

1. A car with an initial speed of 23.7 km/h accelerates at a uniform rate of $.92 \text{ m/s}^2$ for 3.6 s. Find the final speed and the displacement of the car during this time.
2. A driver of a car traveling at 15 m/s applies the brakes, causing a uniform acceleration of 2.0 m/s^2 . If the brakes are applied for 2.5 s, what is the velocity of the car at the end of the braking period? How far has the car moved during the braking period?
3. A car starts from rest and travels for 5.0 s with a uniform acceleration of 1.5 m/s^2 . The driver then applies the brakes, causing a uniform acceleration of 2.0 m/s^2 . If the brakes are applied for 3.0 s, how fast is the car going at the end of the braking period, and how far has it gone from its start?
4. A bobsled has a constant acceleration of 2.00 m/s^2 starting from rest.
 - a) How fast is it moving after 5.00 s?
 - b) How far has it traveled in 5.00 s?
 - c) What is the average velocity in the first 5.00 s?
 - d) How far has it traveled by the time its velocity has reached 40.0 m/s?
5. A subway train starts from rest at a station and accelerates at a rate of 2.30 m/s^2 for 10.00 s. It then runs at constant speed for 30.0 s, and decelerates at 4.05 m/s^2 until it stops at the next station. Find the total distance covered.
6. Marissa's car accelerates at a rate of 2.60 m/s^2 . How long does it take for Marissa's car to accelerate from a speed of 88.5 km/h to a speed of 96.5 km/h?
7. A car, initially traveling at a uniform velocity, accelerates at the rate of 2.32 m/s^2 for a period of 12.0 s. If the car traveled 385 m during this 12.0 s period, what was the velocity of the car when it started to accelerate?
8. A plane lands with a velocity of 120. m/s and accelerates to a stop at a maximum rate of 6.0 m/s^2 .
 - a) From the instant the plane touches the runway, what is the minimum time needed before it can come to rest?
 - b) Can this plane land on a naval aircraft carrier where the runway is 0.80 km long?
9. A bus slows down uniformly from 21.0 m/s to a stop in 220. m. How long does the bus take to stop?
10. A ranger in a national park is driving at 56 km/h when a deer jumps onto the road 65 m ahead of the vehicle. After a reaction time of t seconds, the ranger applies the brakes to produce an acceleration of 3.0 m/s^2 . What is the maximum reaction time allowed if the ranger is to avoid hitting the deer?
11. A speeder passes a parked police car at 30.0 m/s. The police car starts from rest with a uniform acceleration of 2.44 m/s^2 . How much time passes before the police car overtakes the speeder? How far does the speeder get before being overtaken by the police car?