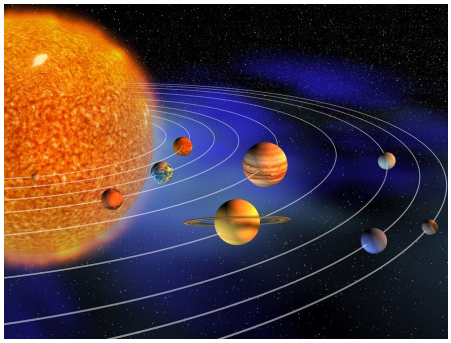
Reading Science

Name: _____ Date: _____

Origins of the Universe



1 Have you ever wondered how our solar system began? Where did all the planets and stars in the universe come from? Are there other inhabited planets out there? Scientists have been trying to answer these kinds of questions since the beginning of humankind. Many theories and myths have been created to help explain the answers to these questions; however, no one knows the answers for sure.

2 The most popular theory for the creation of the universe is known as the Big Bang. The big bang theory says that everything in the universe once fit into an incredibly small area. Because this area was very hot, a powerful expansion of energy was created. Everything that was densely packed in the small area went flying out in all directions. In the blink of an eye, this microscopic area expanded into something larger than the Milky Way galaxy. Within seconds, everything began to cool down. Still expanding, the building blocks of the universe began to form. After millions of years, the universe's temperature was cool enough to allow galaxies and stars to form. To this very day, the universe is still cooling and expanding.

3 The big bang theory is not the only theory that tries to explain the creation of the universe and our solar system. However, it has the largest amount of supporting evidence. This makes it the most popular current theory. Scientists have discovered that galaxies are traveling away from Earth. They know this by studying the color of light that the galaxies give off. Light from each galaxy appears to be shifted toward the red end of the electromagnetic spectrum. This means they are traveling away from Earth. This supports the big bang theory.

4 Another piece of evidence that supports this theory was found in 1992. Scientists launched the Cosmic Background Explorer satellite. It precisely measured the temperature of the cosmic microwave background radiation. Scientists had made temperature predictions based on starting with a hot Big Bang. This satellite found temperatures which matched the predictions. Scientists believe this radiation is from the energy released during the first year following the Big Bang.

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5 Scientists estimate that the universe was formed more than 13 billion years ago. In 1995, scientists pointed the Hubble Space Telescope into an area of space that seemed empty. The telescope collected data for 240 hours. The images that were sent back to Earth were amazing. Many thousands of galaxies appeared in a space as small as a grain of sand. If there are that many galaxies spread evenly through space, there could be more than 50 billion galaxies in the universe. The farthest galaxies are more than 13 billion light-years away. This supports the big bang theory by telling scientists how old our universe is.

6 The universe's creation is still a mystery to scientists. The Big Bang is just one theory that tries to explain the origins of the universe. Exactly how big is the universe? How much more will it expand? These questions continue to fascinate scientists and nonscientists alike.

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1. What is one piece of evidence that supports the big bang theory?

A. The rotation and revolution of Earth

B. The universe formed over 13 billion years ago

C. The universe is cooling down

D. A weak signal of cosmic microwave background radiation

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2. Which of the following is the main idea of paragraph 2?

A. The history of the Hubble Space Telescope

B. Background on the Cosmic Background Explorer satellite

C. The explanation of the big bang theory

D. Discussion of evidence that supports theories

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3. What does it mean if a galaxy gives off light that has been shifted toward the red end of the electromagnetic spectrum?

A. The galaxy is much older than Earth.

B. The galaxy is moving away from Earth.

C. The galaxy is very hot and has not cooled down yet.

D. The remnants of an explosion are between the galaxy and Earth.

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4. What is the best description of the Big Bang?

A. A massive explosion that created everything in the universe

B. That two planets collided, creating the Sun and other planets in our solar system

C. That a rapid expansion of a small, densely packed area expanded into the universe we know today

D. An explanation of how the universe is expanding and how big it is

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5. What is the main purpose of this passage?

A. To inform the reader that there is scientific evidence that supports the big bang theory

B. To prove that the Big Bang never happened

C. To explain why scientists continue to search for evidence of the Big Bang

D. To explain that there are fewer galaxies than scientists had at first suspected

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