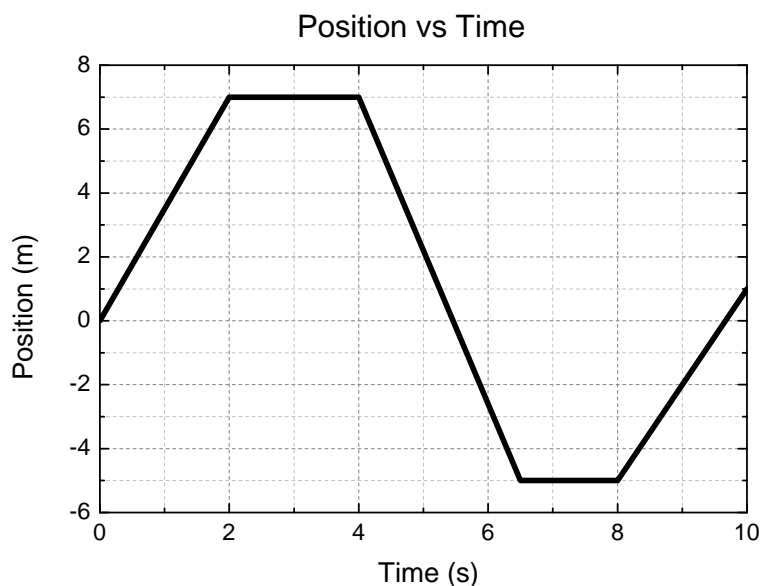- Remember to give the correct units with all numerical answers.

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:

Position vs Time

Velocity vs Time

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 & 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 $16\ km$ from your current position. You look around and notice that about $800\ m$ 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 $100\ m$ tall. Find the height of the mountain.