

More Constant Acceleration Problems

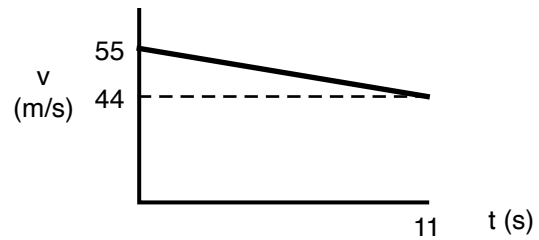
1. A happy physics student is leaving school for the day. This student uniformly accelerates her car from rest with an acceleration of 1.2 m/s^2 .
 - a. How long does it take her to reach 15 m/s ?

 - b. How far does she travel in this time?

2. A car is uniformly accelerated at the rate of 2.5 m/s^2 for 12 s .
 - a. If the original speed of the car is 8 m/s , what is its final speed?

 - b. How far does the car travel in this time?

3. The velocity vs time graph for a car is shown to the right.
 - a. Describe the motion.

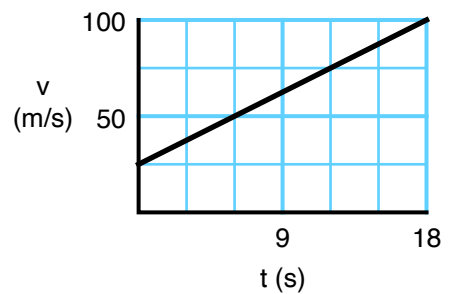


- b. What is the acceleration of the car?

 - c. How far does the car travel during this time?

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4. Mary is riding her bike with a speed of 14 m/s, when she slows down at a constant rate and comes to rest in 7 seconds.
- What is Mary's acceleration?
 - How far does Mary travel while slowing down?
5. A ball rolling down an incline for 0.75 seconds undergoes a uniform acceleration of 4.2 m/s^2 . The ball has an initial speed of 2.2 m/s when it starts down the incline.
- How far does the ball roll?
 - How fast is the ball moving at the bottom of the incline?
6. The velocity vs time graph for a plane is shown to the right. How far does the plane travel in the time shown? (*Hint: there are two ways to do this & each way requires two steps!*)



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Answers:

1. a) 12.5 s b) 93.8 m
2. a) 38 m/s b) 276 m
3. a) car slows down from 55 m/s to 44 m/s in 11 seconds b) -1 m/s^2 c) 545 m
4. a) -2 m/s^2 b) 49 m
5. a) 2.83 m b) 5.35 m/s
- 6.) 1125 m (& first steps were either: $v_{ave} = 62.5 \text{ m/s}$ or $a = 4.17 \text{ m/s}^2$)