



*Drexel-SDP GK-12 ACTIVITY*

**Science**

**Weather and Aeronautics**

**Up, Up and Away! Assessment 1 Lesson**



**Grade Level** \_6\_ (\_5\_ - \_8\_)

**Lesson #** \_8\_ of \_10\_

**Lesson Dependency** Lessons 1 through 10 of the Weather and Aeronautics Lesson and Activity Group

**Time Required: 2 Hours**

**Summary**

This lesson is an assessment in disguise. Students will be arranged into groups and given challenges; they will write down their predictions, try the experiment, observe and write up what happens, and present their findings and /or surprises to the group at the end.

**Engineering Connection**

The aeronautics course is intended as a multi-disciplinary course in physics, math and history of aviation. Navigation, forces of flight, principles of flight, history of flight, and environmental factors (including weather and landforms) are specifically investigated. The core curricular items are emphasized, and

aviation is considered an underlying theme. The intent is to provide grounding to the curriculum components learned in a typical K-12 school year. Aviation easily generates a lot of excitement among this age group, and as a result, measurable results are expected in these subjects.

### **Keywords**

- Aeronautics
- Weather
- Aviation
- Flight
- Bernoulli's Principle
- Air
- Cloud Formations

### **Educational Standards**

- 3.1.7A Explain the parts of a simple system and their relationship to each other.
- 3.1.7B Describe the use of models as an application of scientific or technological concepts.
- 3.2.7A Explain and apply scientific and technological knowledge.
- 3.2.7C Identify and use the elements of scientific inquiry to solve problems.
- 3.4.7C Identify and explain the principles of force and motion.
- 3.5.7C Describe basic elements of meteorology.
- 3.5.7D Explain the behavior and impact of the earth's water systems.

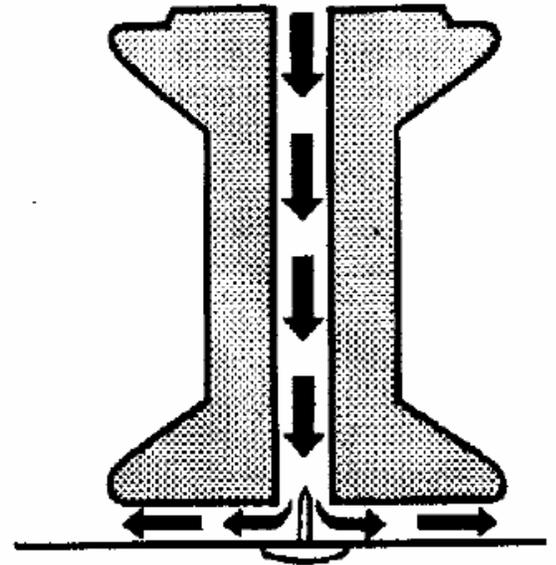
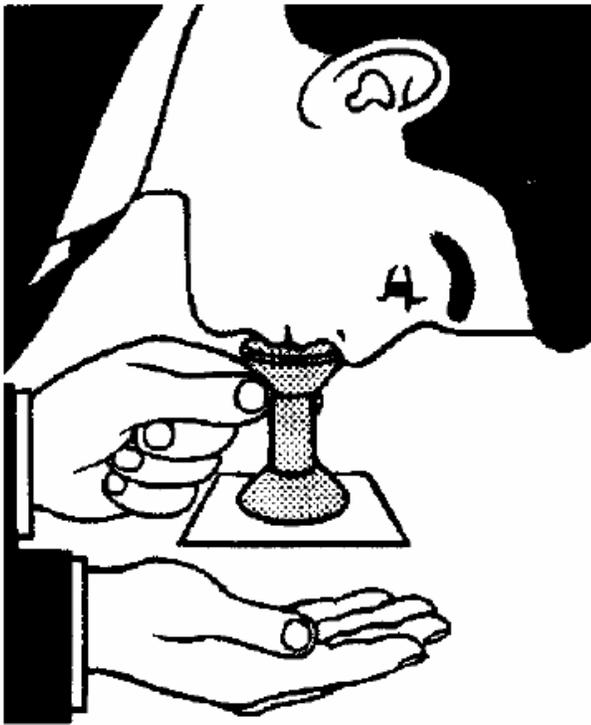
### **Materials List**

- Index cards (Staples)
- Pins (Staples)
- Thumbtacks (Staples)
- Wood blocks (Home Depot)
- Nickels (Anywhere)
- Small plastic dishes (Giant)
- Cotton spools (Giant)
- Aluminum pill tubes (Giant or Home Depot)
- Sardine cans (Giant)
- Wine type bottles (Giant)
- Candle stumps (Giant)
- Water bath bowls (Giant)
- 100w bulbs (Home Depot)
- 200w bulbs (Home Depot)
- 100w lamps (Home Depot)
- 200w lamps (Home Depot)
- Tin foil (Giant)
- Construction Paper (Giant)

- Yardsticks (Staples)
- Pegboards (Home Depot)
- Clamps/hooks for yardstick and Pegboard (Home Depot)
- Extension cords for the light bulbs (Home Depot)

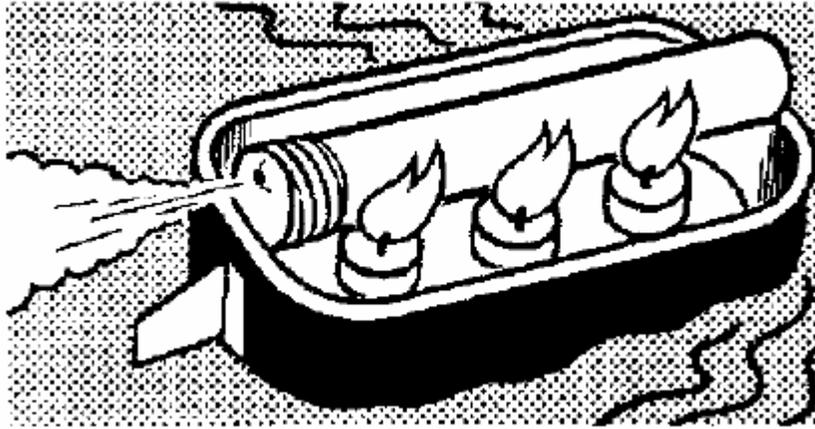
### Procedure

1. Take a folded index card (lengthwise), and fold it on the table so that the opening is facing you. What will happen when you try to flip the index card from the table by blowing on it? Try it and find out!
2. Push three pins into the middle of a piece of wood, and place a nickel on top like a tripod. How can you blow the nickel from the top of the tripod?
3. With the same nickel, try to lay the nickel on the table and blow it into a plastic dish a few inches away. What do you think you have to do and why? Does it work?
4. Stick a thumbtack through the middle of a halved index card. Hold it under a cotton spool so that the pin projects into the hole and blow hard down the hole. If you manage to loosen the card, you really expect it to fall. In fact, it remains hovering under the spool.



5. An empty wine bottle, which has been stored in a cool place, has a ghost in it! Moisten the rim of the mouth with water and cover it with a coin. Place your hands on the bottle. What do you think will happen? What does happen? Why?
6. Bore a hole from the inside through the screw top of an aluminum pill tube about four inches long, and pour some water into the tube. Fix the tube in an empty sardine can into which you

have fixed three candle stumps and place the can in water.



7. Create a mini hot air balloon using tin foil covered in construction paper. Attach them to a yardstick, and hang the yardstick such that the attached balloons hang at either end over a 100w light bulb and a 200 w light bulb. Turn each bulb on and then turn both on. What happens in each case?

## References

<http://www.vidyaonline.net/arvindgupta/simsciexpts.pdf>

## Owner

Drexel University GK-12 Program

## Contributors

William M. Mongan

## Copyright

Copyright 2007 Drexel University GK12 Program. Reproduction permission is granted for non-profit educational use

Version: Mar 2007