



THE STAR★WITNESS

Supplemental Educational Support Materials for Special Feature: "Hubble Celebrates a Stellar Anniversary"

Discussion questions

Q1

**Hubble images have inspired both astronomers and the public.
What Hubble image from the story inspires you the most and why?**

Answer:

Your answer will depend on which Hubble image you choose and your reasons for choosing it. You might choose the image of the Carina pillar that shows wispy clouds and chaotic activity, the image of galaxy M100 that features blue stars, or another image that you think is interesting and unique.

Q2

Explain why Hubble has been the longest-operating space observatory.

Answer:

Hubble has been the longest-operating space observatory because of routine maintenance and upgrades performed during servicing missions. During the most recent servicing mission, Servicing Mission 4, astronauts made repairs and added new instruments and equipment. Now Hubble is more powerful than when it was launched.

Q3

Identify at least three historical events that happened here on Earth since Hubble's launch in 1990.

Answer:

Your answer will depend on which historical events you choose. Your answer may include events such as the demise of the Soviet Union, the discovery of the oldest human remains, or the introduction of the World Wide Web.

Q4

Hubble has helped astronomers solve many of the universe's mysteries. Identify a discovery that you would like to research and learn more about, and tell why.

Answer:

Your answer will depend on which discovery you choose. You may choose to research dark energy because it is a mysterious energy that astronomers are still learning about, but it makes up most of the energy in the universe. Depending on your interests, you may also choose to research galaxies or extrasolar planets.

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Vocabulary words

Astronomer

A scientist who studies the universe and the celestial bodies residing in it, including their composition, history, location, and motion. Many of the scientists at the Space Telescope Science Institute are astronomers. Astronomers from all over the world use the Hubble Space Telescope.

Atmosphere

The layer of gases surrounding the surface of a planet, moon, or star.

Celestial

Of or relating to the sky or visible objects in the sky, like the Moon, Sun, planets, comets, asteroids, stars, and galaxies.

Gravity (Gravitational Force)

The attractive force between all masses in the universe. All objects that have mass possess a gravitational force that attracts all other masses. The more massive the object, the stronger the gravitational force. The closer objects are to each other, the stronger the gravitational attraction.

Hubble Space Telescope (HST)

An orbiting telescope that collects light from celestial objects in visible, near-ultraviolet, and near-infrared wavelengths. The telescope's primary mirror is 2.4 m (8 ft) wide. It orbits the Earth about every 96 minutes and is powered by sunlight collected with its two solar arrays.

Milky Way Galaxy

The Milky Way, a spiral galaxy, is the home of Earth. The Milky Way contains more than 100 billion stars and has a diameter of 100,000 light-years.

Nebula

A cloud of gas and dust located between stars and/or surrounding stars. Nebulae are often places where stars form.

Observation

The act of noticing or perceiving something. In science, observations refer to noting or recording a fact or occurrence. The Hubble Space Telescope is a tool astronomers use to make observations of celestial objects.

Observatory

A structure designed and equipped for making astronomical observations. Observatories are located on Earth and in space.

Orbit

The act of traveling around a celestial body, or the path followed by an object moving in the gravitational field of a celestial body. For example, the planets travel around, or orbit, the Sun because the Sun's gravitational field keeps them in their paths, or orbits.