**Galaxies, Big Bang and our Solar System, Oh MY!**

 **Directions:** Use the websites provided to learn about the beginning of the universe (Big Bang Theory) and the formation of our solar system.

**The Big Bang Theory**

<http://map.gsfc.nasa.gov/universe/>

1. Cosmology is the study of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

<http://www.esa.int/esaKIDSen/SEMSZ5WJD1E_OurUniverse_0.html>

2) What is The Big Bang Theory? And don’t say “A TV show on CBS.”\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) The Big Bang happened about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years ago.

4) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ all began with the Big Bang.

5) What happened following the Big Bang to allow protons and neutrons to come together to form atoms and eventually atoms to come together to form different elements?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

<https://www.universetoday.com/106498/what-is-the-evidence-for-the-big-bang/>

6) The first evidence for the Big Bang Theory was when Edwin Hubble in \_\_\_\_\_\_\_\_\_\_ discovered that galaxies are moving \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from us.

7) There are 4 main pillars of evidence that support The Big Bang Theory:

a) Evidence that the universe is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b) The second line of evidence came from the abundance of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ we see around us. In the earliest moments after the Big Bang, there was nothing more than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_compressed into a tiny volume, with crazy high \_\_\_\_\_\_\_\_\_\_\_ and pressure. The entire Universe was acting like the core of a star, fusing hydrogen into \_\_\_\_\_\_\_\_\_\_\_\_\_ and other elements.

This is known as Big Bang \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. As astronomers look out into the Universe and measure the ratios of hydrogen, helium and other trace elements, they exactly match what you would expect to find if the entire Universe was once a really \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

c) Cosmic Microwave \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Theories predicted that after a Big Bang, there would have been a tremendous release of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. And now, billions of years later, this radiation would be moving so fast away from us that the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of this radiation would have been shifted from\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ light to the Microwave background radiation we see today.

d) The final line of evidence is the formation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and the large scale structure of the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

e) Finally, the Big Bang Theory is the only explanation that explains why our universe looks the way it does today!

**The Formation of the Solar System**

<http://www.nhm.ac.uk/discover/how-our-solar-system-was-born.html>

8) Our Solar System formed about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years ago.

9) How many moons does our solar system have? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10) Stars and planets form in a huge cloud of dust and gas called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

11) What % of the mass of the solar system formed the planets? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12) The flat disc that made up the planets is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

13) The dust and gas that formed our Solar System may have come from a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or exploding star.

Go to: <http://www.astro.cornell.edu/academics/courses/astro201/galaxies/types.htm>

Read the information on the different types of galaxies and answer the following questions:

14) Draw the 3 main types of galaxies and label them:

15) What are the three main components of the spiral galaxy? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Go to: <http://apod.nasa.gov/apod/ap001023.html>

16) What is the group of 25 galaxies referred to as? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When you get finished go to:

<https://www.space.com/15892-hubble-space-telescope.html>

17) What year was hubble launched? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

18) What was wrong with the telescope upon initial use and how did they fix it?

19) List 3 ‘facts’ or stats about the hubble space telescope: