

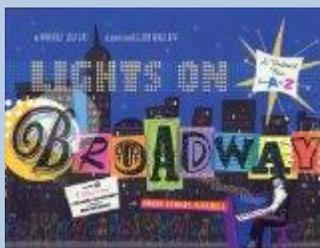


December 2011

Contents

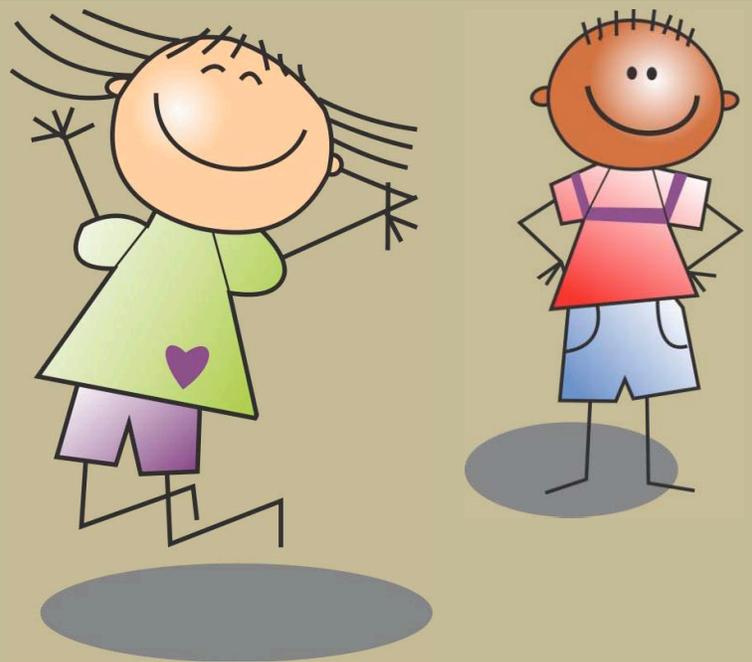
Parts of a Cell _____	Page 1
Mitochondria _____	Page 2
Muscle Cells _____	Page 2
Chemistry Corner _____	Page 3
The Age of Dinosaurs _____	Page 3
Physics Corner _____	Page 4
All About Satellites _____	Page 5
Presidents _____	Page 7
Sunflowers _____	Page 8
Continents _____	Page 9
The Wind and the Sun _____	Page 10
The Clarinet _____	Page 10
The First Farmers _____	Page 11
Famous Landmarks _____	Page 11
Preschool Corner _____	Page 12
Cloud Types _____	Page 13
Alphabetical States _____	Page 13
Beethoven _____	Page 14
Things You Can Learn _____	Page 14
Poetry Corner _____	Page 15
Triangles _____	Page 16
Story Corner _____	Page 17

Great Books for Kids



Teach your child theater related vocabulary with **Lights on Broadway: A Theatrical Tour from A to Z.**

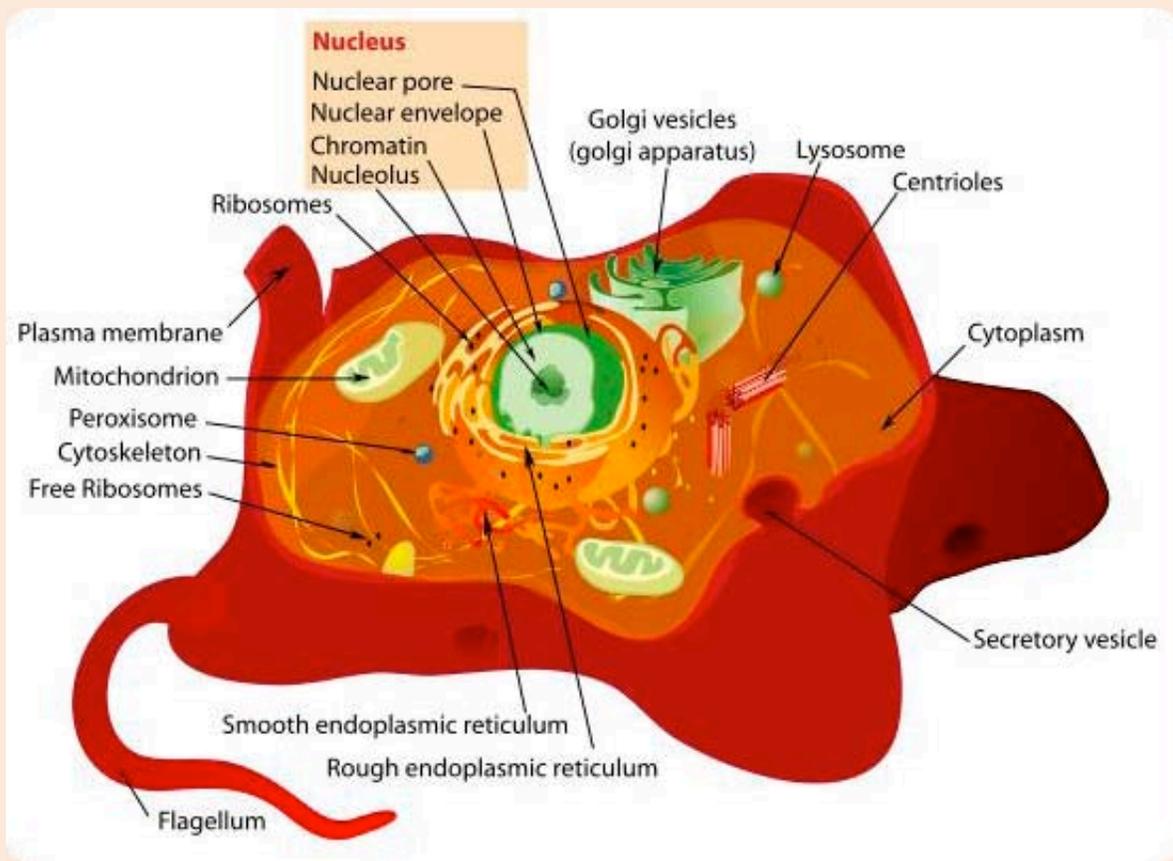
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Parts of a Cell

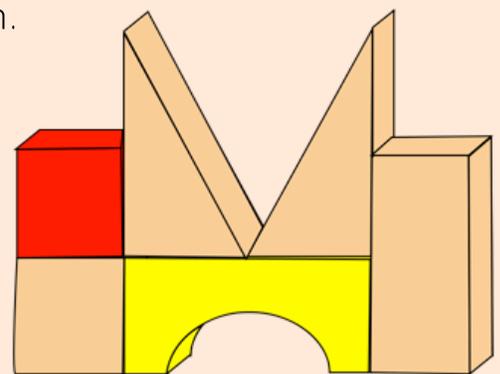


Your body is made up of cells. These cells make up different parts of your body, such as your muscles, heart, skin and brain.

Cells are often called the building blocks of life.

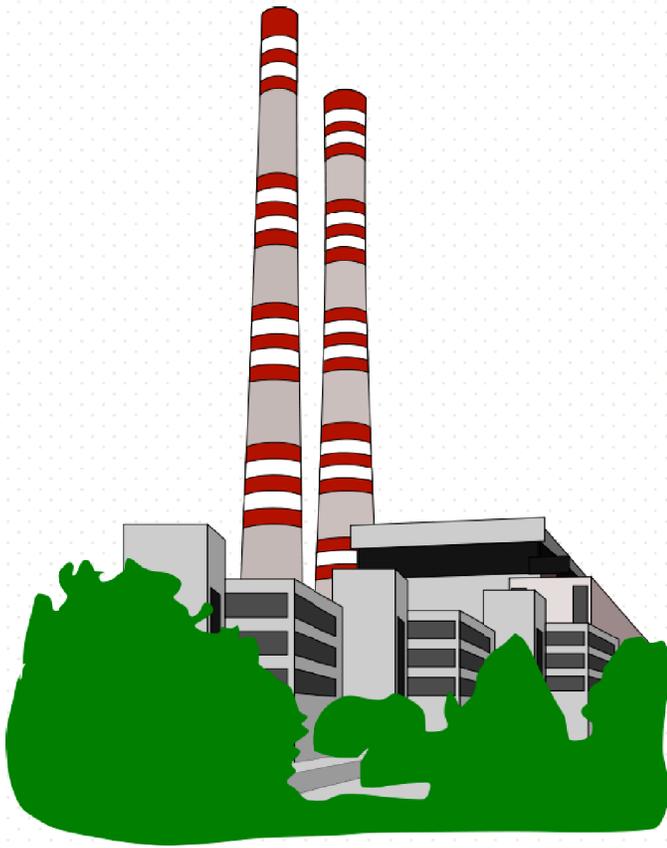
When you put blocks together, you can make buildings or cars. Cells **can't do much on their** own. But together they can make complex

things like human beings. Cells have parts called organelles.



Parts of a Cell: Mitochondria

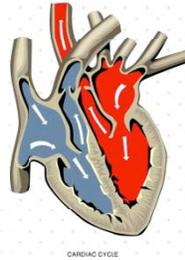
Mitochondria are often called the powerhouses of the cell. Power stations make energy, called electricity, to heat and light your home. The Mitochondria are organelles that make energy for the cell. The process of making energy for a cell is called **cellular respiration**.



Some cells have thousands of mitochondria. Muscle cells need a lot of energy, so they have a lot of these little powerhouses. If a cell **can't make enough** energy, more mitochondria can be made.

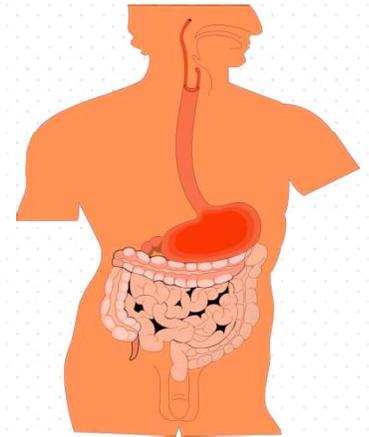
Muscle Cells

You could not move without muscles. You need them to run, smile and draw. Even your heart is a muscle. There are 3 types of muscles cells. They are cardiac muscle cells, skeletal muscle cells and smooth muscle cells.



Cardiac muscle cells are in your heart. These cells are striped. Another word for striped is **striated**.

Smooth muscle cells make up your stomach, intestines and blood vessels. They are called smooth because **they aren't striated**.



Skeletal muscle cells are in muscles that are attached to your skeleton. These cells are long and **striated**. These are the muscles you use to move.

Chemistry Corner

Hi there! We're elements. Also called chemical elements. Do you remember atoms? Well, we are made up of a group of atoms of one type.

Think of us like this. You have building blocks that are cubes, triangles and rectangles. And they are different colors. If you put all of your blue triangles together, that's like an element.

An element may be made of all oxygen atoms, all hydrogen atoms, all helium atoms and so on. Anyway, we get together and make something called **matter**.

There are a lot of us. We are all listed on something called the Periodic Table.

The Age of Dinosaurs

Triassic, Jurassic

And Cretaceous too

Were part of the Mesozoic

When dinosaurs ruled.

These were the periods

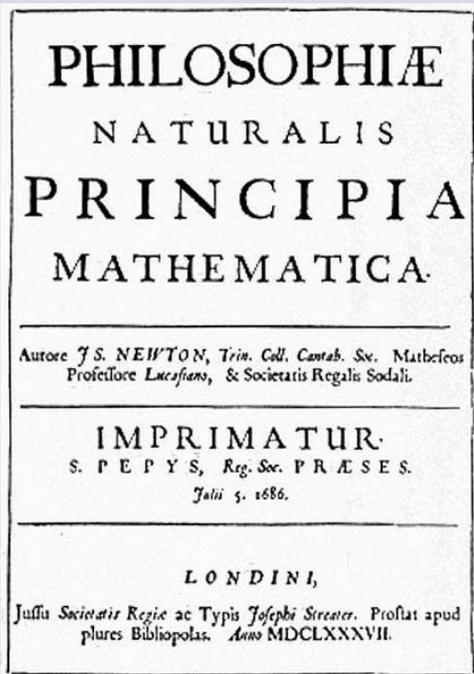
When dinosaurs roamed

Part of the Mesozoic

Which was so long ago.



Physics Corner



Do you remember Isaac Newton? He was a scientist and mathematician. He came up with something called the Three Laws of Motion. These laws explain how forces act on an object. And how the object moves as a result. Ok, you may be confused. **You're wondering what a force is.**

Well, in the science of Physics, a force causes an object to move. Do you ever kick a ball? A ball is an object. When you kick it, you apply a force. Your kick makes a ball move.

A force can also make a moving object change direction. Imagine that you and a friend are kicking a ball to each other. When the ball comes toward you, you kick it back. You changed the direction of a moving ball.



Spiral Galaxy

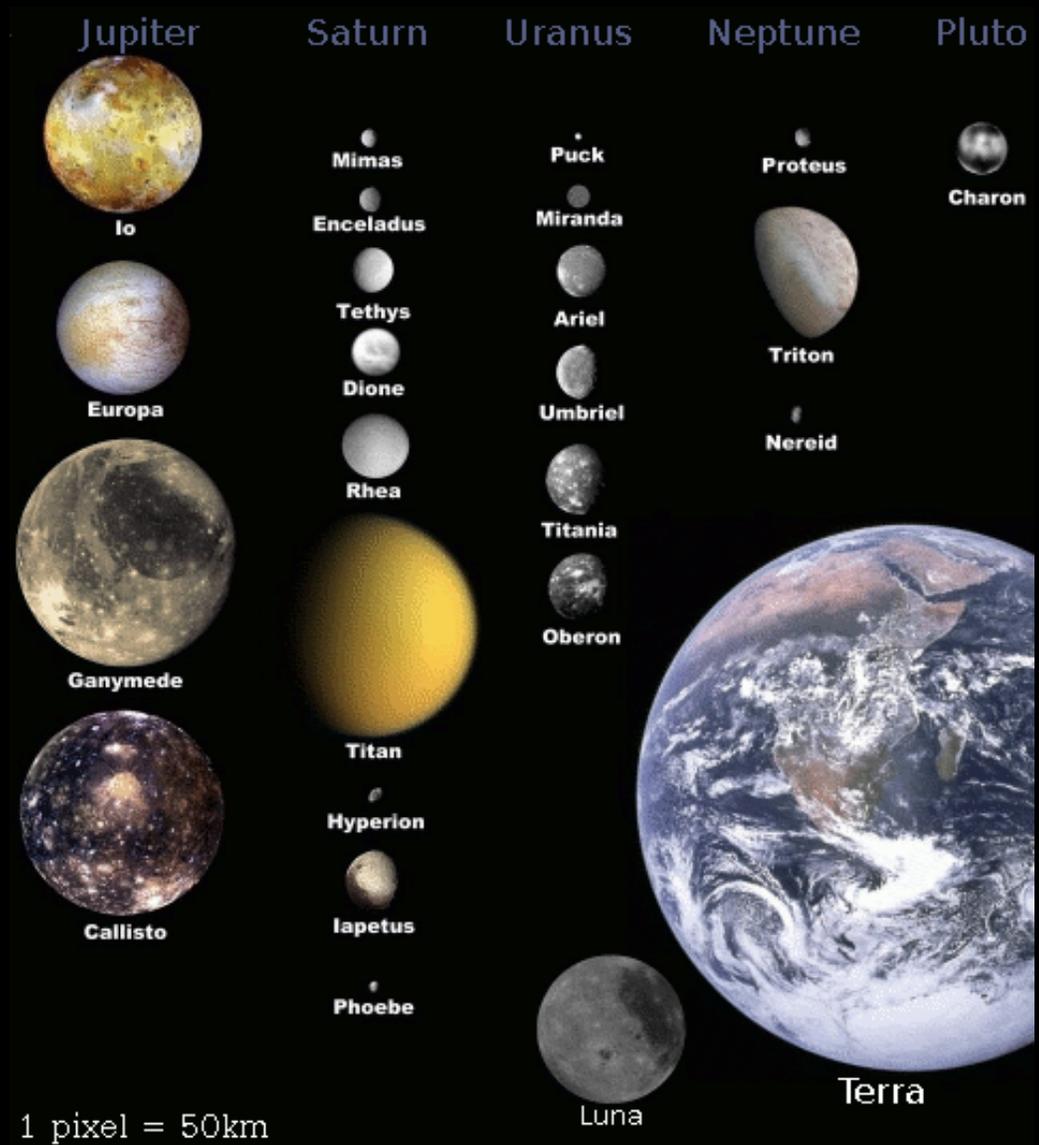
All About Motion

Motion refers to movement. You might be surprised to hear that this is a really important idea in the science of Physics. Why is it so important? Simply because everything in the **universe moves. You don't feel it but you are** on a planet that is moving. It is spinning around. This is called rotation.

The Earth is also moving around the sun. This is called orbiting. The whole Solar System is moving within our galaxy called the Milky Way. A galaxy is a system that contains billions of stars, gas and dust. They are all held together by a force called gravity. Everything moves all the time. So, you can see why motion is so important to scientists. And why Isaac **Newton's Three Laws of Motion are** important. **Mechanics** is a branch of physics that deals with the study of motion.

All About Orbits

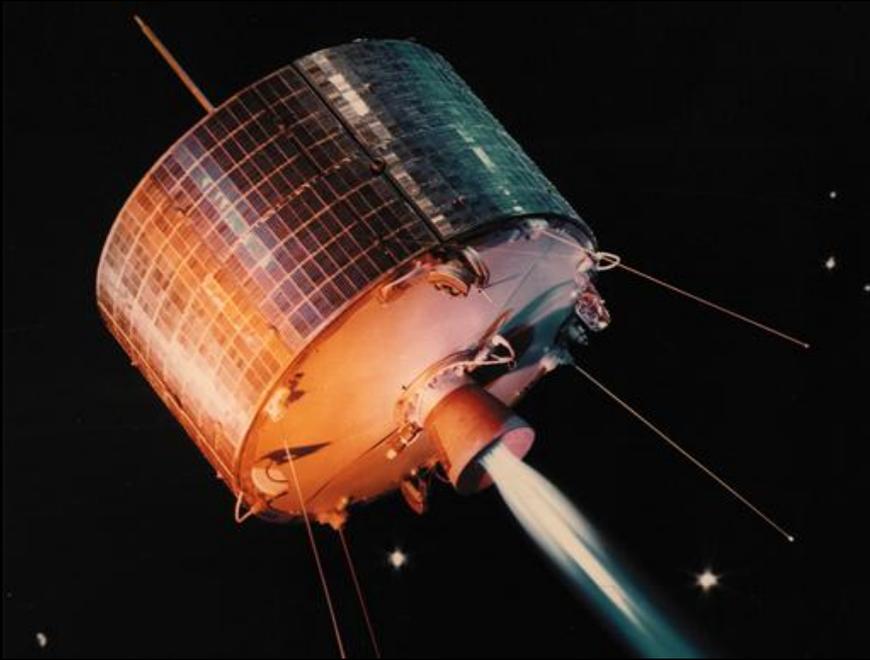
Do you remember what orbit means? Orbit means to go around and around. Satellites are objects that orbit planets. Satellites can be natural or artificial.



Natural means made by nature. Moons are natural satellites. One moon orbits the Earth. Two moons orbit the planet Mars. They are called Phobos and Deimos. Jupiter has 64 moons. Four of Jupiter's moons are called Galilean

moons. They were discovered by an astronomer named Galileo when he used a telescope to look at the night sky. Saturn has 60 moons.

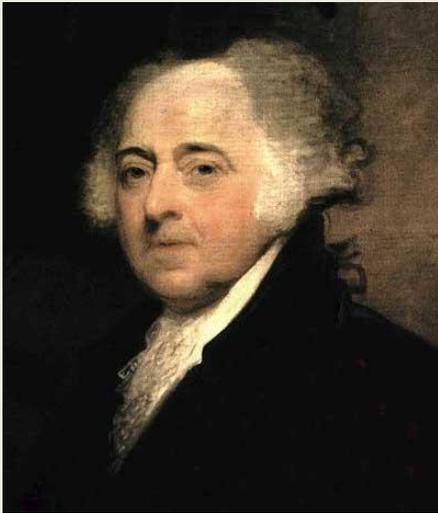
Artificial satellites are made by people. They are sent into space using rockets. Then they orbit the Earth. Artificial satellites have many uses. They can be used to track the weather, deliver television programming, provide directions when driving and provide telephone services.



This is a **geosynchronous** satellite. A geosynchronous satellite's orbit around the Earth takes one day. A **geostationary** orbit is a type of geosynchronous orbit. A geostationary orbit keeps a satellite over the

same point on the Earth's equator. To stay at the same point, the satellite must constantly move along with the Earth. To see how this works, draw a circle on a piece of paper. Now hold a crayon above the circle. Move the paper. To keep the crayon over the circle, you must move the crayon along with the paper. What happens if you move the paper without moving the crayon?

Presidents



John Adams was the second president of the United States. America used to be 13 colonies ruled by the king in far away Great Britain. John Adams was part of the Continental Congress, which wanted America to be a free country.

Adams was one of many people who signed the Declaration of Independence, which said that America was no longer part of the British Empire. This led to a war with Great Britain. John Adams chose George Washington to lead the American

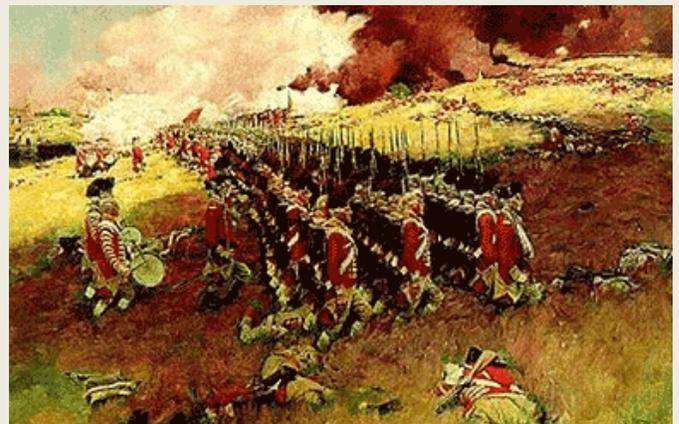
army during the Revolutionary War.

Adams and his son John Quincy went to France during the war. They traveled on a ship across the Atlantic Ocean. It was a dangerous journey. They experienced a hurricane and an attack by an enemy ship. But they made it to France. Adams asked the French to help the Americans and they did. America won the war and became free.

John Adams had a wife named Abigail and four children. His son John Quincy Adams also served as president.



Declaration of Independence by artist John Trumbull

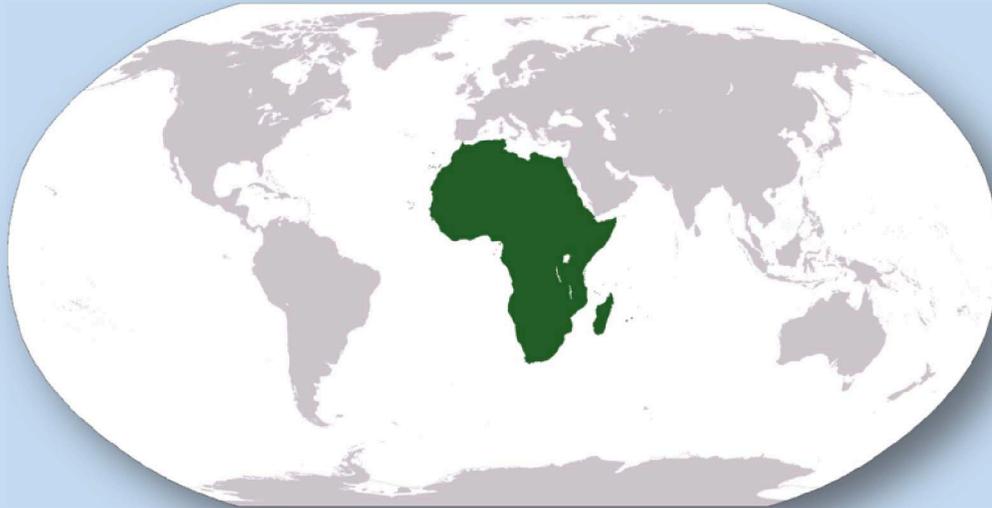


A painting of a Revolutionary War battle. The American soldiers were called Patriots and the British soldiers were called Red Coats



Vase with Twelve Sunflowers by Vincent Van Gogh

Vase with Twelve Sunflowers was painted using oil paint on canvas. Van Gogh made many paintings with sunflowers. He wanted to brighten up the walls of his art studio. This painting is a still life. A still life is a painting or drawing of something that can't move. Artists often set up vases, fruit bowls or bottles on a table to draw or paint. You can easily make your own still life.



Continents: Africa

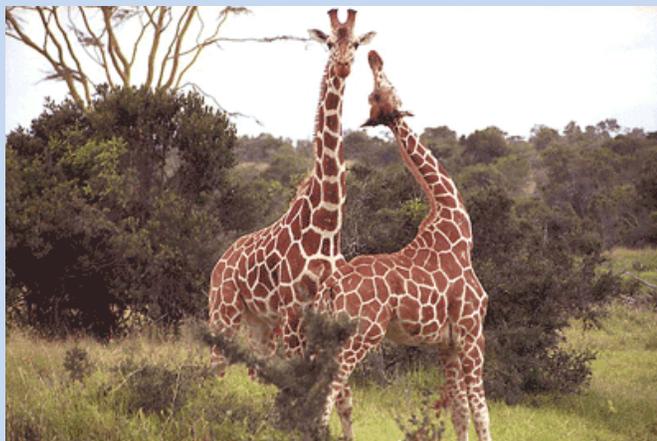
There are seven continents on Earth. One of the seven continents is called Africa. Africa has deserts, grasslands and rainforests.

The longest river in the world, the Nile, is in North Africa. The largest hot desert in the world, the Sahara, is also in North Africa. Lions, giraffes and elephants roam the savannas. **These are Africa's grasslands. The Congo River flows through the Congo Rainforest.** This is the second largest rainforest in the world. The Amazon Rainforest in South America is the largest.

There are 54 countries with more than 900 million people in Africa. Cairo in Egypt is the most populated city in Africa. Most populated means having the most people. Nigeria is the most populated country. More than 2000 different languages are spoken in Africa. Most people work as farmers. Others work in manufacturing and mining.



The Nile River flows through Cairo



Giraffes on the savanna in Kenya

Aesop's Fable: The Wind and the Sun

The Wind and the Sun were arguing about who is strongest. They saw a man walking. He was wearing a coat. The Sun said "Whoever can get the man to take off his coat will be considered the strongest. You go first." The Wind blew as hard as he could. The harder he blew, the more tightly the man wrapped his coat around him. The Wind gave up. The Sun came out and shone brightly. The man became hot and took off his coat.



Moral: It is better to be kind than harsh

Musical Instruments: The Clarinet



Musical instruments fall into different groups: strings, woodwind, brass, percussion and keyboard. Which group do you think the clarinet should be in? A clarinet has a long tube with holes that are stopped by the fingers. Stopping different groups of holes creates different sounds. The clarinet is a woodwind instrument. A father and son from Germany invented the clarinet in 1690. The famous composer Mozart loved the sound. He was the first to use it in a symphony, which is a piece of music written for an orchestra.

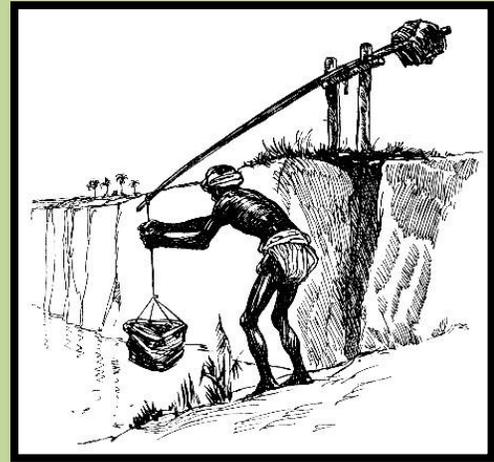
The First Farmers

Farming first began in an area called Mesopotamia. The area around it was called the Fertile Crescent. Large rivers



in the area called the Tigris and Euphrates flooded every year. The floods produced a lot of silt. This creates fertile soil, which helps crops grow. Farmers could use the rivers to water their crops. This is

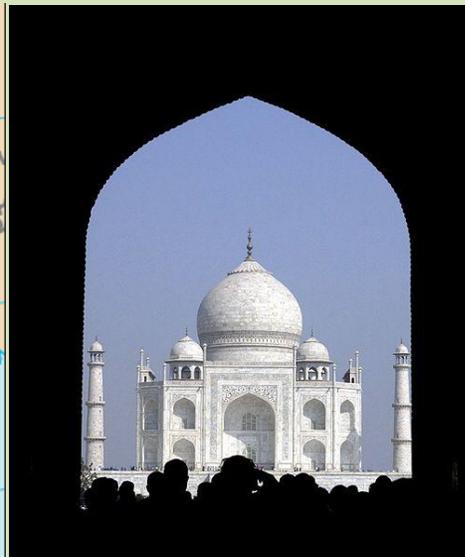
called irrigation. They dug canals to bring the water closer to their fields. Farmers used a machine called a shaduf to help irrigate their crops.



A farmer using a shaduf to water crops

A shaduf looks a lot like a bucket on a long stick. Because of the rich soil, nomads started to settle down and plant crops like wheat. This happened about 12,000 years ago.

Famous Landmarks



The Taj Mahal is a famous landmark in Agra, India. India is a country in Asia. Emperor Shah Jahan built the Taj Mahal to honor his wife Mumtaz Mahal after her death. It was built using a stone called marble. It took 20 years to build. About 20,000 workers and 1000 elephants were needed. The Taj Mahal is an example of Mughal architecture. The Mughals ruled India for many years. The Taj Mahal is one of the Seven Wonders of the Modern World.

PRESCHOOL CORNER

Which does not belong and why?



What comes next?



Phonics

boy

coy

joy

Roy

soy

toy

annoy

ploy

Sight Words

off that

their as

Can you count backwards?

5

4

3

2

1

0

The Color Blue



Cloud Types



Cirrus clouds have a wispy appearance. They are very high in the sky. They are so high, they are made of ice. You will often see **cirrus** clouds on days with nice weather.



Cumulus clouds look like big, puffy pieces of cotton.

Cumulus clouds form low in the sky. These clouds usually predict fair weather. When they get very big they turn into storm clouds called

Cumulonimbus clouds.



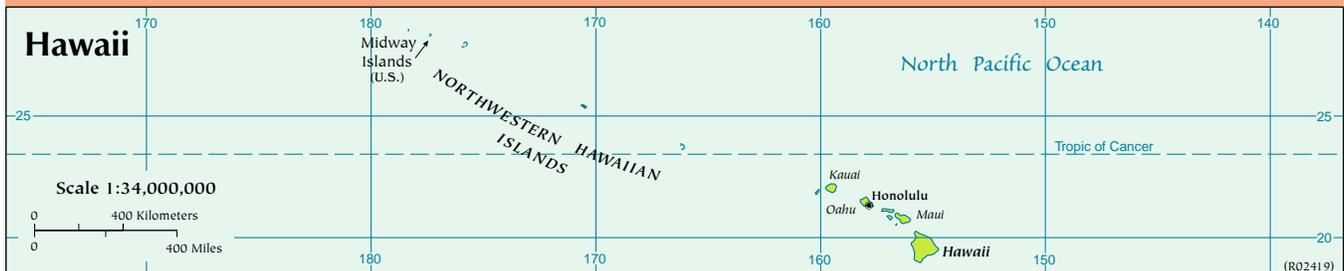
You will often see **stratus** clouds on gloomy days. They are gray in color and sometimes bring light rain. **Nimbostratus** clouds bring rain or snow.

Image courtesy Jeff Schmaltz, MODIS
Land Rapid Response Team at NASA
GSFC

Alphabetical States

There are 50 states in the USA. Go to the next page and find all the states that begin with the letter C. California, Colorado, and Connecticut.

UNITED STATES





Ludwig van Beethoven was a famous musician and composer. A composer writes music. He wrote many symphonies. Symphonies are long pieces of music written for orchestras to play.

Beethoven was born in Bonn, Germany. He had a very unhappy childhood. His father forced him to practice music for many hours. He got very angry when Beethoven made a mistake. When Ludwig was 12, he had to make money to support his family by playing the organ and composing music.

Beethoven became one of the most famous composers. He started to lose his hearing when he was in his twenties. Even when he went completely deaf, he still composed music. He could hear the music he was composing in his mind.

THINGS YOU CAN LEARN

Biology is the study of living things. It is a type of science. There are many branches or areas of study in Biology. These are just a few of them.

Anatomy – this is the study of the parts of plants and animals. What things do you think you might read about in a human anatomy book? You would read about bones, lungs, blood, the brain, how hearing works and so on.

Botany – the study of plants.

Cell Biology – study of the cells of plants and animals.

Entomology – you better like bugs if you want to be an entomologist.

Microbiology – if you love microscopes, you might want to become a microbiologist. They study things that are too small to be seen with the human eye, such as bacteria and viruses.

Neurobiology – if you hurt your knee pain signals travel along nerves to your brain. Neurobiology is the study of your brain and nervous system.

Oceanography – You might like this branch of Biology if you like to get wet. Oceanographers study life in the ocean.

Ornithology – tweet, tweet. This is the study of birds.

Paleontology – this is the study of prehistoric life, like dinosaurs. Paleontologists learn about ancient life from fossils.

Pharmacology – this is the study of medicines.



Hope

By Emily Brontë

Hope Was but a timid friend;
She sat without the grated den,
Watching how my fate would tend,
Even as selfish-hearted men.

She was cruel in her fear;
Through the bars one dreary day,
I looked out to see her there,
And she turned her face away!

Like a false guard, false watch keeping,
Still, in strife, she whispered peace;
She would sing while I was weeping;
If I listened, she would cease.

False she was, and unrelenting;
When my last joys strewed the ground,
Even Sorrow saw, repenting,
Those sad relics scattered round;

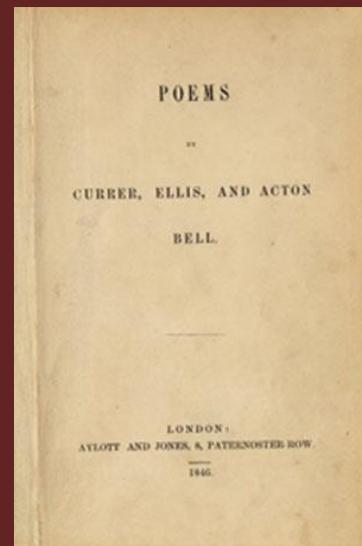
Hope, whose whisper would have given
Balm to all my frenzied pain,
Stretched her wings, and soared to heaven,
Went, and ne'er returned again!

Emily Brontë was a famous English author and poet. She had two famous sisters, named Charlotte and Anne, who also wrote books and poetry. **Emily's** book, called *Wuthering Heights*, and poems were written under the pen name Ellis Bell. People use pen names, also called **pseudonyms**, when they don't want people to know who they really are.

Brontë's poetry is often very sad. Her mother died when she was young. Two of her sisters died as children. Her only brother also died young. So, it **isn't** surprising that much of her writing is dark and moody.

This is clear from her poem *Hope*. Hope is expecting good things to happen. In this poem, someone is obviously very unhappy and in a bad situation. But Hope abandons them. Hope could help the suffering person but chooses not to. Then she leaves forever.

Brontë personifies Hope and Sorrow in this poem. This means that she speaks of Hope and Sorrow as if they are people. Can you find places in the poem where Hope and Sorrow sound like people?

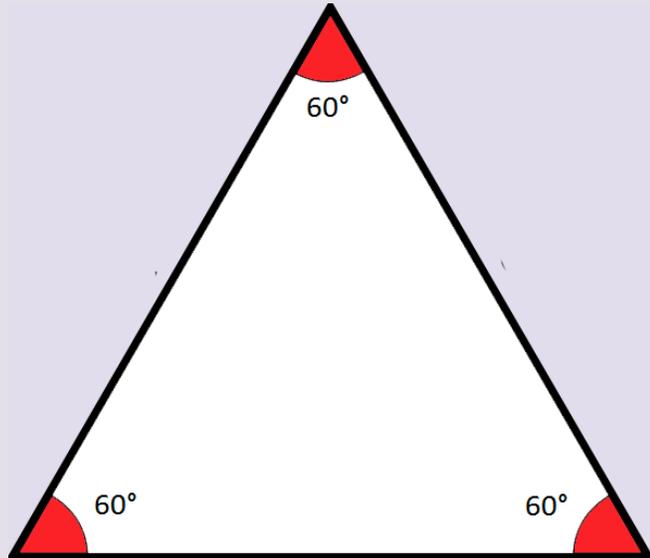


TRIANGLES



Equilateral Triangles

There are different kinds of triangles. Triangles have three sides. The **tri** in triangle, as well as in tricycle and tripod, actually means three. Triangles also have three angles. The angles are the areas colored in red. Angles are measured in something called degrees. The symbol for degrees is $^{\circ}$. The degrees in a triangle will always add up to 180° .



In an equilateral triangle, each angle is 60° . If you add the degrees in each angle together you will get 180 degrees.

$60^{\circ} + 60^{\circ} + 60^{\circ} = 180^{\circ}$. The **equi** in equilateral means equal or the same. **Lateral** means side. So, all sides in an equilateral triangle are the same size. And all angles are the same size. Congruent is a word that means the same size. So, all sides and angles in an equilateral triangle are congruent.

The Frog Prince

Walter Crane

IN the olden time, when wishing was having, there lived a King, whose daughters were all beautiful; but the youngest was so exceedingly beautiful that the Sun himself, although he saw her very often, was enchanted every time she came out into the sunshine.

Near the castle of this King was a large and gloomy forest, and in the midst stood an old lime-tree, beneath whose branches splashed a little fountain; so, whenever it was very hot, the King's youngest daughter ran off into this wood, and sat down by the side of this fountain; and, when she felt dull, would often divert herself by throwing a golden ball up in the air and catching it. And this was her favourite amusement.

Now, one day it happened, that this golden ball, when the King's daughter threw it into the air, did not fall down into her hand, but on the grass; and then it rolled past her into the fountain. The King's daughter followed the ball with her eyes, but it disappeared beneath the water, which was so deep that no one could see to the bottom. Then she began to lament, and to cry louder and louder; and, as she cried, a voice called out, "Why weepest thou, O King's daughter? thy tears would melt even a stone to pity." And she looked around to the spot whence the voice came, and saw a Frog stretching his thick ugly head out of the water. "Ah! you old water-paddler," said she, "was it you that spoke? I am weeping for my golden ball, which has slipped away from me into the water."



"Be quiet, and do not cry," answered the Frog; "I can give thee good advice. But what wilt thou give me if I fetch thy plaything up again?"

"What will you have, dear Frog?" said she. "My dresses, my pearls and jewels, or the golden crown which I wear?"

The Frog answered, "Dresses, or jewels, or golden crowns, are not for me; but if thou wilt love me, and let me be thy companion and playfellow, and sit at thy table, and eat from thy little golden plate, and drink out of thy cup, and sleep in thy little bed,—if thou wilt promise me all these, then will I dive down and fetch up thy golden ball."



"Oh, I will promise you all," said she, "if you will only get me my ball." But she thought to herself, "What is the silly Frog chattering about? Let him remain in the water with his equals; he cannot mix in society." But the Frog, as soon as he had received her promise, drew his head under the water and dived down. Presently he swam up again with the ball in his mouth, and threw it on the grass. The King's daughter was full of joy when she again saw her beautiful plaything; and, taking it up, she ran off immediately. "Stop! stop!" cried the Frog; "take me with thee. I cannot run as thou canst." But all his croaking was useless; although it was loud enough, the King's daughter did not hear it, but, hastening home, soon forgot the poor Frog, who was obliged to leap back into the fountain.

The next day, when the King's daughter was sitting at table with her father and all his courtiers, and was eating from her own little golden plate, something was heard coming up the marble stairs, splish-splash, splish-splash; and when it arrived at the top, it knocked at the door, and a voice said, "Open the door, thou youngest daughter of the King!" So she rose and went to see who it was that called her; but when she opened the door and caught sight of the Frog, she shut it again with great vehemence, and sat down at the table, looking very pale. But the King perceived that her heart was beating violently, and asked her whether it were a giant who had come to fetch her away who stood at the door. "Oh, no!" answered she; "it is no giant, but an ugly Frog."

"What does the Frog want with you?" said the King.

"Oh, dear father, when I was sitting yesterday playing by the fountain, my golden ball fell into the water, and this Frog fetched it up again because I cried so much: but first, I must tell you, he pressed me so much, that I promised him he should be my companion. I never thought that he could come out of the water, but somehow he has jumped out, and now he wants to come in here."

At that moment there was another knock, and a voice said,—

"King's daughter, youngest,
Open the door.
Hast thou forgotten
Thy promises made
At the fountain so clear
'Neath the lime-tree's shade?
King's daughter, youngest,
Open the door."

Then the King said, "What you have promised, that you must perform; go and let him in." So the King's daughter went and opened the door, and the Frog hopped in after her right up to her chair: and as soon as she was seated, the Frog said, "Take me up;" but she hesitated so long that at last the King ordered her to obey. And as soon as the Frog sat on the chair, he jumped on to the table, and said, "Now push thy plate near me, that we may eat together." And she did so, but as everyone saw, very unwillingly. The Frog seemed to relish his dinner much, but every bit that the King's daughter ate nearly choked her, till at last the Frog said, "I have satisfied my hunger and feel very tired; wilt thou carry me upstairs now into thy chamber, and make thy bed ready that we may sleep together?" At this speech the King's daughter began to cry, for she was afraid of the cold Frog, and dared not touch him; and besides, he actually wanted to sleep in her own beautiful, clean bed.



But her tears only made the King very angry, and he said, "He who helped you in the time of your trouble, must not now be despised!" So she took the

Frog up with two fingers, and put him in a corner of her chamber. But as she lay in her bed, he crept up to it, and said, "I am so very tired that I shall sleep well; do take me up or I will tell thy father." This speech put the King's daughter in a terrible passion, and catching the Frog up, she threw him with all her strength against the wall, saying, "Now, will you be quiet, you ugly Frog?"

But as he fell he was changed from a frog into a handsome Prince with beautiful eyes, who, after a little while became, with her father's consent, her dear companion and betrothed. Then he told her how he had been transformed by an evil witch, and that no one but herself could have had the power to take him out of the fountain; and that on the morrow they would go together into his own kingdom.





The next morning, as soon as the sun rose, a carriage drawn by eight white horses, with ostrich feathers on their heads, and golden bridles, drove up to the door of the palace, and behind the carriage stood the trusty Henry, the servant of the young Prince. When his master was changed into a frog, trusty Henry had grieved so much that he had bound three iron bands round his heart, for fear it should break with grief and sorrow. But now that the carriage was ready to carry the young Prince to his own country, the faithful Henry helped in the bride and bridegroom, and placed himself in the seat behind, full of joy at his master's release. They had not proceeded far when the Prince heard a crack as if something had broken behind the carriage; so he put his head out of the window and asked Henry what

was broken, and Henry answered, "It was not the carriage, my master, but a band which I bound round my heart when it was in such grief because you were changed into a frog."

Twice afterwards on the journey there was the same noise, and each time the Prince thought that it was some part of the carriage that had given way; but it was only the breaking of the bands which bound the heart of the trusty Henry, who was thenceforward free and happy.