

Earth Science Unit 1 Learning Activities

Watch the Nova video [Hunting the Edge of Space](#). Answer these questions as you watch.

1. What was a key question for astronomers at the start of the 20th century?
 - a. Is Pluto a planet?
 - b. How far away is the Sun?
 - c. Is there more to the universe than just the Milky Way?
 - d. How many moons orbit Jupiter?

2. Where was the telescope that was able to see outside of the Milky Way in the early 1900s?
 - a. Montana
 - b. Mexico
 - c. Nevada
 - d. California

3. What is the problem with using glass lenses to make large telescopes?
 - a. Glass fogs over with condensation.
 - b. Glass distorts images as lenses are made larger.
 - c. Glass deteriorates over time.
 - d. Glass melts in the Sun.

4. What was used instead of glass lenses in the telescope at Mt. Wilson?
 - a. Mirrors
 - b. Plastic
 - c. Plexiglass
 - d. Aerogels

5. What nebula did Hubble begin to study using the telescope at Mt. Wilson?
 - a. Orion
 - b. Cassiopeia
 - c. Andromeda
 - d. Sagittarius

6. What is the special kind of star that has a true brightness and allows astronomers to calculate distances?
 - a. Neutron Star
 - b. Pulsar
 - c. Black Hole
 - d. Cepheid Variable

7. Hubble calculated the distance to Andromeda to be about how many light years away?
 - a. 80
 - b. 800
 - c. 8,000
 - d. 800,000

8. The distance to Andromeda proved that it was actually a
 - a. Distant star in the Milky Way
 - b. Galaxy beyond the Milky Way
 - c. Planet orbiting a neighboring star
 - d. Moon of Jupiter

9. How many new galaxies beyond the Milky Way have been discovered today?
 - a. None
 - b. About one hundred
 - c. About one million
 - d. About one hundred billion

10. What does a spectroscope do?
 - a. Measures distances to stars
 - b. Measures temperatures of stars
 - c. Splits white light into its spectrum of colors
 - d. Measures masses of stars

11. How does the wavelength of blue light compare to the wavelength of red light?
 - a. Blue light has a longer wavelength than red light
 - b. Blue light has a shorter wavelength than red light
 - c. Blue light and red light have equal wavelengths

12. As an object that emits light moves closer to an observer, the wavelengths become “squished” together making them shorter and the light appears more blue. If the object is moving away from the observer, the wavelengths become more stretched out and the light appears more red. This phenomenon is referred to as
 - a. The Doppler Effect
 - b. Radiational Cooling
 - c. Inductive Heating
 - d. Red Shift

13. Using data from the red shift of faraway galaxies, Hubble discovered that the farther away the galaxy is, the faster it is moving. This led Hubble to the conclusion that
 - a. The universe is expanding.
 - b. The universe is collapsing on itself.
 - c. The universe is being pulled into a distant black hole.
 - d. The universe is finite and measurable.

14. What was discovered in 1964 that provided direct evidence for the Big Bang theory?
 - a. A distant galaxy that mirrors the Milky Way.
 - b. Background radiation.
 - c. Alien spacecraft.
 - d. Nuclear fission.

15. Approximately how old is the Universe?
 - a. 13 thousand years
 - b. 13 million years
 - c. 13 billion years
 - d. 130 million years

16. What is the most famous telescope ever built?
- The Galileo telescope.
 - The Goddard Telescope.
 - The International Space Station.
 - The Hubble Space Telescope.
17. What is a supernova?
- A galaxy.
 - A black hole.
 - An exploding star.
 - A collision of planets.
18. What makes up most of the mass of the Universe?
- Energy
 - Dark Matter
 - Light
 - Heat
19. How much of the Universe is composed of Dark Matter?
- 5%
 - 23%
 - 50%
 - 75%
20. How much of the Universe is composed of visible components?
- 5%
 - 23%
 - 50%
 - 75%

