

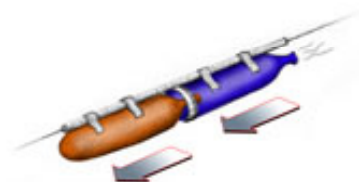
# Young Scientist Lab



## WHELMERS

### Two-Stage Balloon Rocket

Build a multistage rocket from two balloons!



#### WHAT YOU NEED

- spool of fishing line or fine string, 50 to 100 feet long
- drinking straws
- tape (masking or scotch)
- scissors
- two long skinny balloons
- three or four Styrofoam drinking cups

#### WHAT YOU DO

1. Cut several short lengths from drinking straws and thread them on a long line of string.
2. Tie the line taut between two firmly anchored objects, such as two trees. Try to keep the line as level as possible.
3. Cut a circular hoop from the open end of a foam cup.
4. Inflate two balloons. While holding the balloons shut, use tape to attach both to straws on the string. Use one of the foam hoops to hold the mouth of the second balloon tightly against the end of the first.
5. Release the first balloon. It will deflate as it shoots down the line, eventually releasing the next balloon or stage of your rocket.

## WHAT HAPPENS

Space travel requires an enormous amount of energy. Much of that energy is used to lift fuel that will be used later in a flight. To avoid the engineering problems related to extremely large single-stage rockets, engineers developed multistage rockets. Engineers involved in the design and flight of rockets encounter problems similar to those encountered by students flying balloon rockets. The added fuel provided by additional staging tanks allows a rocket to travel farther. However, added tanks bring added weight and complications to the rocket, requiring yet more fuel. Your simple balloon rocket demonstrated that releasing one balloon is easy. A two-stager is much more complicated...isn't it? Want to try for three stages?