

Welcome to the University of Illinois Extension STEM Team Newsletter. Our goal for this newsletter is to provide science and math information and teaching tips that you can use in the classroom.



# Science, Technology, Engineering & Math (STEM) QUARTERLY NEWSLETTER

Second Issue

June 2009

In This Edition You Will Find Activities Parents Can Do With Your Kids This Summer

## WHAT'S THAT IN THE SKY? A BIRD? A PLANE? NO IT'S A METEOR!

By: John Van Horn

A good summer activity for students is to look for meteors. All it takes is staying up after dark and looking up. Of course city lights and the moon make it hard to see, especially around the time of the full moon. But meteors from meteor showers are frequently still visible. Many people are familiar with the Perseid meteor shower in August. It gets noticed because there are lots of meteors (as many as 60-100/hour - that's more than one a minute!) and it's **WARM** out. This year will be pretty good for seeing the Perseid shower as it peaks on

August 12 with good numbers of meteors for two to three days on either side of this date AND the moon is full the week



Photo Courtesy of NASA

before, so it will rise late enough that students won't have it interfering. One thing to

remember when looking for meteors is patience. Second look up! Students can count the meteors or try to map where they come from. The Perseid meteors radiate from an area in the North to northeast portion of the sky but they are visible over most all of the sky.

The months of May and June (and late April) are host to two unheralded meteor showers. These are unique in that they provide students with the opportunity to see one of the sky's more spectacular events, **CONTINUED ON PAGE 4**

### Inside this issue:

What's That in The Sky? A Bird? A Plane? No It's A Meteor!	1 & 4
Play With Your Food!	1
Preventing Math Amnesia!	2
Physical Science Corner—YIA Summer Solstice	2
On The Road & Busy	3
Facts To Know About H1N1 Virus (Swine Flu)	3
How To Go Green With Your Kids This Summer	3
Solstice Summer Activity for Students	4
Astronomy Trivia	4

## PLAY WITH YOUR FOOD!

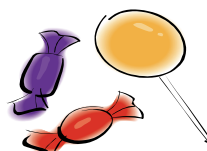
By: Kenya Thomas



Most children enjoy eating candy. A great way to bridge children's favorite past time with scientific learning is to get them to play with their food. By using M&Ms children can learn the chemical components that comprise that notable candy coating on the outside. This can be done through a process called Chromatography, which is a very simple process that involves the separation of colors or particles in a solution using a special paper.

Here's how it's done:

1. Purchase chromatography paper (can be purchased at an online science supply company).
2. Purchase a bag of M&Ms and a bag of generic chocolate coated candies.
3. Separate out the colors in each bag. Remember to keep the name



4. brand separate from the generic.
4. For each color that you have, have a glass of water with about 2 inches of water in it and soak the various candies until the colors have been leached off of the candy coating.
5. Once your color solutions have been prepared, you can start the chromatography process.
6. Cut your chromatography paper into strips that are 6 inches long and 2 inches wide.
7. Place once strip into each of your color samples.

Children will be able to see the composition of colors in each sample. Furthermore, they will get to observe any differences between a name brand and generic product.



## Teacher Professional Development Workshops

The STEM team can bring professional development programs to your school or district in math or science. The aim is to improve the delivery of instruction as well as add to students' enjoyment of math and science. CPDU credits are available for teachers. The workshops will help enhance teachers subject matter knowledge and let them walk away with effective, hands on activities to use in their classrooms.

Call 708-449-4320 and ask for Math Contact, Karen Meyer [meyerk@illinois.edu](mailto:meyerk@illinois.edu) or Science Contact, Kenya Thomas [krthoma1@illinois.edu](mailto:krthoma1@illinois.edu)

## PREVENTING MATH AMNESIA!

By: Karen Meyer

Parents can play an important role in helping their child throughout the summer retain information from the previous school year through a variety of activities and games.

Math is everywhere, yet many children do not see it. Have your children help you compute, measure, estimate, and follow directions in cooking and other household tasks. Younger children should be encouraged to count everything – forwards and backwards. Estimate everything – how long, how much, how many, which is more, and so on.



Look for games and activities that will engage your child. Here are a few websites that may be of interest to you:

[www.nlvu.usu.edu/en/nav/vlibrary.html](http://www.nlvu.usu.edu/en/nav/vlibrary.html) - The National Library of Virtual Manipulatives is a wonderful site with online activities – try tangrams, diffy, or fill 'n pour to name just a few.

[www.superkids.com/aweb/tools/math](http://www.superkids.com/aweb/tools/math) - A more traditional practice, providing an unlimited source of worksheets on a

wide range of topics.

[www.gamequarium.org/math.htm](http://www.gamequarium.org/math.htm) - Interactive math games and virtual manipulatives to engage students.

[www.coolmath.com](http://www.coolmath.com) – this site is packed with fun math activities as well as parent sections on ways you can help.



Keep in mind – it is important for your child to become confident in their ability to do mathematics. So continue to encourage and support their learning this summer.

## PHYSICAL SCIENCE CORNER- INTERNATIONAL YEAR OF ASTRONOMY - THE SUMMER SOLSTICE

By: John Van Horn

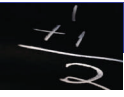
Since we are coming to summer and in keeping with the International Year of Astronomy; this is a good time to discuss the most widely recognized astronomical event of the season. This is the summer solstice.

What is the summer solstice? The summer solstice is simply the day when the sun stops its progress northward progress in the sky. It is at its maximum distance **North** of the Equator. **Solstice** comes from the Latin (*sol*, sun; *sistit*, stands). For several days before and after each solstice, the sun appears to stand still in the sky—that is, its noon-time elevation does not seem to change. This is the longest day or the year in the northern hemisphere. Depending where you are the date of the solstice is either June 20 or June 21. At this time the sun stands directly above the Tropic of Cancer. This is the beginning of summer in the northern hemisphere. (Remember this is winter in the southern hemisphere). The reverse happen at the winter solstice and the sun stands directly over the Tropic of Capricorn. (Of course it's summer in the southern hemisphere). Celebrations of the solstice existed in ancient times around the world.

- ◆ *Ancient Egypt* - Summer solstice was considered the beginning of the new year. It coincided with the flooding season when the soil would be fertilized and water would quench the arid Nile Valley.
- ◆ *Latvia and other Baltic States* - Summer solstice was celebrated with a feast of traditional beer and cheese. All work would be put on hold during the festivities.
- ◆ *North American Natives* - Several Native American tribes marked the solstice with rites and ritual celebrations. The Sioux tribe would perform the Sundance in a specially constructed lodge and the Hopi Indians held ceremonies with masked dancers in brightly colored costumes. The dancers represented the spirits of rain and fertility.
- ◆ The most famous events are tied to the Neolithic monument Stonehenge in England. Stonehenge appears to be an ancient astronomical calendar connected to the summer and winter solstice and the equinoxes. Some claim more alignments but these are controversial.

### Solstice Fun Facts

- ◆ The solstice is when the Sun is lowest in the sky for someone living in the equator.
- ◆ Although the sun is at its highest point in the sky on the solstice, the earth will nearly be at its farthest distance from the sun. It reaches this point (called aphelion) on July 3rd.
- ◆ The names Tropic of Cancer and Tropic of Capricorn come from the constellation the sun was in at the time of the solstice for the ancient Greeks. The sun is no longer there at that time!
- ◆ Around the time of Christ the Sun moved into the constellation of Gemini at the summer solstice
- ◆ The Sun's highest point in the sky is decreasing because the Earth's tilt is decreasing.
- ◆ 2000 years ago the solstice shifted into Gemini and then in 1989, into Taurus. To be complete the Winter Solstice is now in Sagittarius.
- ◆ The summer solstice produces the shortest sunset and sunrise of the year.



## On the Road & Busy

Science On The Go with the Mobile Science Lab is busy visiting to schools and organizations throughout Cook County this summer. We currently have a waitlist for this incoming school year. To request the Mobile Science Laboratory at your school please visit our website at [www.ScienceOnTheGo.uiuc.edu](http://www.ScienceOnTheGo.uiuc.edu). For more information contact Angel Edmond at 708-449-4320 or [edmond@illinois.edu](mailto:edmond@illinois.edu)



## FACTS TO KNOW ABOUT H1N1 VIRUS (SWINE FLU)

By: Dr. Oye Ajifolokun



- ◆ H1N1 virus is now called **Novel influenza A** -a new flu virus of swine origin
- ◆ H1N1 virus is primarily a disease of pigs but human infection can occur
- ◆ As of June 5, 2009, 13,217 cases of swine flu has been reported with 27 deaths.
- ◆ The disease has been reported in all the 50 states including Puerto Rico and the District of Colombia.
- ◆ The mode of transmission is person-to –person and the clinical signs/symptoms in pigs and human are similar.
- ◆ The spread of H1N1 virus is the same as the regular seasonal influenza viruses mainly through the coughs and sneezes of people who are sick with the virus.
- ◆ Common signs/symptoms include fever, chill, lack of appetite, sore throat, coughing and sneezing.
- ◆ H1N1 virus is susceptible (sensitive) to antiviral influenza drugs such as Zanamivir (relenza) and Oseltamivir (tamiflu)
- ◆ If you are at risk of infection, take the following actions recommended by the Centers for Disease Control
- ◆ Cover your nose and mouth with a tissue when you cough or sneeze and throw the tissue in the trash after use
- ◆ Wash your hands often with soap and water, especially after you cough or sneeze. Alcohol based hand cleaners are also effective
- ◆ Avoid touching your eyes, nose or mouth as this is the way germs spread
- ◆ Try to avoid close contact with sick people
- ◆ Stay home from work or school if you get sick and seek medical help immediately.

## HOW TO GO GREEN WITH YOUR KIDS THIS SUMMER!

By: Angel Edmond

As our world's natural resources are depleting, the need to become more environmentally conscious has never been more prevalent than now in our society amongst everyone including kids. Over the summer you can inspire your kids to make their world a greener place. Here are some activities that you can do with your kids to be more eco-friendly and go green:

- ◆ Recycle – Encourage your whole household or classroom to come up with creative ways to recycle and reuse. Place recyclable items in bins and find out where you can drop them off. Turn recycling into a game. Recycle newspapers, magazines, junk mail, etc.
- ◆ Conserve Water – Encourage them to turn off the water when brushing their teeth and take a shower instead of a bath. There are so many ways you and your kids can conserve water.
- ◆ Create a Compost – Create your own healthy compost by gathering garden waste and food scraps. Explain to them that parts of a fruit or vegetable can be composted. You can also buy a composter from a store for them. In a few months with your compost you can show your kids how garbage can be turned into soil to grow more food or make a garden grow.
- ◆ Save electricity – Assign someone to be responsible for turning off lights or any powered equipment not in use.
- ◆ Reusable or Paper Bag - Have your kids make and decorate their own canvas bag from a craft store that can be reused. Encourage them also to use paper bags instead of plastic. Plastic takes a thousand years to break down.
- ◆ Transportation -Ride a bus or bike or simply walk instead of driving. Talk to your kids and see if they have any ideas on ways to start going green this summer.

### Science & Technology Team:

Dr. Ajifolokun Oyewole  
Extension Unit Educator,  
Small Animal Health  
[aji@illinois.edu](mailto:aji@illinois.edu)

Karen Meyer  
Extension Unit Educator,  
Science & Technology  
Math  
[kmeyer@illinois.edu](mailto:kmeyer@illinois.edu)

Kenya Thomas  
Extension Unit Educator,  
Science & Technology  
Food Science  
[krthoma1@illinois.edu](mailto:krthoma1@illinois.edu)

John Van Horn  
Extension Unit Educator,  
Science  
Physics  
[jvanhorn@illinois.edu](mailto:jvanhorn@illinois.edu)

Semaj Johnson  
[sjohns28@illinois.edu](mailto:sjohns28@illinois.edu)

Angel Edmond  
Outreach Organizer/Mobile  
Science Lab Coordinator  
[edmond@illinois.edu](mailto:edmond@illinois.edu)

William Hamer  
Mobile Science Lab Driver

Feel free to visit the Science,  
Technology, Engineering &  
Math team  
website:  
[http://web.extension.uiuc.edu/  
cook/scitech.html](http://web.extension.uiuc.edu/cook/scitech.html)

# WHAT'S THAT IN THE SKY? A BIRD? A PLANE? NO IT'S A METEOR!

CONTINUATION PAGE I

a Fireball meteor! The sight of a bright fireball is a memorable and awe-inspiring scene. Again, you just have to be looking for them. The showers are called the Alpha and Omega Scorpiid meteor showers. If you look in the southern sky after sunset during the summer, you see a bright red-orange star and an unusual grouping of stars that looks like a fishhook. This is the constellation of Scorpius, the Scorpion and this is the area where these meteors come

from. There aren't a huge number of meteors an hour which is why most people have never heard of them. BUT if you see one it's really special. For people around the great lakes region, this part of the sky just peeks above the southeastern horizon around the time of sunset in mid-May. This makes a perfect scenario for sighting Earth-skimming fireballs. Because of the glancing angle at this time of the day, it's common for Alpha and Omega Scorpiid meteors to take long paths across the sky, flaming and spitting debris all along the way. Some even make noise. Indeed, the Alpha Scor-

piid shower is best known for its eye-catching fireballs that exceed the brilliance of Venus. They are brilliant enough to see in twilight or daylight, especially when the Sun is near setting. Indeed, they often show a spectacular green color as they travel through the sky. Both of these showers benefit this year from moon phases that help seeing. The new moon is on May 24<sup>th</sup> and the two showers last from late April until around June 15<sup>th</sup>. So have your students look up both in May-June and again in mid August. They might see something spectacular!

## SOLSTICE SUMMER ACTIVITY FOR STUDENTS

By: John Van Horn

1. Students can sketch or take a picture of the location at sunset over the summer. Have them do this twice a week; except right around June 20-21. They should do this each day during the 3 or four days around the solstice.

- ◆ What should they see? The sun will move slowly up and down along the horizon, with no motion right around the solstice (remember the definition from above.)

2. Students could put a 3-4' rod or stick in the ground and measure the length of the shadow at noon one day a week. Again they could measure it for four consecutive days around June 20-21.

- ◆ What should they see? The shadow of a stick is always shortest at noon, but it will get shorter as we approach the solstice during May and June and grow longer as we move away from the solstice during July & August.

3. You could also use the idea of the solstice to teach students "Sun Savvy!". Discussing sun safety is important. Many Internet sites carry strong sun safety messages or offer teachers valuable lesson plans for teaching about the science of the sun. Here are a couple:

<http://www.sunsafetyforkids.org/>  
<http://www.epa.gov/SunWise/kids.html>  
<http://www.sunsafetyalliance.org/kids.html>

## ASTRONOMY TRIVIA

**Here are a couple of good mind benders for students which involve astronomy, energy, light and the planets.**

What kind of energy does the Sun emit most strongly?

- A. Heat
- B. Ultraviolet energy (light)
- C. Gamma Rays
- D. Green light

*Answer: D - green is the wavelength of light most prevalent in starlight. Remember the sun is a star.*

Which of these happens once a month?

- A. The Sun completes one rotation
- B. The Moon revolves once around the Earth
- C. The sun occupies one zodiac constellation
- D. All of these

*Answer: D - the constellations of the zodiac are the "astrological signs". And there are 12 of them. The sun spends about a month in each of these constellations as seen from the earth.*

How long does it take the Sun or Moon to move its own width as it crosses the sky?

- A. 2 hours
- B. 30 minutes
- C. 2 minutes
- D. 60 seconds

*Answer: C - 2 minutes which is the duration of the sunset in the tropics.*



UNIVERSITY OF ILLINOIS  
EXTENSION

University of Illinois \* U.S. Department of Agriculture \* Local Extension Councils Cooperating  
University of Illinois Extension provides equal opportunities in programs and employment.

If you need a reasonable accommodation to participate in an Extension program,  
please contact your local Extension office.