

Agriculture

Other names for agriculture are farming, cultivation, husbandry, agronomy and gardening. Agronomy is the science of soils and plants.

Lettuce is a member of the sunflower family and the dark green leaves of lettuce are more nutritious than the light green ones. People consume about 13 kilos of lettuce a year.

Agriculture is constantly developing new ways to improve food production. Many universities train agriculturalists.

How does agriculture effect the environment?

What is the largest farm in the world?

How much of the Earth is in agriculture?

Air and Atmosphere

The Earth is wrapped in a layer of gas called the atmosphere. The atmosphere is held in place by the Earth's gravity.

The atmosphere is made of 4 layers: troposphere, stratosphere, mesosphere and thermosphere.

The gases in the atmosphere must hold the infrared rays from the sun's radiation and then reflect them back to Earth to keep the Earth warm. Without the atmosphere the Earth could not hold life, as it would be too cold.

Why are there four layers of atmosphere?

What is air made up from?

How does each layer work with the other layers of air?

Aircraft and Airports

The bigger the plane, the longer the runway needs to be. One of the largest cargo planes, the Antonov, needs a runway that is 4 kilometers long.

Before there were air traffic control centers to direct flights, pilots had to see for themselves whether there was space for them to fly or land.

Airports around the world manage passengers, and tones of cargo.

Where is the largest airport in the world and how big is it?

What country first took to flying?

Which country has the biggest air force?

Amphibians

Amphibians include frogs, toads, salamanders, and sirens, and caecilians (which are similar to worms but have sharp teeth and no Eyes).

Amphibians have lungs to breathe, but can also breathe through their skin under water. Newts also have gills like fish.

Frogs can use their eyeballs to help push down their food.

Do amphibians have teeth?

How many known kinds of frogs are there?

What is the smallest / largest or most poisonous amphibian?

Ancient Ruins

In 1928 AD excavations in a coastal city in Syria unearthed an amazing secret to tell. A set of tablets, with a unique and unknown alphabet, was found.

In Mexico ancient Mayan cities with monuments, temples, and pyramids were discovered. The Mayan civilization thrived between 300 and 900 A.D.

Archaeologists discovered that Mayans used paint containing the mineral mica to make their temples and sacred buildings sparkle.

What happened to the Mayan civilization? **What** other ingredients did Mayans use in their paint?

Which civilizations existed before the Mayans?

How many ancient ruins are there and which one is the oldest?

Animal Habitations

Habitats can be classified into many types—grasslands, deserts, tundra, woodlands, mountains, ponds, streams, marshlands, coastal wetlands, shores, and oceans.

Coral reefs are among the most varied habitats. Reefs are made up of millions of tiny animals that produce limestone deposits.

Tundra is a cold habitat that has short vegetation, long winters and limited drainage. The arctic tundra is south of the North Pole.

What is the purpose of coral reefs and why are they on the endangered list?

What are grasslands and savannas?

How much of the earth is made up of animal habitations?

Antarctica

Icebergs are pieces of the Arctic or Antarctic. The largest known iceberg broke free from the Ross ice shelf in the Antarctica. It was 295 km long and 37 km wide. Most of the iceberg is unseen as it is under the water.

Most of earth's ice is found in Antarctica; 90% of all ice. There is so little rain in Antarctica that it is considered a desert.

Insects live in Antarctica but they don't fly, just hop because the wind would blow them away.

Why is Antarctica a great place to find meteorites?

What are the characteristics of a desert?

What kind of life inhabits Antarctica?

How deep is the deepest ice sheet?

Ants

Ants are capable of carrying objects 50 times their own body weight with their mandibles. They use this strength to defend and feed their home, called nests.

Ants have lived in the time of the dinosaurs. Fossilized ants have been found in amber, a form of plant resin.

Scout ants leave the nest and wander around until they discover something edible. They eat some food (?) and head straight back to the nest to report their find.

How did the carpenter ant get its name?

How many kinds of ants are there?

Are ants a friend or foe to people?

Apes and Monkeys

Monkeys and apes are part of an order called primates. Humans are primates.

A group of monkeys is called a troop. They express affection and make peace with others by grooming each other.

Most monkeys eat both animals and plants. Some eat dirt.

How many kinds of monkeys and apes are there?

How long do monkeys and apes live for?

Where do monkeys and apes live?

What is the difference between apes and monkeys?

Apples

Apples are members of the rose family. They are high in fiber. Fresh apples float because they are $\frac{1}{4}$ water.

Apples can be found in many stories, poems and fairytales. An old saying is, "eat an apple a day, keeps the doctor away".

There are more than 7,000 varieties of apples in the world.

How many varieties of apples are in the super market?

What is the smallest and largest variety of apples?

Why are there so many varieties of apples?

The Arctic and Antarctic

The Arctic region is found in the northernmost part of Earth, while the Antarctica is in the southernmost part of Earth.

The majority of Antarctica is covered with ice over 1.6 kilometres thick.

Many people work but do not live year round in the Antarctic region; while the Arctic region is home to many people. Parts of Russia, Greenland, Canada, USA, Norway, Iceland, Sweden and Finland are in the Arctic Region.

What are the coldest recorded temperatures of the Arctic and Antarctic Regions?

What types of wildlife and vegetation are found in both regions?

Why are the Arctic and Antarctic regions important to the life of Earth?

Bats

Bats are flying mammals that feed mostly on insects. Some bats feed on fruit, fish or even blood!

There are over 1000 different bat species and some live for over 20 years.

Bats are nocturnal. Their ability to fly and hunt in the dark comes from a very special skill called echolocation. Bats make a sound and wait for the sound waves to bounce back off objects. When they hear the sound bounce back they can tell what is in front of them.

What kind of family life do bats have?

Where are bats found in the world?

What is the smallest and largest known bats?

Bears

During the cold season, bears may sleep for as long as six months without waking up to eat or go to the bathroom. The length of time they sleep depends on where they live.

Polar bears can swim as far as a 160 kilometers (100 miles) without resting. Even though the polar bear's fur is white, underneath, it's skin is black.

A brown bear living on a steady diet of spawning salmon can grow to weigh 650 kilograms (1,500 pounds), than a polar bear.

How many kinds of bears are there?

When and **where** are bear cubs born?

How long do bears live for?

Bees

Bees, like termites and ants live in well-organized social colonies. There is a queen bee, the worker bees and the drones. Drones are male and the workers are female.

Bees are found on every continent except Antarctica.

Bees make honey to feed their young and so they have something to eat during the winter.

Bees make noise by rapidly moving their wings.

How many eggs can one queen lay in a year?

Do honeybees have hair on their eyes?

Are there any other insects that produce food for humans?

Beetles

Beetles are one of the most common insects in the world. They are shiny and a rainbow of colors.

Beetles are found on land and in fresh water and can adapt to almost any environment. They eat small insects, tree sap, fruit, fungi, plant or animal debris.

Adult beetles have two sets of wings. Female beetles usually lay dozens or hundreds of eggs. Most beetles only live for a year.

What are the beetles antennae used for?

What is the largest and smallest beetle on Earth?

Which beetle is the gardener's friend?

Birds

While a bird can be a real “bird brain”, birds can also be very smart. Some birds play games and tricks, solve problems and learn other bird languages.

The Peregrine Falcon may be the fastest animal in the world when it dives out of the sky at 320 kph (200 mph) to catch his dinner.

Some birds species are intelligent enough to create and use tools.

Some birds can't fly at all. Instead, birds like ostriches are great runners and the Emperor Penguin swims using its wings underwater.

Why do some birds sing?

How are birds related to dinosaurs?

How many varieties of birds are there?

Bones

Bones give our body its structure. Without them our motion and actions would not be possible.

The human thigh bone is stronger than concrete, while the femur bone is the biggest bone in our body.

Humans are born with 300 to 350 bones. As we age some bones, like the ones in our head, fuse together or disappear.

Which part of the human body has the most bones?

What is the activity that helps your bones stay healthy?

Did you know that the strongest bone is hollow? —**Which** one?

Bridges

Common types of bridges include beam bridges, arch bridges, suspension bridges, cantilever bridges, truss bridges, and cable-stayed bridges.

The Zhaozhou Bridge is the oldest standing bridge in China and the world's oldest stone segmental arch bridge. Built in 605 AD, it is still standing strong today, over 1400 years later.

The longest suspension bridge in the world (as of 2010) is the Akashi Kaikyo Bridge in Kobe, Japan. It opened in 1998 and spans an incredible 1991 metres (6529 feet).

Which types of bridges are found closest to you?

What was the first bridge ever built?

How many bridges are there in the world?

Buildings

The word skyscraper originally referred to a type of sail on a sailing ship. A skyscraper is created from a steel skeleton of vertical columns, horizontal girder beams, and diagonal beams for extra support.

The Burj Khalifa in Dubai, UAE, is the tallest building in the world. It reaches an amazing 828 metres (2717 feet) in height.

The world's largest office building (by square metre) is the Pentagon in Virginia, USA. It is 60,400 square metres.

When did people start living in buildings?

What is the tallest building in your city?

Is a tent a type of building?

Butterflies and Moths

Butterflies sleep at night with their wings together. Most moths sleep in the day with their wings open flat.

Monarch Butterflies fly 3200 kilometers (2,000 miles) to winter in Mexico, then fly 2,000 miles back in spring.

Many butterflies can taste with their feet!

Why do people catch butterflies and moths?

How many kinds of butterflies and moths are there?

Which butterflies are poisonous?

Castles

A castle was built to withstand attack from enemy. Castle builders added many defensive features to make their castles difficult to attack. Many castles were built on high ground with clear views of the surrounding land.

Moats are large ditches, filled with water that surrounds a castle. This made it difficult for invaders to tunnel under the castle or climb the high walls.

If moats were not dug, ramparts could be used instead. Ramparts are steep banks of earth or loose stone that attackers had to climb before they could get to the castle walls.

Which country has the most castles?

Where were castles built?

How big is the largest castle in the world?

Cats

There are over 500,000,000 domesticated cats in the world. Domesticated cats weigh around 4 - 5 kilograms. A group of domesticated cats is called a clowder, a male cat is called a tom, the female a molly or queen and a baby cat is a kitten.

The largest cat species is the tiger, followed by the lion. When a tiger breeds with a lion, the offspring are called 'ligers' and 'tigons'.

All cats, rest from 16 (domesticated) to 20 (wild cats) hours a day.

How many species of cats are there?

Where in the world do wild cats live?

Why are wild cats on the endangered list?

Cattle

Cattle provide important products other than just beef. Products that are made with cattle byproducts are bubble gum, crayons, candles, toothpaste, paper, plastic, perfume, antifreeze, glue, tires, paints, carpets, and many more!

Cattle don't lap up water like cats and dogs, but use a sucking action to drink. Cattle regurgitate their food and re-chew the cud to help digestion. Cattle graze for about 8 hours a day.

Texas in the USA has the most cattle – 13,000,000.

How many cattle are in the world?

What do cattle eat?

Why can cattle climb up starts but not climb down?

Caves, Mines and Tunnels

Caves are giant holes that run horizontally underground. Holes that plunge vertically are called potholes. The most spectacular caves, called caverns, are found in limestone. Acid rainwater trickles through cracks in the rock and wears away huge cavities.

Mines are dug and worked by people for their minerals and materials like, coal, gold, silver, uranium and diamonds!

Tunnels are created by humans, insects and animals for the purpose travelling underground from one place to another, Bats have been known to live in caves, mines and tunnels.

What is the longest tunnel built by people?

What is the longest tunnel built by an animal?

How many tunnels, caves and mines are in the world?

Cells

Cells are the smallest parts that make up living organisms. They can be seen with the help of microscopes. Most cells can only be seen with a microscope. Animals have egg cells that are large enough to be seen with the naked eye.

There are many types of cells and each does a special job. There are two primary types of cells, eukaryotic and prokaryotic cells. Eukaryotic cells are found in animals, plants, fungi and protists, while prokaryotes are in bacteria and archaeans.

Cells split apart to create new cells using a process called mitosis.

What are some single celled creatures?

What is a cell membrane?

How many cells are in the human body?

Cereal and Grains

Cereal and grains include wheat, oats, barley, rye, triticale, corn and rice. It is the seeds or seed kernels of the plant that are harvested.

Cereal is named after the ancient Roman goddess of tillage and corn, Ceres. Wheat has been cultivated (grown) since around 7000 BC. Corn, since 5000 BC and rice since 3000 BC.

Cereals and grains are a huge part of the world's diet. You can find cereals and grains in most processed foods, including pet food.

What cereals and grains have you and your family eaten this week?

What are whole grains?

What happens to the rest of the plant once the grains are removed?

The Circus

The circus has been around for over 2000 years. The word circus is from a Latin word meaning circle or ring.

Clowns have been found as far back in history as 2400 BC. The main types of clowns are; the whiteface clown, the auguste (happy) face clown, the contra-auguste clown and the character clown. People who are afraid of clowns suffer from "coulrophobia".

Performers in circuses are superstitious. Some performers keep an elephant tail hair in their pocket.

What are the most famous circuses travelling in the world?

How do circus performers learn their skills?

What part do animals have in a circus?

Clothing

Clothing is made from many types of natural and man-made materials. Some natural plant fabrics used to make clothing are linen, cotton, hemp, nettles and bamboo. Fabrics made from animal byproducts are wool, llama, alpaca, cashmere, fur, leather and camel. Silk is made out of the cocoons of silk worms. Some man made materials are rayon, nylon and Velcro.

Before bleach was used to clean clothes, urine was excellent at taking out stains; however, it left a certain odor on the clothes.

Fashion has been part of clothing since we started wearing them. Over the centuries styles have changed.

Who makes style?

What are your clothes made from?

What is the most unusual clothing you can find in the history of clothing and why do you think it unusual?

Color

The sun's rays contain all the colors of the rainbow mixed together. Its called "white light". White reflects all the colors and black reflects none, as it absorbs all colors.

All the colors of the rainbow can be made by mixing red, yellow and blue. Black and white makes them lighter or darker.

We have objects of many colors now. But, long ago colors were very hard to make and get so only rich people could have them.

What is a prang color wheel?

Colors can represent emotions, **what** color represents excitement?

How does color affect food choices?

What do colors represent in different cultures?

Cooking

People use many different methods for gathering food, which include farming, hunting, gardening, foraging, fishing and shopping.

Cooking is part of food preparation. Cooking is adding heat to foods, which changes their chemical make-up, altering the foods' look, texture, flavor and nutritional value. People cook food by boiling, simmering, steaming, sautéing, pan-frying and deep-frying it.

What is a vegan?

What foods are most popular around the world?

What happens when people are allergic to foods?

Coral

Coral polyps are tiny, soft-bodied organisms related to sea anemones and jellyfish. Coral lives close to the surface in tropical waters throughout the world because they need sunlight. When a lot of coral live together, they and their calcium carbonate residue form a reef, a jagged rock under the surface of the water.

The Great Barrier Reef in Australia is the largest reef system in the world. Astronauts can see it from space.

Climate change is the biggest threat to coral reefs. Coral has been raised to the endangered status.

Why are coral reefs important to the ocean?

What happens to coral when the temperature rises?

How does coral protect its self from predators?

Cosmic Objects

Astronomers study cosmic objects like quasars, galaxies, gas clouds, pulsars and individual stars. The tool of astronomers is high-powered radio telescopes.

Astronomers know that most stars are formed from hydrogen gas. Astronomers can't always see into space with their eyes as space dust blocks their view, so they use radio waves to 'see' the hydrogen.

The Hubble telescope travels through space and sends fantastic pictures of all the cosmic objects it sees back to Earth.

Who first invented the telescope?

How many stars are there in our galaxy, in the Milky Way?

What are cosmic clouds?

Cotton

Small trees and shrubs produce cotton. It belongs to the same family as hibiscus, okra and mallow. Cotton is one of the oldest crops used to make fabrics... around 7000 years old.

Cotton is the most popular and best selling fabric in the world. It became easy to manufacture when the cotton gin was invented.

Cottonseed is made into vegetable oil or fed to livestock.

Who invented the cotton gin and why call it a gin?

Where is cotton grown?

What are other things besides clothes that cotton is used for?

Counting Systems

Before the invention of paper, people kept track of amounts using notches on bones, rocks, sticks, clay balls or tablets, or knots in strings.

Many thousands of years ago, people had no words for amounts. Maybe they used the word “nose” for one and “eyes” for two, then had another word that meant “many”.

Western number systems use a base ten system. Other number systems have used a base twenty or even a base sixty.

Who first invented written numbers?

How many counting systems are there?

What jobs are there that use counting systems?

Crustaceans

All crustaceans have an exoskeleton; no bones just an outer shell.

There are over 44,000 different species of crustaceans, including crabs, lobsters, krill, crayfish and shrimp.

The largest kind of crustacean, the giant spider crab of Japan, measures up to 12 feet (3.7 meters) across between its outstretched claws. The smallest crustaceans, such as water fleas, can be smaller than 1/125 inch (0.2 millimeter) long.

Where do crustaceans live?

Where are lobsters' teeth?

Which crustacean does not move about?

Dance

Dance is the art form that communicates through the body. It can be done alone or with others. Dance develops the skills of balance, strength, coordination and body awareness.

It is estimated that an evening of dancing is the same as going for a 9-kilometer walk.

In August 1983, Peter Stewart of Birmingham, UK set a world record by disco dancing for 408 hours. There are dances created for almost every types of music.

Where and **when** did dance begin?

How many types of dances are there?

What does dance communicate?

Deserts

There are a number of different definitions to describe a desert but they are typically areas that receive extremely low amounts of rain, less than 40cm a year. The Arctic and Antarctic are called polar deserts.

The sand or 'hot' deserts take up about 20% of the Earth surface. The largest hot desert is the Sahara Desert in northern Africa.

With hot days and cold nights, deserts are home to shrubs and cacti and animals like lizards and coyotes.

Which desert is the driest place on Earth?

How do cacti and shrubs live in a desert?

What insects live in a desert? **How** do insects find water in the desert?

Dinosaurs

The word "dinosaur" means "terrible lizard". But dinosaurs were not lizards at all. Dinosaurs had legs underneath their bodies and lizards have legs that go out to the side. All the dinosaurs lived on land.

Birds are the closest living relatives to dinosaurs. The smallest known dinosaur was about the size of a chicken.

"Oviraptor" is Latin for egg thief. Scientists used to think they were stealing eggs but now they think they were just taking care of their babies. Poor, falsely accused oviraptor!

How did dinosaurs become extinct?

Why are some dinosaurs so big?

How did dinosaurs raise their young?

Dogs

In total there are about 400,000,000 dogs in the world and there are hundreds of different breeds.

Dogs have been domesticated for thousands of years as pets, workers and companions throughout human history. Dogs also work, performing useful tasks for humans like, hunting, farm work, policing and assisting with people who have disabilities.

The most popular breed of registered dog is the Labrador.

What makes the Labrador so popular with people?

How many breeds are there?

When and where did dogs first become domesticated?

Dust

Dust is what accumulates on furniture, shelves and TVs. Dust can also be on the playground and kicked up into the air during a soccer game. Dust likes to settle on things, and wind and people move it about.

Dust is pieces of matter so small that it can float in the air and in some cases, is nearly invisible. Most dust is made up out of peoples' dead skin. People are 'dust factories'.

The predators of dust are people and dust mites. People try to sweep it away, while dust mites eat it.

Dust can travel across continents and across oceans.

Where do dust storms come from?

What is in dust besides human skin?

What do you see when you turn on a flashlight in a dark room?

Eggs

Many different types of animals lay eggs, including birds and fish. Sharks lay the biggest eggs in the world.

There is an old egg expression, you have egg on your face, which means, to be left in an embarrassing or humiliating situation, especially because of having made an obvious mistake.

People most commonly eat chicken eggs and scientists say eggs give us brainpower. Choline, a substance found in egg yolks, stimulates brain development and function.

What are some good egg jokes?

What creature lays the most eggs at one time?

Where does the color of an egg come from?

Engines

Engines helped bring about the Industrial Revolution. With engines, machines were created to do the work of many people at a quicker pace.

Denis Papin, a French physicist observed the steam escaping from his pressure cooker. The year was 1679 when he built the first working steam engine. There was a steam device made in 1AD as a toy for play.

The internal combustion engine replaced steam engines.

What fuels space engines?

What fuels are used to move cars?

What happens in an internal combustion engine?

Explorations

Exploration is where one travels to discover or investigate something like natural resources or an answer to a puzzling question.

There are many types of exploration; Arctic, cave, desert, ocean, space, mountain, mineral exploration.

Explorers began to explore the world in the Age of Discovery, known as the Renaissance, around 1400 AD. Christopher Columbus made 4 voyages of discovery and founded a New World.

Space exploration really got going when Neil Armstrong stepped onto the moon. Now the Hubble telescope is traveling, as NASA's eyes, to explore parts of the universe yet know.

What places on Earth are still waiting to be explored?

How do we know about explorers from thousands of years ago?

What is life like for explorers?

Eyes

The information our eyes receive is sent to our brain along the optic nerve. This information is then processed by our brain and helps us make appropriate decisions, for example if you can see an object flying in your direction then you will probably move quickly out of the way.

The parts of the eye are the retina (very light sensitive), the lens (helps us focus), pupil (monitors light), the iris (the colored part of the eye) and the cornea (a transparent covering of the eye).

What creatures do not have eyes?

What creatures have the most eyes?

How do eyes differ from creature to creature?

Do all eyes 'see' the same?

Farm Animals

Farmers have some animals to eat for food, some to use their hair, provide material for clothes and some to do work on the farm.

Chickens take dust baths instead of showers and comb their feathers with their beak.

Some dogs are amazing herders. They are fast, strong and very smart and can make a herd of cows, sheep or ducks go where they want. If they don't have any other animals to herd, they may herd the children!

Which farm animal is the closest living relative to the T-Rex?

What are groups of pigs, cows, geese and sheep called?

Why do pigs roll in the mud?

What kinds of dogs are used as herding dogs?

Farming

Farms are places that produce particular animals or crops. In 1940 there were a lot more people involved in farming. Farms have now become more efficient and produce more food.

Some items that come from farm animals are footballs, crayons, cosmetics, soap, perfume, paint and glue.

A dairy farmer can collect around 7 gallons of milk a day from each dairy cow.

How much of the land in the world is used for farming?

What more do animals produce than meat, milk and eggs?

What do farmers grow that fuels cars, trucks or boats?

Fish

Fish are vertebrate animals that live in the water. Vertebrate means they have a spinal cord surrounded by bone or cartilage. Fish have gills that extract oxygen from the water around them.

Although jellyfish and crayfish have the word 'fish' in their name, they aren't actually fish.

Instead of bones, sharks have a skeleton made from cartilage. There are over 30,000 known species of fish.

How many different kinds of sharks are there?

What do fish eat?

What are mermaids? **What** is the most famous mermaid?

Flags and Heraldry

Heraldry is the study of coats of arms. It all started with the knights entering a tournament. The coats of arms represent the family name, what property they own, who they are with and their profession. This form of identification started in medieval Europe and was mainly used to establish identity in battle.

The idea of flags began in ancient times to identify warring sides. Warriors needed to know where their leaders were, thus the flag barer stayed near the leaders. Romans were the first to use cloth flags.

According to Ancient and Heraldic traditions, the colors and design of flags symbolized the bearer's qualities.

What does the color red on flags symbolize on the National Flags of the World?

How did the pirate flag come about?

What is your family crest? **What** does it mean?

Flowering Plants

Angiosperms, or flowering plants, are the largest group of plants. The flowers are the reproductive part of the plant.

Most of our food, including fruit, vegetables, beans and grains come from flowering plants, as well as spices and herbs. Coffee, tea, cola, beer, wine, tequila and chocolate come from flowering plants.

Linen, cotton and burlap, and the commercial dyes used to color them, come from flowering plants. Also, some drugs like aspirin and digitalis are made from flowering plants.

Are trees flowering plants?

What is the difference between annual and perennial flowering plants?

What is a wildflower?

Forests

The three main types of forest are rainforest, deciduous forest and coniferous forest.

When the leaves fall off the trees in a deciduous forest, lots of sunlight gets to the ground. When the weather warms in the spring, plants on the ground have to grow really fast before the tree leaves grow back and block their sun.

In stories, forests can be places to hide from danger, or dark and scary places. Many stories have forests filled with strange, secret creatures.

How does planting trees and protecting forests help the planet?

What is sustainable forestry?

How much the world is covered in forest?

Fossils

Sometimes fossils are parts of bodies like bones and teeth. Sometimes they are parts of leaves. Other times they might be animal tracks.

There are two types of animal fossils: vertebrate and invertebrate.

Most fossils are found in sedimentary rocks.

Some different types of fossils are molds, casts, carbon films and mineralized bones.

Why are most fossils found in sedimentary rocks?

How do scientists date fossils?

What kinds of things/animals form the fewest fossils and **WHY**?

Fungi

There are an estimated 1.5 to 2 million different species of fungi on the planet Earth. That means that for every species of green plant in existence, there are about SIX species of fungi!

Early Romans referred to mushrooms as “The food of the Gods”.

Truffles, a special type of mushroom that grows below the ground, are one of the world’s most expensive foods. A single truffle was bought at an auction in December 2007, for \$330,000. The truffle weighed 3.3 pounds!

Why are all mushrooms not edible?

What are mushrooms, plants or animals?

How are fungi used in medicine?

Games and Sports

Games and sports are played all over the world and even on the moon. Countries take great pride in having a national sport. Archery is the national sport in Bhutan, a Buddhist country in Asia.

The Olympic Games uses a flame to represent the fire stolen from the Greek God Zeus.

Each sport or game has its own equipment. A major league baseball is only used on average for 5 pitches. Although a football is called pigskin, it is made from cow leather.

What is the oldest sport in the world?

What is the most watched sport in the world?

What was the game that astronaut, Alan Shepard played on the moon?

Can you name 100 pieces of equipment used in games and sports?

Goats

Goats are social animals, but not flock- oriented like sheep, which they are closely related to.

Mother and kid (baby goat) recognize each other’s call soon after the mother gives birth. A kid can follow its mother around almost immediately after it is born.

Goats have excellent balance and coordination and in some cases, climb trees and jump over 5 feet high.

What do goats like to eat?

Who brought goats to North America?

Why are the eyes of goats so different from human eyes?

Grass

Grasses come in a vast range of sizes and types, ranging from lawn grass to rice, wheat, corn, sugarcane and bamboo.

It is estimated that there are about ten thousand different species of grass worldwide and that 1/5 of all vegetation in the world has grasses in it.

Grasses vary from short creeping lawn grasses, to waist-high reeds and bamboo plants up to 40m (120 feet) tall.

What are some of the products we enjoy from grasses?

What is a threat to grasses?

What endangered animal only eats one type of food, a grass?

Habitations

Habitations are the homes where people or animals live.

People and animals build their homes out of materials that are nearby. This could include wood, mud, rock, leaves or other parts of plants and animals.

Weaver ants use the silk from their larvae to weave leaves together into soccer-sized balls for their homes. Some weaver birds build giant “apartment complexes” from straw.

Archeologists found ancient human homes built of mammoth bones and tusks.

What is a critical habitat?

Which animals share their habitat?

What happens when habitations change?

Hair and Fur

Hair and fur are one of the characteristics of mammals. Mammals (warm-blooded vertebrate animals) always have fur or hair so they can keep warm!

Polar bears' fur consists of a dense, insulating undercoat topped by guard hairs of various lengths. It is not actually white—it just looks that way.

Fur varies in colors and is often used as camouflage.

What are some of the differences you have noticed in hair or fur?

Do some mammals have more fur than others?

Fur is a synonym for hair, used when referring to non-humans.

What does synonym mean?

Hands, Feet, Hooves and Paws

Hands, feet, hooves and paws are useful tools for swimming, walking, running, digging, hopping, swinging, kicking and catching.

A hoof is a hard pad that protects the foot of an animal.

An elephant's foot generally measures 40 - 50 centimeters in length and width and has a circumference of about 1.34 meters.

Elephants are near-ungulates, which refers to the fact that they have toenails instead of hooves.

The word paws in the Farsi language means hands.

Are hooves bones?

What type of hoof has 4 toes?

Do camels have hooves?

How many different kinds of animals have hooves?

Headwear and Footwear

Headwear and footwear have been part of the human development since man first appeared. Used as shelter, protection or adornment, head and footwear remain big business in the fashion and work worlds.

In countries around the world, specific head and footwear represent the culture and traditions of that place.

Activities like sports, construction work and mining have developed a vast array of special safety head and footwear.

How many different kinds of jobs (sports) require headgear?

What types of headwear is the most popular in the world?

What are the names of popular footwear?

Horses

Horses are part of the family Equus that in Greek means "quickness". Horses sleep standing up.

A baby female horse is called a filly, a baby boy is called a colt, a baby boy or girl is also known as a foal. Most foals are born at night.

Ponies are small horses. They have thicker manes and tails and are stronger than horses. Why are ponies stronger?

A horse's height is measured in hands. 1 hand = 4 inches (10 cm).

What are hooves made of?

What use is a horse's tail and why is a pony's tail stronger than a horse's tail?

What is a thoroughbred horse?

How fast can horses move?

Icebergs and Glaciers

Icebergs are pieces of the Arctic or Antarctic. An iceberg is a large piece of freshwater ice that has broken off a glacier or an ice shelf and is floating freely in open water.

The largest know iceberg broke free from the Ross ice shelf (glacier) in the Antarctica. It was 295 km long and 37 km wide. Most of the iceberg is unseen as it is under the water.

Glaciers store between 70% and 80% of all the freshwater in the world.

How many glaciers exist on Earth today?

What's the difference between a glacier and an iceberg?

How deep are glaciers?

Insects

A bug is one type of insect. True bugs have straw shaped mouths for sucking juice from plants.

The largest insect is the longhorn beetle in South America. It can grow as big as 25 cm.

Many insects are hard workers and produce products people use. Many insects that eat the harmful insects that attack crops and save farmers a lot of money from being spent on pesticides. The silk moths produce silk and bees produce honey. Many insects are even canned and eaten!

Which insect releases a chemical that smells and tastes terrible so that the birds and other predators won't eat them?

How may eggs do you think a female ladybug lays in her lifetime?

How many species of beetles are there in the world?

Are spiders insects?

Jungles

Jungles are overgrown with wild tangles of vegetation and dense forest. Jungles and rainforests are similar, but while rainforests have thick canopies of tall trees that block out light, jungles allow more light in, making it easier for plants to grow out of the ground.

The word 'jungle' comes from a Sanskrit word meaning 'uncultivated land'.

Although lions have the title of 'King of the jungle', they typically live in savannahs and grasslands.

Who was a famous fictional character that was raised in the jungle by apes?

What types of plants and animals live in jungles?

What is R. Kipling's, The Jungle Book about?

Leaves

The flat part of a leaf is called the blade. If you hold up a leaf to the light it's pattern of veins can be seen.

Some leaves or 'needles' stay on the plant in the fall.

Leaves make sugar for the plant.

What is the history and meaning of a four-leaf clover?

What are the millions of little packages of color (green, yellow and orange) inside a leaf?

What is special about the Raffie palm of the Mascarene islands in the Indian ocean, and the Amazonian bamboo palm of South America and Africa?

Light

Scientists study the properties and behaviors of light in a branch of physics known as optics.

Light takes 1.255 seconds to get from the Earth to the Moon. Light is the fastest thing in the Universe.

Colors are different wavelengths of light.

Photosynthesis is a process that involves plants using energy from sunlight to convert carbon dioxide into food.

How fast does light travel?

Who produced the first light bulb?

What is special about laser light?

Locomotion

Locomotion means movement. Other words for locomotion are propulsion, drive, and kinesis. When things are not in locomotion or moving they are static or not moving.

For locomotion to happen, energy, balance and space are needed. Engines need fuel, animals need food and plants need sunlight to move. Living creatures move in a complex manner, using balance, locomotion, coordination and navigation (a sense of direction).

One doesn't need legs or hands to move like snails and clams. Some insects have 8 legs to more; imagine coordinating all of them at one time!

What animals move but do not locomote?

What are some types of human locomotion?

Why do fish, animals, humans and insects locomote?

Maps

Almost everything in our world, including the cosmos has or is being mapped. Maps are drawings that represent places and what is happening at these places.

Maps can be drawn to represent a variety of information. This information might include things such as roads, tourist attractions and campgrounds, or they might represent the latest weather patterns.

The objects on a map are represented using symbols. A symbol is a picture on the map that represents something in the real world. Symbols on maps can be understood by using the key to the map. This is a box drawn at the side or corner of a map explaining what the symbols mean. The Key is also called a legend.

What are aerial maps?

What is a mapmaker called?

How do map scales work?

Marsupials

There are more than 300 types of marsupials. Most of them, like kangaroos and koala bears live in Australia. The Virginia opossum is the only one in the United States.

Most marsupial mothers have a furry pocket on their bellies to hold their babies. Their babies start out as tiny as a jelly bean or even a grain of rice.

Koala bears eat only poisonous eucalyptus leaves and never drink water!

How many types of kangaroos are there?

Do marsupials mate for life?

Why are some marsupials endangered?

Measurement of Time

The history of time has been an ongoing search for the most accurate and consistent way to measure time. The study of time measurement is called horology. In the 16th century scientific study of time began with the Italian astronomer Galileo's work on pendulums.

In ancient China there was a bell ringer who would hit a giant bell to let people know when to get up and when it was the end of a day. They also burned knotted ropes to measure the passing hours when it was night.

How do sundials work to measure time?

Where is the prime meridian?

What would life be like if there were no measurement of time.

Metals

There are many kinds of metals. The periodic table lists the metals that are pure elements, which means they are all made out of the same atom like iron, gold, silver, and platinum.

Many metals that we use today are alloys. Alloys are metals that combine two or more elements. They could also be called metallic compounds. Often alloys are stronger and harder than pure metal.

Metal is found inside of rocks in mines. These rocks are called ore. In order to separate the other minerals in the rock from the metal, the ore is heated to really hot temperatures in a process called smelting.

How many kinds of metals are there?

What was the period in human history called before metals were used?

What is the study of metals called?

Milk

Over 90% of all milk comes from dairy cows. All cows are female and male cattle are called bulls. One cow can produce around 90 glasses of milk a day.

Milk also comes from goats and camels or dromedaries.

Milk is unique for it has more natural ingredients than any other beverage.

How is cheese made?

When did humans first start getting milk from cows?

What products are made with milk?

Mollusks

Mollusks are animals that don't have a skeleton. The word mollusk means soft, and animals like clams, snails and slugs are soft. One thing these mollusks have is a shell made of calcium to protect them. Octopus and squid are types mollusks called cephalopods and they do not have shells.

The earliest fossil evidence of land snails was from 325 million years ago, around the same time that frogs came out of the water. Frogs like to eat snails.

What foods do mollusks eat?

What was the largest snail ever found?

Where is the largest mollusk in the world found?

Money

Benjamin Disraeli in his 1826 novel Vivian Grey first used the word millionaire. A million dollars' worth of \$100 bills weighs only 10 kg (22 lb.), while in pennies it would weigh 246 tons.

The first credit card was issued by American Express in 1951. The credit card was designed so money would no longer be necessary.

The \$ sign was designed in 1788 by Oliver Pollock.

Which industry in the world earns the most money?

What was used before there was money?

Why is money valuable?

Who has the most money in the world?

The Moon

The Moon is the Earth's natural satellite. It orbits the planet every 27.3 days.

The average distance from the Earth to the Moon is 384,403 kilometres. The first person to set foot on the Moon was Neil Armstrong.

The Moon has a gravitational pull on the Earth, which causes ocean, and sea tides. Through research scientists agree that the Moon has small amounts of water.

How many times have missions landed on the Moon?

Why can only one side of the Moon be seen from Earth?

What is a lunar eclipse?

Mountains

In general, it is thought that a mountain has to be at least 600 meters tall. There are five types of mountains: plateau, block, volcanic, fold and dome mountains. Mountains have steeper sides than a hill.

Hawaii is actually on top of a volcanic mountain. About 80 % of all fresh water comes from the mountains.

Mountains make up 1/5 (one-fifth) of the world's landscape and are home to 1/10th of the world's people.

What is the highest mountain in the world and the highest mountain where you live?

How are mountains formed?

How do mountains affect weather?

Music

Music comes in many different types or genres. A few are: classical, country western, bluegrass, rock and roll, rap, hip hop, techno, etc. Instruments used to make music vary even more: percussion, string, air, voice, etc.

Before technology was wide spread, people played instruments and sang in their homes or went to concerts and shows in theatres. Once radio and then vinyl recordings were invented, people could bring music from all over the world into their homes.

The music company of Philips and Sony developed the CD in 1980. The first CD pressed in the U.S. was Bruce Springsteen's *Born in the USA*.

How many types of music are there?

Is music important in education?

Where is the rock and Roll Hall of Fame?

Musical Instruments

The saxophone was named after the American marching music composer, John Philip Sousa.

Whales deep in the ocean use sound to stun or kill their prey.

A piano covers the full spectrum of all orchestra instruments, starting below the lowest note of the double bassoon and rising above the top note of the piccolo.

What musical instruments started out, not as instruments but as sound signals for communication?

How many musical instruments are there?

What is the earliest known musical instrument? **What** is it made of?

Myths and Folktales

A myth is a story based on tradition that tries to explain how the world or the creatures came to be. Myths may have supernatural creatures that bring drama into the story, like the Greek myths of Zeus and the Gods on Mount Olympus.

Folktales are stories that have been passed down over the human generations. Fairy tales, fables and urban legends are examples of folktales.

There often are songs, dances, proverbs, and poetry in myths and folktales.

What is the difference between myths and folktales?

What are some modern day myths / folktales?

How do people know about myths from thousands of years ago?

Oceans

Oceans are large bodies of saline (salt) water. From the largest to the smallest oceans – they are the Pacific, Atlantic, Indian, Southern (Antarctic) and Arctic oceans. Oceans cover around 70% of the Earth's surface.

The largest ocean on Earth, the Pacific Ocean, covers around 30% of the Earth's surface. The Pacific Ocean contains around 25000 different islands; many more than are found in Earth's other oceans. The Pacific Ring of Fire, a large number of active volcanoes, surrounds the Pacific Ocean.

How do ocean tides happen?

What are seas?

Where is the deepest point in the oceans?

Olympic Games

The original Olympic games were held from 776B.C. until 396 A.D. The games were a celebration for the Greek god, Zeus. It wasn't until 1894 when a French educator, Baron Pierre de Coubertin, suggested the revival of the ancient games.

The Olympic games were originally held every 4 years until 1994, when the winter and summer games have alternated every 2 years.

No country in the Southern Hemisphere has ever hosted the winter games.

What 3 continents have never hosted an Olympics?

Where were the first modern Olympics held?

Why do they have the colors they do?

Paints and their Uses

Paint is a pigment (colour) mixed with a binding medium (something that holds the colour). Other terms for paint are lacquer, Portland cement paint, printing ink, and whitewash.

The purpose of paint is to cover, decorate and protect. The tools of painting depend on the job to be painted.

The first paint used goes back to the dots and hand stencils found on Spanish cave walls... that have been dated back as much as 40,800 years ago.

What was the first type of paint used and what was it made from?

How could 40,000-year-old drawings last so long?

How many uses are there for paint?

Paper

The United States and Canada are the world's largest producers of paper and paper products. The next largest are Finland, Japan, and Sweden, who produce significant amounts of wood pulp and newsprint.

Not all paper is used for printing and writing. In 875 CE the Chinese invented toilet paper.

Almost all paper today is made from wood cellulose. However, rags were used widely until the end of the 19th century.

What other types of materials are used to make paper besides wood cellulose?

What is wood cellulose?

Who are the paper users of today's world?

Pirates

The golden age of pirates was 1764-1856, but there are still pirates today. Today's pirates are not the colorful figures of the past. People still search for the legendary treasures pirates like Blackbeard buried. In 1996 a historic discovery took place, Blackbeard's ship, "Queen Anne's Revenge" was found.

Blackbeard is one of the most infamous pirates in history. His stories are well chronicled even well after his death in 1718 by Captain Robert Maynard.

What was the daily life of a pirate like?

Where are pirates found today?

What does it mean when a pirate says, "shiver me timbers"?

Ponds and Lakes

Lakes are usually large bodies of fresh water and can range in size from a small pond to huge bodies of water. The Caspian Sea is the largest lake on Earth - 370,400 sq. km.

The biggest known lake in the universe is found on Titan, Saturn's largest moon at 388,500 sq. km.

Ponds are often shallow holes where water collects. Over time, ponds will fill up with dirt and debris until they become land.

Lakes are often connected to rivers. There are around 2 million lakes in Canada.

Why is the Caspian Sea called a lake?

How are ponds and lakes made?

What uses do lakes and ponds have?

Ports

Ports are a town or city with a harbor where ships load or unload. They are often where customs officers are stationed.

There are ports in almost every country in the world. Ports handle the cargo and either store it or direct it to where it needs to go.

Shipping containers are uniform throughout the world as ships are specifically built to hold those containers.

Ports are built with deep water channels and wharves for ships, ferries, navy ships and boats to dock at.

What countries do not have ports?

Where are the largest ports in the world?

How much cargo goes through a major port in a day?

Rainforests

Rainforests are forests that experience a high level of rainfall. There are two types of rainforest, temperate and tropical. Rainforests are considered endangered due to deforestation and in some areas drought.

The words 'jungle' and 'rainforest' sometimes are used to mean the same thing but there are some differences.

Twenty-five percent of all natural medicines come from rainforests.

Who or what lives in rainforests?

Why does the world need rainforests?

What are the differences between jungles and rainforests?

Reptiles

A reptile is defined as any "cold-blooded" vertebrate of the class Reptilia, including the tortoise, turtles, snakes, lizards, alligators, crocodiles and some extinct creatures.

Even when a snake has its eyes closed, it can still see through the eyelids.

Reptiles are very clever at camouflage and other ways to defend themselves, like hissing and biting.

Why are reptiles considered to be "cold blooded"?

Why are many reptiles on the Endangered Species list?

How long do reptiles live for?

Rice

Rice is a grain that has been used to feed people for over 5000 years. In the world today, rice feeds 2 out of every 3 people.

Rice is used in beer, dog food, breakfast cereals and much more. Rice is also used in making paper.

Rice can be stored for long periods of time and swells to 3 times its size when cooked. Rice is grown on every continent except Antarctica.

For 1 kilogram of rice there are around 61,000 grains of rice.

What food type does rice belong to?

How is rice grown?

What myths or folktales are told about rice and how it came to Earth?

Rivers

The definition of a river is a natural course of water, usually freshwater, flowing toward an ocean, a lake, a sea or another river.

All rivers start at the highest point, their source and then flow downstream. The 'mouth' of a river is its end.

The world's shortest river is the Roe River, which is 61 metres long.

In the late 18th and 19th century in America pirates terrorized the Ohio and Mississippi river valleys, robbing and killing river travellers.

What are the three longest rivers in the world?

Who owns rivers?

Do rivers remain the same forever? What changes occur in the life of rivers?

Roads

Thousands of years ago roads were built for travellers to move from one place to another, either on foot or by cart and animal.

The most famous historical road, which runs from China to Eastern Europe, is called The Silk Road. It was built to carry trade goods, like silk, spices and teas from China and bring back goods like, cotton, ivory, wool, gold and silver.

Marco Polo traveled to China along the Silk Road.

How long is the Silk Road and who uses it today?

What makes Roman roads so special?

How Which has the most kilometers of roads?

Rodents

There are several species in the rodent group: rabbits, squirrels, mice, rats and chipmunks.

A male rabbit is called a buck and a female rabbit a doe. Baby rabbits are called kits or kittens.

Rats breed so quickly that in just 18 months, 2 rats could create over 1,000,000 relatives.

Rodents are often considered pests: **what** are pests?

Where do you find rodents?

What is unique about rodents' teeth?

Roots of Plants

Roots take an important role in the well being of others. Roots anchor and feed plants. Roots drain water from the soil, which helps the soil from getting too wet. Roots also helps the soil when it gets too dry, by drawing up water from below.

Roots are so strong that they can split rocks into smaller pieces, which later become soil. Roots also help keep soil from being washed or blown away.

Some roots, like carrots and potatoes, are also great for eating.

What other root vegetables do people eat?

Which roots are harmful?

What medicines are made from roots?

Sacred Buildings

Other words for sacred buildings are 'holy, blessed or revered' buildings. Sacred buildings can be churches, chapels, mosques, synagogues, temples, shrines, or stupas. These sacred buildings/places have been and are in every civilization.

It is believed that these places have spiritual qualities. People come to worship. Some of the greatest art treasures are found in sacred buildings, like in the Vatican City in Rome.

Some historical world-renowned sacred buildings are Stonehenge (England), the Great Pyramid (Egypt), and the Shinto shrines (Japan).

What makes a building sacred?

What are some modern day shrines / sacred buildings in the world?

How many of the Wonders of the World are sacred buildings?

Where are there sacred buildings in your neighborhood?

The Sea Shore

Waves are the primary means for sand to travel from the sea to shore and back out to sea again. Waves are caused by the ebb and flow of the tides, winds and water temperature.

Most of the salt in seawater is the same as common table salt. Too much salt intake can cause dehydration.

Individual grains of dry sand do not stick together. But when sand is wet, water surrounds each grain and creates surface tension, which causes the grains to cling to each other. This is why it is possible to build a sandcastle.

Which country has the largest shoreline in the world?

Where does sand come from, how is it made?

What creatures live at the seashore?

Seeds

Seeds are the beginnings of plants that are carried inside them. Seeds come in a remarkable number of sizes, shapes and colors.

Seeds are 'dormant' until they get what they need to sprout. Seeds need different amounts of water, light and/or heat to grow. Many seeds wait until spring before they sprout.

Seeds travel to find space for them to grow. Dandelion seeds are famous travellers.

What can you find out about the coconut which is found only on the Seychelles islands near Africa?

Is a coconut a fruit, nut or seed?

How do seeds travel?

Sheep

A group of sheep is called a herd, flock or mob. Young sheep are called lambs, female sheep are ewes and males are called rams. Sheep stay close together, which makes them easier to move.

Sheep have 4 stomachs and each one helps them to digest their food. Sheep like to eat grass. Sheep are farmed for their meat and their woolly coats called fleece.

The first mammal ever to be cloned was a sheep called Dolly.

How can sheep see behind them, without turning their heads?

What makes sheep 'bovid'?

What are the differences between sheep and goats?

Ships

The first known water vessel dates back to around 10,000 years ago. They resembled rafts with skins or woven material for sails.

Ships are traditionally referred to as “she”, even if they have a man’s name.

There are thousands of types of ships and boats. There are pleasure boats, like yachts, to large cargo freighters that transport goods around the world.

The Canadian 10 cent piece has a famous ship on it, called the Bluenose.

Submarines are considered boats, as are ferries and riverboats.

How many types of ships are there?

What made the Bluenose schooner so memorable?

What is the difference between a ship and a boat?

Sign Systems and Codes

The study of sign systems and codes is called ‘semiotics’.

In 1972 NASA sent the Pioneer 10 into deep space with a plaque (sign) on it. The sign has pictures message on it about the Earth. The sign was added to the probe just in case the probe is intercepted by intelligent, scientific beings. The ‘aliens’ would have to decipher the code in order to understand what the sign is saying.

Sign systems and codes are ways to communicate, send messages and understand things beyond words. Computers use number/signs code to function.

What is sign language?

What did ships use before radio to talk to one another?

What part does semiotics play in modern advertising?

Soil

Soil covers much of the earth. It is made up of minerals (rocks, sand, clay, silt) air, water and organic material.

There are many kinds of soil. Each one has unique colors, textures, structure and mineral content.

There are lots of types of soil and they have names like Alfisols, Aridisols, Entisols, Histisols, Inceptisols, Mollisols, Oxisols, Spodosols, Ultisols, Gelisols, Andisols and Vertisols.

Scientists who study soil are called pedologists.

Would there be life on earth without soil?

How long does it take to form 2 cm of topsoil?

In just one gram of soil there are up to 7000 different species of **what?**

The Solar System

The Solar System was formed around 4.6 billion years ago and includes the sun, planets, comets, asteroids, meteoroids and moons.

It was originally thought that the sun revolved around the Earth.

Astronomers study the celestial skies and it was their scientific work that helped develop the model we now know as The Solar System. The planets revolve around the sun.

Even though there are only 8 planets, there are considered by scientists to be over 100 (non-planet) worlds full of interesting activities. Some moons are bigger than planets!

How did the Solar System form?

What are some of the 100 worlds in The Solar System?

Who was the first scientist to propose that the earth went around the sun?

Songs

The two most essential elements to every song are the LYRICS, words and the MELODY, music. These are the parts that belong to the songwriter. Depending on who sings the song, they will bring in the HARMONY and RHYTHM, which are part of arranging the song.

Artists who sing someone's song pay the songwriter a ROYALTY.

Almost every type of canary has the capability of song, but some prefer to sing a lot more, than others. Whales are also known for their ability to sing songs.

Who is or was the most prolific songwriter?

What other animals are known for their ability to sing?

What is a royalty?

Spacecraft

Spacecraft are built with a double hull to protect them from space objects. They also have special filters on their windows to protect the astronauts from the sun.

Alien spacecraft are sometimes called flying saucers. There are many science fiction books that describe spacecraft and life on them.

The space shuttle, designed by NASA was the first spacecraft that could be reused to routinely go to outer space.

How many spacecraft has NASA launched into space? **What** is NASA?

What happens to spacecraft when it is not flying?

How does life-support work on manned spacecraft?

Spices

Spices and herbs have been traded since 3000 BC. Explorers were sent to find passages to the East Indies to get spices. Wars were even fought to see who would control the spice trade.

Spice is a seed, fruit, root or bark of a plant or a tree always dried up before using. It is mostly used for flavoring, coloring or preserving food.

Herbs are the leafy green parts of a plant (either fresh or dried) used for flavoring food. Otherwise herbs can also be seeds or flowers used for medicines or perfume.

Why were people so interested in spices that they had wars for them?

What spices or herbs live in your cupboards?

How many kinds of spices do we cook with today?

Spiders

Scientists call spiders Arachnids. There are people who are afraid of spiders and this fear is called, Arachnophobia.

The largest spider in the world is the Giant Bird-eating spider, which is around 28 cm from leg to leg.

Spider silk is considered the strongest material in the world. Scientists have tried to copy spider silk but have been unsuccessful so far.

Which story spider character is the kindest and most intelligent?

What are the smallest spiders in the world?

Which spider is considered the most poisonous of all?

Stones and Rocks

The Earth's crust is made up of rock and stones, which are made up of minerals.

Rocks have been used for thousands of years by man; for tools, weapons and construction materials.

There are 3 different types of rocks and stones based on the way they were made; igneous (melted - magma), sedimentary (layers of deposits left over time) and metamorphic rock (pressure and heat formed).

Rock isn't always hard. Chalk is a kind of rock.

What are some types of igneous, sedimentary and metamorphic rocks?

What is the difference between rocks and stones?

What kinds of rocks and stones are considered most valuable?

The Submarine World

The submarine world has over 5000 fish and marine animals living in it.

There are also some insects and spiders that dive in water, like beetles and the larva of the drone fly.

There have been experiments where people live in an underwater environment. Richard Presley spent 69 days and 19 minutes in an underwater module in a lagoon off Key Largo, Florida in 1992.

People have tried to recreate the submarine world in many types of aquariums.

What is the deepest spot in the world?

Who was the first to explore the submarine world?

What is the most valuable shipwreck ever discovered?

Swamps and Wetlands

Wetlands are bogs, fens, swamps and marshes. They are land where the water level is mostly above the ground.

Bogs and fens occur in colder climates and are filled with peat and rotted plants. A swamp's water level varies, while marshes are always flooded.

Wetlands are disappearing. They are being drained, filled in, and built upon. Science shows that wetlands are valuable for their wildlife and water control properties.

How much of the world is wetlands?

Why does eating cranberries, crab cakes, shrimp and wild rice depend on wetlands?

What plants and animals live in wetlands?

Teeth

The 3 top reasons teeth are important are eating, talking and smiling. As babies, people start out with 20 baby/milk teeth and then grow 32 permanent teeth. Some people have false teeth, called dentures.

Teeth are alive and need to be taken care of to stay healthy. Rodents' teeth never stop growing so they need to constantly gnaw on hard things.

The giant armadillo has the most teeth of any land animal... 100!
Tusks and fangs are types of animal teeth.

What animals have teeth and what animals don't?

What kinds of teeth are there?

What are the 5 parts a tooth is made up of?

Theatre

The word theatre means a "place for seeing". It is said that the first theatre was when hunters in prehistoric times would act out their hunting adventures.

There are many types of theatre: medieval, renaissance, kabuki, opera, community, etc. Theatre is done all over the world. A director leads performers, called actors.

Acoustics plays a large part in the design of theatres. The sound wave can travel at different frequencies depending on the material used to make. This is why theatre buildings have strange shapes on the walls and ceilings to absorb sound.

Who are some famous theatre actors?

What part do movie theatres play in theatre?

Why has theatre been around so long?

Tools and Simple Machines

Simple machines are single mechanical devices (one moveable part) that help people work faster, easier, and more efficiently. Simple machines are devices called tools that are used in labor. Tools work using force to overcome friction and gravity to help getting the job done. When we overcome a force like friction or gravity, we are doing work. People still have to put energy into simple machines in order for them to work, like a pencil sharpener.

Putting simple machines together can result in more complex machines, like a bike or car.

What are the 6 kinds of simple machines?

What makes a paper fan a simple machine?

What is the oldest tool in the world?

Trains and Railways

Locomotives don't always pull cars around. They shove them around, too. Locomotives weigh around 200 tons each.

Trains usually have four braking systems available, with one propulsion system. That is because it is much harder to stop than to get moving.

Italy has the only railway that climbs to the top of a volcano. The heaviest train weighs more than 27,000 elephants.

How fast can trains travel?

Where is the largest railway station in the world?

When were trains invented and by whom?

Transportation

The first wheeled vehicles in history were invented in 3500 BC. At the same time oars were introduced on riverboats.

Around 2000 BC horses were domesticated and used for transportation. Horses are still being used as transportation all over the world some 4000 years later.

Leonardo da Vinci in 1492 was the first person to draw and devise flying machines.

There are many stories of what futuristic transportation will look like, from flying cars to worm holes.

What is “public transportation”?

How many types of transportation are there?

What is a dirigible and where can you find them?

Trees

A NASA satellite in 2005 helped estimate that there were 400,246,000,000 trees on Earth.

The tallest standing living tree is a Mountain Ash, named Centurion, is approximately 329 feet, 8 $\frac{3}{4}$ inches tall. You have to go to Tasmania, Australia if you want to go see it up close.

The tallest uncut, decorated Christmas tree can be found in Blue River, Oregon, USA. It is a 212-foot Fir tree.

What is the tallest tree in the world?

How far do tree roots travel?

Why are trees important plants?

Tundra

Tundra in Finnish means “treeless land”. Tundra’s are regions so cold and with so little rain that tall trees cannot grow. They are usually covered in snow for half the year. Mosses, lichen, grasses, heathers and low shrubs grow in tundra. Trees like dwarf willows and ash trees grow there.

There are arctic and alpine tundra. It is dark all the time in winter and light all the time in summer.

20% of the Earth’s surface is tundra.

What animals live in tundra?

What is the average temperature of the Arctic tundra?

What is threatening the tundra ecosystem?

Tunnels

Tunnel boring machines are often used to excavate major tunnels. These huge machines can bore through all kinds of sand, clay and hard rocks. The largest tunnel boring machines feature diameters of over 14 metres.

The longest undersea tunnel in the world (as of 2010) is the Seikan Tunnel in Japan, it is 53.85 kilometres in length.

Not all tunnels are for people: in the Netherlands there are more than 600 tunnels built under roads to keep animals safe.

What tunnels are near you?

What animals are great tunnel makers?

Where is the longest tunnel in the world?

Underground Life

There are some animals that live underground for most, if not all their life, like moles and worms. Animals who live underground are called Fossorial animals, like aardvarks, armadillos and rabbits. In fact, there is a huge underground community of burrowing animal life.

One very famous Fossorial animal has a day named after it; Groundhog Day. On February 2nd Punxsutawney Phil comes out of his burrow to predict the weather.

The tunnels build by people are often called 'underground'. There are places built underground where people work and live.

How many types of animals and insects live underground?

What do animals eat and where do they sleep underground?

What is a troglobite and where does it live?

Volcanoes

Most volcanoes occur near the edges of tectonic plates, the massive rock slabs that make up Earth's surface. Some volcanoes are found at "hot spots".

Volcanoes can become extinct. If scientists do not expect a volcano to ever erupt ever again, they consider it to be extinct. Volcanoes that are not currently active but may erupt again are labeled dormant.

The biggest volcano on Earth is Hawaii's Mauna Loa. One of the five volcanoes in Hawaii, it towers 13,000 feet above sea level.

Where in the world are volcanoes found?

How are volcanoes formed and what is a “hot spot”?
Where and when was the largest known volcanic eruption?

Water

In Canada, there is more water underground than on the surface. The overall amount of water on our planet has remained the same for two billion years.

Once evaporated, a water molecule spends about 10 days in the air.

You can survive about a month without food, but only 5 to 7 days without water.

How much water is in the human body?

How much of the world’s water is fresh water and how much is salt water?

Which country has the most water and which country has the least water?

Water Supply and Resources

Every living thing needs water. It is one of our most important resources. A lot of effort is being given to the care and distribution of water. In North America and other developed areas, most water comes to people through pipes from water reservoirs. This is not so for many places around the world. Millions of people spend hours everyday walking to collect water from a far distance.

Of all the water on Earth, only 2.5% is fresh water, while 97.9% is salt water. Climate change is affecting the world’s fresh water supply.

Why is it important to save water?

How can people conserve water?

Where does water come from?

Water Transport

Water transport can be explored in two groups, island water transport and shipping (Coastal and Overseas Shipping). The type of transport needed will depend on the distance and type of water the transport will travel on.

Water transport vessels have had a lot of improvements over the past century. From speed, size and comfort, transport vessels help to connect and develop countries.

Some types of water transport include tankers, cruise ships, ferries, and cargo ships. Each transport has a port it calls home.

What is the biggest water transport in the world?

How many types of water transport are there?

What countries do not have water transport?

Weather and Climate

Weather and climate affect how people dress, and what activities they will do. Weather is the conditions outside on a day-to-day basis. Climate is the conditions of weather over a longer period of time and a larger area of land. Climate changes are under constant watch by weather scientists called, Meteorologists.

Clouds can be categorized into 3 different types; cumulus, stratus and cirrus.

The most rainfall ever recorded in one year is 25.4 meters (1000 inches) in Cherrapunji, India.

What is lightning?

What are weather balloons for?

What is global warming?

Whales

The blue whale is the largest animal that has ever lived. It is bigger than any known dinosaur!

Dolphins are a kind of whale.

A person who studies whales is called a cetologist.

Do humpback whales sing the same song everywhere they go?

How does the whale song travel underwater?

What is the deepest a whale has ever dived?

Wheat

Wheat belongs to the family of grains in the grass family. Out of all the grains, it has been grown the longest. Wheat has been cultivated (grown) since around 7000 BC, corn since 5000 BC and rice since 3000BC.

Early methods of wheat farming were very labor intensive, from planting, harvesting and then threshing wheat by hand to separate the kernel from the shaft. Today the job of wheat farmers is easier due to machinery, like combines. The major problem for farmers today is the low cost of wheat, the high prices of equipment, fuel and, as always, the weather.

From cereals, baked goods to pasta and tortilla chips, wheat is found in a lot of different products

Where was wheat first grown?

What products in your home have wheat in them?

What is cracked wheat?

The Wheel

The wheel has been said to be man's greatest invention and one of the six basic machines. The wheel is used all over the world, in an amazing number of ways, from machines to toys.

No one knows who invented the wheel as it was invented over 12,000 years ago. In Mesopotamia around 3,500 BC are the first known diagrams of wheels turning pottery.

Some of the biggest wheels in the world are 'Ferris' wheels, named after GW Ferris Jr. who built a 264ft tall pleasure wheel for 2,160 people to ride around on.

What great wheels have been made in the world?

Are there some natural, nature-designed wheels?

What games use wheels?

Wildlife Migration

Migration makes it possible for animals to survive. They move to new environments to find food, escape predators or cold, and find mates.

The Arctic Tern may have the longest migration, flying from the Arctic to the Antarctic and back each year. He gets more sun than any other bird. When you add up all the miles he flies in his life, he could have gone to the moon and back!

Scientists have learned a lot about how animals find their way to new homes but it is still a big mystery!

Has migration changed over the centuries?

How many animals, birds, etc. migrate in the world?

Which animal in the oceans has the longest water migration?

Wood

Trees produce different kinds of wood. The wood is judged by its weight and density, making it a soft, medium or hard wood, depending on how much oil, gum, resins and lignum cells it has in it.

The lightest wood in the world comes from the Southeastern Asian Indian Sola Wood. The heaviest wood in the world is the Australian Bauhinia Red.

Not all wood floats!

What kind of wood is the heaviest and hardest in the world?

Do all species of wood float in the water?

What can you find out about the ancient kauri wood?

Wool

Australia is the largest supplier of wool, producing 80% of the world's wool.

The great thing about wool is it still keeps you warm even when it gets damp. Wool is fire and wrinkle resistant and it can stretch.

Wool comes from sheep, but sheep didn't always have wool. 10,000 years ago, people first domesticated sheep for their meat and hides (like deer). It would take 5000 years for people to start to use some of the soft wool underbelly of the sheep to spin wool.

What is the process to make wool, from shearing to cloth?

What other animals produce wool besides sheep?

What things are made of wool?

Worms

Earthworms have been known to bury things in the soil. They grab and pull small objects, like garbage under the soil so they can process it.

Earthworms are able to regenerate most lost parts of their bodies.

Earthworms are important as food for many types of birds and animals. They are also important to keeping the top layer of rich soil on the earth.

Do worms hear and see?

How does a worm breath?

How long do worms live?

What is the longest worm-life ever recorded?

Writing Systems

Different writing systems represent different languages. There are around 100 writing systems that use alphabets today. The most widely used alphabets are the Roman, Arabic and Cyrillic. The alphabetic system relates letter to sound.

In Chinese writing, characters are used instead of letters. The characters stand-alone and are complete in themselves. There are over 9000 characters. Unlike English, Chinese text is only interrupted by punctuation, not space.

What is the first known writing?

Are graphic novels a writing system?

Why is it easier for young children to learn a different language?