

Constant Velocity, Acceleration, & Distance Problems

Equations: $v = \frac{d}{t}$ / $a = \frac{v_f - v_i}{t}$ / $d = v_0 t + \frac{1}{2} a t^2$

1. A motorist travels a distance of 406 km during a 7-hour period. What was the average speed in km/hr?

58 km/hr

2. During a canoe race, a camper paddles an average of 1.2 m/s in 70 sec. How far does the camper travel?

84 m

3. A rocket launched into outer space from rest and travels a distance of 240,000 km during the first 6 hours after the launching. What is the acceleration of the rocket?

13,333.3 km/hr²

4. A bullet leaves the muzzle of a rifle and 5 sec later becomes embedded in the trunk of a tree 3000 m away. What is the average speed of the bullet?

600 m/s

5. What is the acceleration of a racecar if its speed is increased uniformly from 44 m/s to 66 m/s over 11s?

2 m/s²

6. A train starts from rest and then begins accelerating at a rate of 1.9 m/s². What is its velocity after 1 minute (careful) has passed by?

↳ 60s ← must be in seconds

114 m/s

7. How far has the train in #6 traveled?

3420 m

8. You leave for Chicago, which is 40 miles away, at 3pm to try to make a Bulls game at 5pm. Will you make it to Chicago in time if the train is traveling at an average of 18.5 mph?

3 ways to solve!

No {

- The train is 1.5 mph too slow
- You will be .16 hrs. late
- You are 3 mi short of 40.

9. Michael Johnson is running the 100m dash. He waits for the starter to fire the gun and then he takes off accelerating at 1.2 m/s² for the entire race and crosses the finish line going 15.5 m/s. How long did it take him to complete the 100m?

2 ways to solve

12.9s