

The Monthly STEM

Student's favourite newspaper

October 2017

Monthly edition related to the eTwinning project "THE MONTHLY STEM"

<https://twinspace.etwinning.net>

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Monocots vs. Dicots

(Junior High School of Monte Sant'Angelo-Italy; 7th grade class A)

The flowering plants with seed wrapped and protect from fruits, said angiosperms, have divid into two classes: the DICOTS and the MONOCOTS.

We, pupils, observe the seed of the monocotyledons (Mais) and dicotyledons (beans) and the development of their seedlings and we notice the following differences:

ANGIOSPERMS

	<u>MONOCOTS</u>	<u>DICOTS</u>
EMBRYO IN THE SEED	One cotyledon	two cotyledons
ROOTS	fibrous	taproot
VASCULAR BUNDLES	scattered	ringed
LEAF VEINS	parallel	net-like
FLORAL PARTS	multiples of three	multiples of four or five

ONE COTYLEDON TWO COTILEDONS

From seed to plant

(Junior High School of Monte Sant'Angelo-Italy; 7th grade class C)

The bean seed has a cuticle outside, we broke it and after having opened cotyledons we observed the embryo.



In a glass, we placed the seeds of beans, chickpeas and corn on the wet hydro cotton. After a few days, the seeds are sprouted,



developing root, stem and leaves.

Liquid gold

(Panagiotis Bombas - Junior High School of Thermi Greece)

For the first time and with the stamp of the Americans, a clinical study demonstrates that consumption of extra virgin olive oil protects the body from thrombosis



Three spoonfuls of oil a day benefit a lot our health. The famous proverb may not mention the oil, but a new study shows that olive oil has beneficial properties for the body. According to the study, the same action as 400 mg of irebutene, the known drug, causes the human body to consume three spoonfuls of extra virgin olive oil due to its oil content.

Food Against Cancer

Fidel Monteagudo - CEIP Jose María de la Fuente (Spain)

Cancer is recognized worldwide to be a major health problem affecting millions of people each year.

Cancer refers to uncontrolled cell division that leads to a tumor or abnormal cell growth.

Today, the early combination of chemotherapy and nutrition therapy is able to save the lives of thousands of cancer patients.



DICOTS

MONOCOTS



DICOTS

MONOCOTS



DICOTS

MONOCOTS



MULTIPLE OF THREE

MULTIPLES OF FOUR OR FIVE

TWO FLOWS HAVE BEEN DONE IN THE FROZEN'S HOUSE. NOW WE WANT FRUIT



Then we poured the little plants into the ground, to continue to take care of them and to verify that they produce the flowers and then the fruits with the seeds inside. The harvest of the new seeds will restart the cycle of life.

Sunflower Seeds Germination and

Growth Time Lapse:

<https://youtu.be/eKo5F87A8ao>

[Time measurement of the rotation of the earth around its axis](#)

(ITCS "G. Zappa" Saronno - 1 ACT)

We made a Physics experiment in the school yard.

We wanted to measure the time of rotation of the earth around its axis.

For the experiment you need:

- a table with a metal bar installed along one side (gnomon)
- a ruler
- a protractor
- a stopwatch

Instructions

- orient the gnomon in the direction south-north, moving the bar towards the sun
- consider the shadow produced by the gnomon

Foods and Habits that Increase Your Cancer Risk

While most people choose to turn to conventional cancer treatments like chemotherapy, radiation or other drugs, there's a lot of evidence that cancer risk can be reduced by following a healthy diet.

Foods that increase inflammation and cancer risk include:

- Sugar
- Refined oils
- Farm-raised meats

Top 12 Cancer-Fighting Foods

1. Leafy Green Vegetables: Spinach, kale, collard greens, romaine, arugula salad, watercress, etc.

2. Cruciferous Vegetables

Like cabbage and broccoli cauliflower, cabbage or Brussels sprouts. Additionally, many other vegetables are beneficial for lowering cancer risk, including onions, zucchini, asparagus, artichokes, peppers, carrots and beets.

3. Berries

Blueberries, raspberries, cherries, strawberries, goji berries, camu camu and blackberries.

4. Brightly Orange-Colored Fruits and Veggies (Citrus Fruits, Squash, Sweet Potatoes, etc.)

Many citrus fruits, sweet potatoes, berries, pumpkin, squashes and other plant foods.

5. Fresh Herbs and Spices

Include ginger, raw garlic, thyme, cayenne pepper, oregano, basil and parsley — which can easily be used in many recipes, juices, dressings and smoothies.

6. Organic Meats

Including beef or chicken

7. Cultured Dairy Products

Includes raw milk products such as cheese, kefir and yogurt.

8. Nuts and Seeds

Sesame seeds, pumpkin seeds and sunflower seeds, walnuts, brazil nuts and almonds.

9. Healthy Unrefined Oils

Extra virgin olive oil, cod oil and coconut oil.

10. Mushrooms

11. Traditional Teas

12. Wild-Caught Fish

Salmon, mackerel and sardines.

I can become a gas without melting !!

(Junior High School of Xanthi-Greece; 2th grade class B6)

There are substances that pass directly from the solid to the gas phase. Such a substance is iodine which is solid in ambient conditions. Heating it, causes a transition directly from the solid to the gaseous phase. This transition is called sublimation.



The Importance Of a Varied Diet

Daniel Almansa - CEIP Jose María de la Fuente (Spain)

Everyday is more mentioned the importance of a varied diet that has all groups of nutrients to get the energy we need.

At the same time nutrients are required to develop the growth of our bones, skin and they are considered a weapon or defense against some illnesses. We need to get the vitamins that protect us against flus, and that reinforce our immune system. We can get vitamins from vegetables and fruit.

We also need energy to face the day and the daily activity. We get that help through carbohydrates and fats from pasta, rice, cereal or bread, and oils.

We can find information about how doctors recommend a balance diet as a base of a good health, and even an influence for our emotional capacity, because it is all connected, and substances like potassium are a precedent in our state of mind.

- draw a line on the shadow of the gnomon and start the stopwatch
- after 10 minutes draw a new line on the shadow that has moved
- using the protractor measure the angle between the two lines

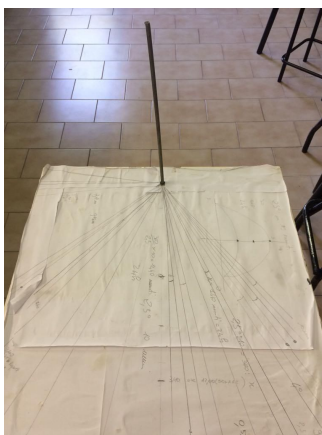
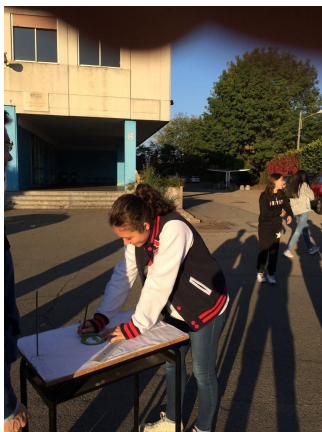
The result of our measurement was 2.5 degrees.

To calculate the time of rotation of the earth around its axis we use the following proportion:

$$10^\circ : 2.5^\circ = x : 360^\circ$$

$$X = \frac{10 \times 360}{2.5} = 1440' = 24h$$

Therefore we demonstrated that the earth takes 24 hours to make a complete rotation around its axis.



Healthy Life

Alejandra Ocaña - CEIP Jose María de la Fuente (Spain)

Hi I'm Alejandra and today I want to tell you something about healthy life

Why we need to eat fruit and vegetables? We need to eat fruits and vegetables because this aliments have a lot antioxidants. We need fruits and vegetables also to have a balance diet we have to eat fruits and vegetables 7 times per day. A study say that Spanish people eat a lot of potatoes and a lot of bananas.

Why we need water?

The water is the most important element to living things the importance of the water to the humans is so evident that constitutes almost the two thirds parts of the body and is present in all the vital organs :

Brain, lungs, heart, liver, kidneys.

Why we need do sport?

We need do sport because its help to the respiratory system .

Before do sport we need to eat and drink water because without an aliment on our body we can faint .

Exist a lot of sports like handball, basketball, football, dance...

Why we need to sleep?

We need to sleep because our brain need to have a rest.

We need to sleep 8-9 hours to have a good rest , babies sleep 14-15 hours.

Can you pierce a wooden skewer stick through a balloon without popping it?

(Junior High School of Xanthi-Greece)

You will need the following materials:

1. balloons
2. wooden skewers

Blow up a balloon – not too full – and tie the opening shut. Try to stick the skewer into the side of the balloon. The balloon pops. Insert the skewer with a gentle twisting motion into the end of the balloon opposite the knot. Continue pushing and twisting the skewer until the tip emerges from the other end, near the knot.

Why doesn't the balloon pop?

The Discovery Of a New Drug To Breathe

Álvaro Domínguez - CEIP Jose María de la Fuente (Spain)

In 1983, Tore Curstedt saved the life of several babies that suffered big problems in the respiratory system thanks to a new drug he has been investigated with animals. These problems were known with the name of RDS (Respiratory Distress Syndrome).

The drug of Tore Curstedt acted over alveolis. Alveolis are tiny and delicate sacs in the lungs where the exchange of oxygen and carbon dioxide is produced. The drug got that alveolis kept opened and they didn't collapse. If these tiny sacs don't open with ease, the lungs can't fill with air and the oxygen can't reach the blood, and this is known like respiratory distress syndrome (RDS). This problem appeared principally in babies, so it was the principal cause of infant death until the discovery of Curstedt's drug.

When the drug could be produced in a synthetic way, the drug arrived to all the world saving millions of babies. Nowadays this drug is known by the name of Curosurf.



The Respiratory System

Irene Fernández - CEIP Jose Maria de la Fuente - Spain

In the respiratory system, we inhale oxygen (O_2) and exhale carbon dioxide (CO_2).

It goes through the nostrils next the pharynx, the larynx, the trachea, the bronchi, the lungs, the bronchioles and finally the air sacs. In the air sacs it makes the gas exchange, then the CO_2 goes by the blood vessels.

The respiratory process has three phases:

1. Gas exchange.
2. The transport of the gasses.



What Happens If We Don't Have a Healthy Diet?

Leny Vizcarra - CEIP Jose Maria de la Fuente - Spain

Children and teenagers really like eating chocolates, lollipops, candies, desserts, donnuts, cupcakes, puddings, ice cream, cakes, cookies, biscuits, gelatins, pastries, pies and sugary drinks as soda. This food form an important part of an unhealthy diet but eating sweets in moderation remains key to good health. What are the disadvantages to human health if we eat sweets and desserts every day?

Cause excess weight gain and lead to obesity, a greater risk of developing diabetes, heart disease, high blood pressure, nutritional deficiencies, cavities and hinder the function of your immune system, making you more susceptible to colds, flus and other viruses.

To sum up, we have to limit highly processed foods and eat mostly foods derived for plants: vegetables, fruits, whole grains and legumes.

Finally, if you want to be healthy have a healthy diet and don't forget exercise every day.

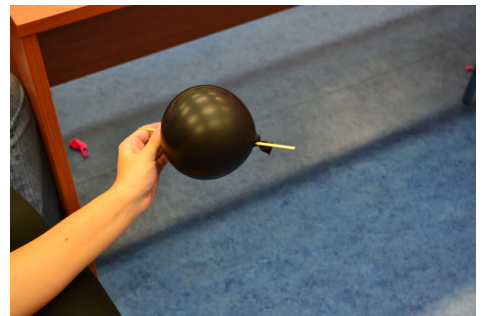
Regular and diffuse light reflection

Rute Duarte - Escola B. 2,3 Pedro Eanes Lobato (Portugal)

The propagation of light in a straight line can be disturbed by obstacles that cause the light rays to change direction. It is very common to see reflexes every day. I give as an example the reflection of an image in the water, or when we see our image in a mirror. These images result



The rubber in the balloon consists of many long molecules that are linked together. It's similar to the way all of the noodles in a plate of spaghetti stick together. These long molecules are called polymers; when molecules of a polymer are chemically attached to each other, it is called cross-linking.



These links hold the polymer molecules together and allow them to stretch...up to a point. When the force or tension pulling on the cross-links is too great, they will break, and the polymer will pull apart.

The rubber at the ends of the balloon is stretched out less than in the middle of the balloon. Therefore, there is less force pulling on it. This allows the tip of the skewer to break some polymer cross-links, push aside the molecules of rubber, and slide into the balloon.

Echolocation in animals

Laura Mendes - Escola B. 2,3 Pedro Eanes Lobato (Portugal)

Echolocation is a sense and sophisticated biological ability to detect the position or distance of an object. In animals, the interpretation of echolocation is important because it helps them to find prey or to move around the environment.

Bats - They emit a high frequency sound to locate their prey and move around the environment. (listen a recording of

3. The respiration in the cells and tissues.

To maintain our respiratory system healthy, we can do some things like:

Eat a diet that is high in vitamins and minerals.

Exercise regularly.

Wash your hands regularly.

Drink water regularly.

Do not smoke.

Avoid places with high levels of air pollution, especially when exercising.

DISEASES IN RESPIRATION

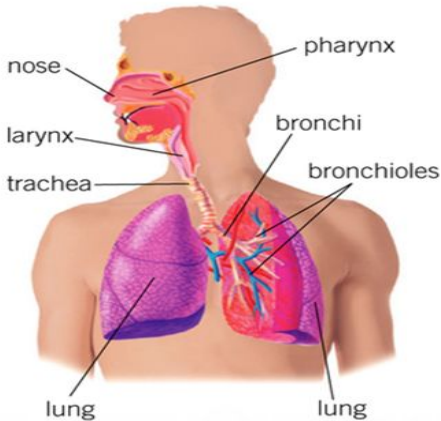
The oxygen that we inhale goes by the blood and distribute by all the body, so that the diseases of the respiratory system affect our health condition in general.

The contamination of the traffic in the pregnancy hurts the lungs of the baby.

10% of the total of patients with asthma is of serious character, according to alert the doctor Santiago Quirce.

Smoking produces lung cancer and respiratory problems that they can produce the death.

The respiratory system



Water properties: adhesion and cohesion

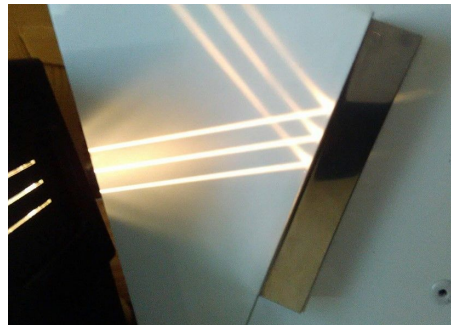
Irane Chartre, Maria Damebas, Aner Bilbao and Eder Barredo - Larramendi Ikastola - Basque Country

The water drop is composed of water molecules that like to stick together, an example of the property of cohesion. The water drop is stuck to other substances, which is an example of the property of adhesion.

from the fact that light has the ability to reflect on certain surfaces.

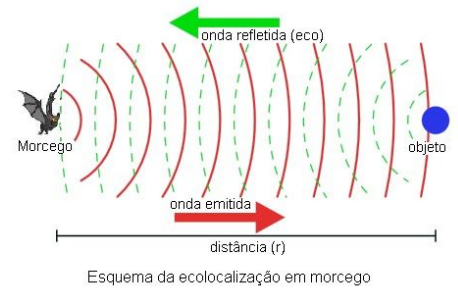


Reflection of light occurs when light strikes a surface and is returned by that surface. Regular reflection happens when the light is reflected on a smooth, polished surface (in a mirror for example), and it reflects in only one direction.



Light diffusion, or irregular reflection, happens when the light is reflected in different directions, when the reflection surface is rough. I give as an example an image reflected in water, in which the water surface is not completely smooth.

Pipistrellus bat approaching its prey by clicking [here](#)).



Dolphins - The dolphin has a good acoustic echolocation system that allows it to get information about other animals and the environment.



We experimented with wave reflection in our ripple tank apparatus. (click the photo to check the video).

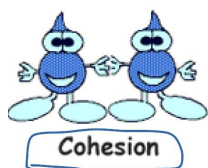
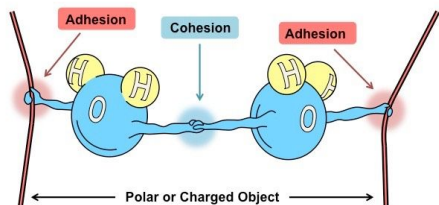


Kinetic Sand

(Romania, Liceul Tehnologic I.V.Liteanu, Valentina 10C)

First you put in a bowl one big spoon of fine sand, mix with dish soap and one spoon of corn starch. Next you put 3-4 drops of food coloring and while you mix put some water. You will see the beautiful transformation and the soft mixture. Once you did this, it must be sat like 2 hours because all the ingredients will be mixed accordingly in time. That is the secret how to make kinetic sand.



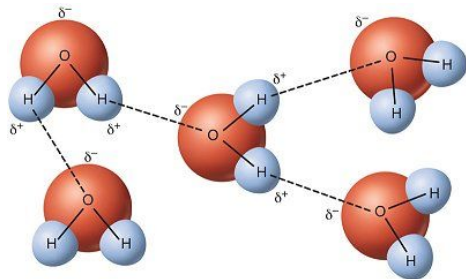


Water sticking to water.



Water is sticking to other substances

The positive and negative charges of the hydrogen and oxygen atoms that make up water molecules makes them attracted to each other. Positive charges attract negative charges. The positive side on one water molecule comes near the negative side of another water molecule, they attract each other and form a bond. This bipolar nature of water molecules gives water its cohesive nature.

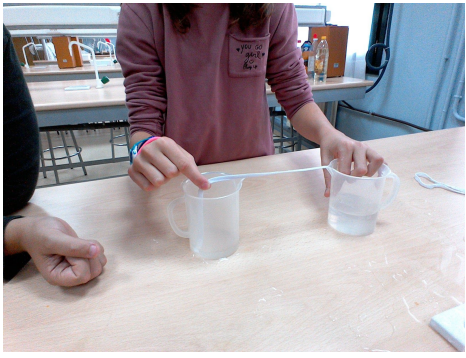


As we mentioned, water is a bipolar molecule and can attach to other substances which are charged positively or negatively. That's the reason of its adhesive nature.



Based on these properties, we tried to transport water from one plastic cup to another one using a shoelace.

For me that is so funny and interesting because it is a homemade toy, so you can make any models like castles, people or animals. It is a recipe for everyone who wants to play or feel the childhood and play with friends. Be creative because you are your own factory and it's easy to transform ideas in real masterpieces.



Here you can see [the video](#).

