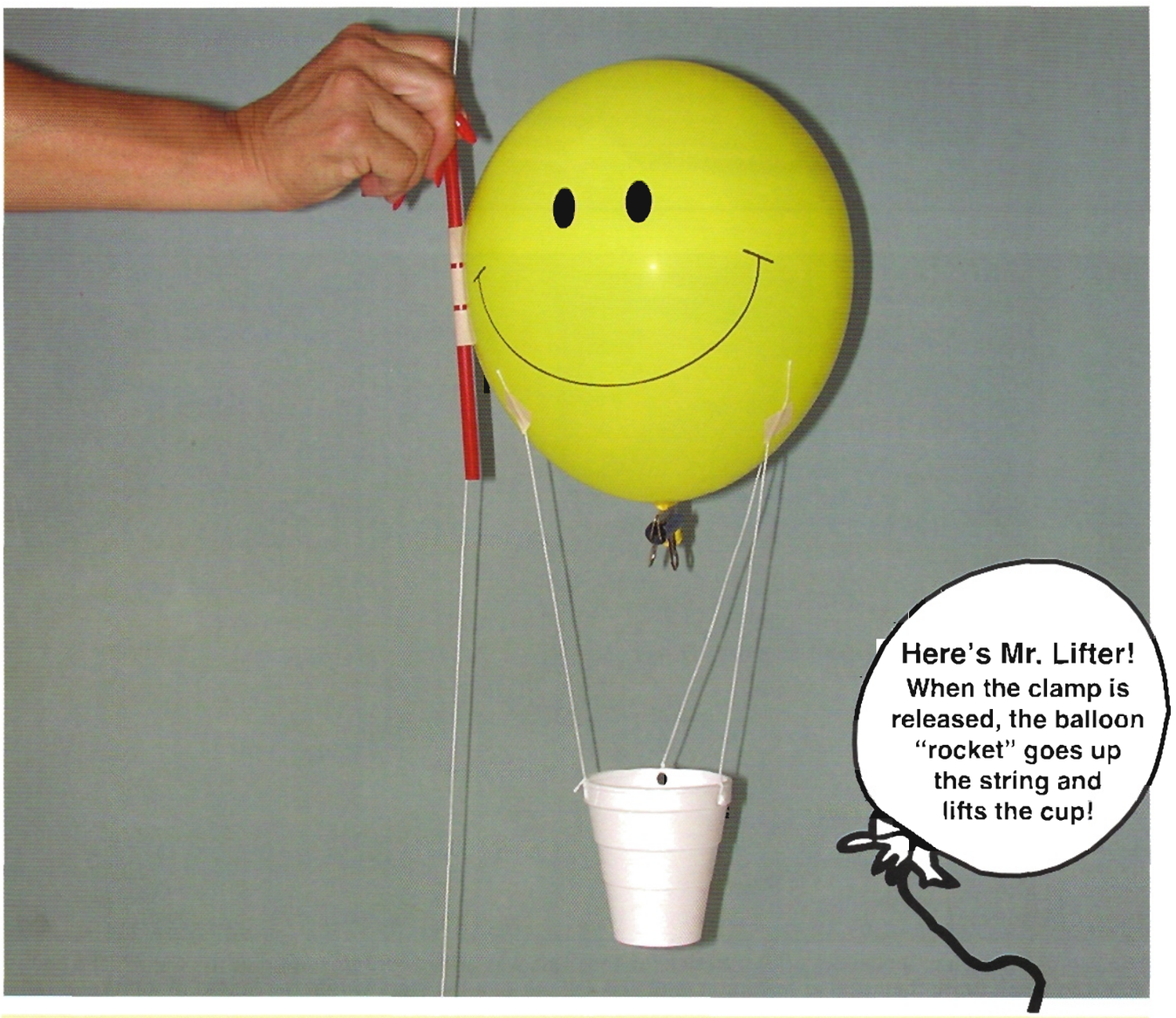
Mr. Lifter —
Using A "Rocket" To Lift Weight, Instead Of A Wing!

OBJECTIVE – The purpose of this activity is to determine the amount of thrust that a toy balloon rocket has and then to see if additional weights affect performance.



NATIONAL STANDARDS

Science Standards:

Standard A: Science as Inquiry
- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

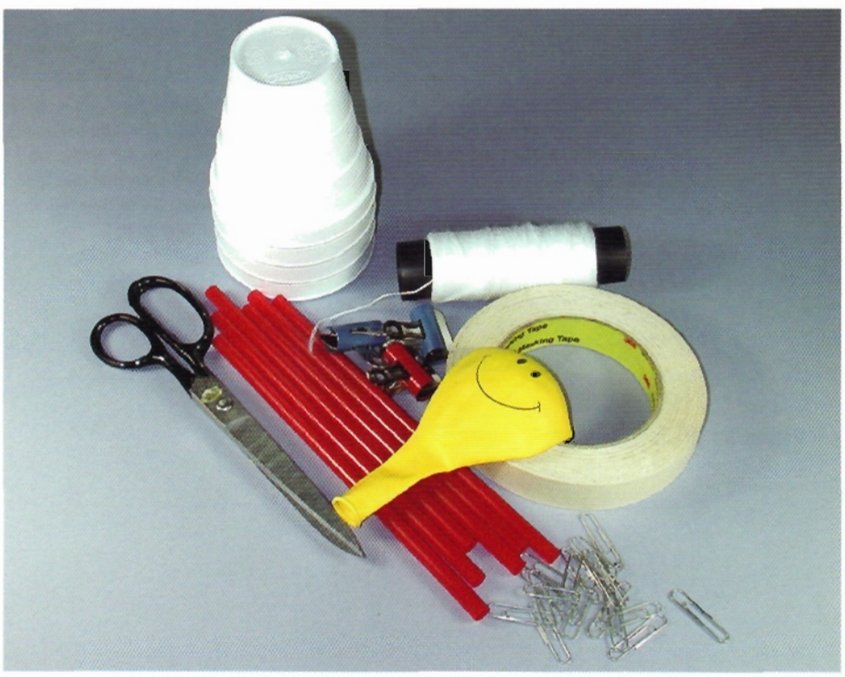
Standard B: Physical Science
- Position and motion of objects

Unifying Concepts and Processes
- Constancy, change, and measurement

ROCKET SCIENCE 101

Teaching children about the mathematics of gravity

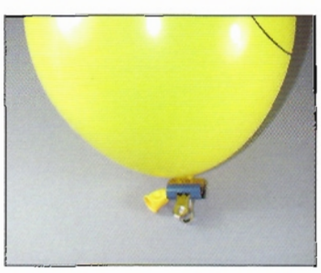
- Depending upon the class, teachers might only want to approach this from Newton's third law, "...for every action there is an equal and opposite reaction." That is, the more action it takes to produce a reaction.
- For students in the upper grade levels who are ready for it, teachers might consider the publication. Microgravity: A teacher's Guide with Activities in Science, Mathematics and Technology (eg-1997-08-110-HQ/1997.) This educator guide contains excellent background information accompanied by classroom activities that enable students to experiment with the forces and processes microgravity scientists are investigating today. The teacher can order this publication through NASA CORE at http://corecatalog.nasa.gov/



These are the materials that were used in this activity.

MATERIALS

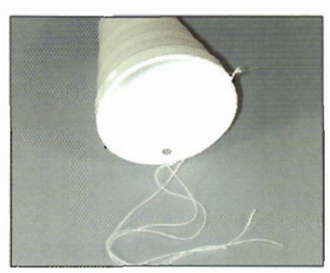
1. Toy balloons
2. Tape (masking usually works well)
3. Soda straws
4. A paper clamp for launching
5. A paper or foam drinking cup
6. String
7. Scissors
8. Paper clips
9. A hand held hole punch



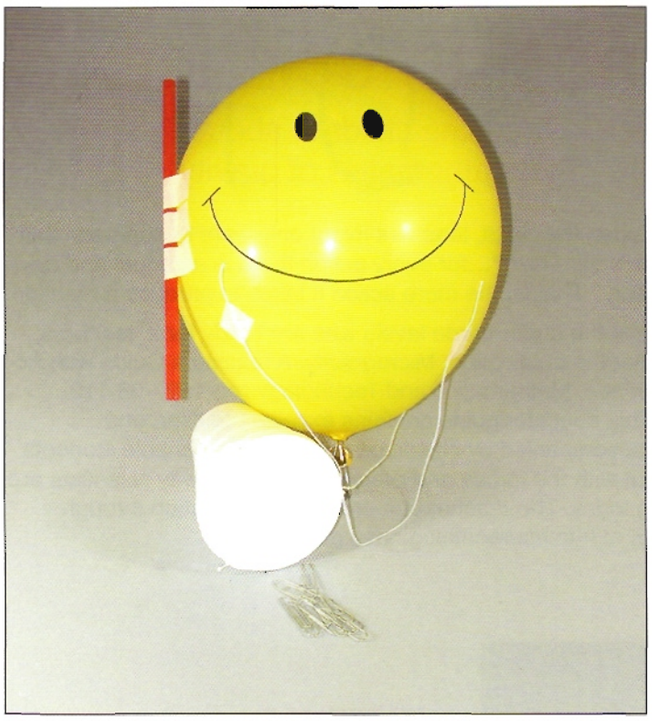
A toy balloon is inflated and clamped at its opening

A soda straw is taped to the side of the balloon

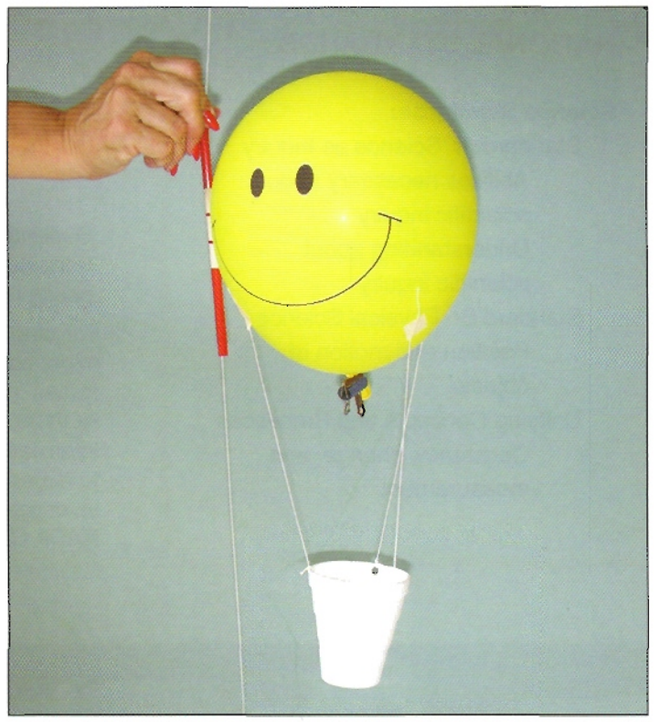
A hole punch is used to make three holes in a foam drinking cup



Three pieces of string, each cut to about 30 cm, are attached to the cup.



The cup strings are attached to the balloon so that the cup will hang straight. After collecting several paper clips, to be used for weights, you're ready to give Mr. Lifter the test.



First, the "launch" string is threaded through the soda straw. Next one end of the string is taped to the table and the other to the ceiling. The little balloon is now ready. When the clamp is released, the balloon will climb the string. To complete the activity, measure the distances climbed by the balloon and then add paper clip weights. Observe how the weights change performance and record the thrust figures on a graph. Mr Lifter will surprise you!

MR. LIFTER INQUIRY SHEET

Name _____ Date_____

How many paper clips (mass) does it take to lift Mr. Lifter:

3 feet? _____
4 feet? _____
5 feet? _____
6 feet? _____

Graph the distance Mr. Lifter travels when you add:

1 paper clip _____
3 paper clips _____
5 paper clips _____
7 paper clips _____

What other masses could you use to regulate the height of Mr. Lifter? _____

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