# Water Bottle Rocket Project Physics

In this project, you will modify a pop bottle to make a water rocket. You will shape the rocket by adding a nose cone and at least 3 fins to get optimum performance. The rocket will be partially filled with water and the air inside pressured. When the pins holding it in place are released it will launch into the air as shown to the right. Your goal for your rocket is to reach the highest height in the air.

## Rules

1. The bottle used must be a **pop bottle** because they are designed to handle the pressures we use.

2. The mouth must be a standard 1-inch opening to fit on the launching stand. No wide mouth bottles or other strange varieties will work. If you have questions about a bottle, you may bring it in to try.

3. You are not allowed to use metal, glass or any other potentially sharp materials in your construction. You may use any other materials you want to build your rocket. You should consider the weight of the materials you use and how they will affect the air resistance of the rocket. If you have any questions about some material, bring it in to be checked.

4. The fins on the rocket must stay clear of the mouth of the bottle, so that the bottle can be mounted on the launch stand.

5. All rockets will be launched with 50 psi of pressure.

6. You may use as much or as little water as you want. A standard amount of water for a 2-liter bottle will be about 1 liter.

7. There will be practice days after school where you can try launching your rocket under different conditions. You may experiment with as many different rockets as you like on these days, but you may only use one for the actual class trials.

#### Rocket Test Dates: Oct 28th 5a, Oct 23th after school

#### Rocket Due Date: Oct 30th

8. You will work alone or in teams of two people. Your name(s) and a name for the rocket must be written on every rocket you create.

9. Rocket launch height results will be calculated by you!

10. On launch day, you will have two launches. Your score will be based on the best of the two launches.

**Score:**

Completing Your Rocket 10 pts

Rocket Launches 10 pts

Height Attained 15 pts

Rocket Calculations 15 pts

Total 50 pts