3 Level Practice

$$Acceleration = \frac{Final\ Velocity - Initial\ Velocity}{Time}$$

YOU MUST SHOW YOUR WORK
You can use a calculator but you must show the steps involved in doing the problem.

SHORT ANSWER

1. Does the speedometer of a car read average speed or instantaneous speed?

2. If the speedometer of your care reads a constant speed of 40 km/h, can you say 100% for sure that the car has a constant velocity? Explain your answer.

3. What two controls on a car cause a change in speed?

4. What control causes a change in velocity?

5. What is the acceleration of a car that travels at a constant speed?

6. Describe a situation in which you can accelerate even though your speed doesn't change.

CALCULATIONS

7. A roller coaster car rapidly picks up speed as it rolls down a slope. As it starts down the slope, its speed is 4 m/s, but 3 seconds later, its speed is 22 m/s. What is the average acceleration?

8. A cyclist accelerates from O to 8 m/s in 3 seconds. What is his acceleration? Is this acceleration higher than that of a car which accelerates from 0 to 30 m/s in 8 seconds?

9. A car advertisement states that a certain car can accelerate from rest to 70 km/h in 7 seconds. Find the car's average acceleration.

10. A lizard accelerates from 2 to 10 m/s in 4 seconds. What is the lizard's average acceleration?

11. A runner covers the last stretch of a race in 4 seconds. During that time, he speeds up from 5 to 9 m/s. What is the runner's acceleration during this part of the race?

12. You are traveling in a car that is moving at a velocity of 20 m/s. Suddenly, a car 10 meters in front you slams on its brakes. At that moment, you also slam on your brakes and slow to 5 m/s. Calculate the acceleration if it took 2 seconds to slow your car down.

13. A ball is dropped from the top of a building. After 2 seconds, its velocity is 19.6 m/s. Calculate the acceleration for the dropped ball.

Level 1 of 3