

Name:_____

- (b) How far was the driver from the bridge when she first noticed the sign? {5 marks}

4. A car is travelling along a highway with a speed of 25 m/s when the driver sees an obstruction 1.80×10^2 m directly ahead. It takes the driver 0.80 s to react and begin braking.
- (a) How far does the car travel before it begins to slow down? { 2 marks}
- (b) How long will it take the car to stop once the brakes are applied, provided the car stops just before the obstruction? { 3 marks}
- (c) What is the value of the acceleration of the car if it just misses hitting the obstruction? Assume the acceleration is uniform. { 2 marks}
5. An object is pushed from rest across a sheet of ice, accelerating at 5.0 m/s^2 over a distance of 80.0 cm. The object then slides at a constant speed for 4.0 s until it reaches a rough section that causes the object to stop in 2.5 s.
- (a) What is the speed of the object when it reaches the rough section? { 2 marks}
- (b) At what rate does it slow down once it reaches the rough section? { 2 marks}
- (c) What is the total distance that the object slides? { 5 marks}

6. A car is stopped at an intersection. When the traffic light turns green, the car starts to accelerate at 1.5 m/s^2 . A truck continues through the intersection, at a constant speed of 12 m/s , and passes the car at the same time that it starts to accelerate.

(a) How long does the car take to catch up with the truck? { 5 marks }

(b) How far does the car travel before it catches up with the truck? { 2 marks }

7. You are driving with a constant velocity of 20.0 m/s when a child suddenly steps into the path of your vehicle 65 m away. When you fully apply your brakes, your car slows down at a rate of 7.5 m/s^2 . What is the minimum reaction time that is required so that the child will not be hit? { 5 marks }