

## Forces and Motion

### Performance Assessment: VEHICLES IN MOTION

(5 instructional periods)

**Purpose Statement:** The purpose of the performance assessment is to demonstrate that the student has successfully learned and understood the concepts presented in the unit.

**Objectives:** Students will be able to apply the concepts learned in this unit to a new situation

**Summary:** Students will read about a study, conducted by the Insurance Institute for Highway Safety, that links the probability of occupant fatality to the mass of the vehicles involved in highway crashes. The students will brainstorm other variables that may affect the survival of occupants. They will design investigations and gather data to determine how the variable they choose to investigate affects the vehicle occupant. They will design and test safety restraint systems to protect the vehicle occupant in collisions. Finally, they will write a letter to the National Highway Transportation Board that presents their investigations, data, and recommendations.

**Teacher Note:** Students should not begin their projects until they have learned the objectives of the unit as outlined in the Overview .

#### Equipment

- 16 collision cars
- 8 grooved ramps
- 8 100g mass sets (10 10g washers) for the collision cars
- 8 barriers (optional)
- Books (to raise the ramp; teacher supplied)
- 8 meter sticks
- Clay
- Carpet (optional)
- Sandpaper (optional)
- String, Velcro, cotton balls, cloth, and other assorted materials to protect the occupant (teacher supplied)