

# Ames Public Library @HOME Activities

## We Love STEAM activities!

STEAM stand for Science, Technology, Engineering, Art, and Math. STEAM activities are fun to do and also spark curiosity about how the world works. To see related videos on STEAM activities go to the Library's YouTube Channel at <http://bit.ly/APLvideos>.

## Books and Media

Title	Author / Performer	Call Number
<i>How to Make Bubbles</i>	Shores, Erika	ETR 507.8 SHO
<i>Power Up!</i>	Paleja, S	J 333.79 PAL
<i>The Boy Who Harnessed the Wind</i>	Kamkwamba, W and Mealer, B	J 333.79 KAM
<i>Sound</i>	Gregory, Josh	J 534 GRE
<i>Music: The Sound of Science</i>	Dr. Margaret E. Albertson & Paula Emick.	J 534 ALB
<i>Magnets Push, Magnets Pull</i>	Adler, David	J 538 ADL
<i>Janice VanCleave's Biology for Every Kid: 101 Easy Experiments That Really Work</i>	VanCleave, Janice	J 574 VAN
<i>Seeds Move!</i>	Page, Robin	J 581.4 PAG
<i>Building Bridges</i>	Enz, Tammy	J 624.2 ENZ
<i>The Science Behind Superman's Flight</i>	Enz, Tammy	J 629.132 ENZ
<i>READAbout: WEATHER</i>	READAbout bag	J READABOUT WEA

## Vocabulary

*Gravity* – The force that pulls objects to the center of Earth.

*Energy* – Energy makes things happens. Energy is found everywhere and it comes in many forms: solar, wind, light, mechanical, sound, heat etc. Our body produces energy from the food we eat.

*Evaporation* - Evaporation takes place when liquid turns into gas.

*Photosynthesis* – The process by which the leaves of a plant collect energy from the sun and make food for the plant.

*Vibration* – Vibration is when an object moves or shakes back and forth. This vibration cause the molecules in the medium (water, air etc.) around it to vibrate. Sound is produced when such vibrations happen.

*Sound Waves* – Vibrations in air, water, or solid that can be heard.

*Magnets* – Magnets are rocks or a piece of metal that can pull certain kinds of metal towards itself. Magnets are also one of the rare items on earth that can exert control on another object without touching it.

*Rock* – A rock can be a single mineral, several minerals, and/or a combination of minerals and organic substances in solid form. Earth's rocks are classified into three main groups: igneous, sedimentary, and metamorphic rocks.

*Minerals* – Minerals are naturally occurring solid substances that have a definite chemical composition. Almost all chemical elements in the Earth's crust are associated with at least one mineral. Most minerals occur naturally as crystals. Examples include sodium, chlorine, and over 4000 other naturally occurring minerals.

*Weather* – Weather is the daily state of the atmosphere, or air, in any given place. Weather is sunshine, rain, wind, snow, or storms. It's what is happening outside right now. Weather is temporary.

*Climate* – Climate describes the typical weather conditions in a region for a long period of time, usually 30 years or more. Keeping track of Earth's sea level is one way that scientists track how quickly the climate is changing.

*Xylem* – Cells that transport water and minerals up from the roots to the different parts of the plant.

# Pinwheel @HOME Kit

*The kit contains:*

- 3pcs origami paper
- Straw
- Paper pin
- Scissors

Fold the square paper along the diagonal or use a pencil and ruler to draw the diagonal lines.

Mark the center point.

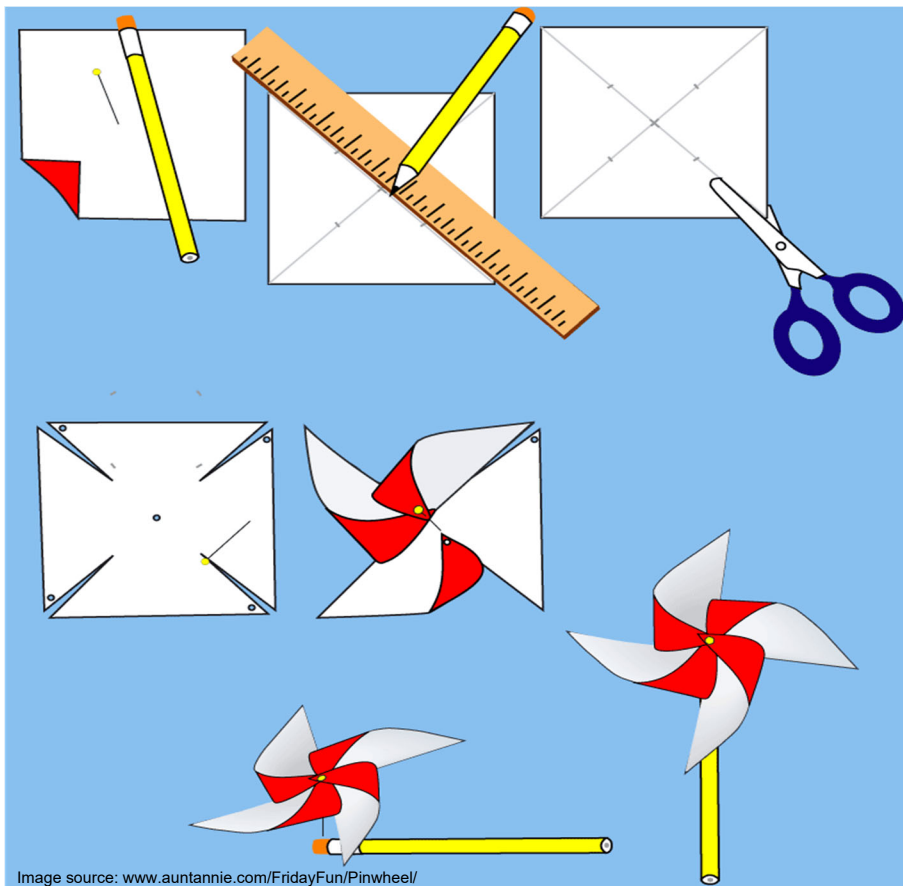
Using scissors cut the diagonal fold line or pencil line. Stop about an inch from the center point.

Bring every other corner point to the middle and hold it there.

Pierce the paper pin through all the points in the center to the back, and then through the straw.

Make your pinwheel rotate by holding it to the wind, bowing it on or running with it.

Experiment by making modifications to the pinwheel by using different types of paper, different types of pins and different straw lengths to see how it affects the way the pinwheel works.



## Water Flow Experiment

**Objective: To show how water is transported through plant stems.**

You need:

- A white flower like a carnation. Queen Anne's Lace also works
- 2 glasses
- Red and blue food coloring

With the help of an adult cut the stem of the flower in half lengthwise from the bottom towards the flower.

Pour  $\frac{1}{2}$  cup of water in each glass.

Add enough food coloring to the water in each glass to make it a deep color, making one blue and the other red.

Leave the flower standing with one part of the slit stem in the blue colored water and the other part in the red colored water for 48 hours.

Observe what happens. The colored water will move up through the xylem cells in the flower stalk and cause the color to be distributed throughout the flower. Because two different colors were used, part of the flower will be blue and part red.

Minerals in the soil also dissolve in water like the blue and red coloring. These dissolved minerals are carried up to different parts of the plant by the xylem cells providing nutrients to the flowers and the leaves.

(Source: *Janice VanCleave's Biology for Every Kid: 101 Easy Experiments That Really Work* by Janice VanCleave)