THE STORY DOME

STUDY GUIDE

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INTRODUCTION

Dear Educators,
This study guide is a companion piece to the fun and educational shows of The Story Dome. During the program, you and your students will experience some informative and visual lessons in the area of Astronomy. Each of the lessons is packed with audience participation that keeps kids engaged and ready to learn.

The program is specifically designed to be supportive of the science standards and tailored to the grade levels in attendance. Performances are 35-45 minutes long. Programs can be adapted to high levels or preschool levels.

No matter the grade level you teach, this study guide will help you carry the learning experience into the classroom. You will find great activities and lesson ideas. Some you may want to reproduce for the students (www.thestorydome.com); others are for you the teacher. We know every class is different and learning styles differ, feel free to pick and choose the parts of this guide that meet the needs of your class.

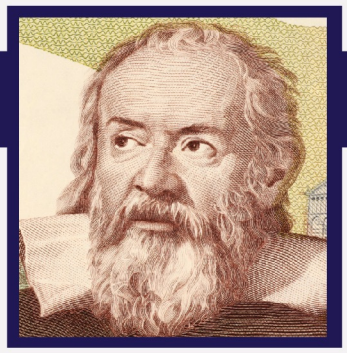
Thank you for letting Darren and his team at The Story Dome share this special experience with your students. We sincerely hope you enjoy the The Story Dome as much as we enjoy sharing our fun-filled, educational experience with your class.

Don't Forget To Look Up!

Darren Casteel

ASTRONOMY

Astronomy is the study of the universe and its contents outside of Earth's atmosphere. **Astronomers** examine the positions, motions, and properties of celestial objects. **Astrology** attempts to study how those positions, motions, and properties affect people and events on Earth.

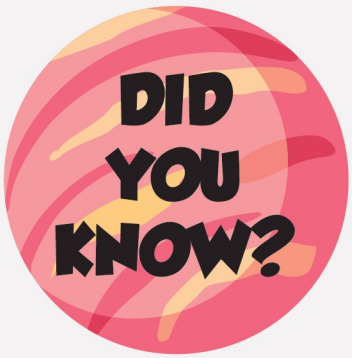


Galileo Galilei

Galileo Galilei was an Italian scientist who opened the eyes of the world to a new way of thinking about how our solar system works and astronomy in general.

Galileo was the first scientist to prove that the solar system revolved around the sun.

He also invented an improved telescope so that he could gaze far into space. He was the first to see Jupiter's moons and then realised that the earth's moon was covered full of craters.



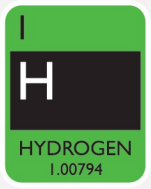
1610 - Galileo discovered that Jupiter had 4 moons.

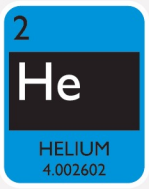
One of Galileo's fingers is on display at the Museum of Science in Italy.

ASTRONOMY

WHAT IS A STAR?

A star is a huge sphere of superhot gas made up mostly of hydrogen and helium. Stars get so hot by burning hydrogen into helium in a process called nuclear fusion.

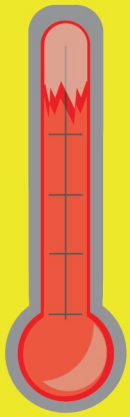




Temperature of Stars

Orange and Red Stars 2,600° F
Yellow-White Stars 10,000° F
White Stars 12,000° F
Blue-White Stars 18,000° F
Blue Stars (hottest) 80,000° F

Sun 9937° F



Every star forms in a huge cloud of gas and dust.

ASTRONOMY

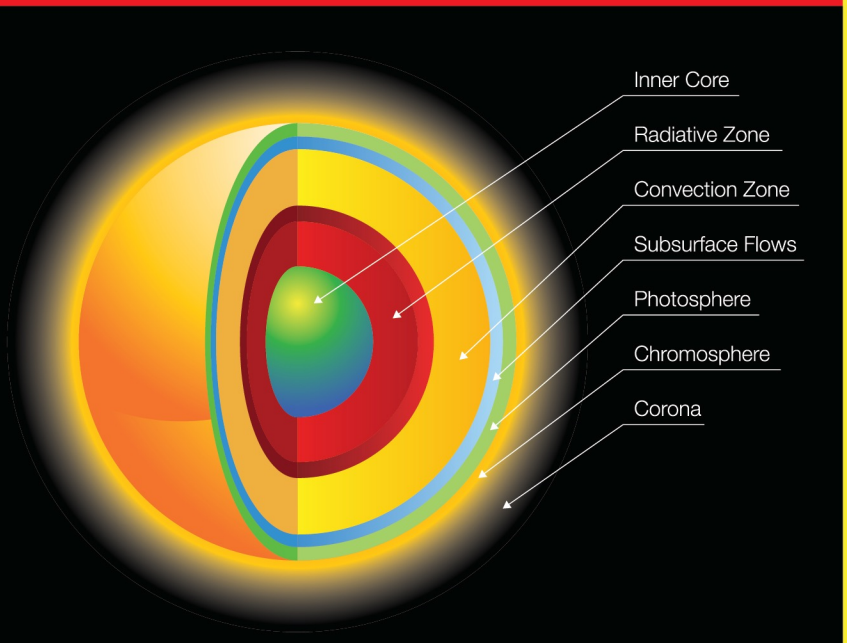
What Is The Sun?

The Sun is what is known as a main sequence star; that is, a sphere composed primarily of the two gases hydrogen and helium.

The SUN emits three different kinds of energy; infrared radiation, visible light, and ultraviolet light.

THE SUN'S GRAVITY IS 28 TIMES STRONGER THAN EARTH'S GRAVITY.

LAYERING OF THE SUN



FACTS

Light from the SUN reaches **EARTH** in 8 minutes.

AROUND 1.3 MILLION Earths could fit inside **THE SUN.**

The SUN accounts for over 99.8% of the ENTIRE mass of the Solar System.

Scientists Believe The SUN is about HALF way THROUGH IT'S LIFE.

ASTRONOMY

The Milky Way

The Milky Way galaxy is a disc shaped spiral galaxy with a huge collection of stars, about 100-400 billion.

The center of the galaxy is called Sagittarius A

It's a medium size galaxy having over 200 billion stars. Compared to other galaxies, the Milky Way is small.

The Milky Way is so named because across the night sky, it has a milky appearance.

Galileo Galilei wast the first astronomer to recognize that the band of light.

Light takes 100,000 years to cross from one side of the Milky Way to the other.

The center of the Milky Way is full of mostly old stars. Its spiral arms contain more newborn stars.

According to scientists, about 7 new stars are born in the galaxy every single year.

ASTRONOMY

What is a Constellation?

A constellation is a group of visible stars that form a pattern when viewed from Earth. The pattern they form may take the shape of an animal, a mythological creature, a man, a woman, or an inanimate object such as a microscope, a compass, or a crown.

Star maps are typically divided into maps for the northern hemisphere and maps for the southern hemisphere.

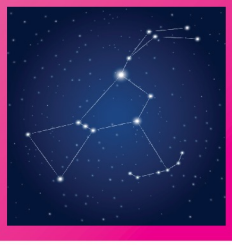
Hemispheres and Seasons

Not all of the constellations are visible from any one point on Earth.The season of the year can also affect what constellations are visible from where you are located on Earth.

The Big Dipper is part of the Ursa Major constellation.

The word "constellation" comes from a Latin term meaning "set with stars."

Orion is the largest constellation in the sky.



VOCABULARY

Asteroid - An asteroid is a celestial body made of rock and metal that orbits the Sun. Asteroids can vary in size from a few feet across to hundreds of miles.

Asteroid belt - An area between the orbits of Mars and Jupiter where millions asteroids orbit the Sun.

Astronaut - A person who is specially trained to travel into outer space.

Astronomy - The branch of science that studies outer space, celestial bodies, and the universe.

Constellation - A grouping of stars that form a pattern in the sky when viewed from Earth.

Comet - A celestial body made of ice and rock that orbits the Sun. When a comet nears the Sun a coma and tail of gases and dust can be seen.

Galaxy - A system consisting of a large number of stars bound together by gravity.

Light year - A measure of length that equals the distance light travels one year in a vacuum. It is about 5.8 trillion miles.

Meteor - A meteoroid that has entered the Earth's atmosphere is called a meteor.

Meteorite - A meteor becomes a meteorite when it reaches the ground.

Meteoroid - A small rocky object that orbits the Sun that has broken off from a comet or asteroid.

Milky Way - The galaxy that contains the Solar System.

Nuclear fusion - The process by which two or more atoms are joined together to form a larger atom. This process occurs inside stars and produces huge amounts of energy.

Orbit - The path a celestial object takes around a star or planet.

Planet - A large celestial object that has become rounded due to its gravity and has cleared is nearby region of other smaller objects. Planets in the solar system include Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

Solar System - The Solar System consists of the Sun and all the objects that orbit around it including the planets, asteroids, comets, and other objects.

Star - A giant ball of hot gas and plasma that generates huge amounts of energy through nuclear fusion.

Telescope - An instrument used to view objects in outer space.

Universe - The universe is everything that exists including the stars, planets, matter, energy and time.