Unit 2: Describing Motion
Exercise 5 – Problem Solving

For each problem below, state if the object is experiencing constant velocity or acceleration, draw a graph of your choice and solve. Show all work.

1.   An object has a speed of 2.00 m/s. 3.0 seconds later it is going 8.00 m/s. What average acceleration did it experience?

2.   What is the average speed of a cheetah that uniformly runs 100 m in 4.00 s?

3.   A runner makes one complete lap around a 200 m track in a time of 25.0 s by moving at a constant rate. What was the runner's average speed? Average velocity?

4. A car goes from 90.0 m/s to a stop in 3.00 s. (SUPER BRAKES!) What is its acceleration?

5. An object is accelerated from rest at a constant rate of 5.00 m/s². What will be its speed after 8.00 seconds?

6. The peregrine falcon is the world's fastest known bird and has been clocked diving downward toward its prey at constant vertical velocity of 97.2 m/s. If the falcon dives straight down from a height of 100 m, how much time does this give a rabbit below to consider his next move as the falcon begins his descent?

7. A car company claims that its car can accelerate from rest to a speed of 28.0 m/s in 20.0 s. Find the average acceleration of the car.

8. A car moving at 30.0 m/s slows uniformly to a speed of 10.0 m/s in a time of 5.00 s. Determine the acceleration of the car.

9. Hans stands at the rim of the Grand Canyon and yodels down to the bottom. He hears his yodel back from the canyon floor 5.20 s later. Assume that the constant speed of sound in air is 340.0 m/s. How deep is the canyon? (Be careful, there is a trick here!)