

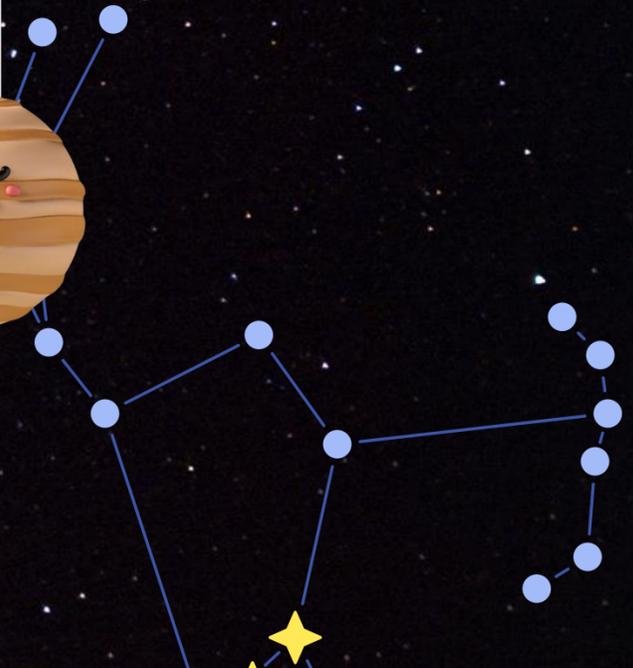
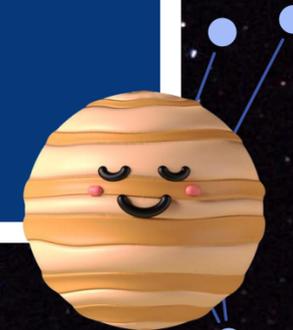
LESSON 42

CONSTELLATION



IMPORTANT QUESTION

WHAT IS THE SIGNIFICANT OF
CONSTELLATION IN OUR LIVES?



Ancient people used to create patterns out of stars. They based their pattern on animals, myths, etc.





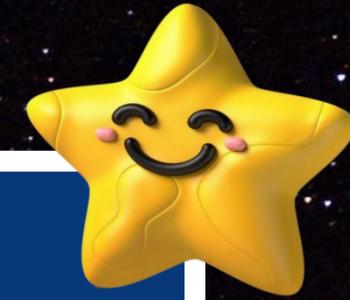
If you are going to observe the sky on a cloudless night very keenly, you will notice the patterns formed by groups of stars. The groups of stars that form distinct patterns in the sky are called **constellations**.





The ancient people first observed these groups of stars as outlines of animals, mythological heroes, gods, and other objects. They found it easier to locate and remember constellations when they try to find a distinct and particular pattern the way a group of stars are engaged.





For example, in the Northern Hemisphere, they have observed a group of stars which they thought look like a dragon, so they named this group as **Draco**. In the Southern Hemisphere, they noticed a group of stars that seemingly form a cross and so they called it as **Southern Cross**. Some other popular constellations are the **Ursa Major** (Big Bear), **Ursa Minor** (Little Bear), **Orion**, and **Cassiopeia**.





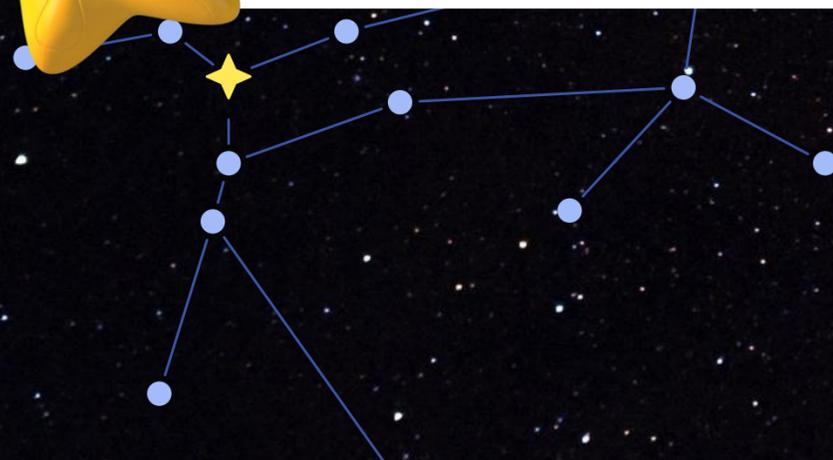
Some of the Known Constellations and Stars

The International Astronomical Unit (IAU) made a list of the official modern constellations. There are already 88 constellations on the list, and many of these constellations were discovered by the ancient Greeks.



URSA MAJOR

Ursa Major – resembles a big bear and is the third largest constellations in the night sky. It includes the Big Dipper, which is composed of the seven stars, Alkaid, Alcor, and Mizar (appear as one), Alioth, Megrez, Phecda, Merak, and Dhube.

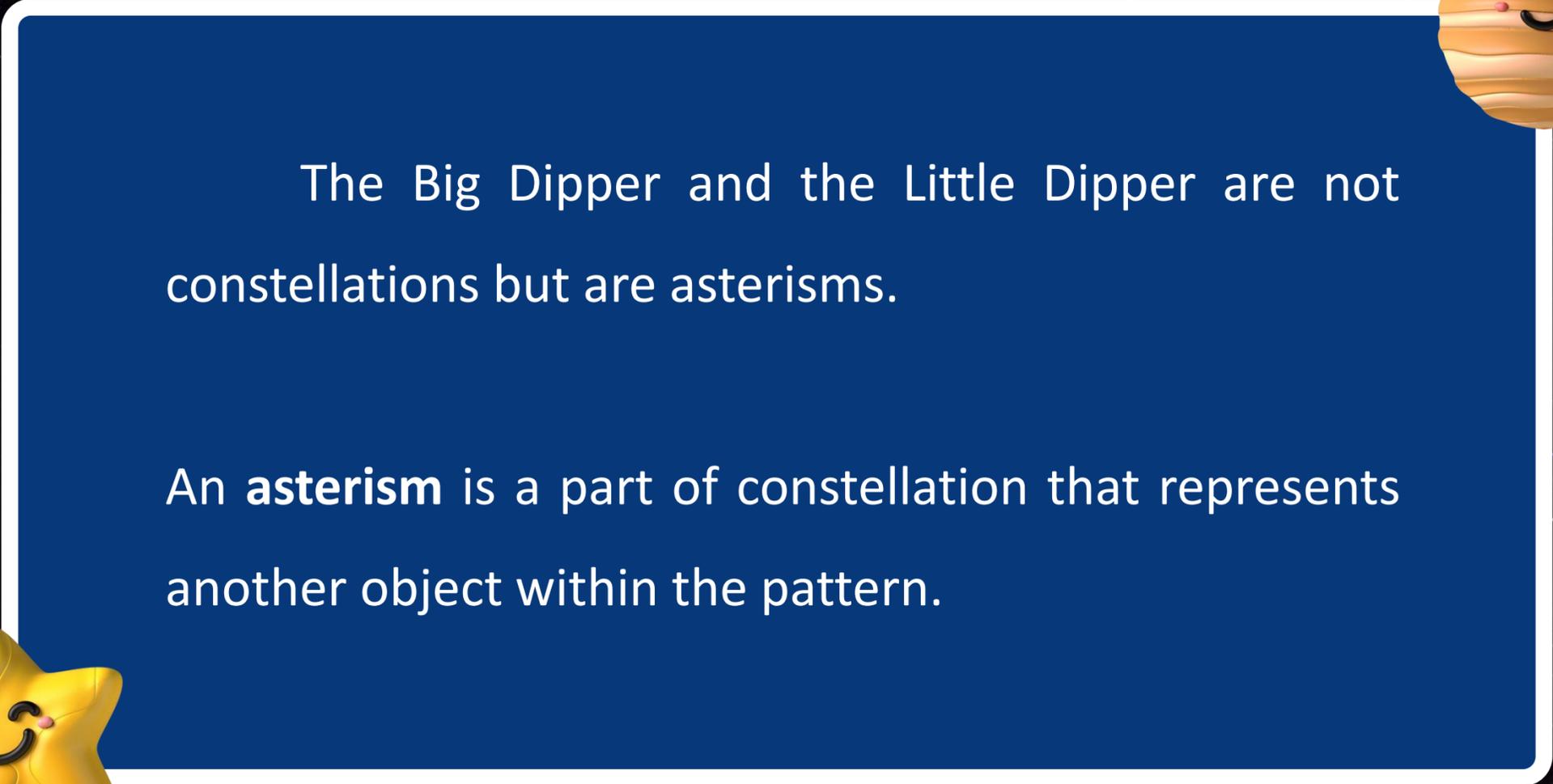


URSA MINOR



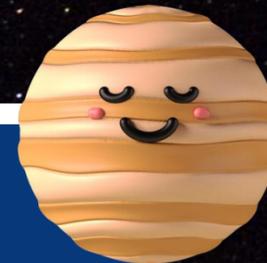
Ursa Minor – or the little bear contains a group of stars known as the Little Dipper. The handle of the dipper serves as the little bear's tail and the dipper's cup, is the bear's thigh. The most famous star in the Ursa Minor is Polaris. It is called the North Star, since its position always points to the earth's north pole.





The Big Dipper and the Little Dipper are not constellations but are asterisms.

An **asterism** is a part of constellation that represents another object within the pattern.



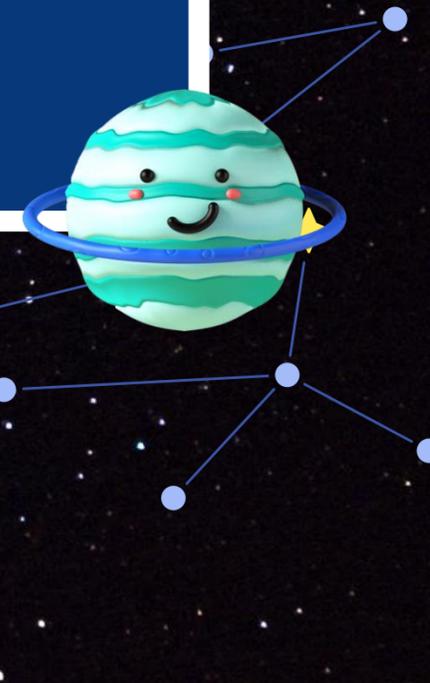


Some constellations are named after Greek mythology legends. Two of them are Cassiopeia, the Queen, and Orion, the Hunter.



CASSIOPEIA

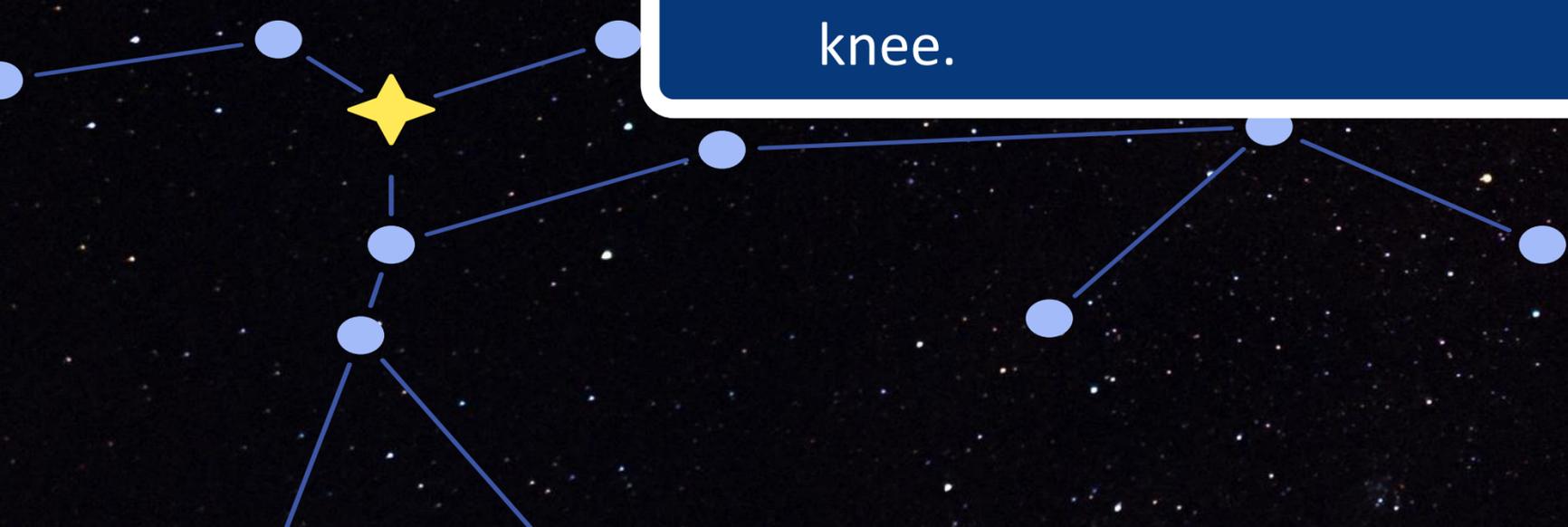
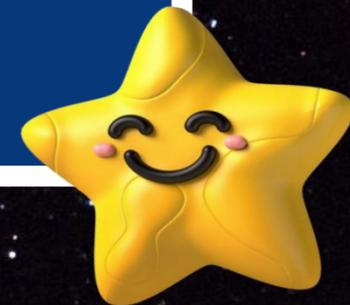
Cassiopeia – Consist of five stars that seem to form the letter W. It represents the queen Cassiopeia of the mythical kingdom of Ethiopia.



ORION



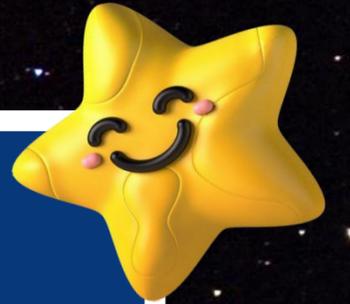
Orion – is one of the most recognizable constellations in the night sky and is visible throughout the world. Three of its stars form its belt. Orion's belt is also an asterism. On Orion's right shoulder is a red supergiant star called **Betelgeuse**. A bluish white star called **Rigel** is found on Orion's left knee.



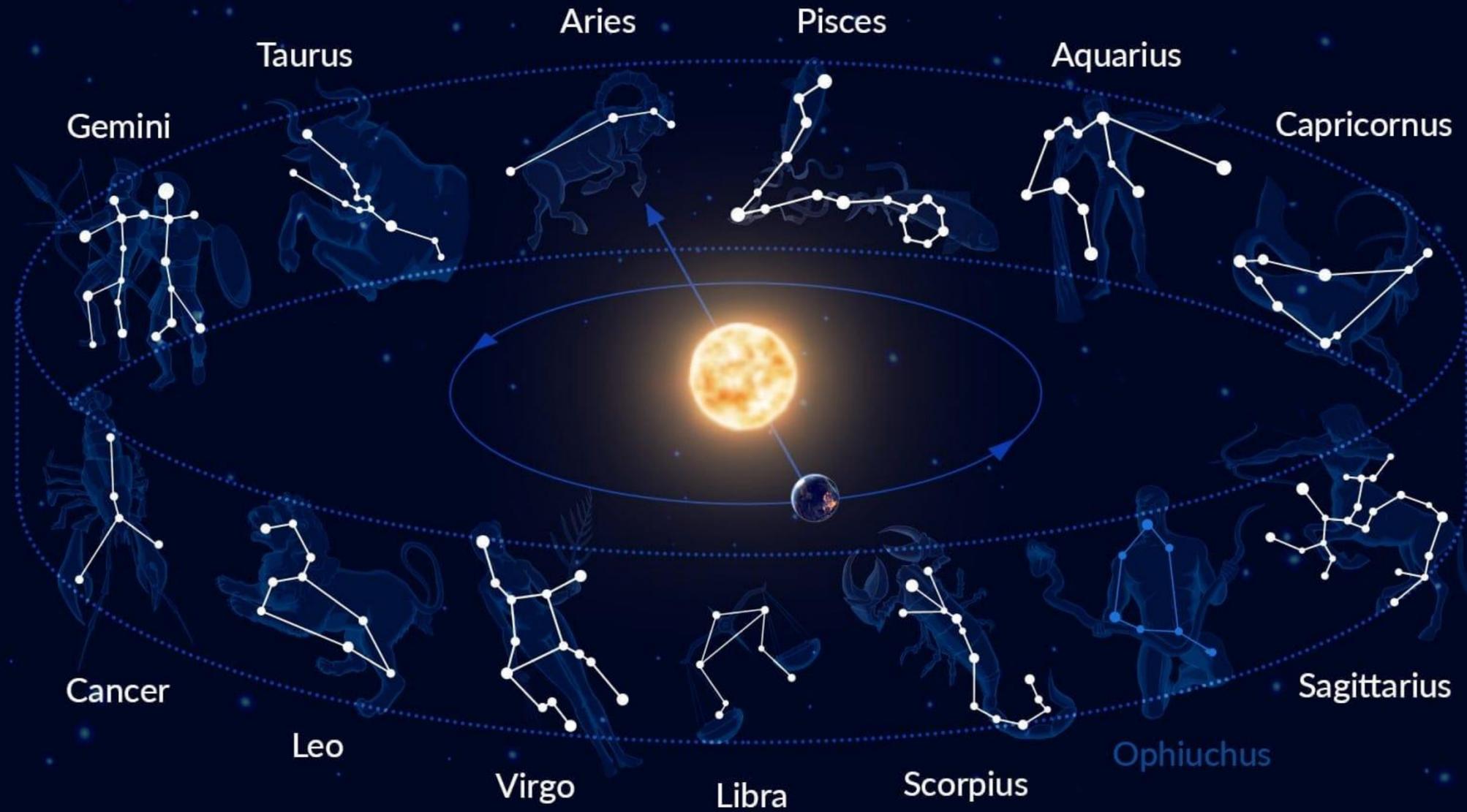
THE POLLAR CONSTELLATION

There are some constellations that can be seen only during certain seasons of the year. These are called North Polar Constellations and South Polar Constellations. The Constellations nearest the center of the circle can be seen throughout the year.

The people living in the Northern Hemisphere see constellations different from those living in the Southern Hemisphere. Why do you think?



THE CONSTELLATIONS OF THE ZODIAC



CONSTELLATIONS IN THE ZODIAC



The stars keep to the same pattern in the sky, while the much nearer sun, moon, and planets appear to move slowly about. However, the sun, moon, and planets keep to a definite circular belt or path in the sky called **Zodiac**. The Zodiac is an imaginary belt or path in the heavens that includes the path of the planets. The belt is 16 degrees wide and the path of the sun seems to follow as viewed from the earth moves along its center. Therefore, the path of the moon and those of the planets are within the boundaries of the Zodiac.

CONSTELLATIONS IN THE ZODIAC

The Zodiac contains twelve constellations. They are the Aquarius, Aries, Cancer, Capricorn, Gemini, Leo, Pisces, Sagittarius, Scorpio, Taurus, and Virgo. Each constellations is represented by a sign or symbol.

The sun moves through the constellations of the Zodiac as the Earth moves. Thus, based on the arrangement of the constellations in the Zodiac, the sun is said to enter in the constellations Aries at the Beginning of spring (March 21) in the Northern Hemisphere.



MOVEMENT OF STARS



Why do constellations seem to be fixed or permanent? Do stars move?

The answer is yes.

Stars move just like all the other bodies in the universe. Galaxies or groups of billions of stars are also in constant motion in the space.

The set of in our galaxy, the milky Way, are constantly moving. Each star follows around the center of the galaxy. Our sun moves around the galaxy 240 million years. Stars that are farther than the sun take a longer time to move around the center of the gravity.

MOVEMENT OF STARS



Why, then, do the constellations seem to be fixed? It is because of the distance of the stars to Earth. Since stars are too far away from us, their motion seems to be negligible or has a little effect on their positions. This explains why the constellations seem to retain their shape even after many years.

There are different constellations in the sky at the different times of the year. The night sky changes over the year. The Earth revolves around the sun, therefore the stars in the sky we see in June are different from the stars we see in the sky in December. As a result, the night sky changes constantly.



USEFULNESS OF CONSTELLATIONS

Since ancient times, constellations are always helpful to people. They used the appearance of certain stars to forecast the weather. When stars are visible, they expect fair weather. But, when stars are hidden behind the clouds, the next day may be cloudy or rainy.

Constellations are helpful to navigators, too. Navigators used their knowledge in astronomy in the conduct of their work. When the navigators are lost at sea, they refer to Polaris, which is Ursa Minor. They use Polaris as their guiding star. Polaris is a fixed star. It is located at the north. By using Polaris, it is easy to find south, east, and west directions.

LET'S SUMMARIZE



- ❖ Stars are giant balls of hot gases
- ❖ Not all stars are the same. They all differ in size, color, distance, and brightness.
- ❖ The size of stars is measured in diameter.
- ❖ The brightness of a stars is measured in a apparent magnitude.
- ❖ The distance of the stars is measured in light-years is the distance travelled by light in one year.
- ❖ The color of the stars determines its hotness. Red is the least hot and blue is the hottest.

LET'S SUMMARIZE



- ❖ A group of stars that form a certain pattern is called a constellations.
- ❖ Asterisms are parts of the constellation which forms another object within the constellation. An example is the Big Dipper inside the constellation Ursa Major.
- ❖ There are two types of Polar constellation. People living in the northern hemisphere see the north polar constellations while people living in the southern hemisphere see the south polar constellations.



THANK YOU!!

