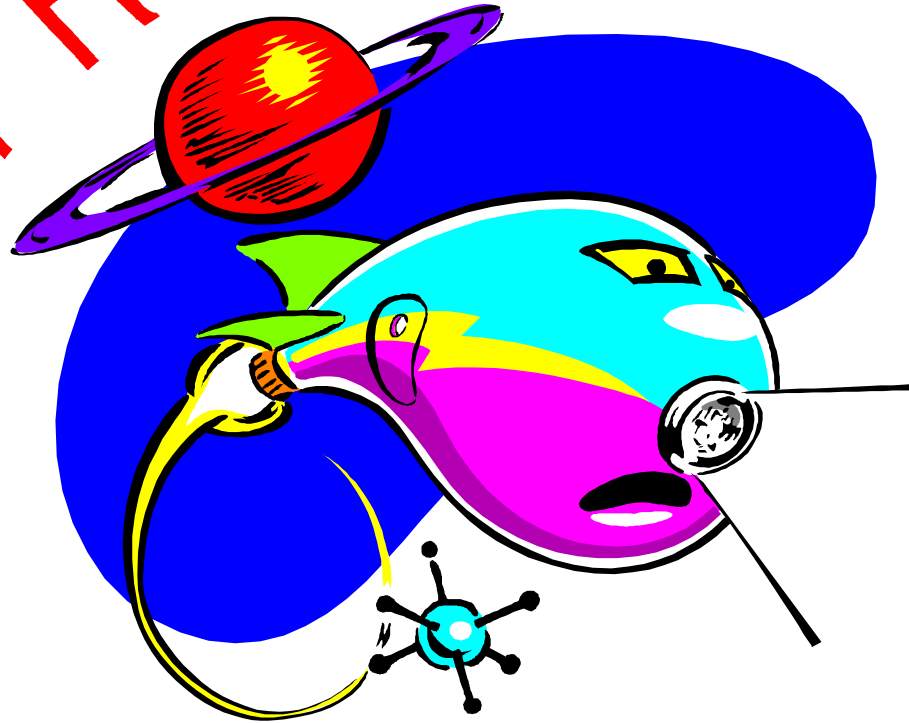
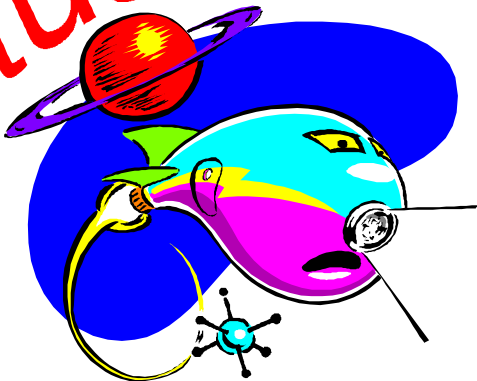


Paper Rocket

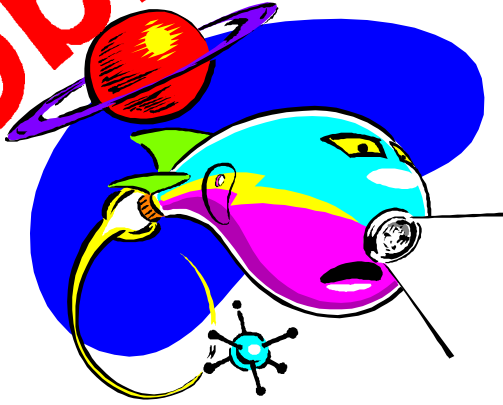


Situation



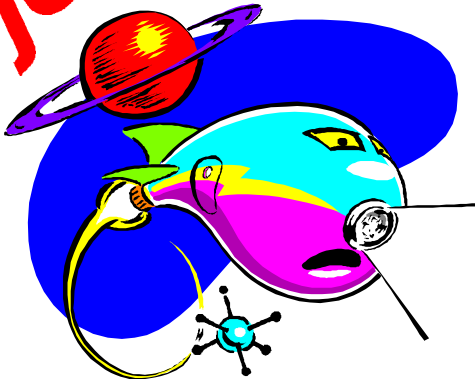
Robert Goddard is the father of modern rocketry. His rockets were unmanned and they were small. However, his research provided information that is still used today for all rockets.

Problem



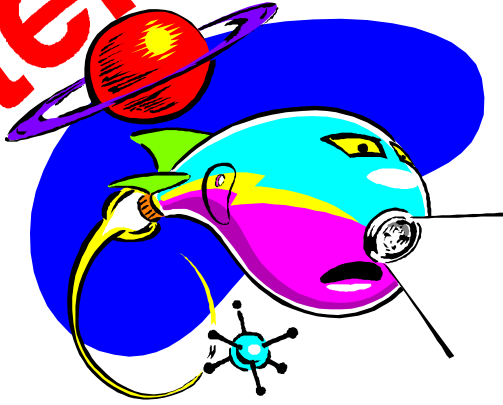
You must build a paper rocket by following the directions on the activity sheet.

Objectives



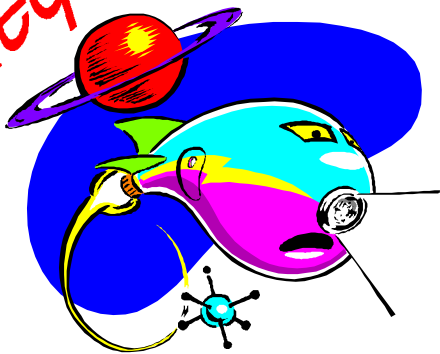
Students will use creativity and problem solving to build a paper rocket. Students will learn the principles of propulsion and aerodynamics.

Materials



- 2 sheets of paper per group
- clear tape
- 1 pair of scissors per group
- 2 rulers per group
- 2 drinking straws per group
- 1 - 1/4" dowel (wood stick) per group to wrap paper around
- colored pencils

Requirements



Your grade will be based on the following performance:

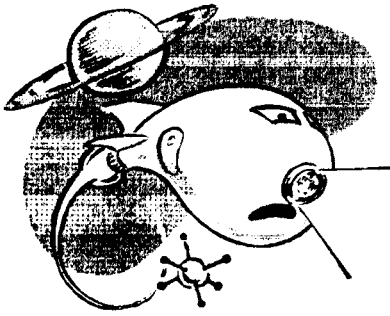
- *You must follow the directions on the sheet entitled, "Paper Rockets".
- *You must have your rocket completely colored.
- *Your rocket must fit onto the straw.
- *Your rocket can be launched from the straw.

- A = completed rocket that is colored and can be launched from the straw
- B = completed rocket that can be launched from the straw
- C = completed rocket that is colored but cannot be launched
- D = completed rocket that is not colored and cannot be launched
- F = no rocket presented

Subject: Rocketry

Topic: Stability

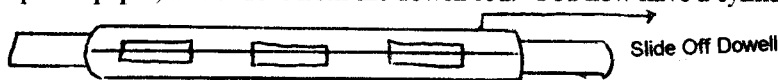
Description: small paper rockets propelled by air blown through a straw



Materials:
scrap paper
tape
scissors
dowell rod
straw
fin template

Procedure:

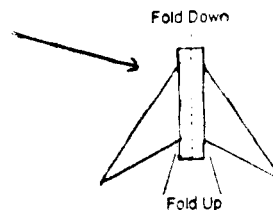
1. Cut a 1" x 5" strip of paper.
2. Color the paper completely.
3. Roll it tightly around the dowell rod.
4. Tape the paper, and slide it from the dowell rod. You now have a cylinder.



5. Fold over one end of the cylinder and seal it with tape. You have formed the nose cone for your rocket.



6. Gently blow into the open end to check for leaks. If air easily escapes, use more tape to seal the leaks.
7. Use the template to trace and cut two sets of fins.
8. Tape the fins near the open end of the cylinder.



Flying the Rocket:

1. Slip the straw into the open end of the rocket.
2. Point the rocket in a safe direction. **DO NOT POINT IT TOWARD ANYONE. THE ROCKET COULD POKE AN EYE!**
3. Blow a quick, hard breath through the straw. Your rocket will shoot away!

Discussion:

Paper rockets show how rockets fly through the atmosphere and show the importance of having fins for control. Try this experiment: Build one rocket with no fins. Build another rocket with fins in the front. See how they fly. Practice flying the rockets on the ballistic trajectory toward a target.

As an added experiment, make a rocket with wings. Will it glide?