

Harbours to Highlands

A Geography Manual

In the Sky Above

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In the Sky Above

The information for the following story is from Scholastic Canada's Atlas of the World and the following Internet sites accessed 04/02/03:

http://www.findarticles.com/cf_d1s/m1076/n2_v40/20463462/p1/article.jhtml

http://www.msc-smc.ec.gc.ca/cd/brochures/understandozonelayer_e.cfm

<http://www.weather.about.com/library/weekly/aa050802a.htm>

<http://www.whre.org/globalwarming/greenhouse.htm>

<http://encarta.msn.com/encnet/regpages/RefArticle.aspx?refid=761578504>

Words to Preview		
nitrogen	photosynthesis	precipitation
atmosphere	stratosphere	thermosphere
mesosphere	oxygen	depletion
Ozone Spectrophotometer	optimistic	troposphere

The Atmosphere

Part I

Layers of the Atmosphere

It would be impossible for humans, or any plant or animal, to live on the Earth without the protective blanket of air that surrounds it -- the atmosphere.

The atmosphere is composed of layers of gases -- 99% of it is oxygen and nitrogen. It also contains small amounts of carbon dioxide, hydrogen, water vapor, argon, and a few other gases.

The Earth's atmosphere makes it possible for us to breathe and it protects us from the sun's dangerous rays. Also, the trapped sun's heat in the atmosphere helps to keep us comfortable by providing a kind of climate on Earth that benefits all living things.

It is from the atmosphere that plants get the carbon dioxide that is essential for the process called *photosynthesis*. This is the plant food-making process. In turn, green plants continually make a fresh supply of oxygen that is essential for humans and the other animals to live.

The atmosphere also plays a major role in the water cycle on Earth. It absorbs water from the oceans, lakes, and rivers, which produces water vapor in the air. Under certain conditions, the water vapor is returned to Earth in the form of precipitation, such as rain and snow. It then returns to the atmosphere through evaporation, and the cycle continues.

Layers of the Atmosphere

According to scientists, four layers make up the atmosphere. They are: the troposphere, the stratosphere, the mesosphere and the thermosphere.

The troposphere:

This is where we live. The troposphere is the layer of air closest to the surface of the Earth. It is in this 8 to 14 kilometer-thick layer that you find most of Earth's weather; such as rain, snow and wind. Here, the air is mostly dense and the temperature drops as you go higher.

The stratosphere:

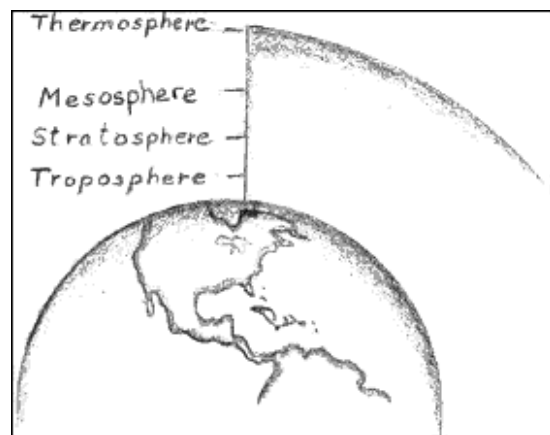
Above the troposphere, up to about 48 kilometers above the surface of the Earth, is the stratosphere. In this layer the air is dry and thinner and the temperature increases as you go higher. To avoid the weather, jet planes fly in this layer.

The Mesosphere:

If you were to travel above the stratosphere, you would reach the mesosphere. In this layer above the stratosphere, you could see meteors and shooting stars. The temperature lowers with altitude in this layer.

The thermosphere:

The thermosphere is the "top" layer. This layer of air is up to 600 kilometers above the surface of the Earth. To go above this layer would mean that you are about to enter into outer space. There is a great increase in temperature as you go higher in this layer. It is more than 1700 degrees Celsius!



Part II

The Ozone Layer

In recent years, we have heard a lot about the ozone layer. What is it? Where is it found?

The eye cannot see the invisible ozone layer of colorless gas that benefits all life on Earth. The ozone gas, which is a kind of oxygen, absorbs the sun's harmful ultraviolet (UV) rays. The ozone layer lies within the stratosphere.

Though beneficial in the stratosphere, ozone that is formed at ground level, or on the Earth's surface, is harmful to all living things. Ground level ozone is the main element of smog in cities.

What is the Ozone "Hole?"

In the 1970's, it was discovered that there was a large "hole" in the ozone layer over the Antarctic each spring and a small hole over the Arctic. Thinning of the ozone layer above other areas has also been discovered. Since the 1970's, six percent of the ozone layer has thinned. This is a grim reminder of the effects of human activities on the environment.

The Ozone and Science

Scientists discovered that certain industrial chemicals, especially CFC's (chlorofluorocarbons) and halons, are the cause of the depletion, or thinning, of the ozone. Governments were warned by scientists to be responsible and act to protect the ozone layer in order to slow down or reverse the depletion process.

Canada is involved in ozone science and was the first country in the world to pay attention to the warnings of the scientists after the ozone hole was discovered over the Antarctic.

As well as doing extensive research and monitoring of ozone levels, Canadian scientists developed the *Brewer Ozone Spectrophotometer*. This is a "first class" instrument known as the most accurate instrument for ozone measuring in the world. It is being used in many countries.

The Effects of Ozone Thinning on Living Things

The thinning of the ozone layer has a large impact on Earth since it allows more harmful UV rays to reach us. A greater exposure to the sun's UV rays causes health problems, harms the fishes' food chain, and affects forests and crops.

Overexposure to the sun's damaging rays has caused an increase in skin cancer and it can also cause damage to the eye and immune system.

For agriculture, the increase in UV rays has been responsible for the decreased growth of some of the world's main crops, such as oats and barley.

Also, the harmful UV rays can cause damage to the main food eaten by fish -- the tiny plankton. Less food means fewer fish!

The Ozone and the Future

Are scientists optimistic about the recovery of the ozone layer? At present, it seems like they are. Of course, it all depends on whether the chemicals which have caused the thinning are eliminated. The good news is that the world listened to the warnings of scientists to protect the ozone layer. Under an International agreement, called the *Montreal Protocol*, action has been taken to protect the ozone layer and reduce the harmful chemicals released into the atmosphere.

It has taken many years for the damage to be done so we can expect it to take many years before the damage can be undone.

Part III

The Greenhouse Effect - What is it?

The greenhouse effect is nothing new. It is a natural process that has warmed the Earth since its beginning. It has to do with the interaction between sunlight and certain gases in the Earth's atmosphere.

These atmospheric gases (water vapor, carbon dioxide, methane, and others) are called "*greenhouse gases*" because they work in the same way as glass acts in a nursery greenhouse by letting in the

sun's radiation and trapping heat inside.

The Earth's atmosphere lets in and traps sunlight, but some of this solar energy is reflected back into space. Another part is scattered by gas molecules and is absorbed into the atmosphere. About 50% of the energy passes through the atmosphere and makes its way to the surface of the Earth.

The Earth absorbs the solar energy but some of it is released back into the atmosphere. The atmosphere contains "greenhouse gases" which absorb much of this re-radiated energy.

The heat-trapping, greenhouse gases act as an insulating blanket keeping the Earth warm. Without the natural greenhouse effect, more heat energy would radiate back into space, and the Earth's temperature would be about 60 degrees F colder. Most living things could not survive at this temperature.



Global Warming

There has been a lot of debate about global warming. Some people often confuse global warming with the greenhouse effect process.

Scientists have discovered how the effects of human activities affect and alter the Earth's atmospheric gases and the natural greenhouse effect process.

With the Industrial Revolution in the 1700's came new fuel-burning inventions. The burning of fossil fuels releases some of the same gases (water vapor, carbon dioxide, methane and others), as the natural heat-trapping greenhouse gases in the atmosphere. Some fossil fuels are coal, oil, and natural gas. The build-up of these gases causes the Earth to warm by trapping heat near the Earth's surface. Because it is a "unnatural" heating process, scientists call it "*global warming*."

How Warm is the Globe Getting?

Of course, Earth is not warming at full speed, but just a few degrees warmer can mess things up. Some scientists believe that it has taken nearly one hundred years for the Earth's surface temperature to increase 0.6 degrees Celsius (almost 1 Fahrenheit degree). But even just this slight increase concerns many scientists. They fear that in about another hundred years, temperatures will rise 1.4 - 5.8 Celsius degrees (2.5 to 10.4 degrees F).

Some scientists fear that the warmer temperatures will cause the ice in polar regions and glaciers in mountains to partly melt. This melted ice will cause the sea levels to rise causing flooding in the coastal regions.

Other problems with global warming would be changes in the weather patterns causing long droughts in some areas and more flooding in other areas. This would greatly affect agriculture and our food production.

Of course, that will not happen anytime soon.

"The Atmosphere"

Comprehension Questions

Part I

1. What is the protective blanket of air that surrounds the Earth called?
2. What is photosynthesis?
3. Explain the water cycle on Earth.
4. In which layer of the atmosphere do we live?
5. In which layer of the atmosphere do jet planes fly?
6. What is the "top" layer of the atmosphere?

Part II

7. What is the ozone layer?
8. Holes in the ozone layer were discovered where in 1970's?
9. What is causing the depletion of the ozone layer?
10. What is the name of the instrument used to measure the ozone layer?
11. Name one effect of the depletion of the ozone layer.

Part III

12. Is the greenhouse effect a natural process?
13. What would happen if there was no greenhouse effect?
14. How does global warming cause the Earth to warm?
15. In one hundred years, how much has the Earth's surface temperature increased?
16. Why are scientists worried about global warming?

[\(View answers\)](#)

Reading Between the Lines

1. The story says that ground level ozone is the main element of smog. What is smog?
2. Scientists discovered that certain industrial chemicals, especially CFC's (chlorofluorocarbons) and halons, are the cause of the depletion, or thinning, of the ozone. Some household cleaners advertise that they contain no CFC's. Look in your household and give a list of the cleaners that you use that advertise no CFC's.

"The Atmosphere"

Multiple Choice

Choose the correct word.

1. The atmosphere protects us from the _____(suns/sun's) rays.
2. There is a small _____(hole/whole) in the ozone layer over the Arctic.
3. Solar energy makes _____(it's/its) way to the Earth's surface.
4. _____(There/Their) are four layers in the atmosphere.
5. Ground level ozone is the main element _____(of/off) smog in cities.
6. Humans get some of _____(there/their) oxygen from plants.
7. _____(It's/Its) from the atmosphere that plants get carbon dioxide.
8. _____(There/Their) has been a lot of debate about global warming.
9. The atmosphere plays a major _____(role/roll) in the water cycle.
10. The _____(Earths'/Earth's) atmosphere has many gases.
11. Global warming could _____(affect/effect) agriculture.
12. Scientists have discovered how the _____(affects/effects) of human activity _____(affect/effect) the Earth's atmosphere.

[\(View answers\)](#)

The information for the following story is from Scholastic Canada's *Atlas of the World*.

Words to Preview		
hemisphere	southern	northern
imaginary		

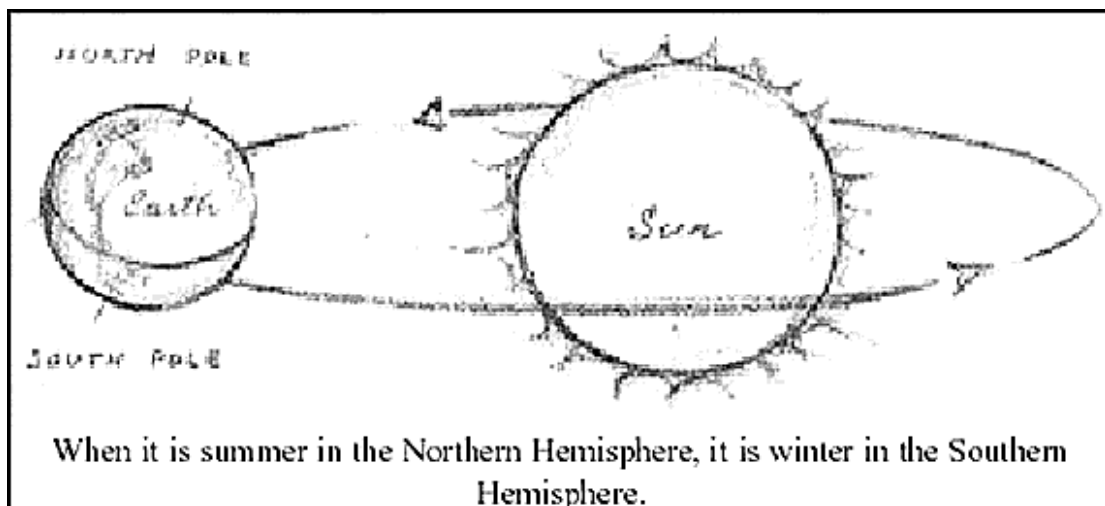
The Revolving Earth

If you could observe Earth from outer space, you would see a beautiful "moving" Earth.

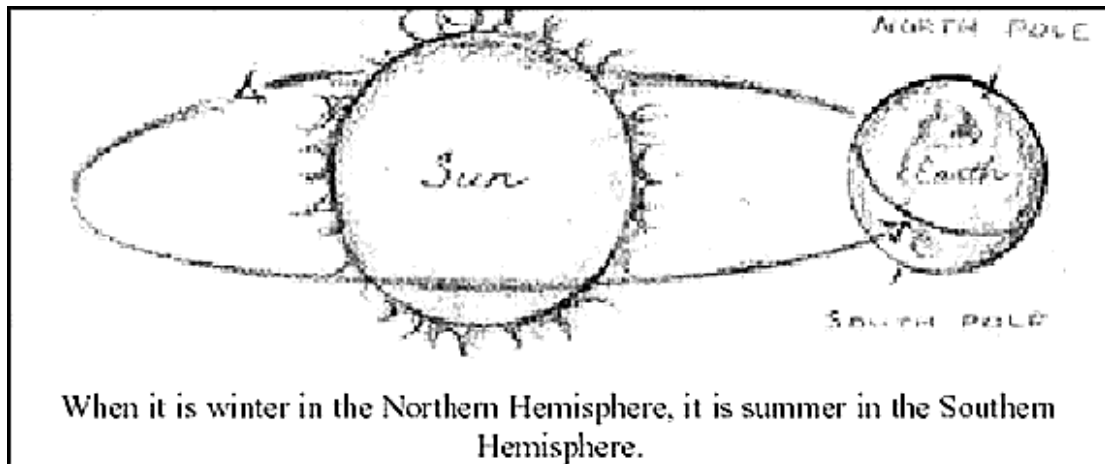
Between the North and South poles, there is an imaginary line that extends right through the centre of the Earth. It is called the axis of the Earth. The Earth spins or rotates around on its axis just like a toy top spins around.

In 24 hours, the Earth rotates all the way around. This is what gives us our day and night. It is daytime in places where the Earth faces the sun and nighttime in places where the Earth faces away from the sun.

The Earth spins on its axis from west to east and at the same time travels around the sun in a fixed orbit. This is the reason each day begins with a sunrise in the east and ends with a sunset in the west. Of course, the sun really does not "rise" or "set." It is the movement of the Earth that makes it seem like it does. When we see the sun reach its highest point in the sky, it is noontime. The Earth takes 364 1/4 days to rotate around the sun.



The Earth's axis is not in an upright position, but at a slight slant position or tilt. The tilt of the Earth's axis is 23 1/2 degrees away from the vertical position. It is this tilt of the Earth's axis and the Earth's rotation around the sun that gives us our seasons. The Northern Hemisphere is tilted towards the sun from March to September. In this area on Earth, it is spring and summer. At the same time, it is fall and winter in the Southern Hemisphere.



The seasons change again when the Southern Hemisphere is tilted towards the sun from September to March. It is then spring and summer in regions in the southern half of the Earth and fall and winter in regions in the northern half of the earth.

It is amazing how the spinning movement of the Earth creates the seasons, days and nights, sunrises and sunsets.

"The Revolving Earth"

Comprehension Questions

1. What is the axis of the Earth?
2. What is the axis of the Earth?
3. The Earth's axis is tilted how many degrees away from the vertical position?
4. Why is it fall and winter in the southern hemisphere from March to September?
5. How long does it take the Earth to revolve around the sun?

[\(View answers\)](#)

Reading Between the Lines

1. Do some research and discuss this with your class or teacher. How do you think the Earth would be affected if it spun around its axis from east to west instead of west to east?

Trivia Question

Do a bit of research.

Why is it very hot near the equator and very cold at the North and South poles?

[\(View answer\)](#)

"The Revolving Earth"

Seasons Exercise

Put each of the places listed in the box under the appropriate heading in the seasons chart. The first one is done for you.

Remember: "The Northern Hemisphere is tilted towards the sun from March to September. In these areas on Earth, it is spring and summer. At the same time, it is fall and winter in the Southern Hemisphere."

Zambia	Spain	Turkey	Australia
Chile	Egypt	Philippines	South Africa
Argentina	Cuba	Saudi Arabia	New Zealand
Peru	Mexico		

Seasons Chart

[\(View answers\)](#)

March to September: Summer Season	March to September: Winter season
Mexico	

The Earth on its Axis*

The Earth's axis is an imaginary line that passes through the Earth and through the North and South poles.

The Earth spins around on its axis like a toy top.

Every 24 hours, the Earth makes one full rotation on its axis.

This is what gives us day and night.

It is daytime where the Earth faces the sun.

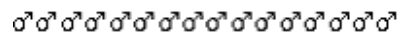
It is nighttime where the Earth faces away from the sun.

The Earth spins on its axis from west to east.

The Earth is also spinning around the sun in a fixed orbit.

The part of the earth that is tilted towards the sun is having its spring and summer season.

The part of the earth that is tilted away from the sun is having its fall and winter season.



1. The Earth's axis is _____
_____.
2. The part of the earth that is tilted towards the sun is having its _____ season.

* For sources to this article, see [The Revolving Earth](#).

The information for the following story is from the following Internet site accessed 04/08/2003:
<http://seds.lpl.arizona.edu/nineplanets/nineplanets/sol.html>

Words to Preview		
galaxy	helium	chromosphere
hydrogen	photosphere	eclipses

The Sun

Without the sun's heat and light, no life could exist on our planet.

The sun is a star like the countless others that you see in our night sky. It is not the biggest of the billions of stars in our galaxy, but it is the star that is closest to the earth. For that reason, it appears much larger than the other stars.

The sun is an enormous ball of blazing gases, mostly hydrogen and helium. The sun, like Earth and the other planets, rotates on an axis. Because the sun is made of gases rather than of solid matters like earth, it has a "strange" rotation behavior. Its rotation is faster at the sun's equator than at the poles. It rotates once every 25.4 days at the equator while it can take 36 days at the poles.

Light and heat are given off by the sun's surface - the photosphere. Temperatures reach about 5800 Kelvin (K). Water boils at 100 degrees Celsius which is 373 K. That is extremely hot! But it has "cool" spots where the temperature is only 3800k. These spots on the surface of the sun are called sunspots. They are often seen as dark spots and can be as large as 50,000 km (30, 000 miles) in width. The sunspots are not really dark but they appear to be because of the sun's brightness surrounding them. What causes these spots is a complicated matter and not fully understood, but it is believed that it has to do with the sun's magnetic field.

Above the photosphere is the chromosphere. And still above the chromosphere is an area called the corona. This atmosphere extends millions of kilometers above the sun and has temperatures of more than 1,000,000 k. Now...that is blazing hot! The corona can be seen only during eclipses of the sun.

Every second, 368 billion megawatts are discharged by this enormous ball of energy. Luckily for us, the sun is located at just the right distance to keep us from boiling or freezing to death.



"The Sun"

Comprehension Questions

1. The sun is a star in our galaxy. Why does the sun appear much larger than other stars?
2. What is the sun made of?
3. What is unusual about the sun's rotation?
4. What are sunspots?
5. How many megawatts of energy are discharged from the sun every second?

[\(View answers\)](#)

Reading Between the Lines

1. If 100 degrees Celsius is equal to 373 Kelvin (K), how many degrees Celsius is 5800 K?

[\(View answer\)](#)

Trivia Question

Do a bit of research.

How far away is the sun from the earth?

[\(View answer\)](#)

"The Sun" Alphabetization

Put the following in alphabetical order. The first two are done for you.

sun	because	solid
star	earth	matter
heat	planet	ball
temperature	reach	understood
large	field	axis

- | | | |
|----------------|-----------|-----------|
| 1. <u>axis</u> | 6. _____ | 11. _____ |
| 2. <u>ball</u> | 7. _____ | 12. _____ |
| 3. _____ | 8. _____ | 13. _____ |
| 4. _____ | 9. _____ | 14. _____ |
| 5. _____ | 10. _____ | 15. _____ |

[\(View answers\)](#)



1. Find the two compound words in the story. _____
2. Find the synonym for nearest. _____
3. Find the antonym for light. _____
4. Choose the correct spelling:

athmosphere	atmosfere	atmosphere
surounding	surrounding	surroundding

Our Sun*

The sun is a star.

It's not the biggest star, but it's the closest to the Earth.

The sun is made up of blazing gases.

It rotates on its axis.

Since the sun is made of gases, it has a strange rotation.

It rotates faster at its equator than the poles.

The sun's surface is very hot.

Its temperature can reach 5800 Kelvin (K).

Water boils at 373 K.

Some "cool" spots on the sun are only 3800 K



1. The sun is a _____.
2. The sun is made up of _____.
3. The temperature of the sun's surface is _____.

* For sources to this article, see [The Sun](#).

The information for the following story is from The New Book of Knowledge and from the following Internet site accessed 04/08/2003: <http://www.nineplanets.org/luna.html>

Words to Preview		
satellite	meteorites	astronauts
orbit	igneous	craters
axis	molten lava	mantle
rotation	analysis	lunar

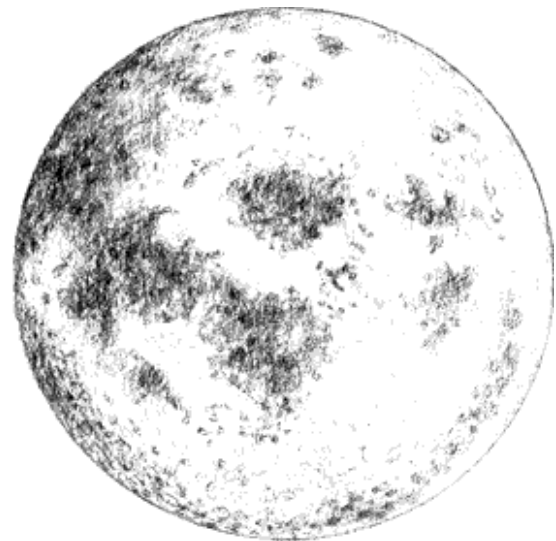
By the Light of the Moon

There is no doubt that the moon has been an object of fascination and admiration since the beginning of civilization. Wolves have howled at the full moon, and witches on their magic brooms have flown over it on Halloween night!

Why are we so fascinated by the object that lights up our night skies? And what is the moon anyway? Is it a star like our sun? Is it a planet like our Earth? The moon is neither a star nor planet. It is a satellite. Of course, it is not a man-made satellite, but Earth's one and only natural satellite.

Our moon circles around the Earth in a fixed orbit in much the same way the Earth travels around the sun. The moon's path, or orbit, is not perfectly round but more like a flattened circle called an ellipse.

Like Earth, the moon also spins on its axis. To make a complete rotation, it takes 27 days, 7 hours, and 43 minutes. For the moon to make its orbit around the Earth, it takes about the same amount of time. Also like Earth, the moon's axis is at a tilt. Because of this we can see a bit more of the moon's surface at certain times, but we never see the back of the moon. From Earth, we always see the same side of the moon, people call it the "face" of the moon.



Where does the moon get its light?

Although the moon is the brightest object in our night sky, it does not have its own light. Its light is reflected light from the sun. In other words, sunlight gives the moon its glow and our night light.

The moon does not have a "dark side" as it was once believed, but receives sunlight half the time on all regions. The "far side" or "back" of the moon only became known to us in 1959 when it was photographed by the Soviet spacecraft Luna 3.

What is the moon made of?

Green cheese? Thousands of years ago some people might have thought so. Today, many studies have been done to find out more about the moon.

The moon is a big ball of rock. It has no atmosphere so plants and animals could not survive. A thick layer of powdery grey dust and bits of rock covers most of the surface of the moon. The dust was produced by the impact of meteorites crashing on its surface.

Tests have proven that moon rocks were formed from cooled molten lava. Most rocks on the moon are between 4.6 and 3 billion years old! All the moon's rocks are igneous - like some of Earth's rocks. Astronauts have brought back to Earth a total of 382 kilograms (840 pounds) of rock and soil samples for analysis and study. Much knowledge was gained from studying those samples.

There are no oceans, lakes, or rivers on the moon, but there are high mountains, hills, valleys, plains, and craters. Craters are large, flat areas that are sunken and have a rough circular shape similar to waterless oceans and seas. Craters were made by huge rocks that crashed from outer space into the moon's surface.

Is the moon's interior similar to the Earth's?

In recent years, scientists have used instruments to measure the strength of the moon quakes that happen each year. This enables them to get an "x-ray" picture of the moon's interior.

The outer layer, the crust, is about 60 kilometers (37 miles) thick on the "face" of the moon but it is almost double in thickness on the far side. A thick layer of hard rock forms the next layer - the mantle. Not much is known about the moon's core. Scientists believe the interior of the moon's core is no longer active - unlike the Earth.

The moon's first visitors

Humans couldn't resist! The moon has been so fascinating that "earthlings" paid it a first visit on July 20, 1969. The moon is the only thing in our solar system that has received visitors from Earth.

When the Apollo II astronauts departed from the moon, they were bringing back new and valuable knowledge to the world. They were also leaving something of their visit behind - their footprints in the thick "lunar soil!" With no wind or rain to wash them away, they could stay there forever!

No air...no life...grey dust...and a few earthly footprints. I don't know about you, but I'd rather stay on Earth

"By the Light of the Moon"

Comprehension Questions

1. Is the moon a star, planet, or satellite?
2. What shape is the moon's orbit? How long does it take to make a complete rotation of the Earth?
3. Where does the moon get its light?
4. What covers the surface of the moon?
5. What are the moon rocks made of?
6. What are craters on the moon and how were they formed?
7. What are craters on the moon and how were they formed?
8. When did astronauts first land on the moon?

[\(View answers\)](#)

Reading Between the Lines

1. Why do you think that scientists are so interested in exploring the moon?

Trivia Question

Do a bit of research.

1. With powerful telescopes you can see "rilles" on the moon. What are they?
2. Is the moon perfectly round?

[\(View answers\)](#)

"By the Light of the Moon"

Fill in the Blanks

Fill in the blanks with the correct word from the box.

deported	howled	orbit
meteorites	star	sunlight
man-made	astronauts	footprints
craters	tilted	air

1. Wolves have _____ at the moon.
2. The moon is not a _____ satellite.
3. The moon's _____ is not round.
4. The moon's axis is _____.
5. _____ gives the moon its glow.
6. The grey dust on the moon was produced by _____ crashing on its surface.
7. _____ have brought back moon rocks for study.
8. _____ are large, flat areas that are sunken.
9. The astronauts' _____ were left in the lunar soil.

[\(View answers\)](#)

The Moon*

The moon is not a star or planet.

It is the Earth's one and only natural satellite.

The moon circles the Earth in a fixed orbit.

The moon's orbit is not perfectly round.

The moon also spins on its axis.

It takes 27 days, 7 hours, and 43 minutes to make a complete rotation.

The moon does not have its own light.

The moon's light is reflected light from the sun.

The surface of the moon is covered with a thick layer of grey dust and bits of rocks.

There are high mountains, hills, valleys, plains, and craters on the moon.

There are no oceans, lakes, or rivers.

Astronauts first landed on the moon on July 20, 1969.



1. The moon's light is _____.
2. There are _____, _____, _____, _____, and _____ on the moon, but no _____, _____, or _____.

* For sources to this article, see [By the Light of the Moon](#).

The information for the following story is from Scholastic Canada's *Atlas of the World*.

Words to Preview		
asteriod	satellite	enormous
galaxy		

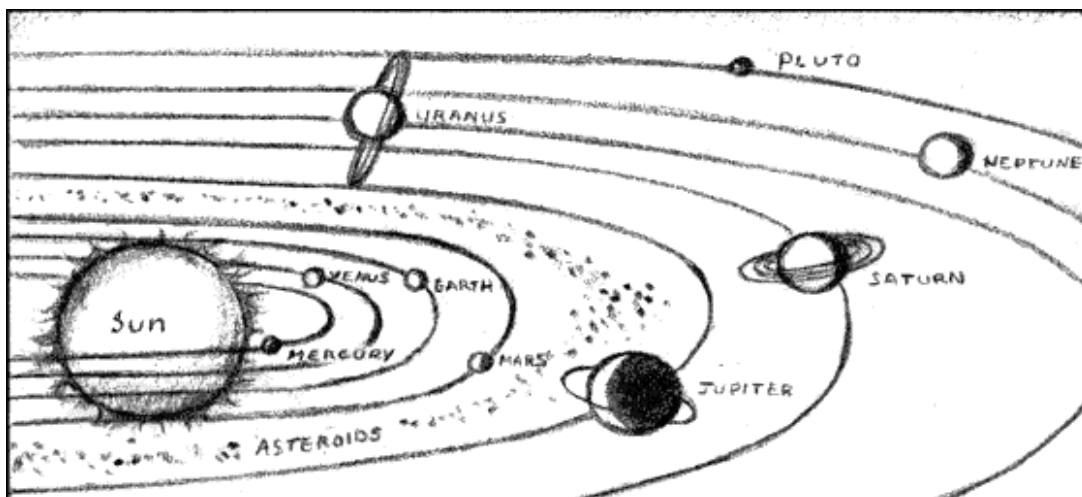
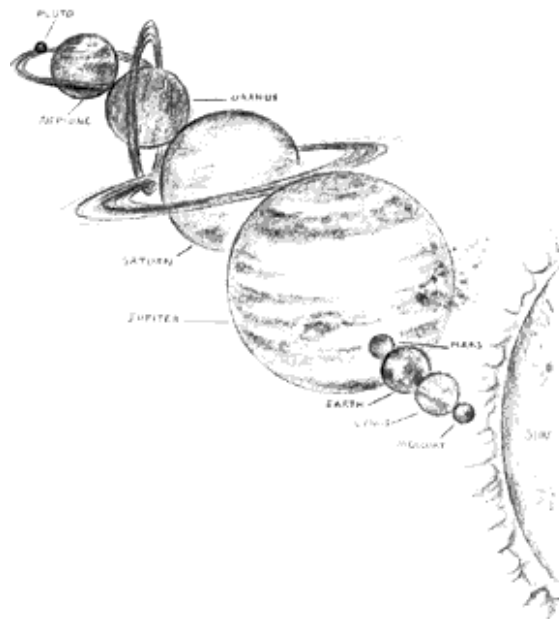
The Solar System

Our very own planet Earth is one of the nine known planets. In this family of planets, Earth is not the largest - some of the other planets are much larger, but Earth is the only planet on which we are certain that life exists.

In order closest to the sun, the nine planets are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto.

Some of the larger planets, such as Jupiter and Saturn, are made up of gas -- they are sometimes called the "gas giants." Earth and Mars are made mainly of rock. The smallest planet, Pluto, is made up of a mixture of ice and rock.

Earth and the other planets circle the sun in fixed oval-shaped paths called orbits. Satellites, moons, comets, asteroids, and other objects also orbit around the sun. This family makes up what we call the Solar System.



The sun is not a planet -- it is a small star. It belongs to a huge group of stars called the Milky Way. Our planet belongs to this enormous galaxy of millions of stars.

Earth takes 364 1/4 days or one earth year to make one complete circle around the sun. Mercury takes only 88 days to make its orbit because it is the planet closest to the sun. For Pluto, which is most often the farthest from the sun, it takes nearly 248 earth years to make its orbit around the sun.

"The Solar System"

Comprehension Exercise

Fill in the blanks with the correct word.

1. The planet closest to the sun is _____.
2. Jupiter and _____ are made up of gas.
3. Earth and _____ are mainly rock.
4. The smallest planet is _____.
5. The planets circle the sun. These paths are called _____.
6. _____, _____, _____, and _____ are objects that also orbit the sun.
7. The sun is not a planet. It is a _____.
8. The _____ is a huge group of stars.
9. The Earth takes _____ days to make one rotation around the sun.
10. Mercury takes _____ days to rotate around the sun.
11. _____ takes 248 earth years to rotate once around the sun.

[\(View answers\)](#)

Reading Between the Lines

1. The Earth takes 364 1/4 days to make one rotation around the sun. Do you think this is why we have a leap year? What is a leap year? How often do we have a leap year?

Trivia Question

Do a bit of research.

What is the Earth's distance from the sun?

[\(View answer\)](#)

"The Solar System"

Syllables

Syllables are the separate sounds in a word. For example, "remember" has 3 syllables -
- re*mem*ber.

Split each word into syllables.

Example: remember: re/mem/ber.

planet	_____	mixture	_____
life	_____	satellite	_____
certain	_____	family	_____
sometimes	_____	giant	_____
belong	_____	only	_____
complete	_____	special	_____
awesome	_____	Earth	_____
enormous	_____	orbit	_____

[\(View answers\)](#)

Find 3 two-syllable words in the story.

Find 3 three-syllable words in the story.

"The Solar System"

Supplementary Exercise -- Mars*

Space missions have been successful in getting photos and information about Mars. In 1965, the Mariner 3 took the first close-up pictures of Mars. If we could land on Mars, what do you think we would find?

Do some research and choose the correct answers to the multiple choice questions below.

1. Mars has:
a) lot of water
b) very little water.
2. Every twenty-four hours, the Earth makes one complete rotation on its axis.
a) Mars takes more time.
b) Mars takes less time.
3. The Earth's axis is tilted 23 ½ degrees. Mars is:
a) not tilted.
b) tilted 23 ½ degrees like Earth
c) tilted 25 degrees.
4. Mars has seasons like the Earth.
a) This statement is true.
b) This statement is false.
5. The red color that Mars has is caused by:
a) fire.
b) red dust and rocks.
c) fumes.
6. Mars' atmosphere has clouds.
a) This statement is true.
b) This statement is false.
7. The different colors on Mars are caused by:
a) blowing sand.
b) vegetation.
c) rocks

[\(View answers\)](#)

* For sources to this exercise, see the [Answer Key](#).

Planets*

The solar system is made up of planets, satellites, moons, comets, asteroids, and the sun.

There are nine larger planets that orbit the sun.

They are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto.

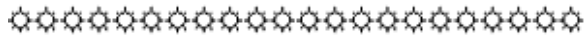
The sun is not a planet; it is a small star.

The sun belongs to the huge group of stars called the Milky Way.

The Earth takes 364 1/4 days to make one complete circle around the sun.

Mercury only takes 88 days since it is closer to the sun.

Pluto is the farthest from the sun and takes 248 earth years to orbit it.



1. The nine planets are _____
_____.
2. The Milky Way is _____.

* For sources to this article, see [The Solar System](#).