

Water Rockets

The Experiment

This activity is going to give you an opportunity to build a launchpad using sprinkler pipe and then launch a 2-liter pop bottle hundreds of feet into the air. However, and we are required to warn you at this point, it won't be a cakewalk. As you work to achieve perfection in attaining these stratospheric heights, you will have to experiment with and determine the proper ratio of water to air to find the best propellant (the push to get the rocket off the launchpad). Likewise, you will have to address issues of vehicle stability and determine the most efficient pattern of fins and cones to aid your rocket in its journey into the galaxies and back down on top of the neighbor's doghouse. So, as they say in Houston, "Godspeed."

TEKS Objectives

(8.7) The student knows that there is a relationship between force and motion.

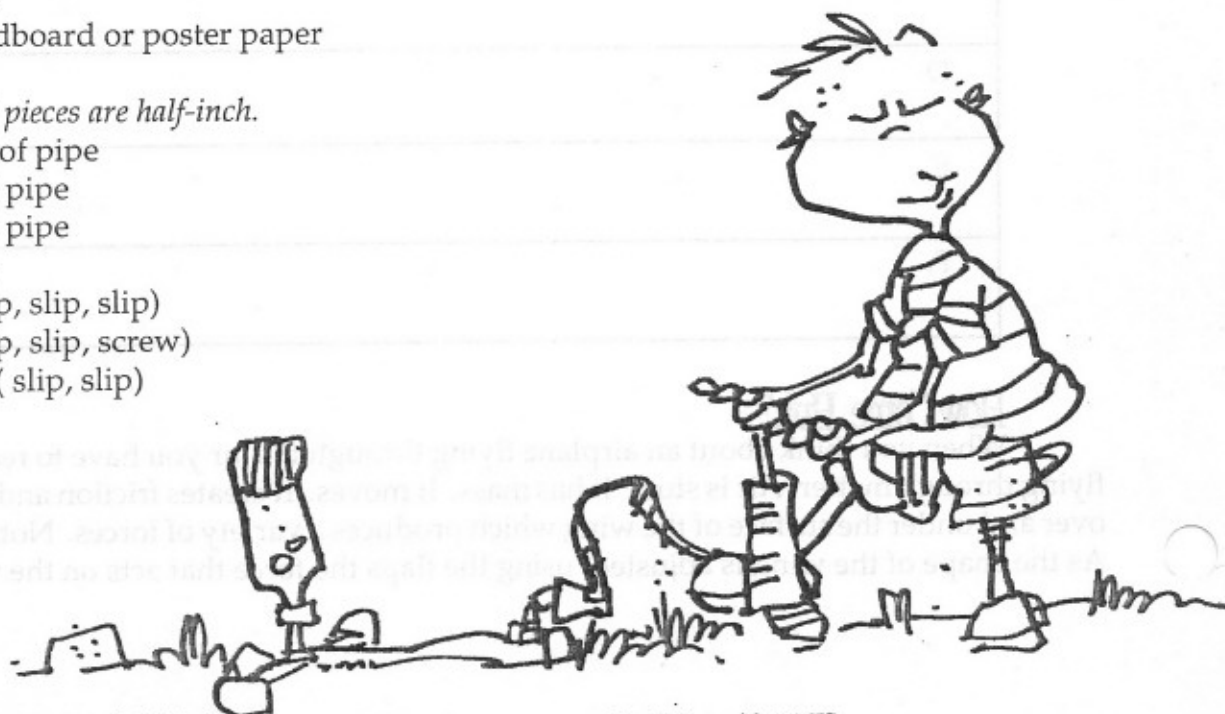
(A) demonstrate how unbalanced forces cause changes in the speed or direction of an object's motion

Materials

- 1 2-liter Pop bottle, preferably clean and empty
- 1 Bicycle pump, air tank, or air compressor
- 1 Bucket of water
- 1 Large, plastic, drinking cup to refill bottle
- 1 Bottle of PVC glue
- 1 Pair of PVC scissors
- 1 Drill with half-inch bit
- 1 Roll of masking tape
- 1 Tire valve
- 1 Pile of cardboard or poster paper

These PVC pieces are half-inch.

- 4 12" Pieces of pipe
- 1 8" Piece of pipe
- 1 4" Piece of pipe
- 1 3" Nipple
- 1 T joint (slip, slip, slip)
- 1 T joint (slip, slip, screw)
- 1 Coupling (slip, slip)
- 1 Elbow
- 3 End caps



Water Rocket

The first thing that you will need to do is put together your rocket launcher with all the PVC parts listed on page 32 and a little glue. All of these items can be found at the local hardware or sprinkler supply company. Using the pattern on page 33 as a guide, assemble all of the pieces. You will need to drill a half-inch-diameter hole in one of the end caps, you may want to enlist one of your folks or the neighbor with the cool drill press and too much extra time for assistance.

Remember that perfection rarely comes the first time out of the chute, so be patient. When you are done, you will have something that resembles a giant, slightly mutated, capital T.

