

## REGENTS EARTH SCIENCE

### Big Bang & Universe Worksheet

Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_

It is widely accepted that the creation of the universe was an event called the Big Bang. At this moment, for a still unknown reason, a point in empty space exploded. In that explosion, everything was created. Every proton and electron, every shred of energy was created at that moment. From that moment on, the Universe exploded outward and the expansion continues today. This explains the expanding Universe.

1) What is the name of the event, which created the universe? \_\_\_\_\_

### The Order of the Universe

Going from the smallest to the largest, the Universe is arranged at several levels. The smallest "unit" is the **planet**. Planets are found revolving around stars, such as the Sun. The next larger item is the **star**. Stars can be found by themselves, they can be paired, or there can even be multiple stars orbiting around each other as small systems.

Fill in the blanks:

2) A \_\_\_\_\_ is smaller than a \_\_\_\_\_. (star/planet)

It appears that there is a good fraction of stars that have planets making the next largest grouping: the **solar system**. Our solar system has eight planets revolving around a single star called the Sun. Recent discoveries confirm the existence of many stars with planets orbiting around them. It seems as if stars with their own solar systems are fairly common.

A galaxy is the next level in size. A **galaxy** is a collection of billions to millions of stars. It is held together by the gravity of all the stars within it. Our galaxy, for instance, is the Milky Way galaxy. It is 100,000 light years across and contains trillions of stars- one of which is our sun. Galaxies come in many shapes and sizes. Like our Milky Way, they can be spiral shaped, or they can be elliptical or irregular. Deep space photographs have shown that there are just as many (or even more) galaxies in space as there are stars in the Milky Way.

3) What is a galaxy? \_\_\_\_\_

4) How does a solar system differ from a galaxy? \_\_\_\_\_

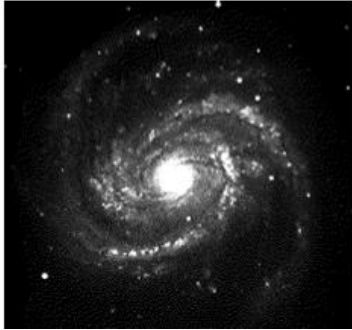
The last level that we are aware of is the **Universe**. The Universe literally means "everything." Everything that exists is contained in the Universe. So far, scientists estimate that there are more galaxies in the Universe than there are stars in a galaxy. This means an infinite number of stars could exist.

5) What is the Universe? \_\_\_\_\_

6) List the following in order of increasing size: galaxy, planet, star, universe.

### Regents Questions:

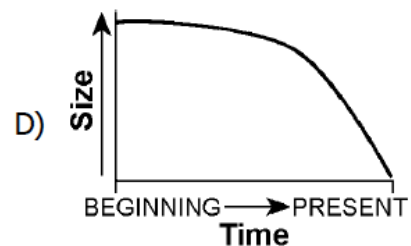
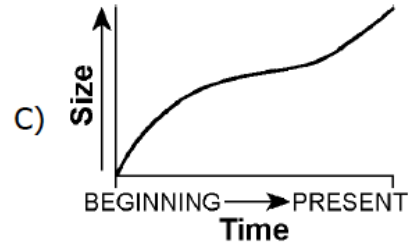
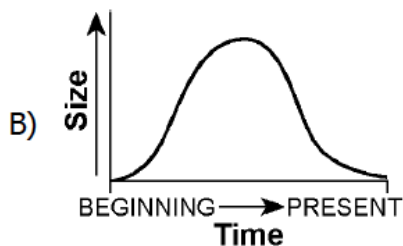
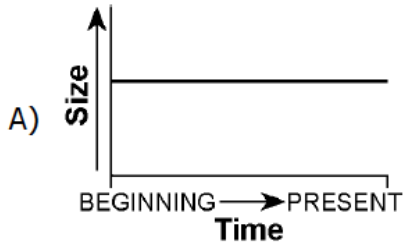
- 7) The Milky Way galaxy is best described as  
A) a constellation visible to everyone on Earth  
B) a type of solar system  
C) a spiral-shaped formation composed of billions of stars  
D) a region in space between the orbits of Mars and Jupiter
- 8) Compared to the Earth's solar system, the universe is inferred to be  
A) younger and larger  
B) younger and smaller  
C) older and larger  
D) older and smaller
- 9) The diagram below represents the shape of the Milky Way Galaxy.



The Milky Way galaxy is best described as

- A) elliptical  
B) irregular  
C) circular  
D) spiral

- 10) What is the age of our solar system in millions of years? (*1 billion years = 1000 millions of years*)  
A) 544  
B) 10,000  
C) 4600  
D) 1300
- 11) According to the Big Bang theory, which graph best represents the relationship between time and the size of the universe from the beginning to the present?



- 12) The explosion associated with the Big Bang theory and the formation of the universe is inferred to have occurred how many billion years ago?  
A) 4.6  
B) 2.5  
C) less than 1  
D) over 10
- 13) The Sun's position in space is best described as the approximate center of  
A) the universe  
B) our solar system  
C) the Milky Way galaxy  
D) a constellation