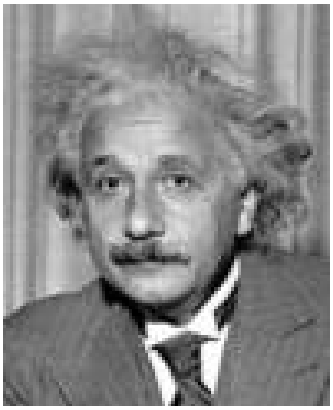
Sir Isaac Newton

Louis Pasteur



Albert Einstein

A SCIENCE Winter Inquiry Land

Grade 1

Winter 2011-2012

Miami-Dade County Public Schools
Curriculum & Instruction

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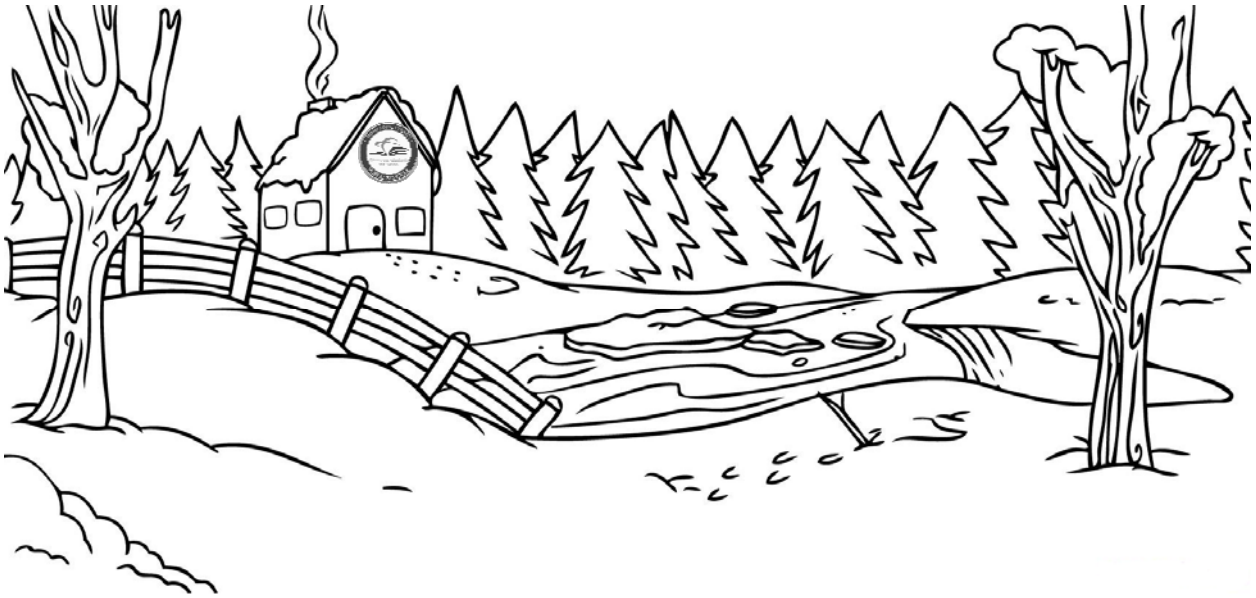


WELCOME TO A *SCIENCE WINTER INQUIRY LAND*

The activities and reading passages in this packet were selected to allow young people to experience the relevancy of science in a fun and engaging way. As they navigate through these activities, they will realize that science is not limited to the classroom but that it is in their everyday lives. Science can be done away from school and can explain many of the phenomena encountered in life. Additionally, each activity addresses a specific Next Generation Sunshine State Standards benchmark. Targeted benchmarks are identified at the end of each activity.

Included as part of this packet, is a link to the Miami-Dade County Public Schools Student Portal. Log on to this site and go to Links to Learning for additional online activities. These online activities are supplemental and, as such, are not to be assigned or graded. All online activities are provided as a resource to both parents and students to engage learning using technology. Please log on just as you do at your school.

http://www.dadeschools.net/students.asp

Enjoy!

Activities

Children learn by doing, by trying new ideas and challenging old ones. This doesn't just happen in school. You can help your children learn by providing them with safe, interesting learning experiences in a supportive atmosphere.

The activities that follow are designed for you to use with your child at home and in the community. The activities are intended to show your child that science plays a part in many everyday activities and that it is used in many places and environments. They also show that learning science doesn't require expensive equipment and complicated experiments

Safety First
Read through each activity before you try it with your child. Adult supervision is important especially with any of the activities that involve heat, chemicals or sharp instruments.

Also make sure that your child understands any safety precautions that may be necessary for these—or any—science activities. In particular, you should:

- Teach your child not to taste anything without your supervision;
- Insist that he wear goggles whenever something could splash, burn, or shatter and endanger his eyes;
- Teach them to follow warnings on manufacturers' labels and instructions for toys and science kits;
- Keep toxic or other dangerous substances out of the reach of your child;
- Teach them what he can do to avoid accidents; and
- Teach them what to do if an accident occurs.

http://www.ed.gov/pubs/parents/Science/Home.html

Who Were They?

Sir Isaac Newton was a physicist, mathematician, astronomer, alchemist, and natural philosopher. He is best known for his explanation of Universal Gravitation and the three laws of motion. He was also able to prove that the reason of both the motion of objects on Earth and of celestial bodies is controlled by the same Neutral laws. These findings would make a revolutionary change in the development of science. His invention of the reflecting telescope was his great contribution in optics.

Louis Pasteur was a French chemist and microbiologists and one of the most famous and influential contributors in medical science. He is remembered for his remarkable breakthroughs in the causes and preventions of diseases supported by his experiments on the germ theory of disease. He also created the first vaccine for rabies and anthrax. Pasteur also invented the method of “pasteurization”, where harmful microbes are stopped from causing sickness in food.

Albert Einstein is the greatest scientist of the twentieth century and the most notable physicist of all time. He was born in Germany but eventually migrated to America to take a teaching position at Princeton University. It is told that he had a learning disability in his childhood. He could not talk till he was three and could not read till he was eight. Despite such problems, in 1921 he became the noble prize winner for his contributions to Physics. His *Theory of Relativity* is considered a revolutionary development of Physics.

Bubbles

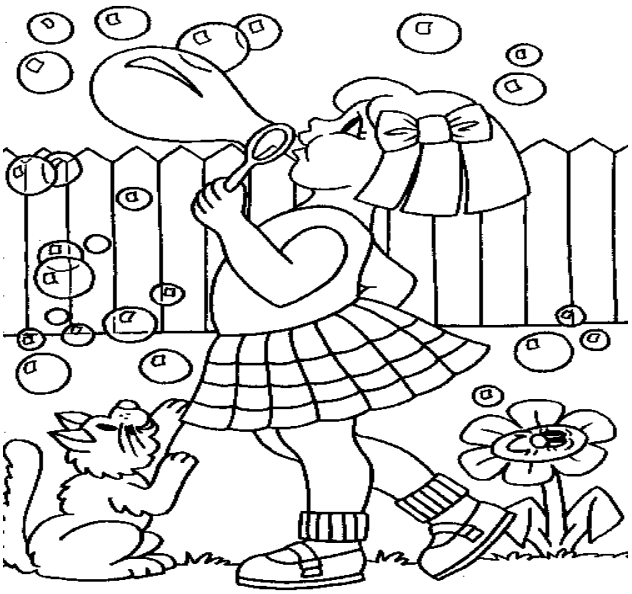
Learn more about surface tension and about change just from blowing bubbles

What You Need

8 tablespoons of dishwashing liquid
1 quart water
1 drinking straw
A shallow pan

What to Do

Mix the dishwashing liquid with the water and pour it into the pan. Give your child a straw and tell him/her to gently blow through it as he/she moves it slowly across the surface of the solution. Ask him/her to notice the size of the bubbles that he makes. Next, have your child try to make a very big bubble that covers the surface of the pan. Have him do the following: Dip one end of the straw into the solution. Then hold the straw slightly above the surface. Blow into it very gently. He/she may have to try several times to make a really big bubble. When he's/she's made a bubble, have him/her touch it gently with a wet finger to see what happens. Have him/her make another big bubble, then touch it with a dry finger.



Benchmark: SC.1.N.1.1 (Next Generation Sunshine State Standards) Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations.

Splish Splash

There are many ways to measure things. At bath time, use different sized containers to measure volume.

What you will need

Measuring spoons and cups of different sizes
Milk containers of different sizes--for example, pint, quart, half-gallon, and gallon (or 1 liter, 2 liter, and 4 liter)
A funnel
2 containers that hold the same amount (such as a 1 or 2 quart pitcher and storage bowl), but are different shapes--one tall and thin, and one short and squat
1 bathtub or sink filled with water
Science journal

What to do

1. Fill a small container (such as a quart) with water. Then pour the water (using the funnel, if necessary) into a larger container (a half-gallon or gallon). Ask your child how many small containers does it take to fill one large one?
2. Another good question to ask is how many tablespoons does it take to make half a cup and how many cups to make a quart?
3. Help your child find out how many quarts (or liters) it takes to fill a gallon (or a 4-liter container).
4. Next, fill the gallon (or 4-liter) container, and use the funnel to pour the water into the little containers. How many times will it fill the pint (or 1/2-liter) container?
5. Fill the short, squat container with a given amount of water--3 cups, for example.
   Pour this water into the tall, thin container.
   Ask your little scientist record their observations in their science journal.

Water and other liquids take the shape of whatever container they are in. Containers of certain sizes have names--cup, pint, quart, liter, or gallon, for example. This activity provides an introduction to *volume* and *measurement*.

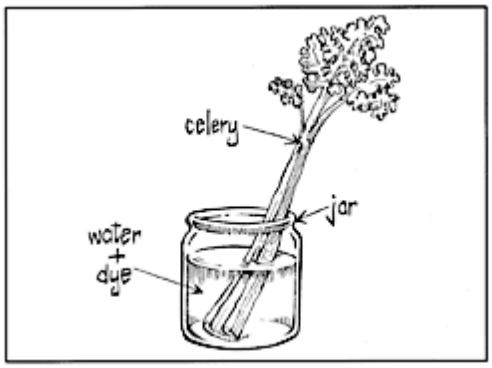
Benchmark: SC.1.N.1.1 (Next Generation Sunshine State Standards) Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations.

Celery Magic

Did you ever wonder how a paper towel can soak up a spill, or how water gets from a plant's roots to its leaves? The name for this is "capillary action."

What you will need

4 same-size stalks of fresh celery with leaves
4 cups or glasses
Red and blue food coloring
1 Measuring cup
4 paper towels
1 vegetable peeler
1 ruler
Some old newspapers
Science journal



What to do

1. Lay the 4 pieces of celery in a row on a cutting board or counter so that the place where the stalks and the leaves meet matches up.
2. Cut all 4 stalks of celery 4 inches (about 10 centimeters) below where the stalks and leaves meet.
3. Put the 4 stalks in 4 separate cups of purple water (use 10 drops of red and 10 drops of blue food color for each half cup of water).
4. Label 4 paper towels in the following way: "2 hours," "4 hours," "6 hours," and "8 hours." (You may need newspapers under the towels).
5. Every 2 hours from the time you put the celery into the cups, remove 1 of the stalks and put onto the correct towel. (Notice how long it takes for the leaves to start to change.)
6. Each time you remove a stalk from the water, carefully peel the rounded part with a vegetable peeler to see how far up the stalk the purple water has traveled.
7. What do you observe?
   Notice how fast the water climbs the celery.
   Does this change as time goes by? In what way?
8. Measure the distance it has traveled and record this amount in your science journal.
9. Make a list of other objects around your house or in nature that enable liquids to climb by capillary action.
   Look for paper towels, sponges, old sweat socks, brown paper bags, and flowers.

Capillary action happens when water molecules are more attracted to the surface they travel along than to each other. In paper towels, the molecules move along tiny fibers. In plants, they move through narrow tubes that are actually called capillaries. Plants couldn't survive without capillaries because they use the water to make their food.

Benchmark: SC.1.N.1.1 (Next Generation Sunshine State Standards) Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations.

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Federal and State Laws

The School Board of Miami-Dade County, Florida adheres to a policy of nondiscrimination in employment and educational programs/activities and strives affirmatively to provide equal opportunity for all as required by law:

Title VI of the Civil Rights Act of 1964 - prohibits discrimination on the basis of race, color, religion, or national origin.

Title VII of the Civil Rights Act of 1964, as amended - prohibits discrimination in employment on the basis of race, color, religion, gender, or national origin.

Title IX of the Educational Amendments of 1972 - prohibits discrimination on the basis of gender.

Age Discrimination in Employment Act of 1967 (ADEA), as amended - prohibits discrimination on the basis of age with respect to individuals who are at least 40.

The Equal Pay Act of 1963, as amended - prohibits gender discrimination in payment of wages to women and men performing substantially equal work in the same establishment.

Section 504 of the Rehabilitation Act of 1973 - prohibits discrimination against the disabled.

Americans with Disabilities Act of 1990 (ADA) - prohibits discrimination against individuals with disabilities in employment, public service, public accommodations and telecommunications.

The Family and Medical Leave Act of 1993 (FMLA) - requires covered employers to provide up to 12 weeks of unpaid, job-protected leave to “eligible” employees for certain family and medical reasons.

The Pregnancy Discrimination Act of 1978 - prohibits discrimination in employment on the basis of pregnancy, childbirth, or related medical conditions.

Florida Educational Equity Act (FEEA) - prohibits discrimination on the basis of race, gender, national origin, marital status, or handicap against a student or employee.

Florida Civil Rights Act of 1992 - secures for all individuals within the state freedom from discrimination because of race, color, religion, sex, national origin, age, handicap, or marital status.

Veterans are provided re-employment rights in accordance with P.L. 93-508 (Federal Law) and Section 295.07 (Florida Statutes), which stipulates categorical preferences for employment.

Revised 9/2008