Faith & SCIENCE

SESSION TWO: POSTERS AND FACTS

Listed below are the hyperlinks to the required images of the Sombrero Galaxy, the Bubble Nebula, and the planet Saturn. As was noted in the session two leaders' guide, images can be displayed as printed posters, in a laptop screen, on an iPad, or on an LCD or overhead projector. Use your best judgment, based on your group size, your retreat space, and your available resources. The links below provide several options.

This document also includes facts about the three images and about four NASA missions to find earth-like planets. Use this sheet to select which facts you would like to display. Printable versions of all listed facts are included in the curriculum for you to reproduce and use with your students.

Please feel free to direct curious students to the websites listed below. They contain a wealth of information about the images and the missions.

SOMBRERO GALAXY

Images

Several versions of the image can be found here. Choose the best format for your display:
http://hubblesite.org/newscenter/archive/releases/2003/28/image/a/

Fast Facts
Source: http://hubblesite.org/newscenter/archive/releases/2003/28/fastfacts/

The Sombrero Galaxy is located on the southern edge of the rich Virgo cluster of galaxies.

This galaxy is 28 million light-years away. For comparison, it takes sunlight 8.3 minutes to reach the earth.

We live in the Milky Way Galaxy.

A galaxy is any of the very large groups of stars and associated matter that are found throughout the universe.

A galaxy is a vast gravitationally bound system of stars, interstellar gas and dust, plasma, and possibly unseen dark matter. Typical galaxies contain 10 million to one trillion stars, all orbiting a common center of gravity. In addition to single stars and a tenuous interstellar medium, most galaxies contain a large number of multiple star systems and star clusters as well as various types of nebulae. Most galaxies are several thousand to several hundred light years in diameter and are usually separated from one another by distances up to millions of light years.[1]

[1] http://en.wikipedia.org/wiki/Galaxy

In 1912, astronomer V.M. Slipher discovered that the hat-like Sombrero Galaxy appeared to be rushing away from us at 700 miles per second. This enormous velocity offered some of the earliest clues that the Sombrero really was another galaxy, and that the universe was expanding in all directions.

BUBBLE NEBULA

Images

Several versions of the image can be found here. Choose the best format for your display:
http://hubblesite.org/newscenter/archive/releases/1998/28/image/e/

Fast Facts
Source: http://hubblesite.org/newscenter/archive/releases/1998/28/image/e/

This NASA Hubble Space Telescope image reveals an expanding shell of glowing gas surrounding a hot, massive star in our Milky Way Galaxy.

This shell is being shaped by strong stellar winds of material and radiation produced by a bright star nearby, which is 10 to 20 times more massive than our sun.

Fierce winds are sculpting the surrounding material – composed of gas and dust – into the curve-shaped bubble.

A nebula is an interstellar cloud of dust, gas and plasma.

The glowing gas in the lower right-hand corner is a dense region of material that is getting blasted by radiation from the Bubble Nebula's massive start.

This nebula can be found in the Pegasus Constellation. It is 72 million light-years away.

SATURN

Images

Several versions of the image can be found here. Choose the best format for your display:
http://hubblesite.org/newscenter/archive/releases/2003/23/image/a/

Fast Facts
Source: http://hubblesite.org/newscenter/archive/releases/2003/23/fastfacts/

Saturn is the sixth planet from the sun and is the second largest, after Jupiter. More than nine earths would fit across Saturn!

In Roman mythology, Saturn is the god of agriculture.

The rings around Saturn are composed of ice, dust and rock. Some of these particles are as tiny as grains of sand, but some are much larger than skyscrapers. Actually, some are up to a kilometer across, which is more than half a mile.

Saturn experiences seasonal tilts away from and toward the sun, much like Earth does.

It is quite windy on Saturn. Winds around the planet's equator can reach 1,800 kilometers – or 1,118 miles – per hour. In comparison, the fastest winds on earth only reach about 400 kilometers – or 250 miles – per hour.

Saturn goes around the sun very slowly, but spins on its axis extremely fast. A Saturn year lasts for more than 29 earth years, but a Saturn day only lasts 10 hours and 14 minutes.

Saturn is mainly gas, so it is the only planet in our solar system that is less dense than water. This means that if you could build a ridiculously large bathtub, Saturn would actually float in it.

KEPLER (launched in 2007)
Source: http://kepler.nasa.gov/

Kepler is a Discovery mission to detect the presence of extrasolar planets by observing the slight increase in light detected from the parent star as the orbiting planet passes in front of it.

Kepler, a NASA Discovery mission, is a spaceborne telescope designed to look for Earth-like planets around stars beyond our solar system.

Kepler will detect planets indirectly, using the "transit" method. A transit occurs each time a planet crosses the line-of-sight between the planet's parent star that it is orbiting and the observer. When this happens, the planet blocks some of the light from its star, resulting in a periodic dimming. This periodic signature is used to detect the planet and to determine its size and its orbit.

Over a four-year period, Kepler will continuously view an amount of sky about equal to the size of a human hand held at arm's length, or about equal to two "scoops" of the sky made with the Big Dipper Constellation. In comparison, the Hubble Space Telescope can only view the amount of sky equal to a grain of sand held at arm's length, and then only for about half an hour at a time.