# Parachutes

## Getting Started Package

Build and deploy parachutes with a variety of payloads and watch the excitement. This Getting Started package includes materials for 25 student parachutes and the *Dr. Zoon Parachutes Video*.

The *Parachutes – GS Package* includes the following products that can also be ordered individually:

- 23735 ChutePak II
- 57227 Dr. Zoon Parachutes Video

**23659 Parachutes – GS Package**


Pitsco Exclusive!

## The Connection:

Aerodynamic drag is typically viewed as a problem. With vehicles, aerodynamic drag slows down the vehicles – or causes them to use more energy to retain the same speed.

Parachutes use aerodynamic drag in a positive way, slowing down the descent of its load (human or otherwise) to provide a minimal velocity when it reaches the ground.

## The Activity:

Students construct parachutes using tissue paper, string, and a glue stick. Various numbers of large paper clips are added as the load for the parachute. Students work in teams of two. One student drops his or her parachute from a specified height (dropping from the mezzanine of a gymnasium works well), while the other student times the drop from the point of release to the load landing on the floor.

Times are recorded for each number of paper clips, and any observations of parachute performance with various loads are also recorded. Average velocity is calculated by dividing the height of the drop by the time.

As an extension, students can be asked to predict the next time and velocity in the series (i.e. for 30 paper clips). Their prediction can then be tested to determine if they were correct.

Also, students could graph the results and theorize at what point the parachute would be of little use due to the increased mass of the paper clips.

| # of Paper Clips | Height (m) | Time (sec) | Average Velocity (m/sec) |
|---|---|---|---|
| 5 | | | |
| 10 | | | |
| 15 | | | |
| 20 | | | |
| 25 | | | |

Pitsco's *Parachutes* activity is a study of aerodynamic decelerators, or parachutes. Students construct simple parachutes from tissue, glue, and string; then, they observe and record results of several parachute drops. Results of parachute redesigns or modifications can be predicted and then compared to further test results.

### Science
- Aerodynamic drag
- Negative acceleration
- Observation and data

### Engineering
- Problem solving
- Safety engineering
- Technological design

### Technology
- Design processes
- Troubleshooting
- Historical perspectives

### Math
- Circular area
- Radius
- Ratios
- Geometric shapes