

Introduction to
GEOGRAPHY
FOR
SECONDARY SCHOOL

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INTRODUCTION TO GEOGRAPHY

The first person to introduce word geography was a Greek philosophy called Eratosthenes (276-194). Hence word geography originated from two Greek words such as Geo means Earth and grapho means To draw or to describe. In short, geography means to describe the earth. It is a description of the earth. Therefore the combination of these two words we get Geography.

What is Geography?

Geography is the study of distribution and interrelationship of phenomena in relation to the earth's surface. Or is the scientific study of the earth as a home for humankind. It is a study of human and relation to his or her environment. It is a scientific study of spatial distribution or variation of any physical or natural.

BRANCHES OF GEOGRAPHY

As we have discussed the geography deals with the distribution of geographical phenomena. Now let divide this great subject into branches:-

- ❖ 1. Physical geography
- ❖ 2. Human and economic geography
- ❖ 3. Practical geography

Physical Geography

This branches of geography deal with the study of landforms, their formation, processes and distribution. In short physical geography examine natural processes.

Examples of landforms.

Mountain
Rivers
Roads

Human and economic geography

This branch examines economic, social and behaviour processes. In other words, human and economic geography deals with human activities.

Examples of human activities

Mining
Fishing
Lumbering

Practical geography

This branch of geography deals with a field study of research, statistic, map work and photography interpretation.

Why do we study geography?

- ◆ 1. We study geography to understand the changes which have taken place over time.
- ◆ 2. To understand geographical phenomena which vary over space.
- ◆ 3. To understand employment opportunities found withing knowledge of geography

- ◆ 4. to gain knowledge about our environment
- ◆ 5. geography helps us to know how different countries are relating to each other.
- ◆ 6. geography helps us to be aware of the resources available in our environment.
- ◆ 7. knowledge of geography helps us to discover environmental problems and how to combat those problems.

Geography in our real life.

In our day to day real life, we use geography in many occasions. We use geography in agricultural activities. Crop rotation, irrigation, soil erosion control, the use of manure and fertilizers and other ways of farming. When choosing a good area for agriculture or certain crops according to climate and soil, we use geography to do that.

When we want to know about the climate and weather of an area we need to use knowledge of geography. In interpreting geographical phenomena and their distribution we use geography. In weather forecasting and warning about the coming of natural hazard like a flood, we use geography.

Even when we build our house we use geography, we need a knowledge of geography to determine a good spot for building a house. In planing cities also a knowledge of geography plays great roles.

Wen we want to know the distribution of landforms and natural features we use knowledge of geography. In geography, we study the reasons for the formation of different landforms in a certain area. Why the mount Kilimanjaro is located there and not in other places. The answer to this question needs knowledge of geography.

EXERCISE 1

1. word "geography" is a combination of ___ Greek's words.
2. A word "geo" means ___ while a word "grapho" means ___
3. Mention three branches of geography _____, _____ and _____
4. What is geography?. Geography is _____
5. Why do we study geography?

SOLAR SYSTEM

Solar means sun, while a system means a combination of different part working together as a whole. In short solar system is a system of sun and object that surround it. Our solar system formed 4.5 billion years ago from the cloud of gas called nebular. Sun is at the centre of the solar system. Our solar system comprises sun, planets, satellite, comet, asteroid and meteorites.

What is a solar system

- ❖ Solar System, the Sun and everything that orbits the Sun, including the planets and their satellites; the dwarf planets, asteroids, Kuiper Belt Objects, and comets; and interplanetary dust and gas
(Microsoft ® Encarta ® 2009. © 1993-2008 Microsoft Corporation.)
- ❖ Is an arrangement of heavenly (celestial) bodies that orbit the sun.
- ❖ Is a system of the sun and objects that surround it
- ❖ Is gravitational bound system of the sun and objects that around it.
- ❖ Is an arrangement of the objects that are revolving the sun and they are been affected by its gravity.

The time by which these objects are revolving the sun depends on their distance from the sun. For example, mercury uses a few days to complete its revolution while Pluto uses a lot of time than any planet. This is because Pluto is very far from the sun. All these objects are revolving the sun in their path called orbit. This orbit is not completely round like a ball. Orbit has a shape called Ecliptic shape. Most of these objects are rotating on their axis at a certain angle. All these objects are held by the sun's gravity.

Members of the solar system.

There are many members of solar system, but in this article we are going to see only the following members:-

- ❖ 1. Planets
- ❖ 2. Asteroids
- ❖ 3. Comets
- ❖ 4. Satellite
- ❖ 5. Meteorites

THE SUN

The sun is at the centre of the solar system. the sun is the star, a ball of hot and glowing gas. It does not have any solid part. All objects in our solar system depend on the sun. The sun is the only star in our solar system. It looks bigger than other stars, this is because it is closer than other stars. But in fact, the sun is very small compared to other giant stars.

The sun is made up of 75% of hydrogen, 23% of helium and 2% of other elements. The mass of the sun is about 330,000 times greater than the mass of the earth. The diameter of the sun is about 1.4 million kilometers. The surface temperature of the sun is around 6000 °C while at the centre of the sun temperature is about 14,000,000 °C. The surface of the sun is called photosphere. The sun is the main source of energy and light in planets. without the sun no light on the earth, no energy no life.

SOLAR ENERGY

As we know that sun is a source of all energy and light on the planets. This sun's energy is what called solar energy. There fore, solar energy is energy produced from the sun. This energy is originated from the core of the sun where the nuclear reaction is done to produce heat and energy.

In our day to day activities, we need solar energy for various uses. For example:-

- ✓ 1. We use solar energy for drying our clothes after washing.
- ✓ 2. We need solar energy to dry our crops on the farm and after harvesting.
- ✓ 3. Plants need solar energy to produce their food by the process called photosynthesis.
- ✓ 4. We get vitamin D from solar energy. This vitamin is very essential for our bones
- ✓ 5. In our house, we use solar energy for cooking and for lighting our house. We use electricity made from solar energy by using a solar panel. A solar panel is an instrument used to convert solar energy into electrical energy.
- ✓ 6. Solar energy is very essential to the formation of rainfall.
- ✓ 7. We get heat to warm our bodies from solar energy.

HOW SOLAR ENERGY CONTRIBUTE TO ENVIRONMENTAL CONSERVATION

Solar energy is one of the most friendly sources of energy on the surface of the earth. This is because the use of solar energy promotes environmental conservation. For example:-

- ✓ 1. the use of solar energy replaced charcoal and firewood. As we know that charcoal and firewood are agents of air pollution.
- ✓ 2. Solar energy is clean as it does not produce soot when cooking using solar energy.
- ✓ 3. The plants use solar energy to make their food. In this process, plants use carbon dioxide and produce out oxygen during the day time. Through this process, plants help us to conserve the environment by removing carbon dioxide in the atmosphere.

HOW THE USE OF SOLAR ENERGY CONTRIBUTE TO THE WOMEN DEVELOPMENT

As we know that in developing countries the main fuel used at home is firewood or charcoal. And the main user of these energies is women. This is because they are cook for the family. Now let's look at how the use of solar energy may contribute to the development of women.

- ✓ 1. the use of solar energy for cooking may serve time that my used in other economic activities. Women are using a lot of time for fetching firewood in forests.
- ✓ 2. The use of solar energy may reduce dangerous that are facing women while fetching firewood in the forest.
- ✓ 3. The time that girls may use to fetch firewood may be used for reading. This may improve their academic development.

PROBLEMS CAUSED BY THE USE OF SOLAR ENERGY

- The use of solar energy contributes to some of the problems, in our health and even in our economy. Now let's look at these effects
- 1. Solar energy may cause skin burns and cancer sometimes.
- 2. In bad weather condition, we cant use solar energy as we need.
- 3. Solar energy is expensive in some cases.
- 4. The availability of solar panel in not easy in villages.

PLANET

Planets these are solid celestial large bodies that are rotating around the sun. They are larger than any other bodies in our solar system. Planets are divided into two parties. Inner planet and outer planets. Inner planets include Mercury, Venus, Mars and Earth. These planets are also called rock giants. This is because they made up of rocks and iron. These inner planets are small compared to outer planets.

Inner planets include Jupiter, Saturn, Uranus and Neptune. These outer planets are larger than inner planets. They consist of hydrogen, helium and ice. The first two outer planets (Jupiter and Saturn) are called gas giants as their composition consist of the gases at large. The other two planets (Uranus and Neptune) are called ice giants as the made up of ice at large.

Current there are only eight planets in our solar system. Previous we believed that Pluto is one of these planets. In 2006 Astronomers under International Astronomical Union (IAU) removed Pluto as a planet. From there they provided three characteristics of planets as follows.

CHARACTERISTICS OF PLANET

- ❖ It must orbit the sun
- ❖ It must have round shape from the effects of its own gravity
- ❖ It is the dominant object in its region of space and has cleared the neighbourhood of its orbit of other objects.

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Mercury is the closest planet from the sun in our solar. It is the smallest planets in our solar system. The second planet from the sun is Venus it is also called morning star. It is the brightest planet in the solar system. It is the hottest planet. This is because its atmosphere's carbon dioxide is 90 larger than that of the earth. Its temperature is about 477oC. The earth is the only planet that believed to support life of the living organism. It is the third planet from the sun and only planet that contain water. Mars is the fourth planet from the sun.

Jupiter is the fifth planet from the sun. It is the largest planet in our solar system. Jupiter has more moons than any other planets. The sixth planet from our solar system is called Saturn. Its moon Titan has thicker atmosphere than any other satellite in our

solar system. Saturn is the only planets that have a ring around it. The seventh and eighth planets are Uranus and Neptune respectively.

The path used by planets to orbit the sun is called orbit. The shape of the orbit is an elliptic shape. The time which a planet use to orbit the sun is depending on the distance from the sun. For example, mercury spends little time to orbit the sun while Neptune spends a lot of time than any other planets to orbit the sun.

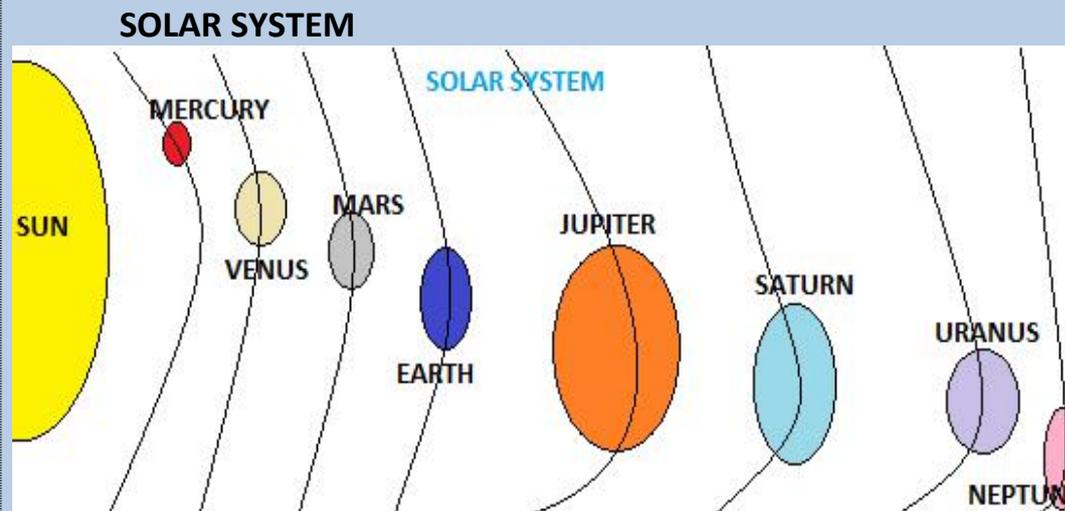


figure 1: solar system

ASTEROIDS



Encarta Encyclopedia, Jet Propulsion Laboratory/Liaison Agency

figure 2:Asteroid
ASTEROIDS

These are solid metal rock objects that orbit the sun, and they are not as bigger as planets. They are mostly found between the orbit of Mars and Jupiter. This region where asteroids are found is called the asteroid belt.

The asteroids have an irregular shape and their size vary from few meters width to over 500 km. There are thousands of asteroids in the asteroid belt. Sometimes they collide to form more small asteroids. They can also collide with planets. It is believed that 65 million years ago asteroid collides with earth. we cannot see asteroids without the help of the telescope.

METEORITES

These are solid celestial bodies made that are orbit the sun. They are small less than the size of asteroids. Meteorites are made up of iron and nickel or silica. They are seen during the night time as a shooting star, but in fact they are not stars. They are

formed after collision of asteroids or comets. Meteor is the process where by a meteorite falls and become disintegrated due to the friction in the earth's atmosphere. Sometimes these objects are not completely evaporated in the earth's atmosphere, thence they complete their journey to the earth's ground and fall down as a meteorites.



In Tanzania meteorites are called “vimondo”, there are two areas where vimondo are found in Tanzania such as Mbozi district and Malampaka in Kwimba district. The largest known meteorite, estimated to weigh about 60 metric tons, is situated at Hoba West near Grootfontein, Namibia. (Microsoft ® Encarta ® 2009. © 1993-2008 Microsoft Corporation.)

Meteorites are visible between 110 km and 145 km above the earth's surface. Sometimes meteorites fall with great force and caused large craters. Example of these crater is that found in Arizona desert in United States of America which estimated to have 150 m deep and width of 1 km. Sometimes crater can occupied by water and form lake. Example of lake formed by this situation is lake Manicougan, in Quebec, Canada.

COMETS

A word comet is a Greek word which means long-haired star. These are piece of rocks that orbits the sun far away beyond the orbit of Pluto.. They can be seen from the earth only when they come close to the sun. They seem as a bright object moving fast and having head and tail, during the night. Usually comet are made up of ice and dust particles. As asteroid and meteorites, comets are irregular shaped celestial objects. Their orbit is highly elliptical (oval-shaped)



As they orbit the sun in their orbit when they come close near the sun, their ice turn into gas directly without melting. Further more the gases and dust particle together they form cloud of gases. As they orbit the sun this cloud form tail while comet it self form head. From the earth comets seems as a bright object with head and tail. These tail may have a distance of several kilometers on the space.

SATELITE

These are solid objects that orbit the planets. Satellites are also called moons (by small letter “m”) of planets. The moon of the Earth is called Moon by capital letter “M”. Almost all planets have got moon except Mercury and Venus. The number of moons depends on the size of the planet. For example, the biggest planet Jupiter has got more than 60 moons, while the small planets like the earth have got only one moon.



THE MOON

The Moon of the earth takes 27.3 days to orbit the Earth. The time from one full Moon to another is 29.5 days. The Moon orbits the earth from west to east with the speed of 3,700km/h. The first person to discover moons is called Galileo Galilei in 1610 AD. The diameter of the Moon is about 3,480 km, with a diameter of 384,403 km.

THE EARTH

The earth is the third planet from the sun. About 71% of the earth is covered by water. Like other planets, the earth is a flattened sphere. This can be shown by the variation of diameter between the equator line and longitude lines. The diameter of the earth along the equator line is 12,757km while along the longitude line is 12713km.

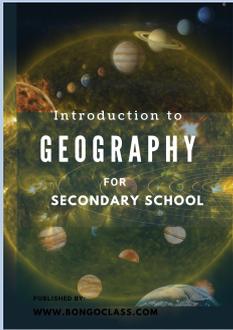
The earth is made up of the Atmosphere (air), Hydrosphere (water bodies), the crust (solid and molten materials) and biosphere (living things). In the following chapters, we are going to look more about this.

SHAPE OF THE EARTH

The shape of the earth is a flattened sphere. There are several pieces of evidence to support this claim. Here are a few of them:-

- ❖ Lunar Eclipse: This is shown by looking at the shadow of the earth on the surface of the moon. The shadow of the earth appears as round. This proves that the earth is round as its shadow
- ❖ Circumnavigation: this done by Magellan in 1519 - 1522 as the first traveller around the world. As he travelled around the world final he came back from where he started his journey. This proves that the earth is round.
- ❖ Sunrise and sunset: As the Sunrise some part of the earth experiences the darkness of night. As time goes on the sun occupies other places and leave dark in other places. When the sunset other places experience the light of the sun. But if the Earth would be flat all parts of the earth would experience sunset and sunrise at once.
- ❖ Ship's visibility: as you see the ship when is coming from far, the only things to be seen are pipes and top objects. As it comes near other features are seen. This is because the earth has a curve that prohibits a ship to be seen at once.
- ❖ Aerial photograph: as seen in the image below, this is the image of the earth taken from the Moon. The image itself confirms that the earth is not flat.





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