



Important Words to Know:

FLUID:

A fluid is a substance that takes the shape of its container and flows when moved around.

DRAG:

Drag is a force that opposes the motion of an object when an object moves through a fluid (e.g., gas, liquid).

AERODYNAMIC:

If something is aerodynamic, it has a shape that reduces the drag from the fluid moving fast.



Implementation

This hands-on lesson involves design, construction, and testing of mini-cars.



Safety

Scissors and other cutting equipment can be dangerous. Please monitor students as they work with these supplies.



Organization and Time

The lesson is organized into 4 main tasks. The first task needs to be completed by a coach before the lesson. The other three tasks that need to be completed by the learners are an introductory activity (15 - 20 minutes), main hands-on learning activity (30 - 35 minutes), and concluding part (10 - 15 minutes).

The tasks should be performed in the suggested order, but their recommended lengths may be shortened or extended, depending on the group of learners. The coach task should be completed prior to the lesson.

Activate activity	15 - 20 minutes
Engage activity	30 - 35 minutes
Summarize activity	10 - 15 minutes
.....	
Total activity	55 - 70 minutes



BEFORE THE LESSON: COACH'S TASK

During this activity, learners will be turning their mini-Soap Box Derby cars into boats with sails. To be able to install a mast and sail on the cars, the shells of the cars have been pre-drilled.

The holes in the shells are wide enough for an 1/8 inch wood dowel to fit snugly through it. If the hole ends up too big, learners can use glue to secure the dowel into place if necessary.



During the lesson:

Follow the lesson guide to achieve maximum learning benefit for all learners. **Have fun!**



Activate: (15 - 20 minutes)

Task 1

In this lesson, the learners will experience air drag and its impact on the objects in motion. In order to do so, they will use air drag to help them win a car race!



Procedures

STEP 1. Coach: Today you will have your first Soap Box Derby race! As you already know, Soap Box Derby cars use gravity to move, but today we will use air drag.