Name: _____ Class: _____ Date: _____

Finding Acceleration

Show your work by writing the formula, plugging in the numbers, then solving.

$$\text{acceleration} = \frac{\text{final speed} - \text{initial speed}}{\text{time}}$$

1. 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, at the bottom of the slope, its speed is 22 m/s. What is its average acceleration?

2. A cyclist accelerates from 0 m/s 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?

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

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

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

6. You are traveling in a car that is moving at a speed of 20 m/s. Suddenly, a car 10 m in front of 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.

7. A ball is dropped from the top of a building. After 2 s, its velocity is measured to be 19.6 m/s. Calculate the acceleration for the dropped ball.

CHALLENGE

8. Josh rolled a bowling ball down a lane in 2.5s. The ball traveled at a constant acceleration of 1.8 m/s^2 down the lane and reached a speed of 7.6 m/s by the end of the lane. How fast was the ball going when it left Josh's hand?