2020 Tesla Roadster Trip – Teacher notes



The November issue of Automobile Magazine reports that the 2020 Tesla Roadster was unveiled in California. The all-electric vehicle can go from 0 to 60 miles per hour in 1.9 seconds and some claim it is the fastest production vehicle ever made, reaching speeds over 250 miles per hour. With a base price of $200,000, customers can reserve a Tesla Roadster by placing a $50,000 deposit, bringing the total cost of the car to a quarter of a million dollars!

*Source*: <http://www.automobilemag.com/news/new-tesla-roadster-unveiled/>

1. Assume that the 2020Tesla Roadster can accelerate from 0 to 60 mph in 1.9 seconds at a constant rate. How fast will the Roadster be traveling in 1 second? In 2 seconds?

At 1 second, the Roadster is traveling 31.6 mph.

At 2 seconds, the Roadster is traveling 63.2 mph.

1. If the Roadster continues to accelerate at the constant rate determined in #1, how long will it take the car to reach the speed of 250 miles per hour? Do you think this is acceleration can last for even longer periods of time? Why or why not?

The article said the top speed for the Roadster is 250 mph, so it would not be able to continue this acceleration beyond this time.

1. Automobile Magazine also reports that the Tesla Roadster has a driving range of 620 miles. If it took someone one mile to get the Roadster to a speed of 75 miles per hour and used the cruise control to maintain that speed, how long could they drive before the Tesla loses its power?

619 miles would be traveled at the speed of 75 mph.

1. Gilbert, the owner of the Roadster, drove it to Las Vegas for a first road trip after he gets the car in 2020. He figured it would take him 5 hours to make the 320-mile drive from his home to his hotel if he doesn’t make any stops. What is his average speed for this trip? Why is this considered an average speed?

It would be very difficult, if not impossible, to maintain a constant speed throughout an entire trip. Drivers have to adjust for traffic, road conditions, stop lights, etc. Since the speed of the Roadster will vary due to these things, we talk about the average speed knowing this is the speed if the car were able to travel at a constant rate the entire trip.

1. While making this trip, Gilbert decides to stop for lunch. It takes Gilbert 45 minutes to eat lunch at a restaurant. Now what is his average speed for the trip?

45 min. = 0.75 hour