Name: _____

Skill Sheet 2 — Acceleration Problems

This skill sheet will allow you to practice solving acceleration problems. Remember that acceleration is the rate of change in the speed of an object. In other words, at what rate does and object speed up or slow down? A positive value for acceleration refers to the rate of speeding up, and negative value for acceleration refers to the rate of slowing down. The rate of slowing down is also called deceleration. To determine the rate of acceleration you use the formula:

$$\text{Acceleration} = \frac{\text{Final speed} - \text{Beginning speed}}{\text{Change in Time}}$$

1. Solving acceleration problems

Solve the following problems using the equation for acceleration. Remember the units for acceleration are meters per second per second or m/sec^2. The first problem is done for you.

1. A biker begins to move from a speed of 0.0 m/s to a final speed of 25.0 m/s in 10 seconds. What is the acceleration of the biker?

$$\text{acceleration} = \frac{\frac{25.0\ \text{m}}{\text{sec}} - \frac{0.0\ \text{m}}{\text{sec}}}{10\ \text{sec}} = \frac{\frac{25.0\ \text{m}}{\text{sec}}}{10\ \text{sec}} = \frac{2.5\ \text{m}}{\text{sec}^2}$$

2. A skater increases her velocity from 2.0 m/s to 10.0 m/s in 3.0 seconds. What is the acceleration of the skater?

3. While traveling along the highway a driver slows from 24 m/s to 15 m/s in 12 seconds. What is the driver's acceleration? (Remember that a negative value indicates a slowing down or "deceleration.")

4. A parachute on a dragster racing-car opens and changes the speed of the car from 85 m/s to 45 m/s in a period of 4.5 seconds. What is the acceleration of the car?

5. The fastest land mammal, the cheetah, can accelerate from 0 mi/hr to 70.0 mi/hr in 3.0 seconds. What is the acceleration of the cheetah?