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DISCLAIMERS

AntiGravity explicitly states that this product is not meant for use by unsupervised children and is not meant for use with any air pump other than a standard low pressure hand-powered bicycle air pump, nor is it meant for use with any bottle other than a plastic bottle that previously contained fizzy pop. Using any air pump capable of applying more than 80 pounds per square inch of pressure or using anything other than a pop bottle is strongly DISCOURAGED.

JURISDICTION

AntiGravity is located in and operates from Chilliwack in the province of British Columbia, Canada and no other location. The laws of the province of British Columbia shall govern these terms and conditions and any dispute related thereto without regard to choice of law rules. Consumer hereby consents and agrees to exclusive jurisdiction and venue of courts in New Westminster, British Columbia, Canada. Use of this product is unauthorized in any jurisdiction that does not give effect to all of these terms including, without limitation, this paragraph.

SEVERABILITY

If any part of this agreement is deemed to be invalid or unenforceable for any reason, then such invalid or unenforceable provision shall be deemed superceded by a valid and enforceable provision that most closely matches the intent of the original provision and the remainder of the agreement shall remain in effect.

www.antigravityresearch.com email: sales@antigravityresearch.com toll-free: 1-866-546-8633
phone 604-824-9021 fax 604-648-8192



Also included with your SkyLab kit:

Filling Hose / Launcher

Lets you pump up the rocket from a safe distance away. Releases automatically when you stop pumping.



Guide Rod

Keeps your rocket pointed up until it's going fast enough to continue on straight up.



Safety Marker

Ensures that the launch site is clearly visible to all.



Clear pictorial instructions

Makes the rocket easy to assemble, a breeze to launch.



Requirements:

- 1 - Bicycle Pump
- 1 - Plastic pop bottle
- 100 ml water
- 1 - 1000' wide open field

Closed-cell foam bumper pad for a safe, soft touch-down every time.

SkyLab

Water Rocket Kit 200 feet+

Entire rocket weighs only 60 grams, maximizing both altitude and safety.

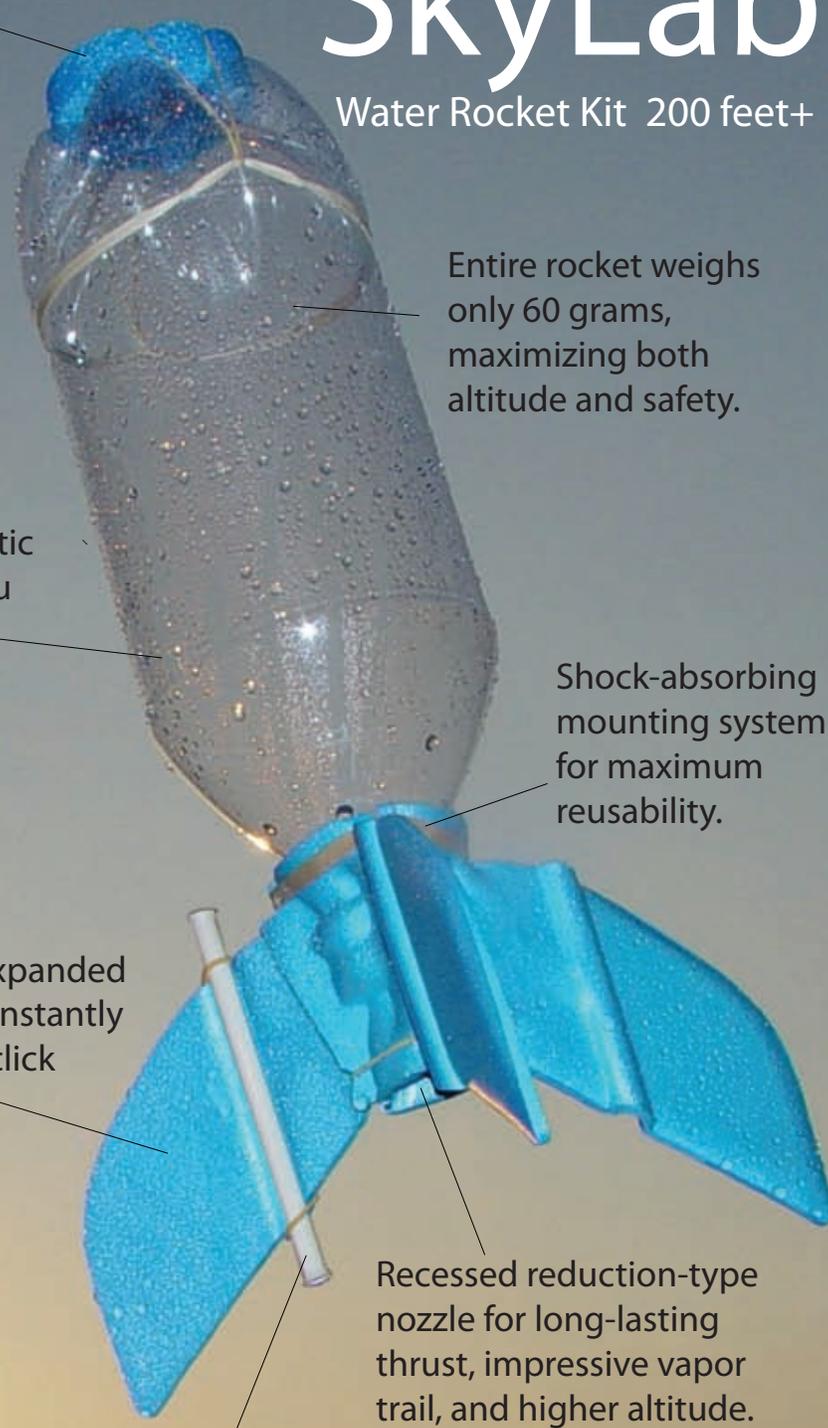
Designed to fit on any plastic pop bottle you choose.

Shock-absorbing mounting system for maximum reusability.

Super-light expanded polymer fins instantly fold out and click into place.

Recessed reduction-type nozzle for long-lasting thrust, impressive vapor trail, and higher altitude.

Low-friction guide tube keeps the rocket pointed up during liftoff.



Reasonably priced spacecraft for the home, school or office.



Sky Lab Rocket: Quick One-Page Instructions

This instruction page is intended for large groups, where each participant requires a copy. On each of the panels below, starting with the bumper, begin at the left and work to the right. If your rocket is an Extreme SkyLab with the stretched bottle, it will already have the bumper installed and you can skip the bumper section. Assembly time: 5 minutes

The Bumper

This is your supply of elastic bands. There are 3 different types: short, long, and wide. Keep the extras as spares.



Slide long elastic under wide one.



The soft bumper is held on with one wide elastic around the bottle, and one long elastic over the bumper.



Slip the foam bumper pad under the long elastic.



Now you're ready for the fins!

The Fins

Use your thumb and two fingers to make a triangle with the small elastic band.



With the other hand, hold the fins in an assembled position with the points up, around your middle finger.

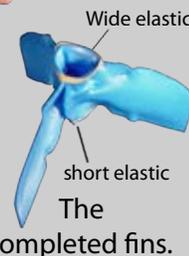


Install the small elastic on the bottom of the fins.

Transfer the fins to your other hand. Use your thumb and two fingers to make a triangle with the fat elastic.



Install the fat elastic on the top of the fins. Make sure there are no twists in it.

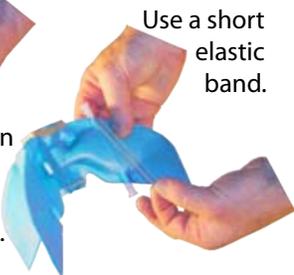


The completed fins.

Guide Tube



Install the guide tube in the groove on the hollow side of any one of the fins.



Use a short elastic band.

The bottle

Bring a 2-liter plastic pop bottle full of water with you to the field. From it, fill your rocket bottle with about half an inch of water. (100 ml).



1/2"

Once your rocket bottle has water in it, install the nozzle-cap on the mouth of the bottle. Screw it on firmly. Make sure to snip off the bottle's retainer ring, or the fins won't sit properly.



if the retainer ring is still on, snip it off.

Push the fins onto the bottle until they click into position. Try not to spill any water!



Countdown!



Push the yellow bulb on one end of the launcher hose into the nozzle cap. Now the water won't leak out.



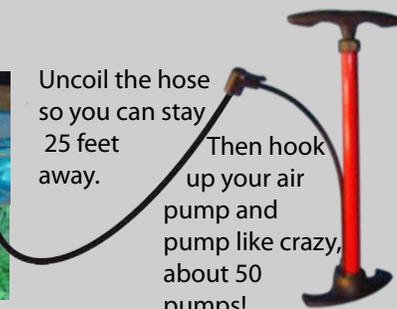
Press the guide rod through the red safety marker 2 inches into the ground in a big open field.

Then slide the rocket's guide tube over the rod.



Uncoil the hose so you can stay 25 feet away.

Then hook up your air pump and pump like crazy, about 50 pumps!



Safety

Adult supervision required. Make sure to stay at least 20 feet away from the rocket while pumping.

Launch!

Pump until the rocket launches. If you want to launch sooner, just stop pumping or disconnect your pump from the launcher hose.



www.antigravityresearch.com
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Preparing the Rocket Bottle

Unless you bought one of our brand new bottles or stretched bottles for your rocket, you'll need to find an empty, used pop bottle. Make sure to only use a plastic bottle that used to hold fizzy pop. Don't use a water bottle, as it is not strong enough to hold the required pressure. Never use a bottle that has been damaged in any way, or that has any visible flaws.

1

Use a pair of snippers or a nail clipper to remove the retaining ring from the mouth of the bottle. If you don't remove it, the retaining ring can interfere with the positioning of the fins.

2

Remove the label from the bottle by gently heating the glue with a hair dryer. The label should then peel off easily. The rocket will fly higher without the extra unnecessary weight of the label.

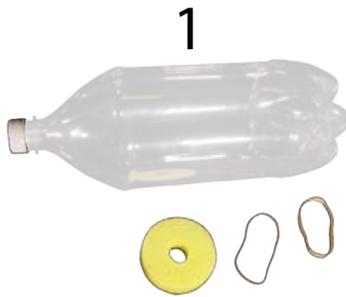
**3**

This is what the finished bottle should look like. Now you are ready to begin assembling the rocket.

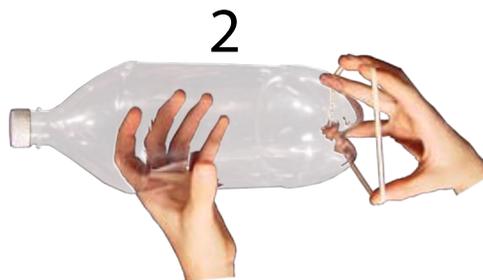


Bumper Installation

The bumper is important because it softens the impact when the rocket lands. Always make sure the bumper is properly attached and centered on top of your rocket before launching. It not only protects what (or who) it hits, it makes the rocket last longer.



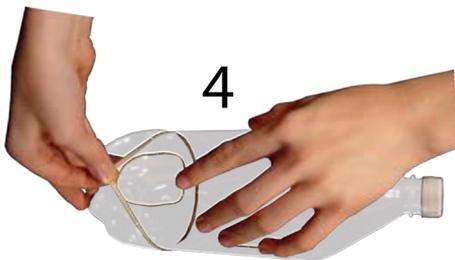
Start with a bottle, a bumper pad, a fat elastic band and a long elastic band.



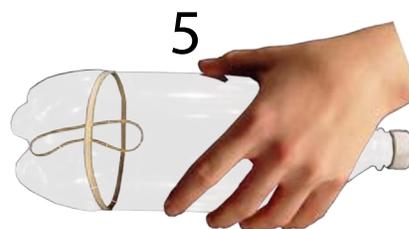
Stretch the fat elastic band and put it over the bottom of the bottle.



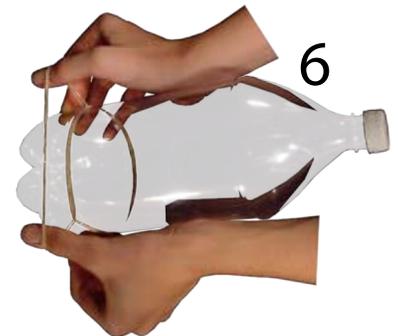
This is what it looks like with the fat elastic band in place.



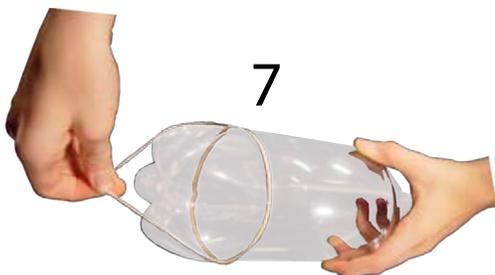
Lift the fat elastic and slide the long elastic underneath it.



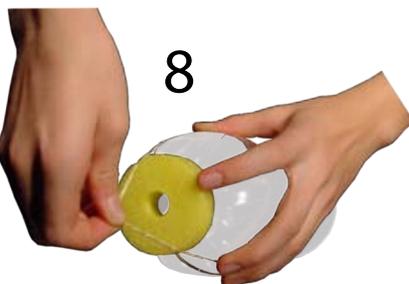
The long elastic now passes beneath the fat elastic, making two loops.



Pass both thumbs through both loops in the long elastic and slide your thumbs to opposite sides of the bottle.



Pull the long elastic's loops up over the end of the bottle, high enough to slide the bumper under.



Slide the bumper pad under the long elastic and let go of the elastic.

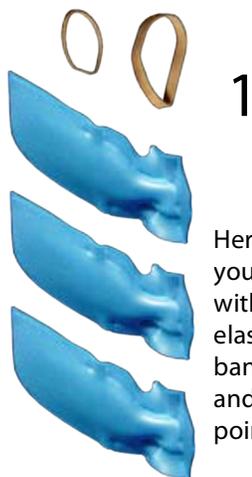


This is exactly what the bumper pad should look like on your rocket.

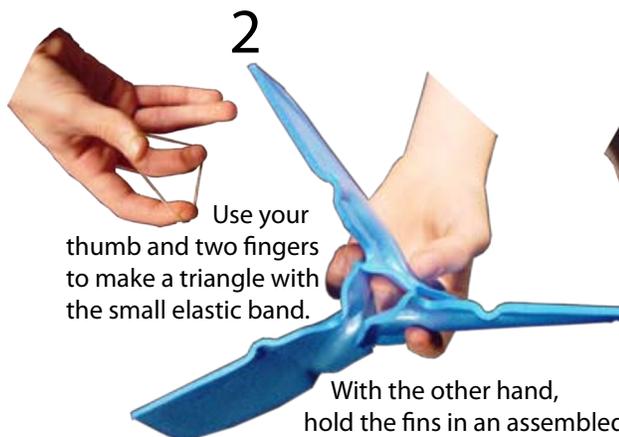


The Tripod Fins

These fins are tough to assemble because the elastics seem to want to keep popping off. Once you've got them in place though, they're there to stay! The elastics hold on tightly when the rocket is flying, but they let go easily during impact so the fins don't break.

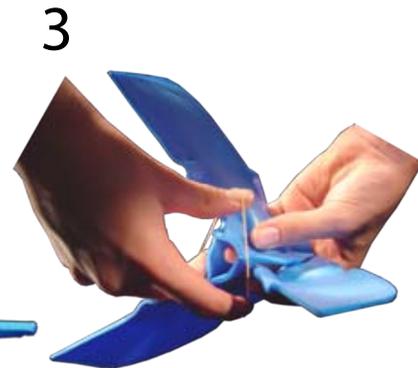


1 Here's what you start with. Two elastic bands and three pointy fins.

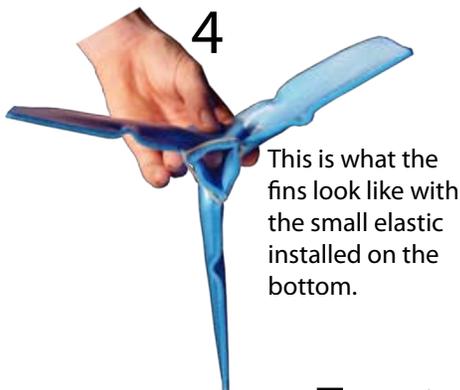


2 Use your thumb and two fingers to make a triangle with the small elastic band.

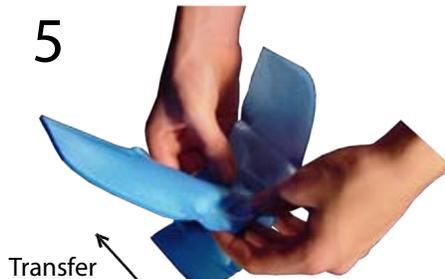
With the other hand, hold the fins in an assembled position with the points up, around your middle finger,



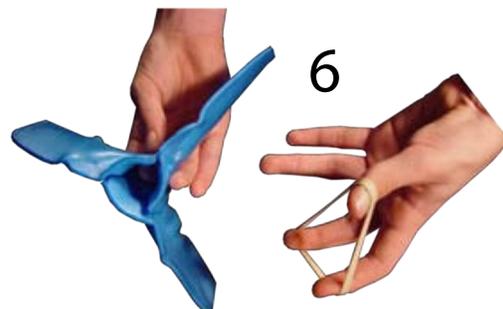
3 Install the small elastic on the bottom of the fins.



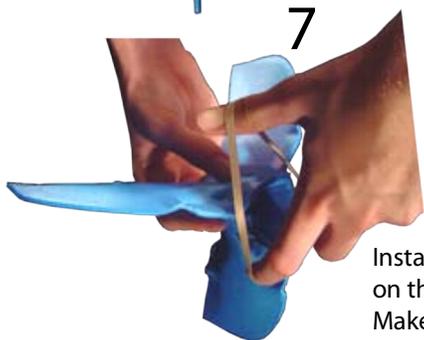
4 This is what the fins look like with the small elastic installed on the bottom.



5 Transfer the fins to your other hand.



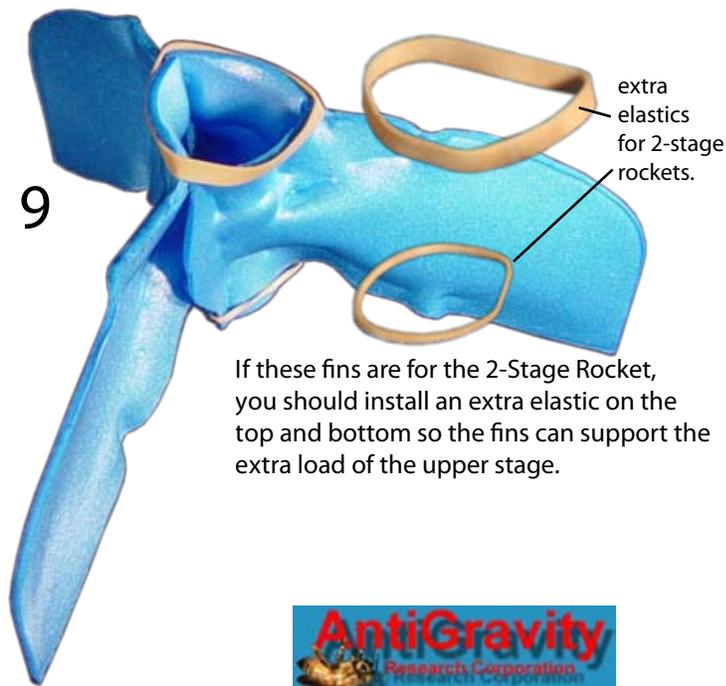
6 Use your thumb and two fingers to make a triangle with the fat elastic.



7 Install the fat elastic on the top of the fins. Make sure there are no twists in it.



8 The fat elastic band looks like this when properly installed.

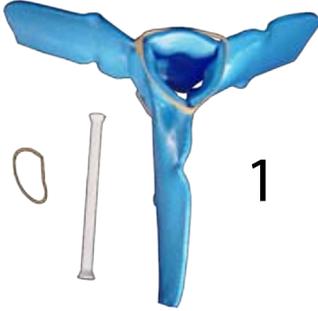


9 If these fins are for the 2-Stage Rocket, you should install an extra elastic on the top and bottom so the fins can support the extra load of the upper stage.



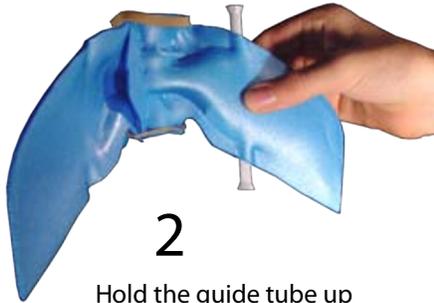
Installing the Guide Tube

The Guide Tube keeps the rocket pointed upward until it is traveling fast enough for stable flight. As the rocket lifts off, the guide *tube* slides straight up the guide *rod* until the rocket is flying freely. Once the rocket is flying, the guide tube is small enough not to interfere with the flight.



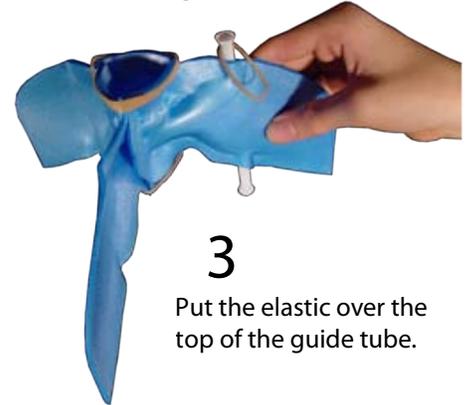
1

Start with the assembled tripod fins, a guide tube, and a mid-sized elastic band.



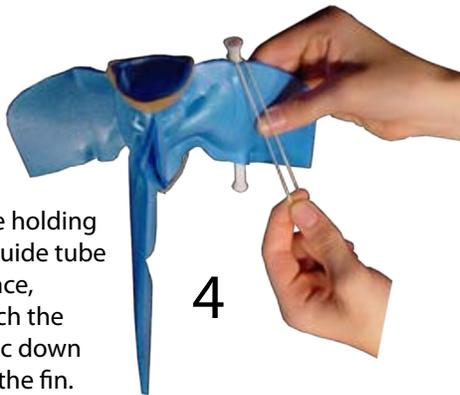
2

Hold the guide tube up against the groove in the hollow side of one of the fins.



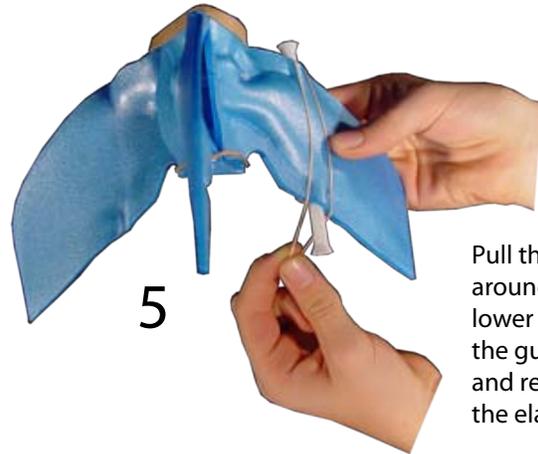
3

Put the elastic over the top of the guide tube.



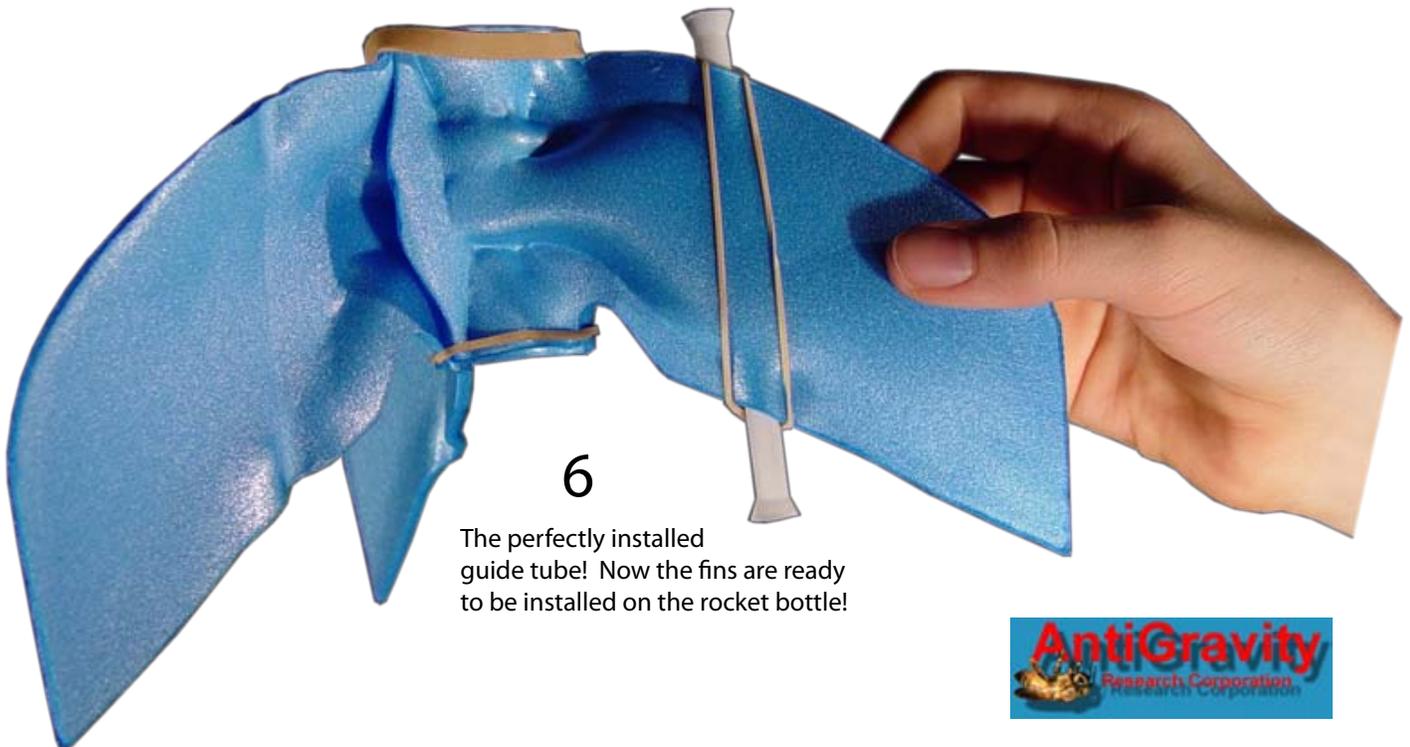
4

While holding the guide tube in place, stretch the elastic down over the fin.



5

Pull the elastic around the lower end of the guide tube and release the elastic.



6

The perfectly installed guide tube! Now the fins are ready to be installed on the rocket bottle!



Rocket Fuel

When you head out to the field with your water rocket, it is important that you bring a supply of water with you. A 2-liter pop bottle works well as a container for that supply. Two liters should give you about twenty single-stage rocket flights, or ten 2-stage rocket flights. If the weather is below the freezing point of water, add some salt to the fuel to keep it from freezing.

For extra altitude and an impressive vapor trail, add about 10% to 25% non-toxic hand-wash dish soap to your water. The soapy exhaust will leave a brown spot on the lawn where the rocket lifts off, so make sure this is okay before using soap. You can run the rockets without any water, but they won't fly as high.

1



Plain ordinary water works very well as a rocket fuel. Don't forget to put the cap back on after each use, or your supply of water will all spill out.

Or

1



For a soap mixture, first add 200 ml to 500 ml of non-toxic hand-wash dish soap into a 2-liter bottle.

2



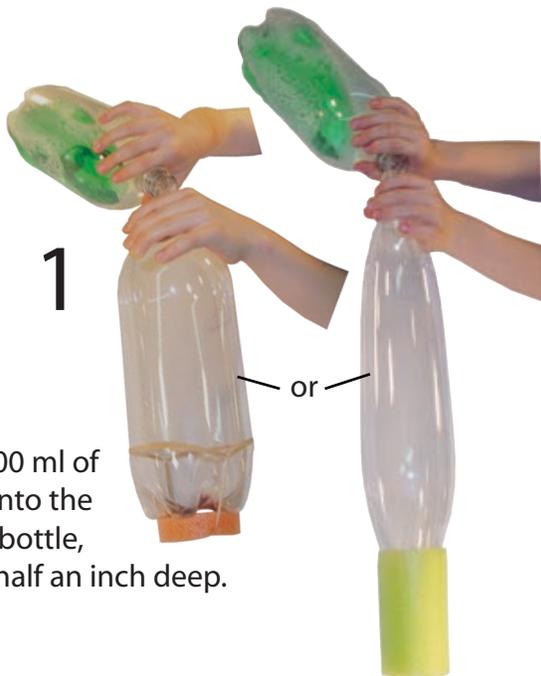
Then fill the rest of the bottle with water, put the cap on and gently shake until mixed.



SkyLab or SkyLab Extreme: Adding water and Connecting the Launcher

Once you put water in, keep the rocket on its side until you have completed step 4, otherwise the water will drain out!

1



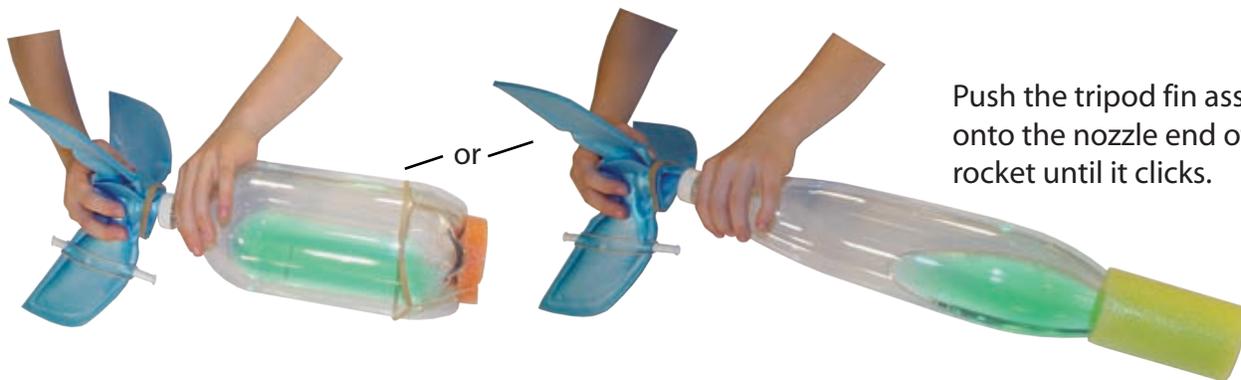
Pour 100 ml of water into the rocket bottle, about half an inch deep.

2

Screw on the nozzle firmly.



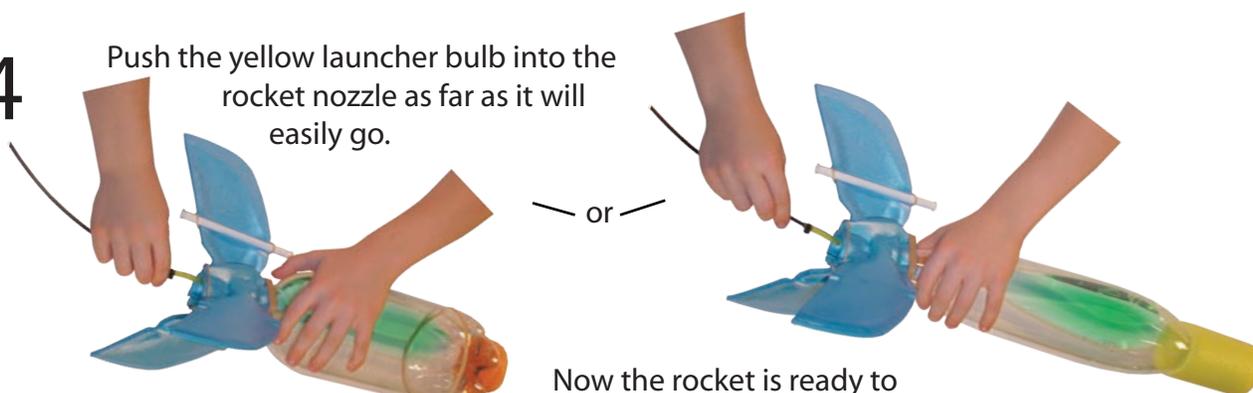
3



Push the tripod fin assembly onto the nozzle end of the rocket until it clicks.

4

Push the yellow launcher bulb into the rocket nozzle as far as it will easily go.



Now the rocket is ready to slide onto the guide rod!



The Guide Rod

The guide rod keeps the rocket pointed straight up until it is going fast enough to be stable. The longer the guide rod, the more vertical the flight. The rocket should have water in it and be connected to the filling hose already. If your guide rod is a 12-inch single stick, go directly to step 4. For a 3-foot rod or 6-foot rod, start at step 1.



Bag of connectors.



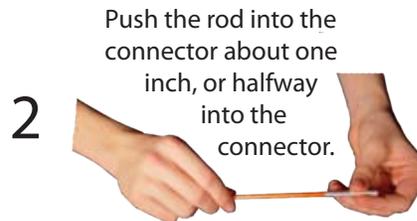
Connector. Push a rod into each end of the connector.



The safety marker prevents you from tripping over the guide rod by making it easy to see.

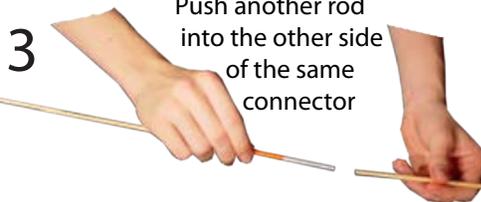


1 Push a metal connector onto a rod.



2

Push the rod into the connector about one inch, or halfway into the connector.

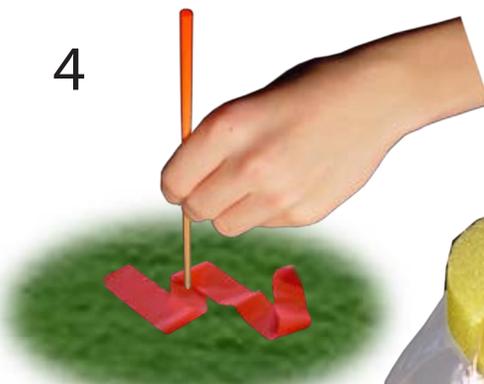


3

Push another rod into the other side of the same connector

Repeat steps 1, 2 and 3 until the rod is as long as you need. Don't make it longer than 6 sections or it's too high to reach over the rocket.

4



Making sure the rod points straight up, push it through the red safety marker into the ground about 2 inches, or until it is firmly planted.

6-foot rod

3-foot rod

5

Lift the rocket to the top of the rod and slide the guide tube over the rod. Slide the rocket down until it rests firmly on its fins on the ground.



6

Ready to fill with air! The rocket's fins rest firmly on the ground and the guide tube is ready to slide up the rod when the rocket takes off.



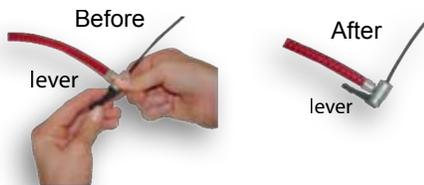
Launching your Rocket

Though you can use any similar air pump, AntiGravity's Rocket Pump is specially designed to easily handle the rigorous conditions involved in water rocket launching. The secret is the pressure reservoir canister, which dissipates heat and absorbs pressure peaks. Always use a hand powered pump to pressurize your rockets, never a compressed air tank or electric or automatic pump. With a hand-powered pump, you stop pumping when the rocket launches, so the little yellow bulb at the end of the launcher doesn't stretch and burst. You also stop pumping if your cell phone rings or if someone interrupts you but an automatic pump keeps on pumping. Plus it's great exercise to pump up a rocket! Always stay at least 20 feet away from the pressurized rocket, and keep everyone else 20 feet away from it, just in case it explodes.

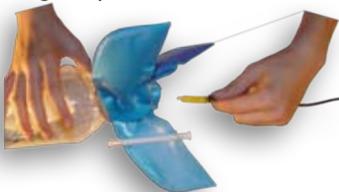
- 1** Push the launcher hose connector into the rocket pump connector.



- 2** Push the lever down by holding the metal rocket pump connector, not the hose.



- 3** Push the yellow bulb into the rocket nozzle as far as it will go, if you haven't done this already.

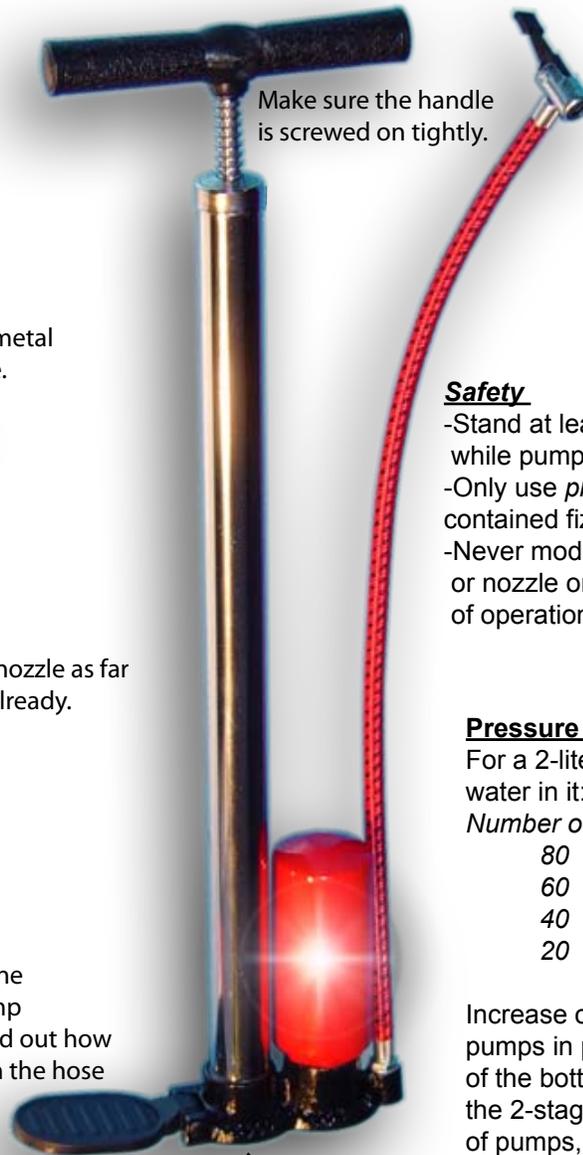


- 4** Place both hands on the handle and one foot on the foot rest, and begin to pump (See pressure guide on this page to find out how much to pump). If no air goes through the hose to the rocket, back out the connector about 1/4 of the way and try again.



- 5** If rocket doesn't launch on it's own, just stop pumping. If it still doesn't launch (usually at lower pressure) disconnect the pump from the launcher hose.

When you pump, the base gets very hot. Make sure to let it cool down after each launch or the pump may overheat.



Make sure the handle is screwed on tightly.

When not in use, keep the pump indoors, away from sunshine and water.

Safety

- Stand at least 20 feet away from the rocket while pumping.
- Only use *plastic* bottles that previously contained fizzy pop.
- Never modify an AntiGravity launcher hose or nozzle or it may adversely affect safety of operation.

Pressure Guide

For a 2-liter plastic bottle with 100 ml water in it:

Number of Pumps	Air Pressure (psi)
80	80
60	60
40	40
20	20

Increase or decrease the number of pumps in proportion to the volume of the bottle you are pressurizing. For the 2-stage rocket, double the number of pumps, because it has 2 bottles to fill.

If you add more water, use fewer pumps.

Pumping faster allows the rocket to hold on longer and fill to a higher pressure.

