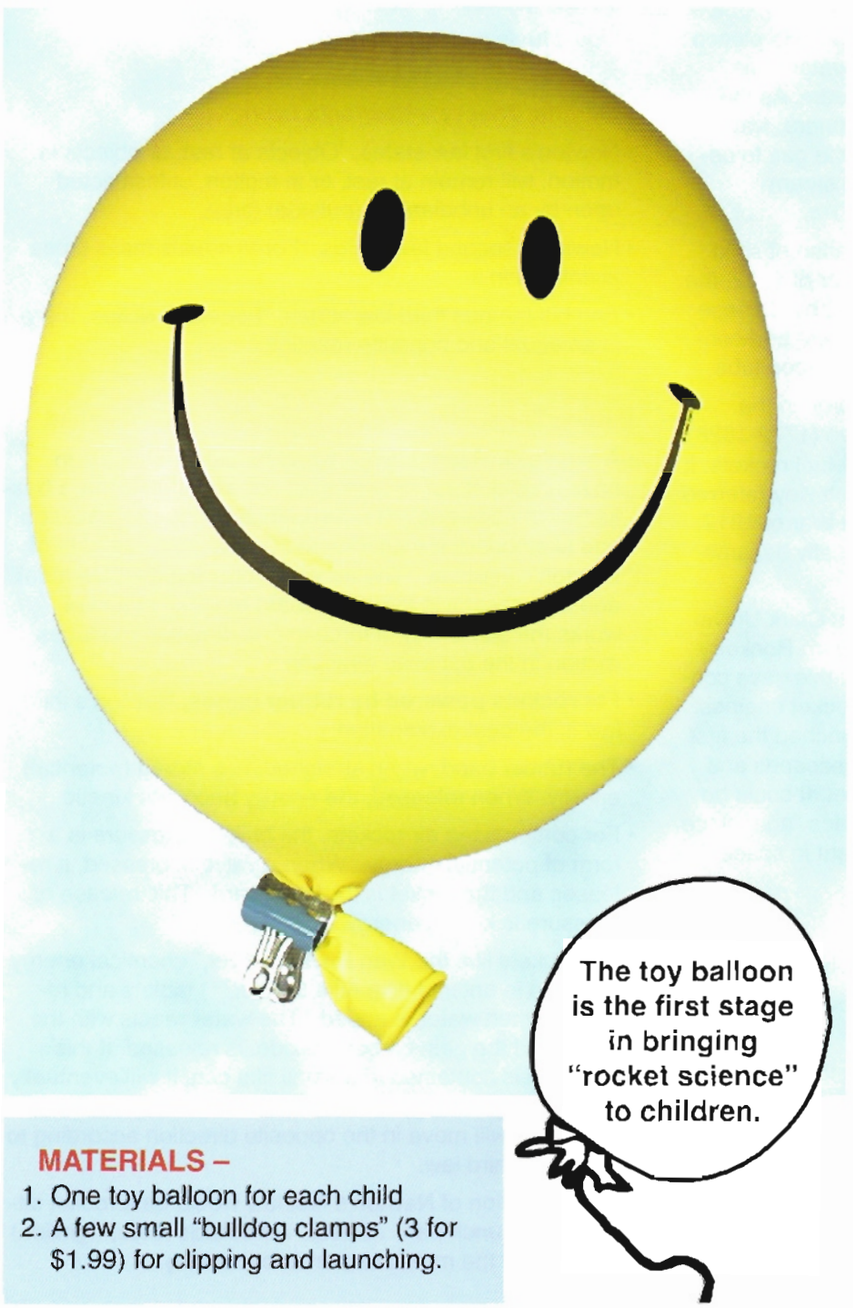
activity one

For The Littlest Rocket Scientists

OBJECTIVE – Using just a toy balloon, the students will learn to basic of what makes rockets fly!



Sir Isaac Newton (1642-1727), a brilliant English scientist, laid the foundation for the science of rocketry. His third law is the heart of rocketry because the action of the rocket engine produces forward motion. Newton's third law states, "...for every action, there is an equal and opposite reaction."
For children, a toy balloon clearly shows how this law works. The action is the pressure release and the reaction is the balloon moving in the opposite direction.

MATERIALS –

1. One toy balloon for each child
2. A few small "bulldog clamps" (3 for $1.99) for clipping and launching.

SCIENCE STANDARDS:

Standard A: Science as Inquiry
Understanding about scientific inquiry
Standard B: Physical Science
Position and motion of objects
Standard E: Science and technology
Abilities of technological design
Standard G: History andf nature of Science
History of science (Historica Perspectives)
Unifying Concepts and Processes
Evidence, models, and explanation

BACKGROUND

Historians do not all agree on the origin of kites. There is evidence that kites were first used by natives in the South Sea Islands. It is speculated that they attached bait to the tail of a kite and used it to fish off shore. This practice, by the way, is still used in the Soloman Islands.

Other historians believe that the kite originated in China over 2000 years ago. They used their kites for many different occasions including warfare. Marco Polo recorded seeing man-carrying kites being used to observe enemy activity.

The Japanese were also heavily involved in building and flying kites. They even developed the art of "air combat" with kites. In their competitions, the kite flyers would maneuver to see who could disable the opponent's control lines.

In American history, Benjamin Franklin even used a kite to "catch" electricity and a British teacher by the name of George Pocock made a kite that was large enough and strong enough to pull a carriage. He claimed that he built and flew one that carried his daughter, Martha.

Octave Chanute (1832-1910) was a civil engineer whose specialty was building bridges for railways. He used his knowledge of engineering to build large box kites and even built a variety of gliders. He was a close friend of the Wright brothers and much of the structural technology that went into the design of the Wright Flyer was based on Chanute's kite experience. Much of the strength designed into the Wright's biplane glider [and eventually their airplane] was based on the Pratt truss that was adapted from bridge technology. To this day, box kites and biplanes both use this technology for strength.

MATERIALS

1. Using the template, run off copies for each student.
2. Two soda straws per student.
3. Scotch™ or similar household tape.
4. Scissors
5. Paper clip
6. Paper punch (single hole)
7. A piece of string about a meter long
8. Nylon-reinforced tape (optional) for strength where the holes are punched.

PROCEDURE

a. Make copies and distribute to students
b. Using class time, or as a home work assignment, decorate kites with crayons, markers, etc.
c. Trim the two soda straws to fit the sled kite template
d. Mount the soda straws, as shown, with tape.
e. A piece of nylon-reinforced packaging tape is placed over the area where the holes are to be punched. (This is an optional step. This kind of tape is especially strong)
f. The hole puncher is used next. Punch out two holes as shown on the template.
g. Cut two pieces of string to a length of 45 centimeters each.
h. One at a time, tie the strings to the holes.
i. Tie the open end of the string pieces to a paper clip.
j. Next, tie another string piece to the open end of the paper clip.
k. To get a better idea of how it is assembled, follow the step-by-step procedures on page 16.

**In this activity, you might also try different types of sail cover to see which works best and is most durable.

Describe how your kite flew when you used:

1. copy paper
2. newspaper
3. tissue paper
4. mylar
5. waxed paper
6. gift wrap
7. Other _____

Simple material, simple construction, super fun. You will need a paper template, soda straws, a hole punch, a paper clip, some string, household tape and some markers to customize your kites!