"You are Galileo!" Project

Observe the Milky Way!

Observation & Sketch

In 1609, Galileo Galilei, the Italian Scientist, began using a telescope to observe the sky. In 1610 he made a great discovery concerning the Milky Way. What did he find? Re-visit his discovery using our own telescope!

Name _____

■Let's observe inside and outside of the Milky Way, and sketch what we see.

Date and Time of Observation _____

Location of Observation _____

Diameter of Telescope _____ cm

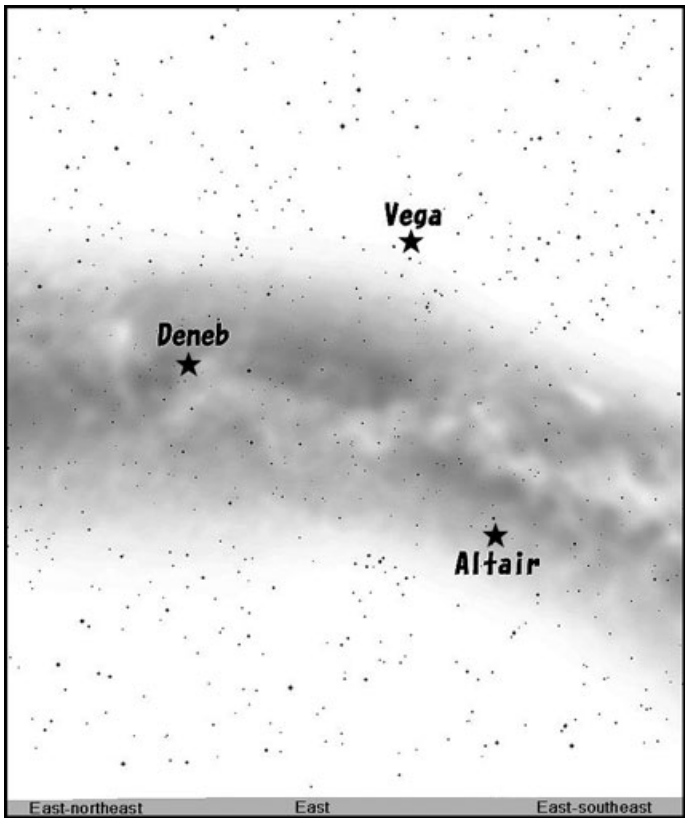
Power of Telescope _____ x

The Power of the Telescope can be calculated by dividing the focal length of the telescope by the focal length of the eyepiece.

Inside the Milky Way

Outside the Milky Way

■ Mark points that you observed in the star chart below.



Images provided by Stellanavigator / AstroArts Inc.

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Post Observation Study

Name _____

■Write down what you noticed when sketching the Milky Way.

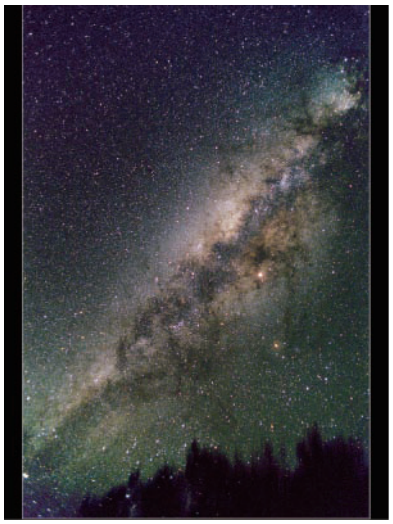
■Check what you were able to do.

☐Find many stars that can’t be seen with the naked eyes.

☐Notice that there are more stars inside than outside of the Milky Way.

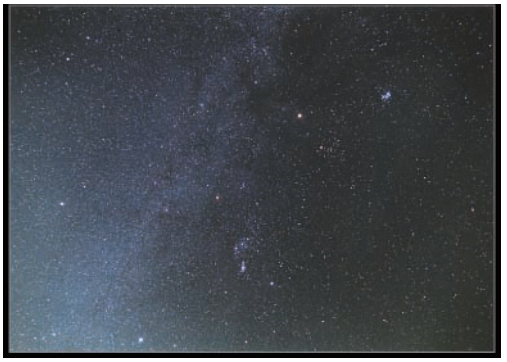
☐Sketch many stars as like Galileo’s sketch.

■The Milky Way has led like surround us. The Milky Way is visible in winter even it is pale compared to the Milky Way in summer.
When you observe carefully, you can see dark parts in the Milky Way of summer. There are dark nebulae in the parts. The starlight behind the dark nebula is hidden because it is made of gases which is lightproof.



← View of the Milky Way in summer.

View of the Milky Way in winter.
↓



Images provided by National Astronomical Observatory of Japan.

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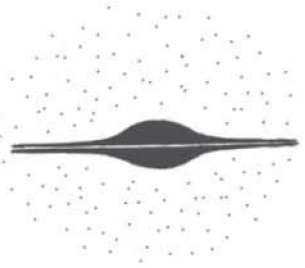
Post Observation Study

Name _____

■Sun and its planets are part of a grouping called the Galaxy.
It is thought that our galaxy is disk shaped like the figures on the right.
This was deduced from observing the Milky Way.

An image from above.



An Image from the side.

■Let's consider the relationship between the Milky Way and the Galaxy by looking at the shape of the Milky Way in summer. With a colored pen or pencil, highlight the shape of the Milky Way in the inverted black and white image below.

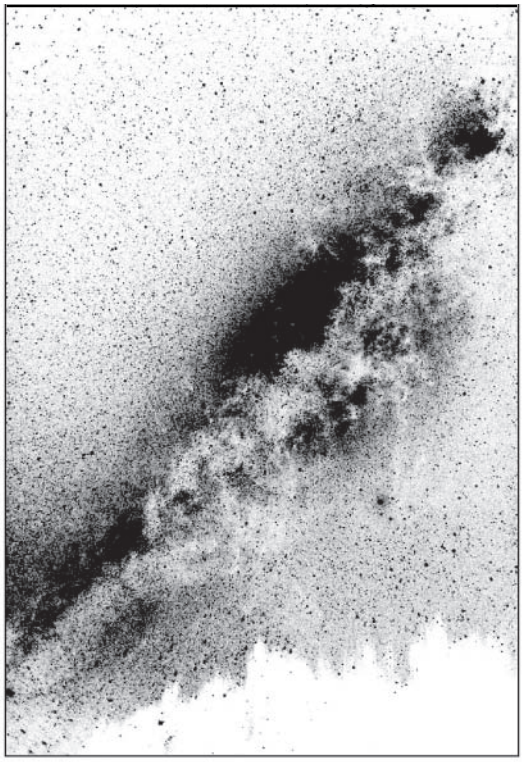
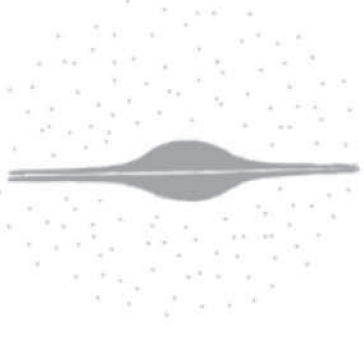


Image provided by National Astronomical Observatory of Japan.

What kind of shape does it have?
Why does it look like it does?
Write down your thoughts.

■What part of the Galaxy are we in?
Make your guess and mark it on the images on the right.



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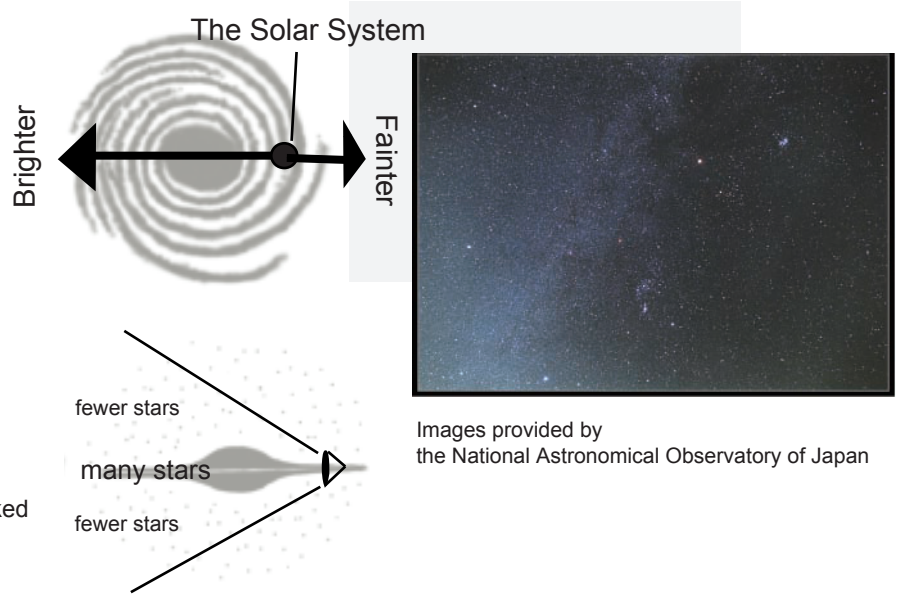
The Milky Way provides a view of the Galaxy from inside. We live at the edge of the Galaxy. The center direction of the Galaxy is seen brighter, and the other side is seen fainter.

Some areas of the Milky Way are blocked from our sight by a dark nebula.

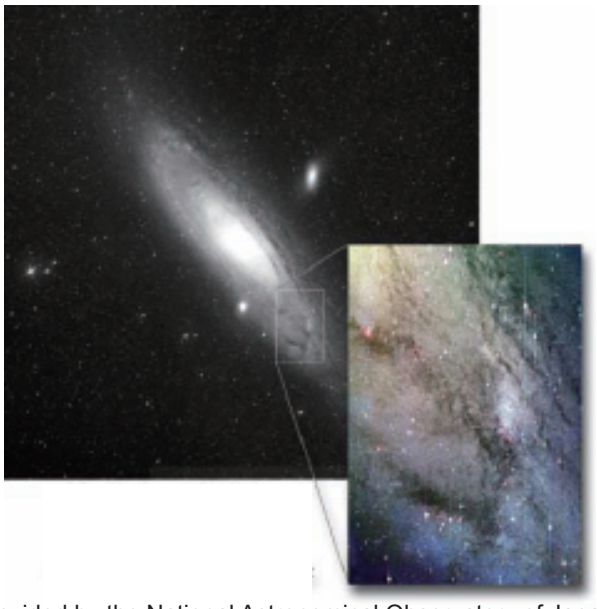


Images provided by
the National Astronomical Observatory of Japan

The Sun and its planets as well as the stars that form the constellations all exist in the same Galaxy. Many astronomers used to consider that the Galaxy was the whole of the Universe.

■80 years ago, an astronomer claimed that a celestial object called the M31 (the Andromeda Nebula) existed outside of the Galaxy.
Later, observations by other astronomer proved that M31 was located far outside of our Galaxy and that it was in fact a separate galaxy. (M31 was renamed the Andromeda Galaxy)

M31 (The Andromeda Galaxy) →



Images provided by the National Astronomical Observatory of Japan

This led to the recognition that the Universe extended way beyond our own Galaxy.

Observe the Milky Way!

Post Observation Study

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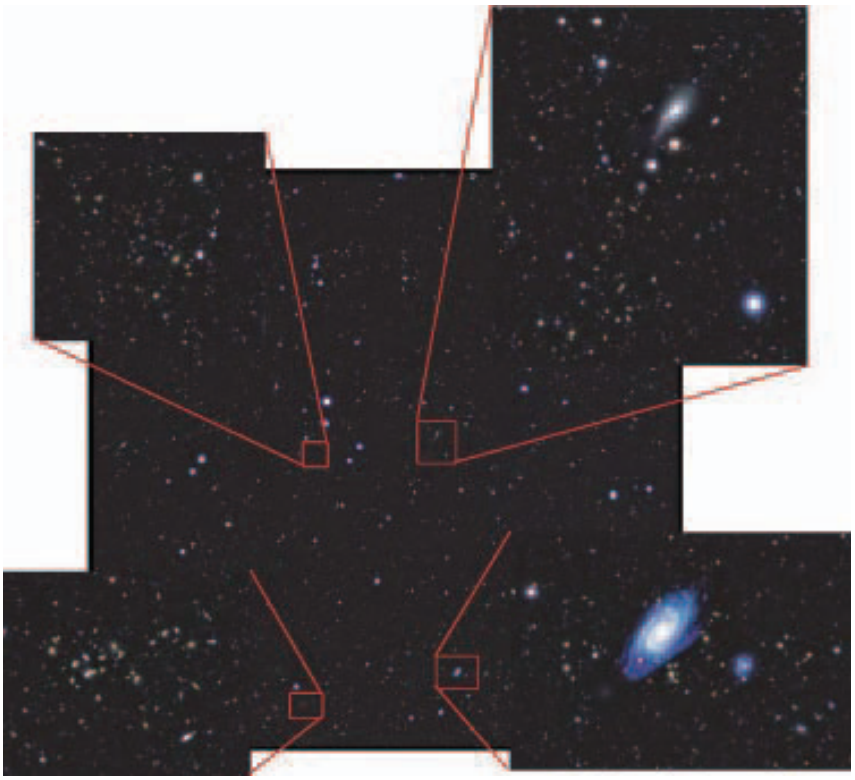
■Astronomers have continued to look for new galaxies and keep finding them. Now we know that there are countless galaxies in the Universe.



←Images taken by the Subaru Telescope.

Many different kinds of galaxies have been observed.

Images provided by the National Astronomical Observatory of Japan.

■To distinguish the galaxy we live in from the other galaxies, we call our galaxy "The Milky Way Galaxy".

The Milky Way Galaxy is just one of many galaxies that exists in this Universe.

■Write down what you learnt in this lesson, and what you would like to learn more about.