**Big Bang Theory Guided Notes**

**Time Begins-**

* The universe begins \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The universe begins as the size of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The universe began as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ All matter and space were created from a single point of pure energy in an instant.

**3 minutes after the Big Bang….**

* The universe has grown from the size of an atom to larger than the size a grapefruit
* Energy froze into matter according to Albert Einstein’s equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* This basically says that like snowflakes freezing, energy forms matter into clumps that today we call \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_\_\_.
* These parts later form into atoms: (Draw a diagram of the atom.)

**Several hundred thousand years after the Big Bang…**

ATOMS form (specifically ­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and its isotopes with a small amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_.)

The early Universe was about \_\_\_\_\_\_ Hydrogen and \_\_\_\_\_\_ Helium. It is still almost the same today.

**200 to 400 million years after the Big Bang…**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ begin to form.

**4.6 billion years ago…**

Our \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ begins to form.

**Misconceptions about the Big Bang…**

1.

2.

**Big Bang Evidence:**

1. Universal expansion and Hubble’s Law
	1. Hubble observed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	2. The farther they are, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	3. Red Shift
2. Background radiation
3. Quasars-
4. Radioactive decay
	1. Radioactive dating
	2. Moon rocks
5. Stellar formation and evolution
6. Speed of light and stellar distances
	1. The speed of light is
	2. The furthest stars away are

**The Solar System**

What makes today’s solar system different from the one your parents learned about? (Later, I’ll ask you why.)

**List of Ingredients**

|  |  |
| --- | --- |
| **Ingredient** | **Percent of Total Mass** |
| Sun |  |
| Jupiter |  |
| Other Planets |  |
| Everything Else |  |

**The Sun:**

* A middle-aged, average star:
	+ Mostly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_ of the Solar System
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years old
* Shines because it is hot:
	+ Surface temp: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Mostly visible, UV and IR light
* Kept hot by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in its core:
	+ Builds \_\_\_\_\_\_\_\_\_\_\_\_\_ from \_\_\_\_\_\_\_\_\_\_\_\_\_\_ fusion
	+ Will shine for about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years

**Inner Planets:**

* Mercury, Venus, Earth, Mars
* Known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ planets.
* Composed of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Outer Planets:**

* Jupiter, Saturn Uranus, Neptune
* Known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ planets
* Thick layers of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Gases: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Asteroids:**

* Rocky; size of dust to boulders
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Most are located \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Comets:**

* Dirty snowballs
* Also solar system left overs
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Draw and label the parts of a comet below:

**Meteoroids:**

* Made from nebula leftovers, rejects from the asteroid belt, comet carcasses
* Stony or iron-y
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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