

## A Bunch of Acceleration Questions

1. A bus takes off from a stop and accelerates at  $2.5 \text{ m/s/s}$  for  $7.0 \text{ s}$ . What is its final speed?
2. You are racing with a friend, and from a stop you accelerate at  $1.0 \text{ m/s/s}$  for  $3.0 \text{ s}$ .
  - a. What is your speed?
  - b. You notice that your friend is ahead of you, and now you accelerate at  $2.0 \text{ m/s/s}$  for  $2.0$  more seconds. Now what is your final speed?
3. You have a GREAT go-cart. You put it at the top of a hill and get in, accelerating down for  $7.0$  seconds and achieving a final speed of  $35 \text{ m/s}$ .
  - a. What was your acceleration?
  - b. As a bonus, you hit some rough ground for  $3.0$  seconds and your speed drops to  $26 \text{ m/s}$ . What was your acceleration in this second phase?
4. You are traveling on your bike at an unknown speed and pedal harder, accelerating at  $1.5 \text{ m/s}^2$  for  $4.0 \text{ s}$ . Your final velocity is  $15 \text{ m/s}$ . What was your initial velocity?
5. You are traveling on your bike at  $4.5 \text{ m/s}$ , and accelerate at  $2.5 \text{ m/s}^2$  for  $6.0 \text{ s}$ . What is your final velocity?
6. You are in a car that is traveling at  $25 \text{ m/s}$  and the brakes are applied. You come to a stop in  $2.5 \text{ s}$ . What was your acceleration?
7. You are in a car that accelerates to  $15 \text{ m/s}$  from a standstill at a rate of  $2.0 \text{ m/s}^2$ . How long did this take?

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