This print-out should have 11 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

001 (part 1 of 3) 10.0 points

The position of a car coasting down a hill was observed at various times and the results are summarized in the table below.

time	distance
0 s	0.91 m
1 s	3.9 m
2 s	12.2 m
3 s	24.5 m
4 s	45.9 m
5 s	65.7 m

Find the average velocity of the car during the first second.

Answer in units of m/s.

002 (part 2 of 3) 10.0 points

Find the average velocity of the car during the time last three second interval.

Answer in units of m/s.

003 (part 3 of 3) 10.0 points

Find the average velocity of the car during the entire period of observation.

Answer in units of m/s.

004 10.0 points

If the acceleration of an object is zero at some instant in time, what can be said about its velocity at that time?

1. It is not changing at that time.

2. Unable to determine.

3. It is negative.

4. It is positive.

5. It is zero.

005 (part 1 of 3) 10.0 points

A record of travel along a straight path is as follows.

1. Start from rest with constant acceleration of 2.65 m/s^2 for 14 s.

2. Constant velocity for the next 3.76 min.

3. Constant negative acceleration -8.01 m/s^2 for 5.64 s.

What was the total displacement for the complete trip?

Answer in units of km.

006 (part 2 of 3) 10.0 points

What was the average speed for leg 1 of the trip?

Answer in units of m/s.

007 (part 3 of 3) 10.0 points

What was the average speed for the complete trip?

Answer in units of m/s.

008 10.0 points

A car capable of a constant acceleration of 2.48 m/s^2 is stopped at a traffic light. When the light turns green, the car starts from rest with this acceleration. At the very same moment, a truck traveling with constant velocity 9.82 m/s passes the car.

As the car's velocity increases, it will eventually move faster than the truck and later overtake it. How far from the light will the car catch up with the truck?

Answer in units of m.

009 10.0 points

The French National Railroad holds the world's speed record for passenger trains in regular service. A TGV (*tres grand vitesse*, or very great speed) train traveling at a speed of 311 km/h requires 1.39 km to come to an emergency stop.

Find the braking acceleration for this train, assuming constant acceleration.

Answer in units of m/s^2.

010 (part 1 of 2) 10.0 points

A truck on a straight road starts from rest and accelerates at 3 m/s^2 until it reaches a speed of 23 m/s. Then the truck travels for 23 s at

constant speed until the brakes are applied, stopping the truck in a uniform manner in an additional 3.7 s.

How long is the truck in motion?

Answer in units of s.

---

011 (part 2 of 2) 10.0 points

What is the average velocity of the truck for the motion described?

Answer in units of m/s.