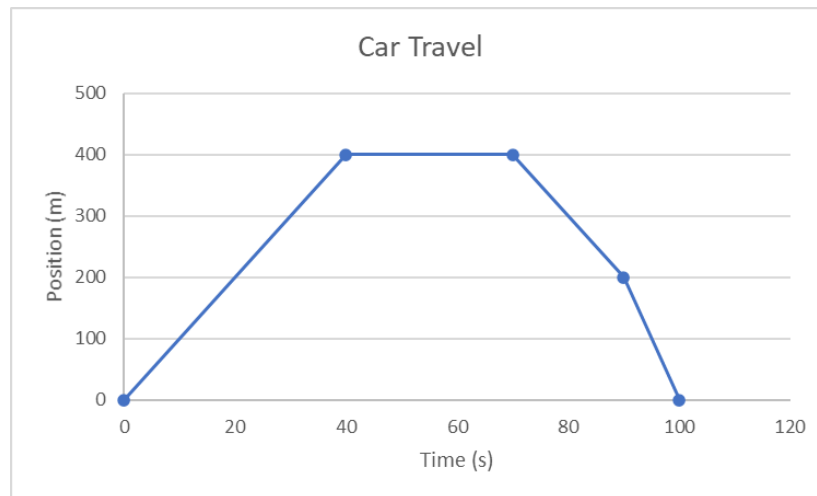


1. A bike travels at a constant speed of 4.20-m/s for 5.00-s. How far does it go? **(21.00-m)**
2. A bike accelerates from 0.00-m/s to 4.20-m/s in 6.00-s. What distance does it travel? **(12.60-m)**
3. A student drops a ball from a window 4.50-m above the sidewalk. How fast is it moving when it hits the sidewalk? **(9.39-m/s)**
4. A bike first accelerates from rest to 5.00-m/s in 4.50-s, then continues at this constant speed for another 3.50-s. What is the total distance traveled by the bike? **(28.75-m)**
5. A car is traveling 18.00-m/s when the driver sees a child standing in the road. He takes 0.80-s to react, then steps on the brakes and slows at 8.00-m/s². How far does the car go before it stops? **(34.65-m)**
6. You throw a ball downward from a window at an initial speed of 1.70-m/s. How fast is it moving when it hits the sidewalk 2.60-m below? **(7.34-m/s)**
7. You throw a ball upward from a window at a speed of 1.50-m/s. How fast is it moving when it hits the sidewalk 2.30-m below? **(6.88-m/s)**
8. Light from the sun reaches Earth in 8.3 min. The velocity of light is 3.00×10^8 -m/s. How far is Earth from the sun? **(1.49×10^{11} -m)**
9. You and a friend each drive 50.00-km. You travel at 84.00-km/h; your friend travels at 97.00-km/h. How long will your friend wait for you at the end of the trip (in minutes)? **(4.79-min)**
10. Use the position-time graph blow to find how far the object travels during each of the following time intervals.

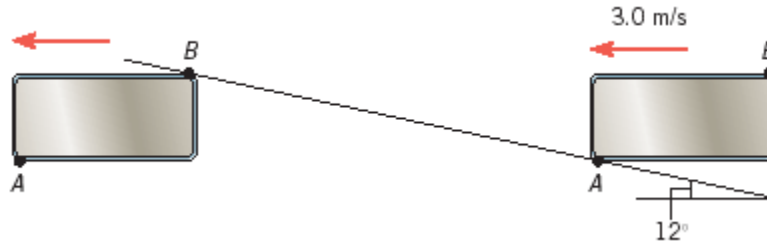


- (a) Between $t = 0$ s and $t = 30$ s **(300.00-m)**
 - (b) Between $t = 40$ s and $t = 70$ s **(0.00-m)**
 - (c) between $t = 90$ s and $t = 100$ s **(200.00-m)**
11. Find the uniform acceleration that causes a car's velocity to change from 30.0-m/s to 99.0-m/s in 8.0-s. **(8.62-m/s²)**

12. A car with a velocity of 15.00-m/s is accelerated uniformly at the rate of 1.30-m/s² for 6.80-s. What is its final velocity? (**23.8-m/s**)
13. A supersonic jet flying at 159.00-m/s is accelerated uniformly at the rate of 23.10-m/s² for 15.00-s.
(a) What is its final velocity? (**506.0-m/s**)
(b) The speed of sound in air is 331.00-m/s. How many times the speed of sound is the plane's final speed? (**1.53x**)
14. Determine the final velocity of a proton that has an initial velocity of 2.40 x 10⁵-m/s, and then is accelerated uniformly in an electric field at the rate of -1.10 x 10¹²-m/s² for 1.70 x 10⁻⁷-s. (**5.30 x 10⁴-m/s**)
15. An astronaut drops a feather from 1.30-m above the surface of the moon. If the acceleration of gravity on the moon is 1.62-m/s² downward, how long does it take the feather to hit the moon's surface? (**1.27-s**)
16. A stone falls freely from rest for 6.80-s.
(a) Calculate the magnitude of the stone's velocity after 6.80-s. (**66.64-m/s**)
(b) What is the magnitude of stone's displacement during this time? (**226.58-m**)
17. A bag is dropped from a hovering helicopter.
(a) When the bag has fallen 1.60-s, what is the bag's velocity? (**15.68-m/s**)
(b) How far has the bag fallen? (**12.54-m**)
18. A weather balloon is floating at a constant height above Earth when it releases a pack of instruments.
(a) The ground with a velocity of -70.10-m/s, how far did the pack fall? (**250.71-m**)
(b) How long did it take for the pack to fall? (**7.15-s**)
19. During a baseball game, a batter hits a high pop-up. If the ball remains in the air for 7.00-s, how high does it rise? Hint: Calculate the height using the second half of the trajectory. (**60.1-m**)

E1. A golfer rides in a golf cart at a speed of 3.10-m/s for 27.0-s. She then gets out of the cart and starts walking at an average speed of 1.30-m/s. For how long (in seconds) must she walk if her average speed for the entire trip, riding and walking, is 1.80-m/s? **(70.2-s)**

E2. You are on a train that is traveling at 3.00-m/s along a level straight track. Very near and parallel to the track is a wall that slopes upward at a 12.00° angle with the horizontal. As you face the window (0.94-m high, 2.20-m wide) in your compartment, the train is moving to the left, as the drawing indicates. The top edge of the wall first appears at window corner A and eventually disappears at window corner B. How much time passes between appearance and disappearance of the upper edge of the wall? **(2.21-s)**



E3. In a historical movie, two knights on horseback start from rest 61.00-m apart and ride directly toward each other to do battle. Sir George's acceleration has a magnitude of 0.16-m/s^2 , while Sir Alfred's has a magnitude of 0.29-m/s^2 . How far from Sir George's starting point do the knights collide? **(21.7-m)**

E4. A Boeing 747 "Jumbo Jet" has a length of 59.70-m. The runway on which the plane lands intersects another runway. The width of the intersection is 25.00-m. The plane decelerates through the intersection at a rate of 5.80-m/s^2 and clears it with a final speed of 32.00-m/s. How much time is needed for the plane to clear the intersection? **(2.21-s)**