**Activity 3**

**Accidents**

**GOALS**

In this activity you will:

- Evaluate your own understandings of safety.
- Evaluate the safety features on selected vehicles.
- Compare and contrast the safety features on selected vehicles.
- Identify safety features in selected vehicles.
- Identify safety features required for other modes of transportation (in-line skates, skateboards, cycling, etc.).

**What Do You Think?**

Chances are you will not be able to avoid being in an accident at some time in the future.

- **How can you protect yourself from serious injury, or even death, should an accident occur?**
- **What do you think is the greatest danger to you or the people in an accident?**

Record your ideas about these questions in your *Active Physics* log. Be prepared to discuss your responses with your small group and the class.
For You To Do

1. Many people think that they know the risks involved with day-to-day transportation. The “test” below will check your knowledge of automobile accidents. The statements are organized in a true and false format. Record a T in your log for each statement you believe is true and an F if you believe the statement is false. Your teacher will supply the correct answers for discussion at the end of the activity.

   a) More people die because of cancer than automobile accidents.
   b) Your chances of surviving a collision improve if you are thrown from the car.
   c) The fatality rate of motorcycle accidents is less than that of cars.
   d) A large number of people who are belted into their cars are killed in a burning or submerged car.
   e) If you don’t have a child restraint seat, you should place the child in your seat belt with you.
   f) You can react fast enough during an accident to brace yourself in the car seat.
   g) Most people die in traffic accidents during long trips.
   h) A person not wearing a seat belt in your car poses a hazard to you.
   i) Traffic accidents occur most often on Monday mornings.
   j) Male drivers between the ages of 16 and 19 are most likely to be involved in traffic accidents.
   k) Casualty collisions are most frequent during the winter months due to snow and ice.
   l) More pedestrians than drivers are killed by cars.
   m) The greatest number of roadway fatalities can be attributed to poor driving conditions.
   n) The greatest number of females involved in traffic accidents are between the ages of 16 and 20.
   o) Unrestrained occupant casualties are more likely to be young adults between the ages of 16 and 19.
2. Calculate your score. Give yourself two points for a correct answer, and subtract one point for an incorrect answer. You might want to match your score against the descriptors given below.

21 to 30 points: Expert Analyst
14 to 20 points: Assistant Analyst
9 to 13 points: Novice Analyst
8 points and below: Myth Believer

a) Record your score in your log. Were you surprised about the extent of your knowledge? Some of the reasons behind these facts will be better understood as you continue to travel through this chapter.

3. Survey at least three different cars for safety features. The list on the next page will allow you to evaluate the safety features of each of the cars. Place a check mark in the appropriate square.

Number 1 indicates very poor or nonexistent, 2 is minimum standard, 3 is average, 4 is good, and 5 is very good.

For example, when rating air bags: a car with no air bags could be given a 1 rating, a car with only a driver-side air bag a 2, a car with driver and passenger side air bags a 3, a car with slow release driver and passenger-side air bags a 4, and a car which includes side-door air bags to the previous list a 5. You may add additional safety features not identified in the chart. Many additional features can be added!

a) Copy and complete the table in your log.

b) Which car would you evaluate as being safest?
Reflecting on the Activity and the Challenge

Serious injuries in an automobile accident have many causes. If there are no restraints or safety devices in a vehicle, or if the vehicle is not constructed to absorb any of the energy of the collision, even a minor collision can cause serious injury. Until the early 1960s, automobile design and construction did not even consider passenger safety. The general belief was that a heavy car was a safe car. While there is some truth to that statement, today’s lighter cars are far safer than the “tanks” of the past.

The safety survey may have provided ideas for constructing a prototype of a safety system used for transportation. If it has, write down ideas in your log that have been generated from this activity.
Physics To Go

1. Review and list all the safety features found in today’s new cars. As you compile your list, write next to each safety feature one or more of the following designations:

   F: effective in a front-end collision.
   R: effective in a rear-end collision.
   S: effective in a collision where the car is struck on the side.
   T: effective when the car rolls over or turns over onto its roof.

2. Make a list of safety features that could be used for cycling.

3. Make a list of safety features that could be used for in-line skating.

4. Make a list of safety features that could be used for skateboarding.

5. Ask family members or friends if you may evaluate their car. Discuss and explain your evaluation to the car owners. Record your evaluation and their response in your log.

Stretching Exercises

1. Read a consumer report on car safety. Are any cars on the road particularly unsafe?

2. Collect brochures from various automobile dealers. What new safety features are presented in the brochures? How much of the advertising is devoted to safety?