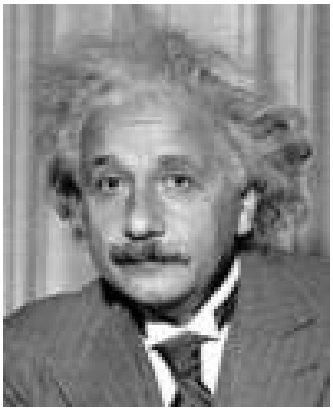
Sir Isaac Newton

Louis Pasteur



Albert Einstein

A SCIENCE Winter Inquiry Land

Grade 4

Winter 2011-2012

Miami-Dade County Public Schools
Curriculum & Instruction

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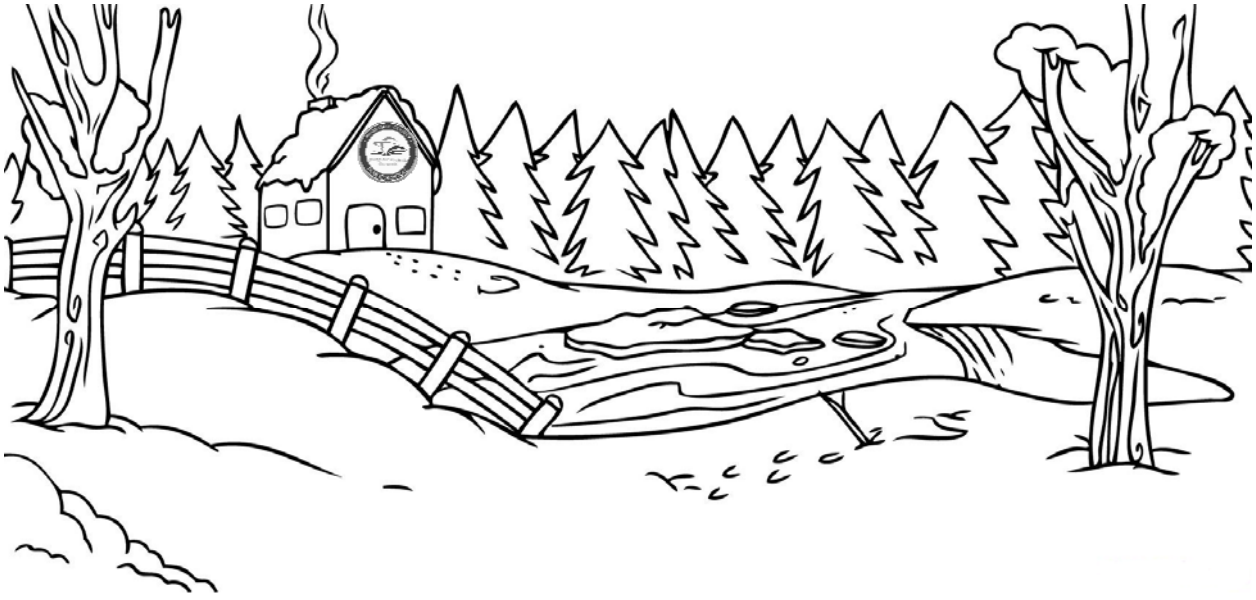

WELCOME TO *A SCIENCE WINTER INQUIRY LAND*

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 just as you do at your school and go to Links to Learning for additional online activities. Individualized student learning paths have been designed based on FCAT scores and are aligned to the District's Pacing Guides. 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 to the link below 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.

I’m Dreaming of a Green Holiday

Background
It’s time to start planning for an eco-friendly holiday break.

What to Do
Become a super scientist by researching how to have an eco-friendly holiday break. Holidays can be fun but also wasteful. Think about the amount of holiday wrappings that are thrown in the garbage and the hours of electricity that is used for lighting.

In the space below, write a short story on how the holidays can be so wasteful and what you can do about it. Share tips on how you can be energy efficient over the holidays, and what you will reuse and recycle.

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Big Idea 1: SC.4.N.1.1 Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

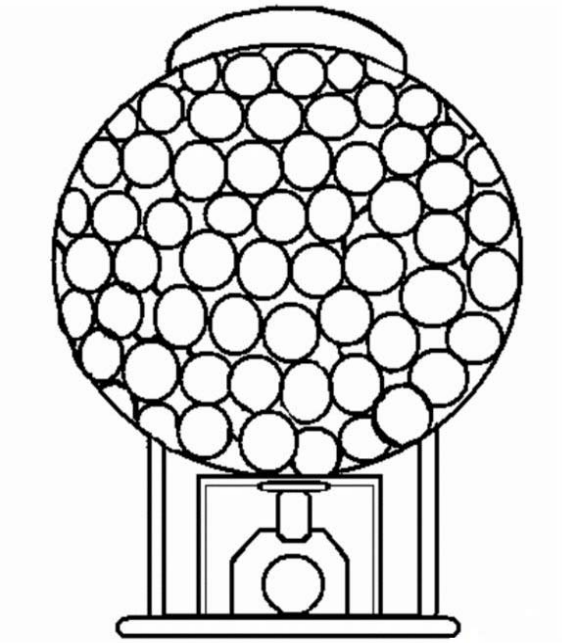
Bubble Gum Science

Discover what brand of bubble gum would blow the biggest bubble

Background
Times have changed. At one time chewing gum in school got you into big trouble. Not only did you have to spit it out but you had to write, "I will not chew gum in school" a hundred times. Today, kids are learning how to make gum in science class as a lesson in the chemistry of food.

What You Need
Two brands of Bubble Gum
Measuring distance tool (i.e. String, ruler)

What to Do
Have your child predict which brand of gum will make the biggest bubble. He or she is to then chew one piece of gum at a time and blow a bubble with each piece. Once the bubble is blown to as large as possible, measure its width and record on the data chart on the next page. After chewing both brands of bubble gum and measuring the width of each bubble, have your child repeat the procedures two more times for a fair test and record this data. Then he or she finds the average for each of the three trials. Ask your child to compare the data collected to his or her prediction to see if it was correct.



1) Which brand of gum do you think will make the biggest bubble?

_____

Width of Bubble in Centimeters				
Brand	Trial 1	Trial 2	Trial 3	Average

2) Which brand of gum on average made the biggest bubble?

_____

3) Was your prediction correct? Why?

_____

_____

4) What new question has your experiment lead you to ask that could be tested in another investigation?

_____

_____

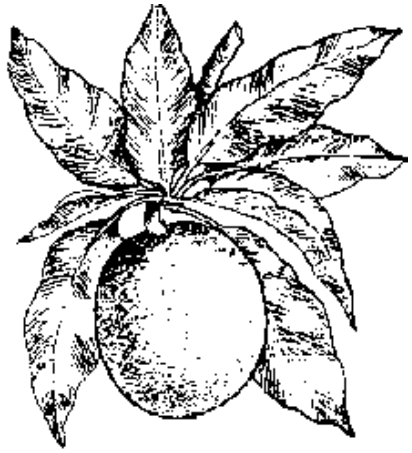
The Bubble Gum Story

(From Making Science Fun)

The difference between bubble gum and chewing gum is the gum base. Chewing gum base is a natural gum called chicle harvested from the sap of a tropical tree called a sapodilla tree. This kind of gum is chewy but it will not blow a large bubble. Bubble gum base, on the other hand, is a mixture of starches and polymers made in a laboratory and specially formulated to blow bubbles.

Believe it or not, chewing gum is actually beneficial. It relieves boredom, eases tension and aids in concentration -- tell your teacher that little fact! It also helps to pull food particles from between your teeth and even refreshes breath. Okay, sometimes it freshen breath. A stick of gum containing sugar has about 10 calories compared to sugarless gum which has only 6 calories. Contrary to popular belief, swallowing gum will not do any harm... or so they say.

Ancient Greeks chewed the gum of the Mastic tree. More than 1,000 years ago the native people of Central America and North America chewed the sap and resins found in trees. Today, the United States is the world's leading manufacturer of gum (go figure!). With all of this fascination with bubble gum, it only stands to reason that bubble gum was invented in 1928 by Walter Diemer an accountant from Philadelphia. Now you know the rest of the bubble gum story.



Sapodilla *(Manilkara achras)*

Big Idea 1: SC.4.N.1.6 Recognize and explain the difference between personal opinion/interpretation and verified observation.

Global Warming: What it is…

(From the United States Environmental Protection Agency)

http://epa.gov/climatechange/kids/gw.html

Read the information below from the EPA. Then write the answers to the five questions.

Greenhouse Effect, Climate Change, and Global Warming

Earth has warmed by about 1ºF over the past 100 years. But why? And how? Well, scientists are not exactly sure. The Earth could be getting warmer on its own, but many of the world's leading climate scientists think that things people do are helping to make the Earth warmer.

The Greenhouse Effect: Scientists are sure about the greenhouse effect. They know that greenhouse gases make the Earth warmer by trapping energy in the atmosphere.

Climate Change: Climate is the long-term average of a region's weather events lumped together. For example, it's possible that a winter day in Buffalo, New York, could be sunny and mild, but the average weather – the climate – tells us that Buffalo's winters will mainly be cold and include snow and rain. Climate change represents a change in these long-term weather patterns. They can become warmer or colder. Annual amounts of rainfall or snowfall can increase or decrease.

Global Warming: Global warming refers to an average increase in the Earth's temperature, which in turn causes changes in climate. A warmer Earth may lead to changes in rainfall patterns, a rise in sea level, and a wide range of impacts on plants, wildlife, and humans. When scientists talk about the issue of climate change, their concern is about global warming caused by human activities.

Who?	***The person or thing the story is about***
What?	*The event taking place*
When?	*The time the action has or will happen*
Where?	*The place where the action happens*
Why?	*The reason the action has or will happen*

Who:

_____

_____

What:

_____

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When:

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Where:

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Why:

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_____

Big Idea: SC.4.N.1.1 Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

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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