

Earth and Space

Name:

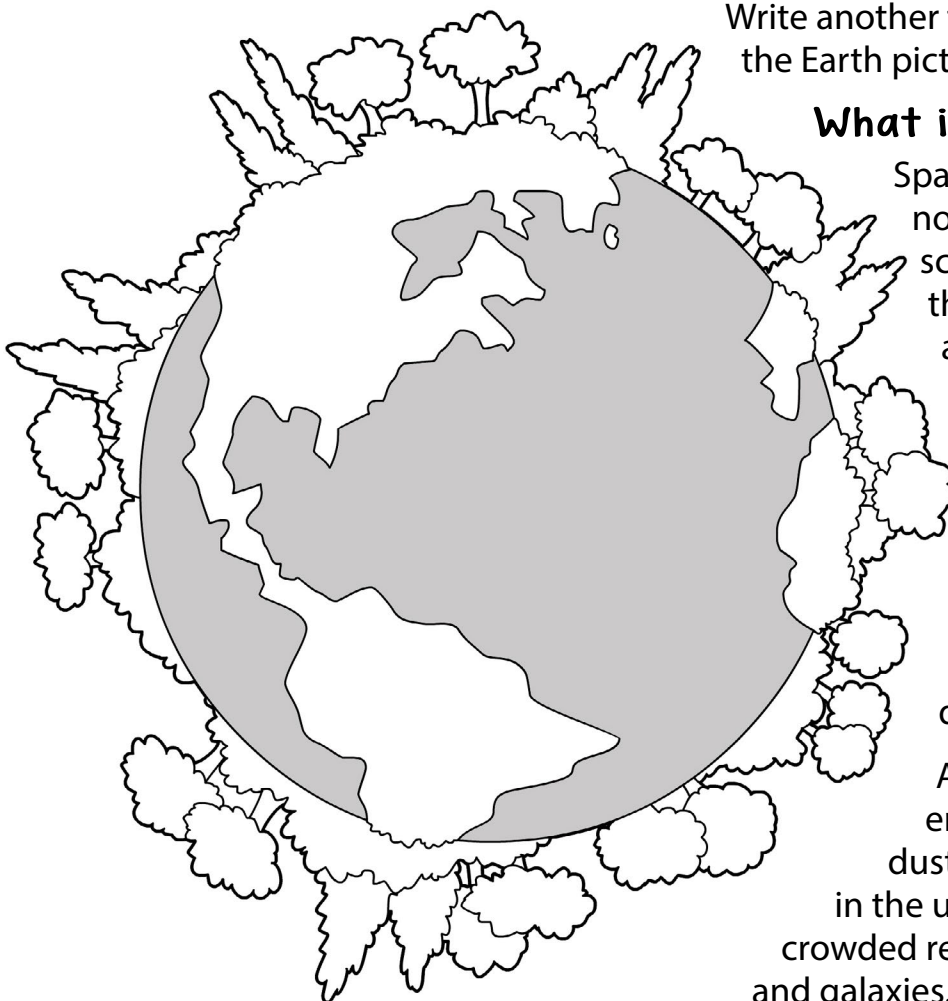
Scientists believe our Solar System was created by the collapse of a massive molecular cloud known as the pre-solar nebula about 4.6 billion years ago.

1. Earth is the fifth largest planet in the Solar System.
2. It is the third planet from the Sun.
3. It is the only planet in the Solar System to have water in its liquid form.
4. Earth is the only place in the universe where life is known to exist.
5. Earth has features like mountain ranges, canyons, ridges, plains, and volcanic activity.

DID YOU KNOW?



Activity:



Write another five interesting facts in the Earth picture featured here.

What is space?

Space is a vacuum. In space, no one can hear you scream! This is because there is no air in space and sound waves cannot travel through a vacuum.

'Outer space' starts about 100 km above the Earth. There is no air to breathe and it looks like a black blanket dotted with stars.

Although space seems empty, it is not. Gas and dust float around the gaps in the universe while more crowded regions host planets, stars and galaxies.

The term “light-years” is used to measure long distances in space and this measures the distance it takes for light to travel in a year (roughly 5.8 trillion miles, or 9.3 trillion kilometers).

Space is also filled with radiation that is dangerous to astronauts. Most of the infrared and ultraviolet radiation comes from the Sun.

Activity 2: Design and build your own spaceship

Put your design and building skills to the test by creating a spaceship using recycled materials (e.g. cardboard, tin foil, plastic bottles, newspaper, bottle tops etc.).

Plan your design on paper before you start building.

Answer these questions once you have completed your project:

What materials did you use to build your spaceship?

Why did you choose those particular materials?

Did you follow your exact design?

What is the name of your spaceship?

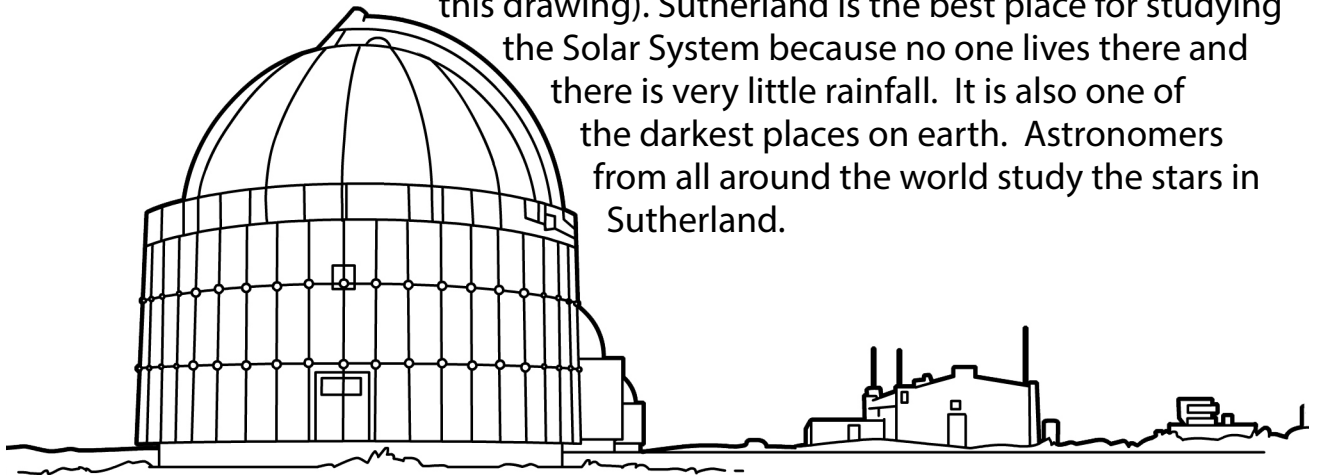
Write a paragraph about your trip to space

The Earth's place in Space

Name: _____

Scientists who study space are called astronomers. They work from special buildings called observatories. From these buildings, astronomers can observe the sky to find out more about the solar system. Telescopes are used to watch the skies. They are powerful machines that make small objects look much bigger.

There is a giant telescope in South Africa in a place called Sutherland (depicted in this drawing). Sutherland is the best place for studying the Solar System because no one lives there and there is very little rainfall. It is also one of the darkest places on earth. Astronomers from all around the world study the stars in Sutherland.



What is the Milky Way?

The Milky Way is the galaxy, which is the home of our Solar System as well as at least 200 billion other stars. The Milky Way got its name from the band of white light that falls across the night sky.

Define the following words:

Orbit _____

Elliptical _____

Galaxy _____

Comets _____

Asteroids _____

What is the Solar System?

It is our Sun and everything that travels around it. Our solar system is elliptical in shape. That means it is shaped like an egg. The Sun is in the centre of the solar system. Our solar system is always in motion (moving).

There are eight planets in our solar system. Each planet has its own moons, along with comets and asteroids. All of these objects in space orbit (move around) the Sun. The Sun is the biggest object in our solar system.

The eight planets are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

Write down the sentence to remember the planet names in order:

"My very easy method just speeds up naming planets."

My = Mercury

Very = Venus

Easy = Earth

Method = Mars

Just = Jupiter

Speeds = Saturn

Up = Uranus

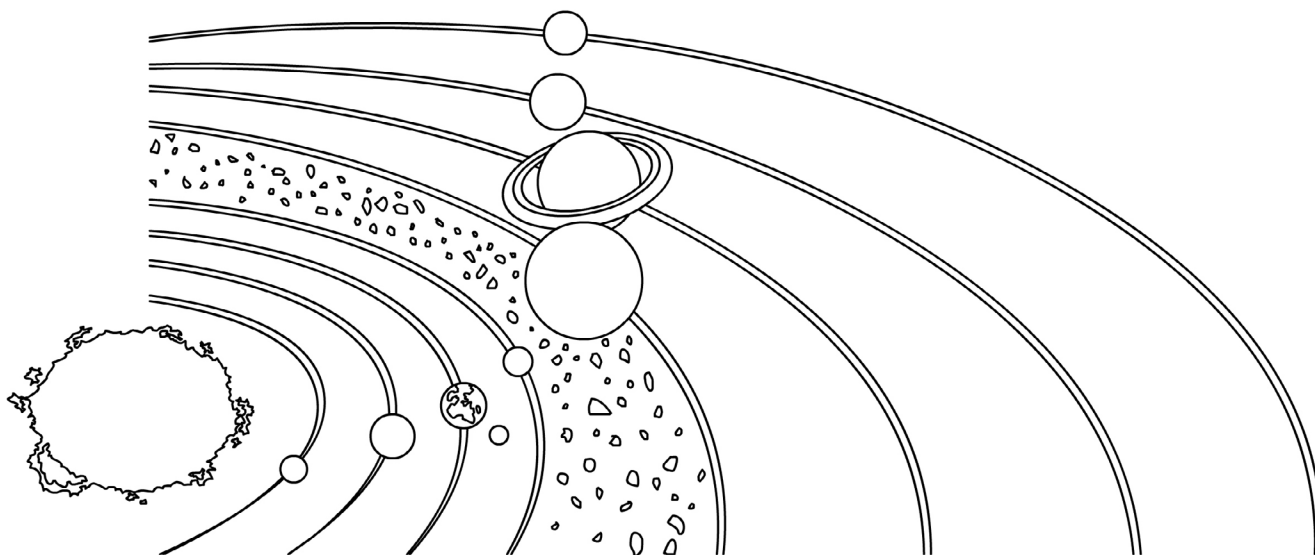
Naming = Neptune

Planets = Pluto (reclassified as a dwarf planet)



Astronomers are now finding new objects far from the Sun which they call dwarf planets. Pluto, which was once called a planet, is now called a dwarf planet or plutoid.

Label the Planets in the solar system:



Earth's features

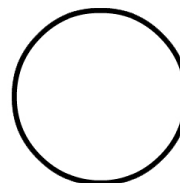
Name: _____

The Earth looks round like a ball, but is not exactly round, it is 'geoid'. This simply means that it has a slight bulge towards the equator caused by the rotation of the Earth. It is the third planet from the Sun and is the largest of the terrestrial planets. The Earth's name comes from the Anglo-Saxon word 'erda' which means 'ground or soil' and is the only known planet to support life.

Look at the size of the Earth compared to the moon. Colour in the visible features of the Earth.



Earth



Moon



Dione

The Earth is made of many different layers. The outermost layer is called the crust. It is made up of rocks, soil and seabed. The rocky crust is made up of silicon, aluminum, calcium, sodium and potassium. The crust is divided into continental plates which drift a few centimetres each year.

Beyond the crust is the mantle which makes up 85% of the total weight of the Earth's mass. The mantle is made up of hard rock, molten rock and solid rock. The upper mantle is rigid and is part of the lithosphere. The outer core is beneath the Earth's surface and is made up of super-heated molten lava. This lava contains iron and nickel and the outer core creates the Earth's magnetic field. The inner core is very hot (hotter than the surface of the Sun) and scientists believe that it is made up of iron and other minerals.

Most of the surface of the Earth is covered with water (oceans and seas). Water covers about 70% of Earth's surface, hence the name 'Blue Planet'. Only 3% of

the water is fresh and the rest is salted, of that 3%, over 2% is frozen in ice sheets and glaciers. This means less than 1% of fresh water is found in lakes, rivers and underground. Earth has a variety of geological features like hills, mountains, valleys, plains, rivers, oceans and lakes.

FUN FACTS!

If you could separate the Earth into piles of material, you'd get 32.1 % iron, 30.1% oxygen, 15.1% silicon, and 13.9% magnesium. Most of this iron is actually down at the core of the Earth. 47% of the Earth's crust consists of oxygen.

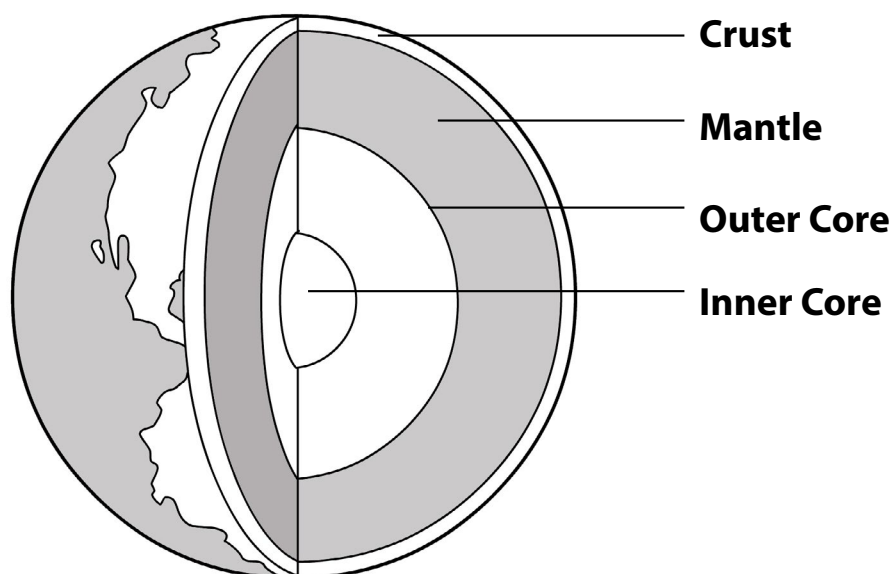
Earth doesn't take 24 hours to rotate on its axis – It's actually 23 hours, 56 minutes and 4 seconds. This is the amount of time it takes for the Earth to completely rotate around its axis; astronomers call this a sidereal day. That means a day is 4 minutes shorter than we think it is!

A year on Earth isn't 365 days – It's actually 365.2564 days. It's this extra .2564 days that creates the need for leap years. That's why we add on an extra day in February every year divisible by 4.



The Earth's layers

Soil covers much of the land area of Earth. It is made up of minerals (rock, sand, clay, silt), air, water, and organic material (matter from dead plants and animals). Soil provides an anchor, a source of food for plants, and a home for many animals (insects, spiders, centipedes, worms, burrowing animals, bacteria, and many others).



Quiz Questions:

1. Research and write down the meaning of 'geoid'

2. What is most of the Earth's surface covered with?

3. What is the outermost layer called? What is the innermost layer called?

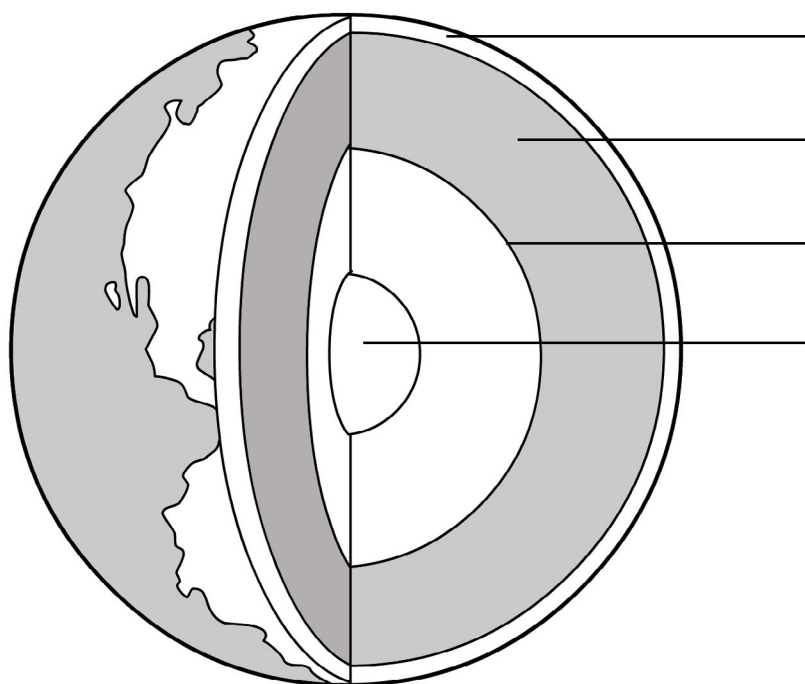
a) _____

b) _____

4. What creates the Earth's magnetic field?

5. Describe the Earth and its features

Label the different layers of the Earth, then colour the picture.

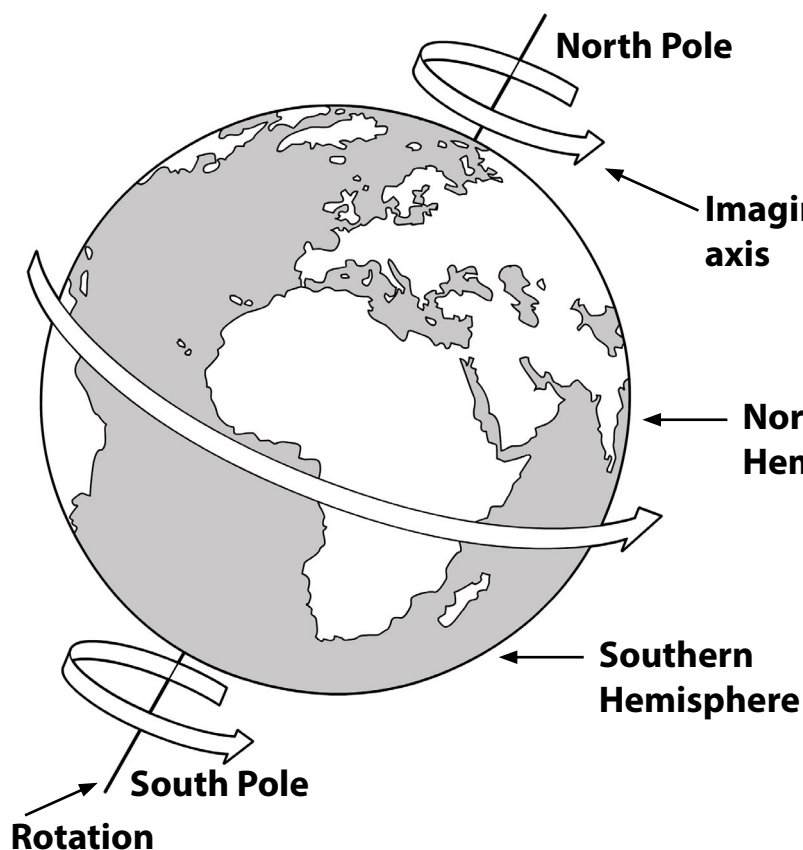


Earth's features (2)

Name: _____

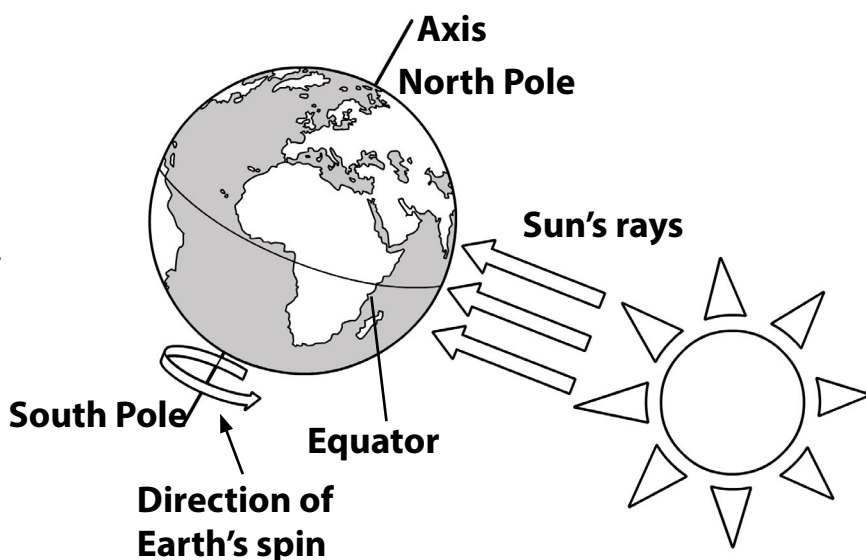
Earth is the fifth largest planet. Earth is the only known planet that has life with plants and animals. The Earth consists of land and water. About one quarter of the Earth is land and about three quarters of the Earth is made up of water (rivers, seas, and oceans). There is oxygen on the Earth's entire surface. Earth has one moon.

From space, the Earth looks like a ball covered with white clouds. Beneath the clouds you can see brown land areas and blue oceans. As there is more water than land, the Earth is often referred to as the 'Blue Planet'.



Earth is the third planet outward from the sun in the solar system. The Earth continuously spins around an imaginary line passing through its centre. This imaginary line is called the axis. The spinning of the Earth is called rotation. It takes 24 hours for the Earth to complete one rotation. That is why one day and one night equals 24 hours.

The Sun shines on one half of the Earth at a time. When it shines on one half it is daytime. The other half of the Earth is in shadow and it is night.



How the Earth moves

Although we can't feel it, the Earth moves in two different ways at the same time.

1. It spins around an imaginary axis every 24 hours. The Earth rotates on its axis.
2. The Earth circles around the sun once a year. The Earth revolves or orbits the Sun.

Complete:

The Earth rotates on its axis every _____ hours = _____ day. This gives us day and _____.

The Earth revolves/orbits the sun every _____ days = _____ year.

The imaginary line that divides the Earth into 2 equal halves is called the _____.

The top half is called the Northern _____ and the bottom half is called the Southern _____.

Day and night

The Earth is spherical. This means the same as _____.

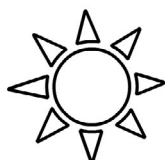
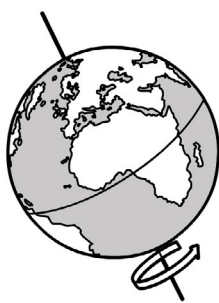
The Earth rotates on its own imaginary _____. This axis runs through the North and South Pole. It takes the Earth _____ days to rotate on its own axis.

1 day = _____ hours

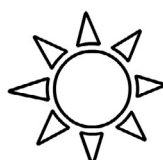
The rotation on the Earth's axis allows for night and day.

In each example, shade in the part of the Earth which is in darkness (night).

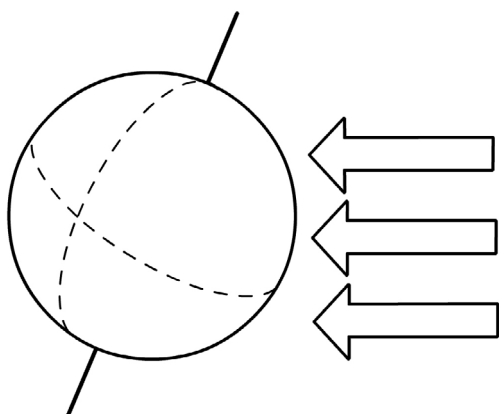
1.



2.



Label the the diagram using the words listed below:



Sun's rays

North Pole
South Pole
Axis
Equator
Night
Day

The Sun – Our closest star

Name: _____

The Sun is the largest object in the Solar System and is one of more than 100 billion stars in the Milky Way. It is the closest star to Earth and is made of hot gases. It is much bigger than the Earth and gives out heat and light. NEVER look directly at the Sun because it only takes a few seconds of direct sunlight to do permanent damage to the eye.

The Sun or 'Sol', is the star at the centre of our Solar System and is responsible for the Earth's climate and weather. Light from the Sun contains all the colours of the rainbow as well as colours that we cannot see, such as ultraviolet light. UV light affects our daily lives.

SUN FACTS!

Age: 4.6 Billion Years

Type: Yellow Dwarf (G2V)

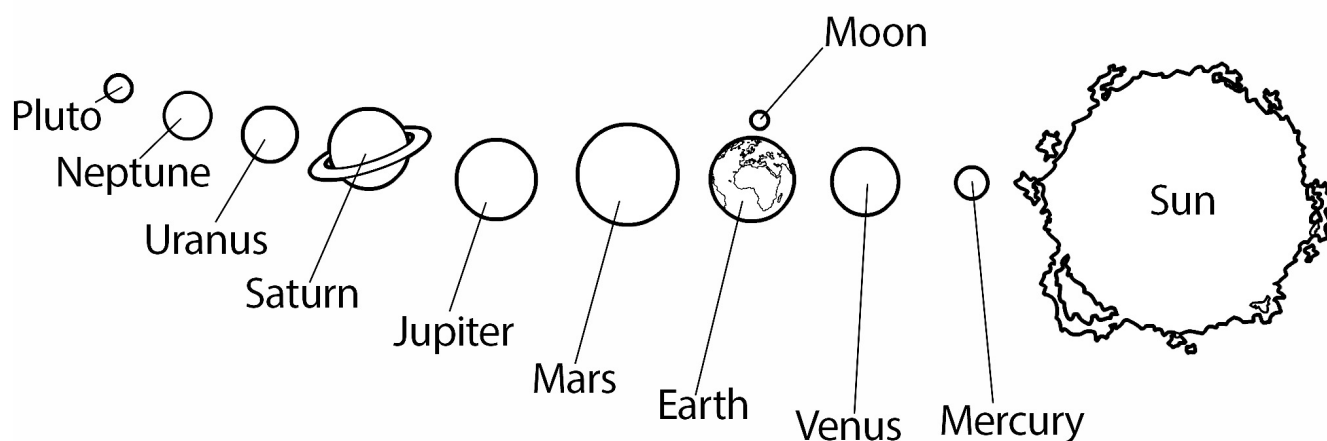
Diameter: 1,392,684 km

Circumference at Equator: 4,370,005.6 km

Mass: 1,989,100,000,000,000,000 billion kg (333,060 x Earth)

Surface Temperature: 5500°C

<http://space-facts.com/the-sun/>



FUN FACTS!

The Sun rises in the East and sets in the West

The Sun is large enough that approximately 1.3 million Earths could fit inside it.

The mass of the Sun is approximately 330,000 times greater than that of Earth. It is almost three quarters Hydrogen, whilst most of the remaining mass is Helium.

The Sun is an almost perfect sphere – there is only a 10 kilometre difference in its polar diameter compared to its equatorial diameter.

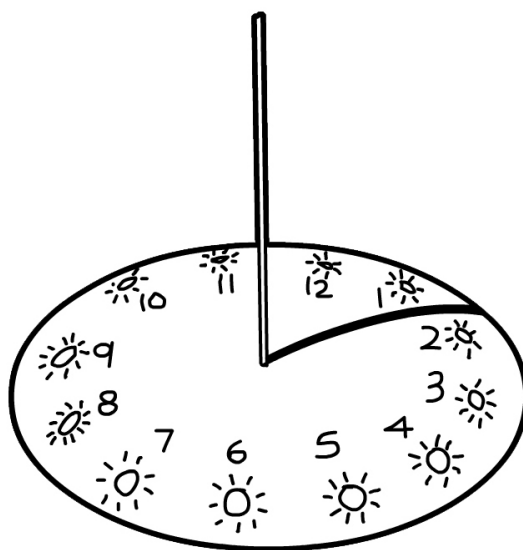
The actual brightness of a star depends on the size (the larger the star is, the brighter it tends to be) and temperature (hot stars are brighter, cooler ones are dimmer). However, how bright a star appears to be also depends on how far away from us it is. A dim star that is very close to us can appear to be brighter than a bright star further away. The Sun, a medium-sized star, is much, much closer to us than any other star in the sky, and consequently appears to be much, much brighter.

www.nasa.gov

For a free downloadable book from NASA English Version: Our Very Own Star the Sun <http://spacelink.nasa.gov/products/Our.Very.Own.Star.the.Sun/>

Activity: Make a sundial**Materials:**

- paper plate
- plastic straw
- sharp pencil
- crayons
- duct tape
- sunny place
- clock or watch



Directions:

- Make a hole in the centre of the paper plate big enough for the straw to fit through.
- Turn the paper plate upside down. Write the number “12” on the edge of the paper plate.
- Use a ruler and draw a line from the 12 to the hole in the paper plate.
- Put the Straw in the hole and take the paper plate outside just before noon. Put it on the ground and slightly tilt the straw towards the line and the 12.
- At exactly noon, turn the paper plate so the straw’s shadow lines up with the line and the 12.
- Fasten the paper plate to the ground with duct tape so it doesn’t move. Predict what will happen an hour later.
- At exactly 13h00, mark the spot on the paper plate and write 13h00. Repeat this process every hour on the hour to make the clock.
- To use the sundial on subsequent days, it must be put in the same place in the same position.

Source: [National Wildlife Federation](#)

The Sun and life

Name: _____

Energy Flows From the Sun and through lives

Earth receives two crucial kinds of solar radiation:

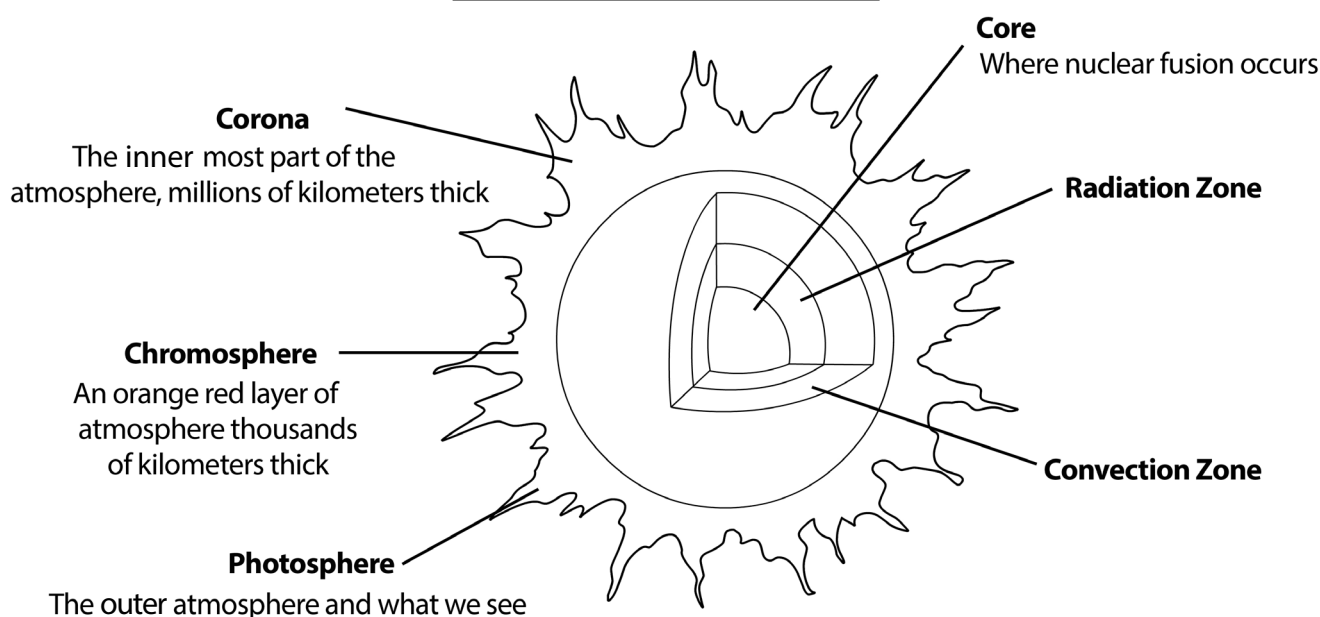
Light:

Light drives photosynthesis, the foundation of food energy; light arrives in quantum packets called photons; Plants transform Sun energy into packaged food; plant packaged Sun energy transfers from life to life.

Heat:

Solar heat drives the water cycle, the winds, the ocean currents; heat arrives as infra-red waves. Earth is at just the right distance from the Sun to receive the amount of heat that it needs.

Structure of the Sun



The life-giving Sun

Every time you run or jump, you are using up energy in your body. You get energy from the food you eat. As food passes through the body, some of it is digested. This process of digestion releases energy.

The Sun is very important for all living things. Without the Sun, plants would not grow and without plants, there would be no animals!

A food chain shows how each living thing gets its food. Green plants make their own foods by using the energy from the Sun. Some of the food is used and some is stored in the plants roots, stems and leaves. Plants are called producers because they are

able to use light energy from the Sun to produce food (sugar) from carbon dioxide and water. The process by which plants make food is called photosynthesis.

Animals cannot make their own food so they must eat plants and/or other animals. They are called **consumers**. There are three groups of consumers:

Animals that eat ONLY PLANTS are called **herbivores** (or primary consumers).

Animals that eat OTHER ANIMALS are called **carnivores**.

Animals that eat BOTH animals and plants are called **omnivores**.

Carnivores that eat herbivores are called **secondary** consumers.

Carnivores that eat other carnivores are called **tertiary** consumers.

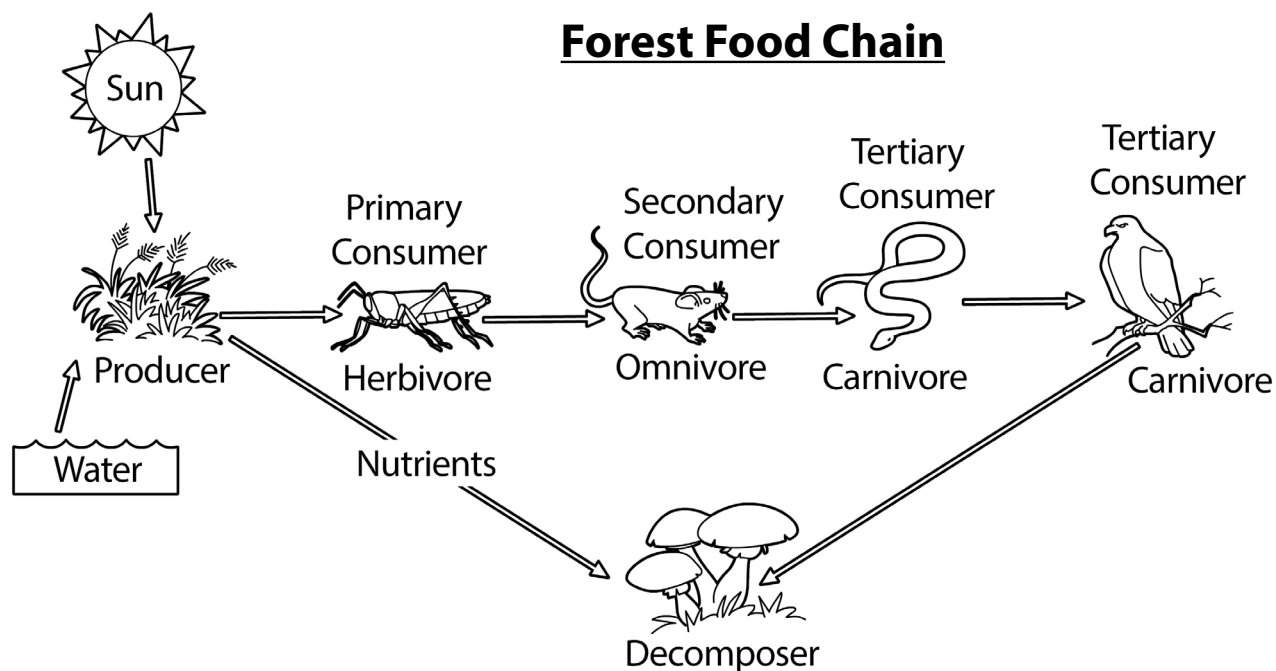
OCEAN FOOD WEB

phytoplankton ⇔ small fish ⇔ seals ⇔ killer whales

Killer whales eat seals, seals eat small fish, small fish eat phytoplankton

Then there are decomposers (bacteria and fungi) which feed on decaying matter.

Look at an example of a food chain:



A food chain always starts with a plant (producer) which is eaten by an animal (consumer) and ends with a predator (top of the food chain). Each link in this chain is food for the next link.

If you have access to the Internet, do the Food chain quiz:

<http://www.zephyrus.co.uk/foodpuzzlechain.html>

DO YOU KNOW?

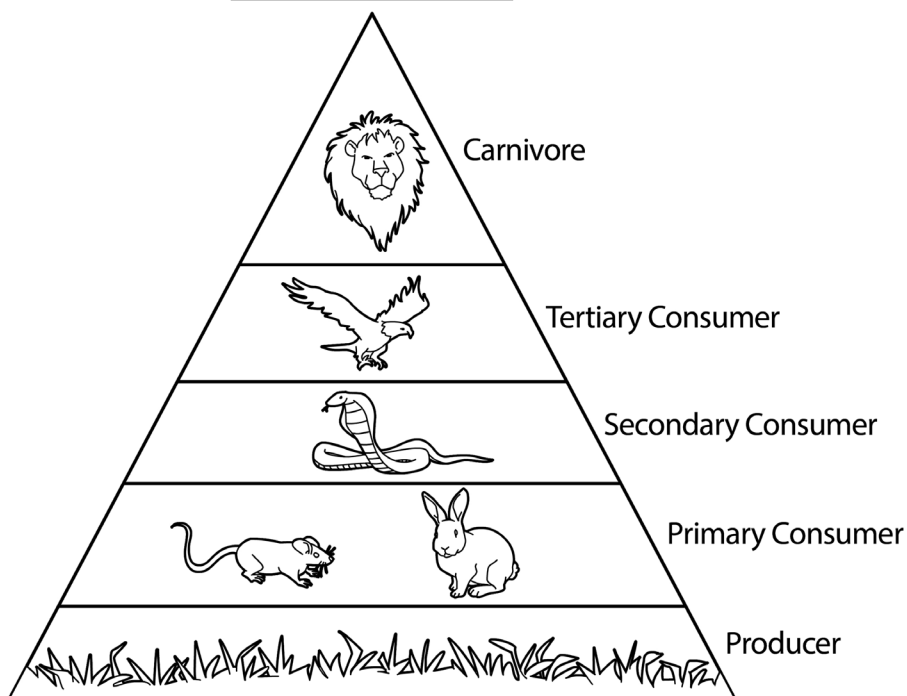
A food web consists of many food chains connected together.

A food chain only follows just one path as animals find food.

Activity:

Examine the example below and then draw and label your own animal food chain listing the primary, secondary and tertiary consumers

A Food Chain



Movement around the Sun

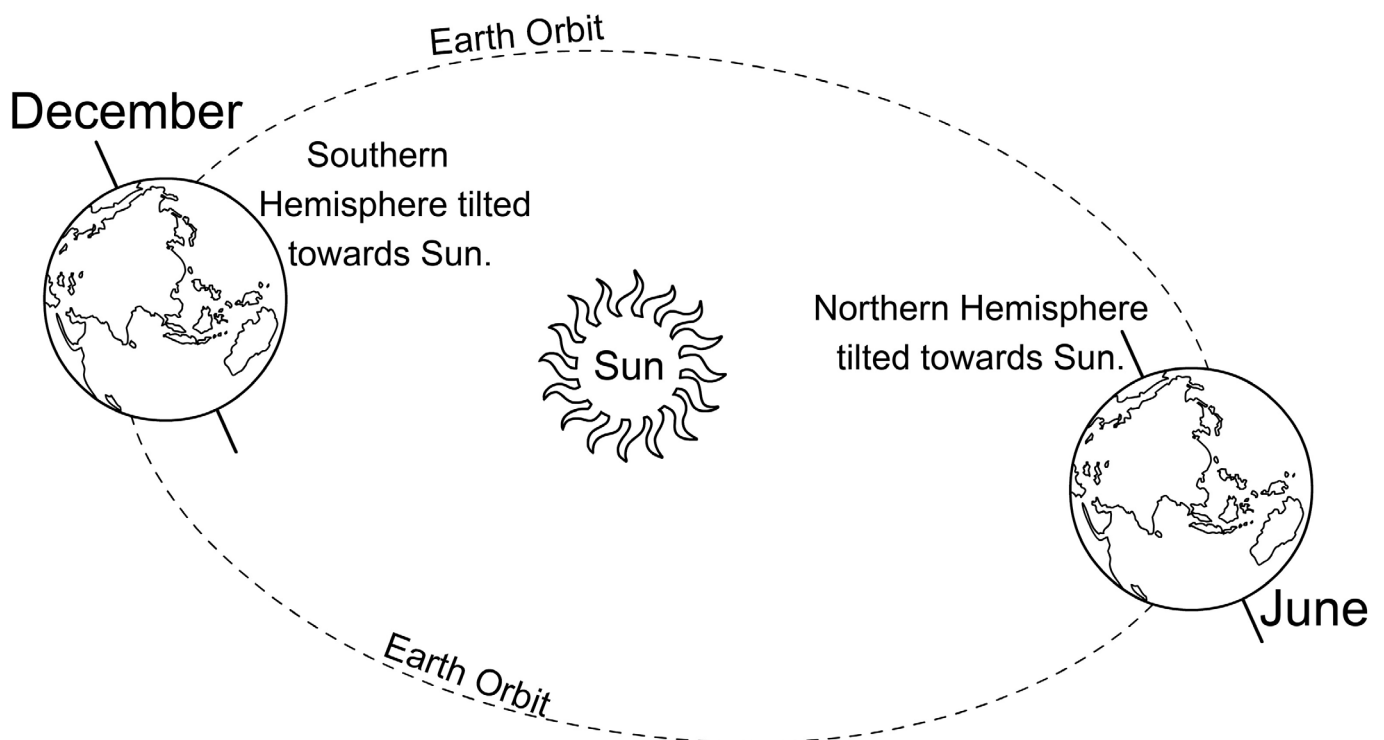
Name: _____

Rotation of the Earth:

Earth orbits around the Sun. It takes one year to go around the Sun once. Earth also rotates, or spins, on its axis. It takes one day to spin around itself. Earth's axis is not straight, but tilted at 23.5 degrees. Even though Earth does have a point at which it is closest to the Sun and a point at which it is further way from the Sun, the distance between these two points is not enough to impact the temperatures felt on Earth, which determine our four seasons.

Seasonal temperature changes are down to the fact that Earth is constantly changing it's position with the Sun, because it tilts and the Sun does not. As Earth orbits the Sun, different regions tilt either towards or away from the Sun, depending on the hemisphere they're in. This causes the Sun's light and energy to hit the different regions of the Earth at different angles throughout the course of one orbit, or one full year.

This is why South Africa (Southern Hemisphere) will experience hot weather when England (Northern Hemisphere) is experiencing cold weather.

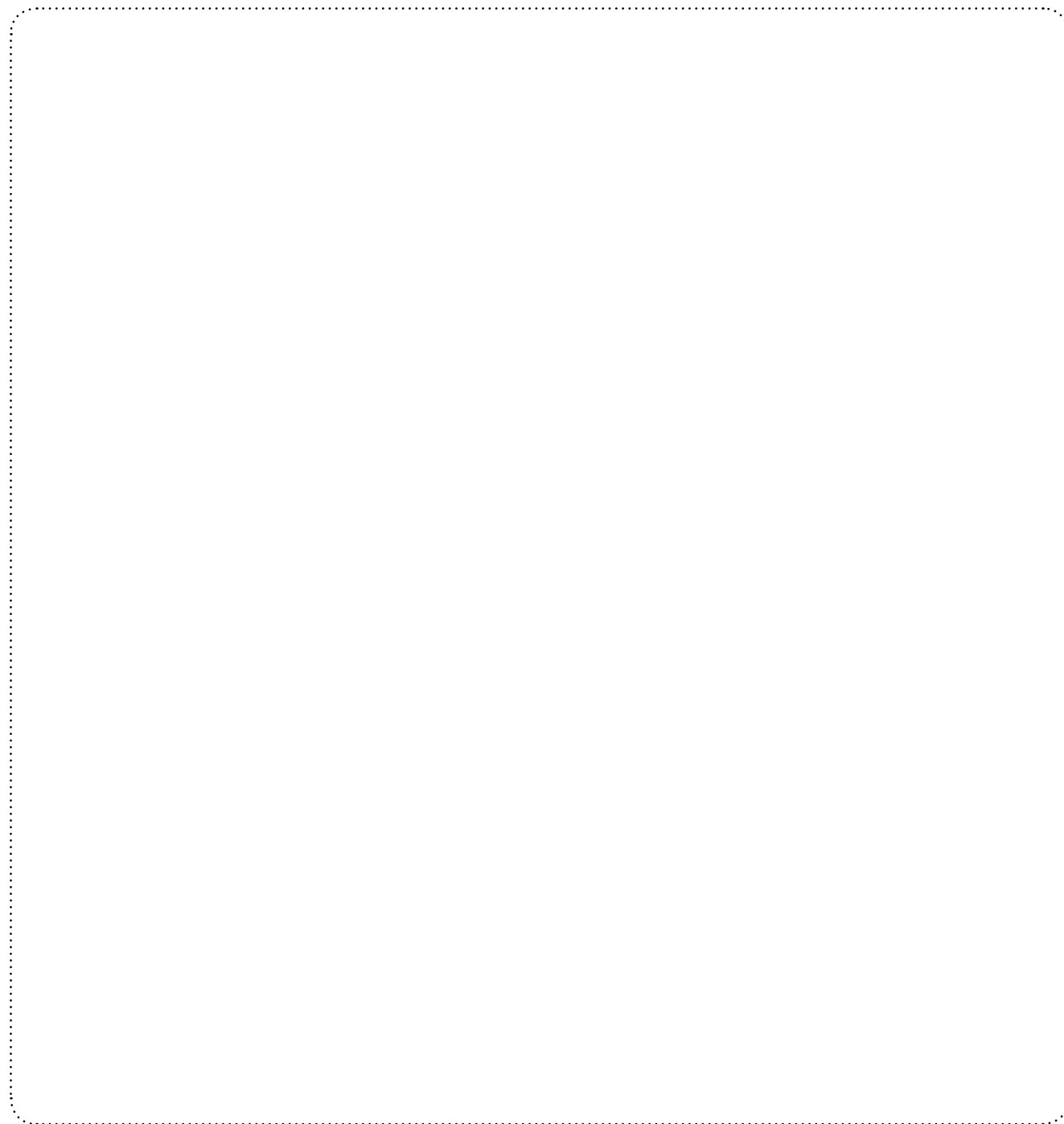


Revolution of the Earth:

The movement of the Earth around the Sun in a fixed orbit is called as revolving. One full orbit around the Sun is one revolution. The Earth takes 365 days or 1 year to complete one revolution. The Earth revolves around the Sun because of gravity. The Earth really rotates $365 \frac{1}{4}$ times during each revolution. The calendar usually has 365 days, but after every four years, the Earth has made one extra rotation. Thus, one extra day is added to the month of February once in every four years forming a leap year with 366 days.

Activity 1

Draw a picture of Earth orbiting the Sun. Label your drawing and give it a heading.



OUR SOLAR SYSTEM

A solar system is a star surrounded by planets which circle around it. The Sun is the star at the centre of our solar system. Earth is one of the eight planets that circle around the Sun. Some planets are closer to the Sun and some are further away.

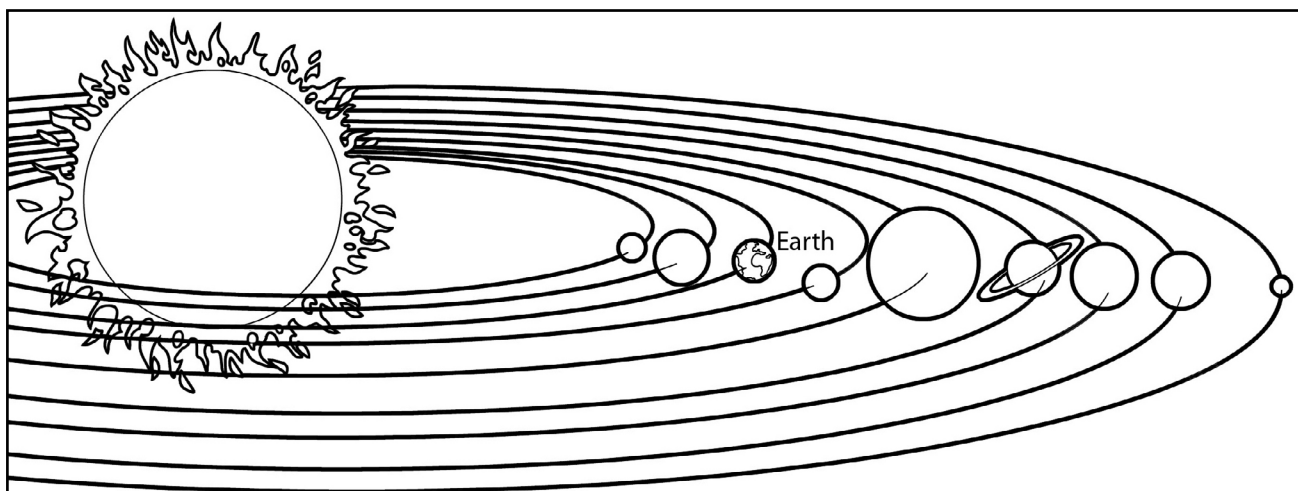
An easy way to remember the planets

My – Mercury
 Very – Venus
 Educated – Earth
 Mother – Mars
 Just – Jupiter
 Showed – Saturn
 Us – Uranus
 Nine – Neptune
 Planets – Pluto (dwarf planet)



DID YOU KNOW?

The Earth travels through space at a speed of 30 kilometres per second. That is very fast!



There used to be nine planets in our solar system. Pluto used to be one of them. Pluto was too small to be a planet. So today, Pluto is no longer considered to be one of the major planets. It is a dwarf planet.



DID YOU KNOW?

The four planets closest to the sun are all made of rock. The outer four planets are very large and mainly made of gas.

Activity 2

1. Name the four planets closest to the Sun.

a. _____

b. _____

c. _____

d. _____

2. Which planet is known as a dwarf planet?

3. Which is the largest planet?

Memorandum

Activity 2 Answers:

1. Mercury, Venus, Earth, Mars
2. Pluto
3. Jupiter

Features of the Moon

Name: _____

The Moon is the fifth largest natural satellite in the Solar System. It has no atmosphere. It has quakes caused by the gravitational pull of the Earth.

Soon after it formed, the Moon was surrounded by a huge shell of molten rock called the lunar magma ocean.

The Moon is made of rock and dust. During September 24, 2009, NASA scientists discovered water molecules in the polar regions of the Moon. The surface of the Moon has craters, mountains and river-like valleys, called rilles. Rilles are volcanic features.

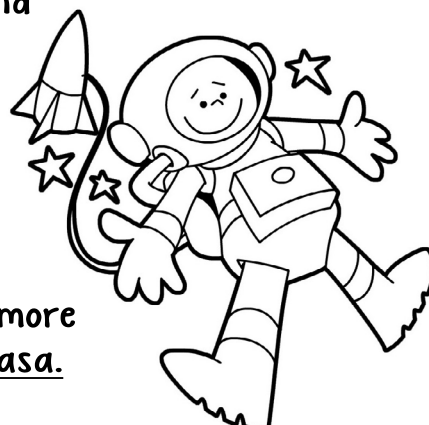
The Moon is the Earth's nearest neighbour. It is about 384,000 km away, but it is slowly drifting away from the Earth: The Moon is moving approximately 3.8 cm away from our planet every year. It is estimated that it will continue to do so for around 50 billion years. By the time that happens, the Moon will be taking around 47 days to orbit the Earth instead of the current 27.3 days.

We wouldn't be able to see the moon if the Sun wasn't there, because the Sun always lights up one side of the Moon. Another interesting fact about the Moon is that it has a very thin atmosphere. Footprints left on the Moon by Apollo astronauts who visited and walked on the moon, will remain visible for at least 10 million years because there is no erosion on the Moon.

ALL ABOUT THE MOON

The Moon (or Luna) is the Earth's only natural satellite and was formed 4.5 billion years ago some 30–50 million years after the formation of the Solar System. The Moon rotates around on its own axis in exactly the same time it takes to orbit the Earth, meaning the same side is always facing the Earth. The side we see is lit by reflected sunlight. The first spacecraft to reach the Moon was Luna I in 1959. This was a Soviet craft, which was launched from the USSR. It passed within 5995 km of the surface of the Moon before going into orbit around the Sun. The Moon has only been walked on by 12 people; all American males. The Moon will be visited by man in the near future: NASA plans to return astronauts to the moon to set up a permanent space station.

The first man to walk on the moon was Neil Armstrong in 1969. Visit the following website for more information about Neil Armstrong: <http://www.nasa.gov/centers/glenn/about/bios/neilabio.html>



Read the poem and then research and write down the meaning of these words:

**eons siderophiles depletion
volatiles duelled**

The Original Moon

*Four and a half eons ago
a dark, dusty cloud deformed.*

*Sun became star; Earth became large,
and Moon, a new world, was born.*

*This Earth/Moon pair, once linked so close,
would later be forced apart.
Images of young intimate ties
we only perceive in part.*

*Both Earth and Moon were strongly stripped
of their mantle siderophiles.
But Moon alone was doomed to thirst
from depletion of volatiles.*

*Moon holds secrets of ages past
when planets duelled for space.
As primordial crust evolved
raw violence reworked Moon's face.*

*After the first half billion years
huge permanent scars appeared;
ancient Feld spathic crust survived
with a mafic mantle mirror.*

*But then there grew from half-lived depths
a new warmth set free inside.
Rivers and floods of partial melt
resurfaced the low 'front side'.*

*Thus evolved the Original Moon
in those turbulent times.*

*Now we paint from fragments of clues.
the reasons and the rhymes:*

*Sister planet;
Modified clone;
Captured migrant;
Big splash disowned?*

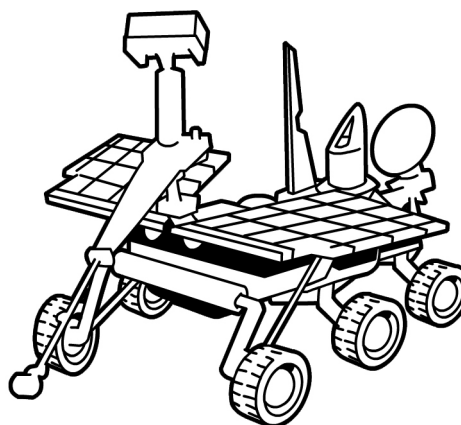
*The Truth in some or all of these
will tickle, delight,
temper, and tease.*

— Carlé Pieters

Quiz Questions:

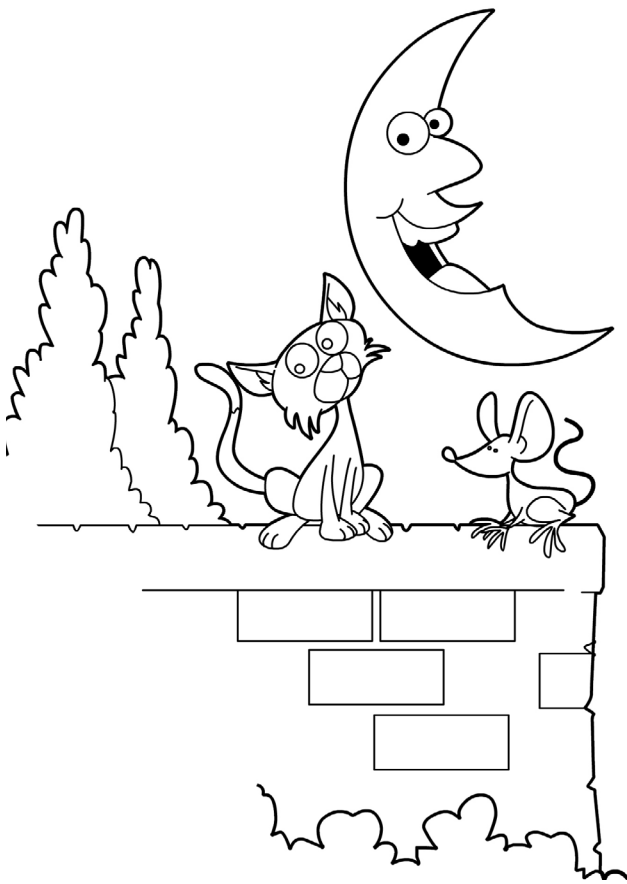
1. What is the Moon surrounded by?
2. List five features of the Moon

3. Armstrong's first footprint is still visible on the surface of the Moon. We know this even though no one has returned to the moon in over 30 years. How can we know this for sure?
4. How long does it take for the Moon to orbit the Earth?
5. True or False: The Earth orbits the Moon.
6. Design a new lunar roving vehicle. Label the parts and give your vehicle a scientific name.
7. Write a paragraph about the special features and capabilities of your vehicle.



Moon stories

Name:



The Moon

by Robert Louis Stevenson

*The Moon has a face like the clock in the hall
She shines on thieves on the garden wall
On streets and fields and harbour quays
And birdies asleep in the forks of the trees.*

*The squalling cat and the squeaking mouse
The howling dog by the door of the house
The bat that lies in bed at noon
All love to be out by the light of the Moon.*

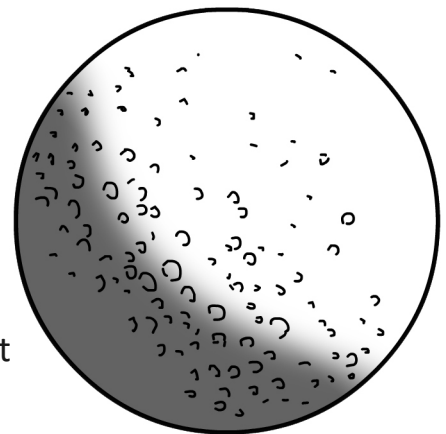
*But all of the things that belong to the day
Cuddle to sleep to be out of her way
And flowers and children close their eyes
Till up in the morning the Sun shall arise.*

For thousands of years, people have looked up at the Moon and wondered about its divine significance. Many cultures throughout time have had lunar deities (gods or goddesses) associated with the power and energy of the Moon.

There is a British legend that if Christmas fell on the day of a dark Moon, the following year's harvest would be a bountiful one. Some parts of the British Isles believed that a waxing Moon on Christmas meant a good crop the next fall, but a waning Moon indicated a bad one would come.

In the legends of the Inuit peoples, Alignak is the god of both the Moon and weather. He controls the tides, and presides over both earthquakes and eclipses.

In some Native American legends, the Moon is held captive by a hostile tribe. A pair of antelope hope to rescue the Moon and take it the village of a good tribe, but Coyote, the trickster, interferes. The antelope chase Coyote, who tosses the Moon into a river each night, just out of reach of the antelope.

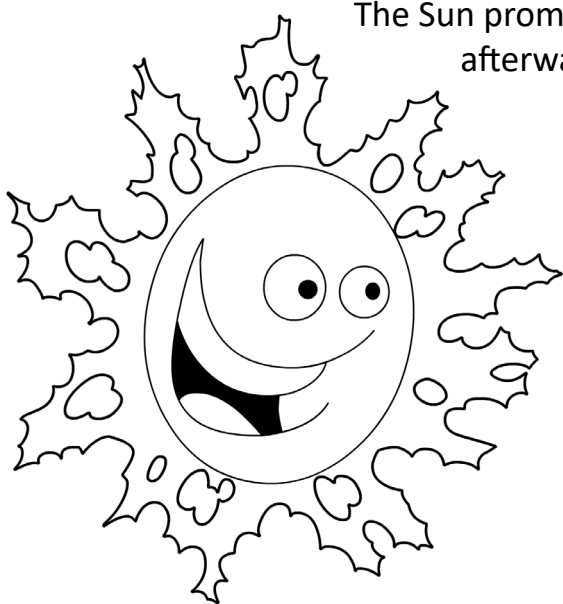


Read the following African Folktale about why the Sun and the Moon live in the sky

Many years ago, the Sun and water were great friends and they both lived on the earth together. The Sun often used to visit the water, but the water never returned the visits. At last the Sun asked the water why he never visited. The water replied that the Sun's house was not big enough, and that if he came with all his people, he would drive the Sun out of his home.

The water then said, "If you want me to visit you, you will have to build a very large house. But I warn you that it will have to be very large, as my people are numerous and take up a lot of room".

The Sun promised to build a very large house, and soon afterwards, he returned home to his wife, the Moon, who greeted him with a broad smile.



The Sun told the Moon what he had promised the water, and the next day, they began building a large house to entertain the water and all his people.

When it was completed, the Sun asked the water to come and visit him.

When the water arrived, one of his people called out to the Sun, and asked him whether it would be safe for the water to enter, and

the Sun answered, "Yes, tell my friend to come in."

The water began to flow in, followed by the fish and all the other water animals.

Very soon, the water was knee-deep in the house, so he asked the Sun if it was still safe, and the Sun again said, "Yes," so more of them came in.

When the water was at the level of a man's head, the water said to the Sun, "Do you want more of my people to come?"

Not knowing any better, the Sun and the Moon both said "yes". More and more of the water's people came in, until the Sun and the Moon had to sit on top of the roof.

The water once again asked the Sun if it was still alright to keep coming in. The Sun and Moon answered yes, so more and more of the water's people came in.

The water soon overflowed the top of the roof, and the Sun and the Moon were forced to go up into the sky.

...and they have been there ever since.

Worldoftales.com

Write your own Moon myth story and share it with the class.

Phases of the Moon

Name: _____

REVOLUTION OF THE MOON

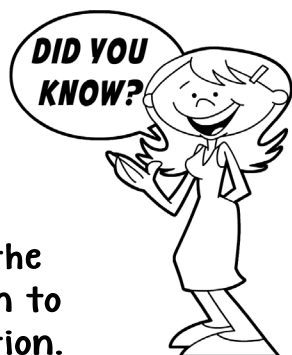
The revolution of the Moon around the Earth makes the Moon appear as if it is changing shape in the sky. From Earth we see the Moon grow from a thin crescent to a full disk (or full Moon) and then shrink back to a thin crescent again before vanishing for a few days.

The Moon phases are produced by the alignment of the Moon and the Sun in the sky.

The Moon appears to look different at various times of the month, but it never really changes. The lunar phase is the part of the Moon you can see from Earth depending on how much of it is lit up by the Sun. This amount changes each day. The phases of the Moon depend on its position in relation to the Sun and Earth. As the Moon makes its way around the Earth, we see the bright parts of the Moon's surface at different angles. These are called "phases" of the Moon and there are eight phases.

The Moon is illuminated because it reflects the light from the Sun. The part of the Moon facing the Sun is lit up. The part facing away from the Sun is in darkness. The phases of the Moon work in a cycle starting with the new Moon. A complete cycle of the Moon's phases from new Moon to full Moon takes twenty nine and a half days.

The Moon takes about 27 days (27 days, 7 hours, 43 minutes, 11.6 seconds) to go all the way around the Earth and return to its starting position.



The Moon's orbit around the Earth is a slightly squashed circle called an ellipse. A lunar month is the time the Moon takes to pass through a complete cycle of its phases and is measured from New Moon to New Moon. A lunar month is about 29.5 days (29 days, 12 hours, 43 minutes, 11.6 seconds).

The Moon orbits near the equator of the Earth. In the Northern Hemisphere, we're standing on the opposite side of the globe from countries in the Southern Hemisphere. People in different hemispheres therefore see the Moon in a slightly different way.

In the Southern Hemisphere, people see the Moon 'upside down' so the side which is shining (sunlit) seems the opposite from the Northern Hemisphere: <http://www.primaryhomeworkhelp.co.uk/moon/times.html>

Why is a Lunar month (29.5 days) longer than the number of days it takes the Moon to orbit the Earth (27.3)?

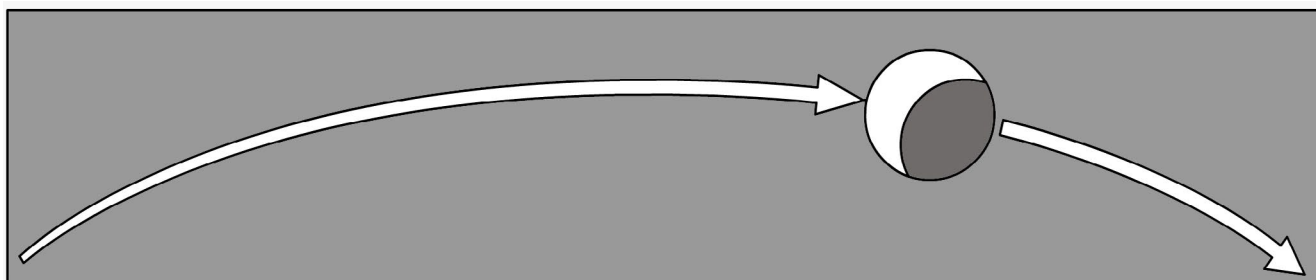
Whilst the Moon is orbiting the Earth, the Earth is constantly moving because it is orbiting the Sun. The Moon therefore travels slightly more than 360° to get from one new Moon to the next. Thus the lunar month is longer.

How old is the Moon?

The Moon is 4.5 billion years old.

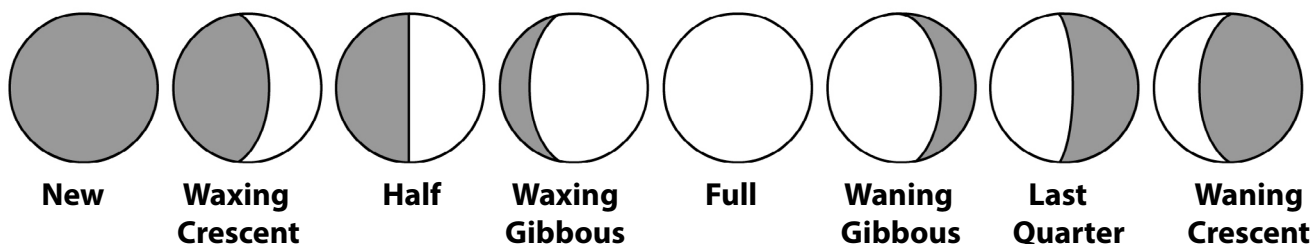
Phases of the Moon

The Moon rises in the east and sets in the west.

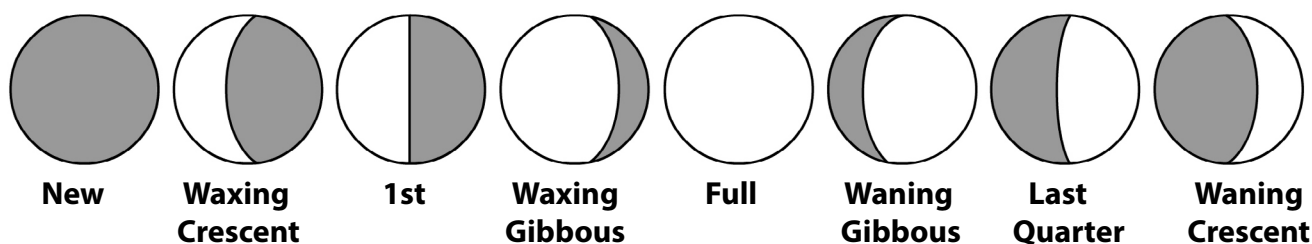


Examine the pictures below which illustrate the phases of the Moon.

NORTHERN HEMISPHERE



SOUTHERN HEMISPHERE



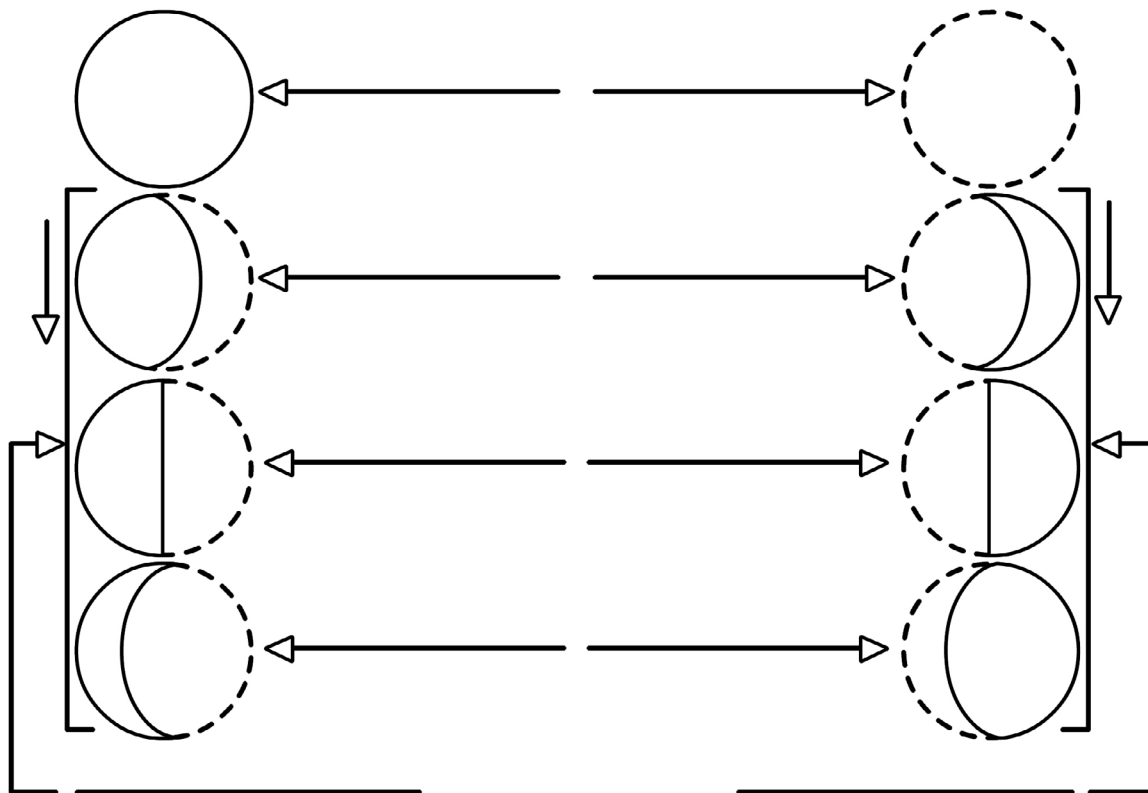
NASA have released a video that provides the most detailed tour of the Moon to date. Using a mix of photos and computer simulation from data collected by the Lunar Reconnaissance Orbiter (LRO) it covers some of the the Moons most interesting features including the Orientale Basin, Tycho Crater, Taurus Littrow Valley (the location of Apollo 17's Lander and Rover) and some of the most detailed footage from the far side of the Moon. NASA tour of the Moon:

<http://www.youtube.com/watch?v=2iSZMv64wuU>

If you have access to the Internet, play the Moon challenge – Drag the Moons to their correct places in the lunar cycles:

http://sciencenetlinks.com/interactives/moon/moon_challenge/moon_challenge.html

Draw and colour each phase of the Moon and label the phases



Make your own chart of the Moon's phases over the next month and label each phase.

○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
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