Calculating Acceleration

1) A man's initial velocity was 4.5ms/ [N] and sped up to 6.0m/s [N] in 0.25s. What was his acceleration?

2) A cyclist was traveling at 2.0m/s [E] when she saw the lights turning red. She came to a rest after 3.5s. What was her acceleration? Was she slowing down or speeding up? If her velocity was positive, was her acceleration positive or negative?

3) A car was rolling down the hill at 0.12m/s when the driver frantically stepped on the gas pedal. How long did the car take to move up the hill at 1.0m/s if pressing the gas pedal generated an acceleration of +0.46m/s2?

4) A ball was dropped from rest and reached a final velocity of 3.43m/s downward in 0.35s. What was this ball's acceleration? If the acceleration due to gravity is -9.8m/s2, what can you conclude about your answer?

5) A turtle crawled at 0.25m/s [S] then accelerated at 0.25m/s2 [N] for 4.0s. What was the turtle's final velocity?

Graphing Acceleration

*Below is a velocity-time graph depicting the motion of a cue ball before and after hitting the side of a pool table.*

Velocity vs. Time



6) Between t = 0s and t = 4.9s, describe the motion of the cue ball:

A) It is not moving

B) It is moving in the positive direction towards the side of the pool table

C) It is moving away in the negative direction away from the side of the pool table

D) It is accelerating towards the side of the pool table

E) It is accelerating away from the side of the pool table

7) Between t = 5s and t = 10s, describe the motion of the cue ball:

A) It is not moving

B) It is moving in the positive direction towards the side of the pool table

C) It is moving away in the negative direction away from the side of the pool table

D) It is accelerating towards the side of the pool table

E) It is accelerating away from the side of the pool table

8) Calculate the acceleration of the cue ball from t = 4.9s to t = 5s.

9) What was the cue ball's total displacement from t = 0s to t = 10s?