Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_

***The Big Bang Theory***

Most astronomers believe the Universe began in a Big Bang about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years ago.

At that time, the entire Universe was inside a bubble that was thousands of times smaller than a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than anything we can imagine.

Then that bubble suddenly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the Universe that we know was born. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ all began with the Big Bang. In a fraction of a second, the Universe grew from smaller than a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_to bigger than a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. And it kept on growing at a fantastic rate. It is still \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ today.



As the Universe \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, energy changed into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. These two opposite types of particles \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ each other. But some matter survived. More stable particles called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ started to form when the Universe was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ old.

Over the next \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the temperature dropped below \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ degrees Celsius or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (One trillion, 800 billion, and thirty two). It was now cool enough for the protons and neutrons to come together, forming \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ nuclei.

After \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years, the Universe had cooled to about \_\_\_\_\_\_\_\_ degrees. Atomic nuclei could finally capture \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to form atoms. The Universe filled with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of hydrogen and helium gas.

We cannot see anything that happened during the first \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the Universe. Scientists try to work it out from their knowledge of atomic particles and from computer models.

The only direct evidence of the Big Bang itself is a faint glow in space. Spacecraft and telescopes see this as a patchy pattern of slightly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gas all around us. These ripples also show where the hydrogen clouds were slightly denser.



As millions of years passed, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ areas pulled in material because they had more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Finally, about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years after the Big Bang, the gas became hot and dense enough for the first \_\_\_\_\_\_\_\_\_\_\_\_\_ to form.

New stars were being born at a rate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ higher than in the present-day Universe. Large \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ soon became the first \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The Hubble Space Telescope and powerful ground-based telescopes are now beginning to find galaxies that were created about one billion years after the Big Bang. These small galaxies were much \_\_\_\_\_\_\_\_\_\_\_\_\_\_ together than galaxies are today. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ were common.

Like two flames moving towards each other, they merged into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ galaxies. Our \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ galaxy came together in this way.

**Independent Practice**

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| Q1. About how old is the Universe? |
| Q2. Explain using your own words what the Big Bang Theory is. Include the big highlights. |

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| Q3. The Universe is not just made up of atoms. What else makes up the Universe? |
| Q4. Explain 2 ways that the Universe could end? |

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| Q5. What have you found to be the most interesting from what you have learned about the Big Bang theory, so far? Explain why. |

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| Q6. Circle which is larger:The universe or a galaxy?The universe or a star?A galaxy or a star? |