46.1 The Universe (part I)

Physical Science

Summarize main points from each video.

Video Title / topic _____

Video Title / topic _____

Video Title / topic _____

Topic Introduction

Summarize your understanding of each paragraph.

So what is the Universe? Well, the short answer is that it is the sum total of all existence. It is the entirety of time, space, matter and energy that began expanding some 13.8 billion years ago and has continued to expand ever since.

No one is entirely certain how extensive the Universe truly is, and no one is entirely sure how it will all end. But ongoing research and study has taught us a great deal in the course of human history.

Some parts of the universe are too far away for the light emitted since the Big Bang to have had enough time to reach Earth, and so lie outside the observable universe.

The current scientific consensus is that the Universe expanded from a point of super high matter and energy density roughly 13.8 billion years ago. This theory, known as the Big Bang Theory, is not the only explanation of the origins of the Universe and its evolution

Adapted from: https://www.universetoday.com

Read/Summarize Text

1. **Read the passage.**
2. **Underline key expressions in each sentence.**
3. **Re-write each word (or expression) you underlined.**
4. **Summarize the passage.**

What is the Universe?

1

The universe is all existing matter and space considered as a whole; the cosmos. The universe is believed to be at least 10 billion light years in diameter and contains a vast number of galaxies; it has been expanding since its creation in the Big Bang about 13 billion years ago.

2

Honeycutt Science

The observable universe is a spherical region of the Universe comprising all matter that can be observed from Earth at the present time, because electromagnetic radiation from these objects has had time to reach Earth since the beginning of the cosmological expansion. There are at least 2 trillion galaxies in the observable universe.

https://en.wikipedia.org/wiki/Observable_universe

Re-write words you underlined

3

_____ _____ _____

_____ _____ _____

Using a complete sentence, summarize or rephrase the passage

4

Read Text for Comprehension

Read this article for deeper understanding. No summary is required, although you may want to circle, underline, or mark key ideas and words.

The universe is the whole cosmic system of matter and energy of which Earth is a part. We have take a long road since early societies imagined Earth, the Sun, and the Moon as the main objects of creation. Early on – humankind imagined the rest of the universe being formed almost as an afterthought.

Today we know the Earth is only a small part of space – and its unimaginable vastness. Science presently sees the birth of the Solar System as only one event among many that occurred against the backdrop of an already mature universe.

This humbling lesson has unveiled a remarkable fact, one that endows the minutest particle in the universe with a rich and noble heritage: events that occurred in the first few minutes of the creation of the universe 13.7 billion years ago turn out to have had a profound influence on the birth, life, and death of galaxies, stars, and planets.

Indeed, a line can be drawn from the forging of the matter of the universe in a primal “big bang” to the gathering on Earth of atoms versatile enough to serve as the basis of life. The intrinsic harmony of such a worldview has great philosophical and aesthetic appeal, and it may explain why public interest in the universe has always endured.

Beginning in the 1960s, a number of countries launched satellites to explore cosmic phenomena in the gamma-ray, X-ray, ultraviolet, visible, and infrared regions.

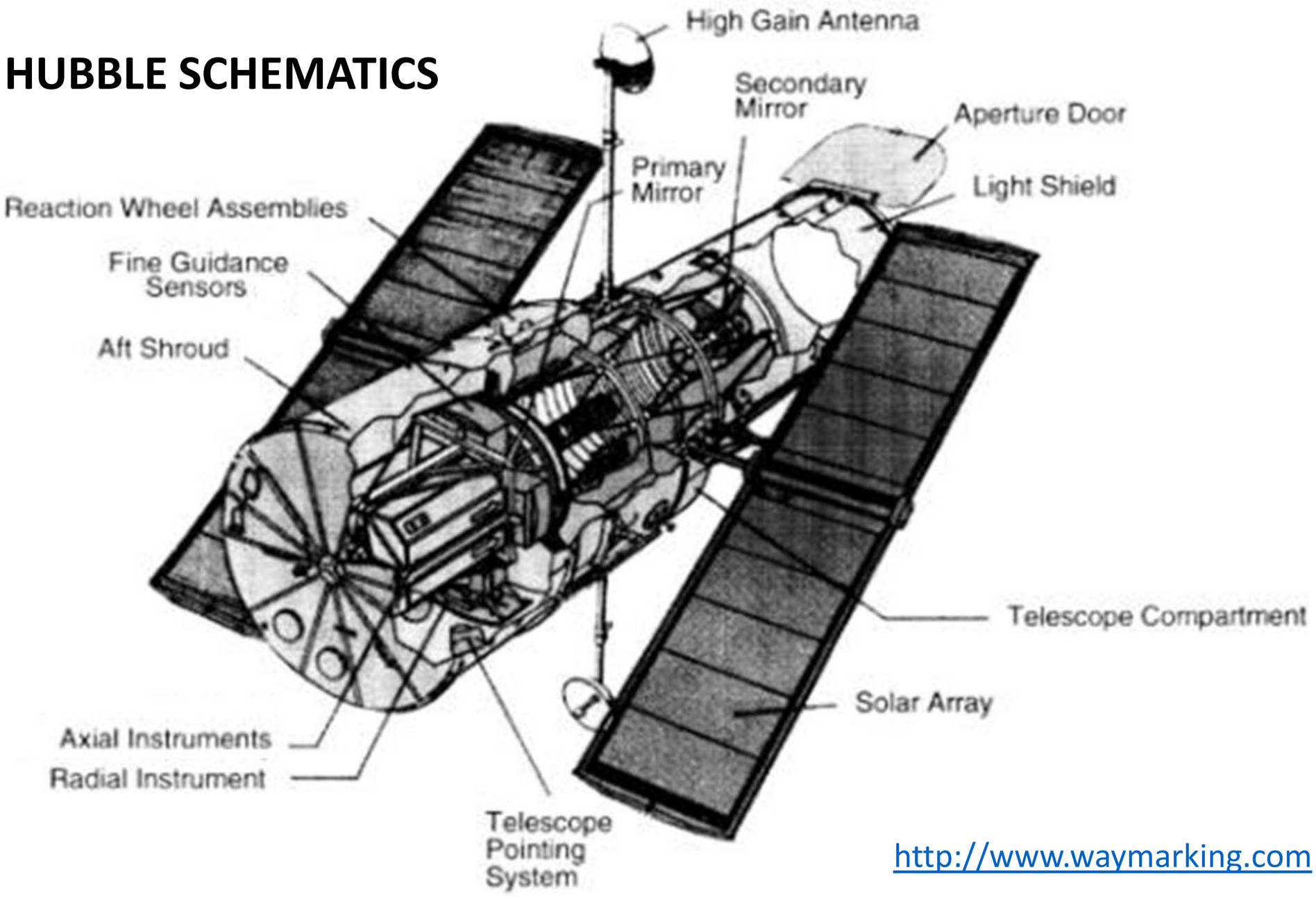
More recently, space-based radio astronomy has been pursued. In the last decades of the 20th century, the United States embarked on the development of a series of long-duration orbital facilities collectively called the Great Observatories.

- Hubble Space Telescope, launched in 1990
- Compton Gamma Ray Observatory, launched in 1991
- Chandra X-Ray Observatory, launched in 1999
- Spitzer Space Telescope, launched in 2003

Europe and Japan have also been active in space-based astronomy and astrophysics.

Excerpts and adaptations from: https://www.britannica.com/science/universe

Sketch Illustration



http://www.waymarking.com

Draw (Copy) the Illustration Here

Interpret a Graph

Write the title of the graph _____

Circle the type of chart this represents

Bar Chart *Line Chart* *Pie Chart* *Other*

If applicable,

What does the X-axis represent _____

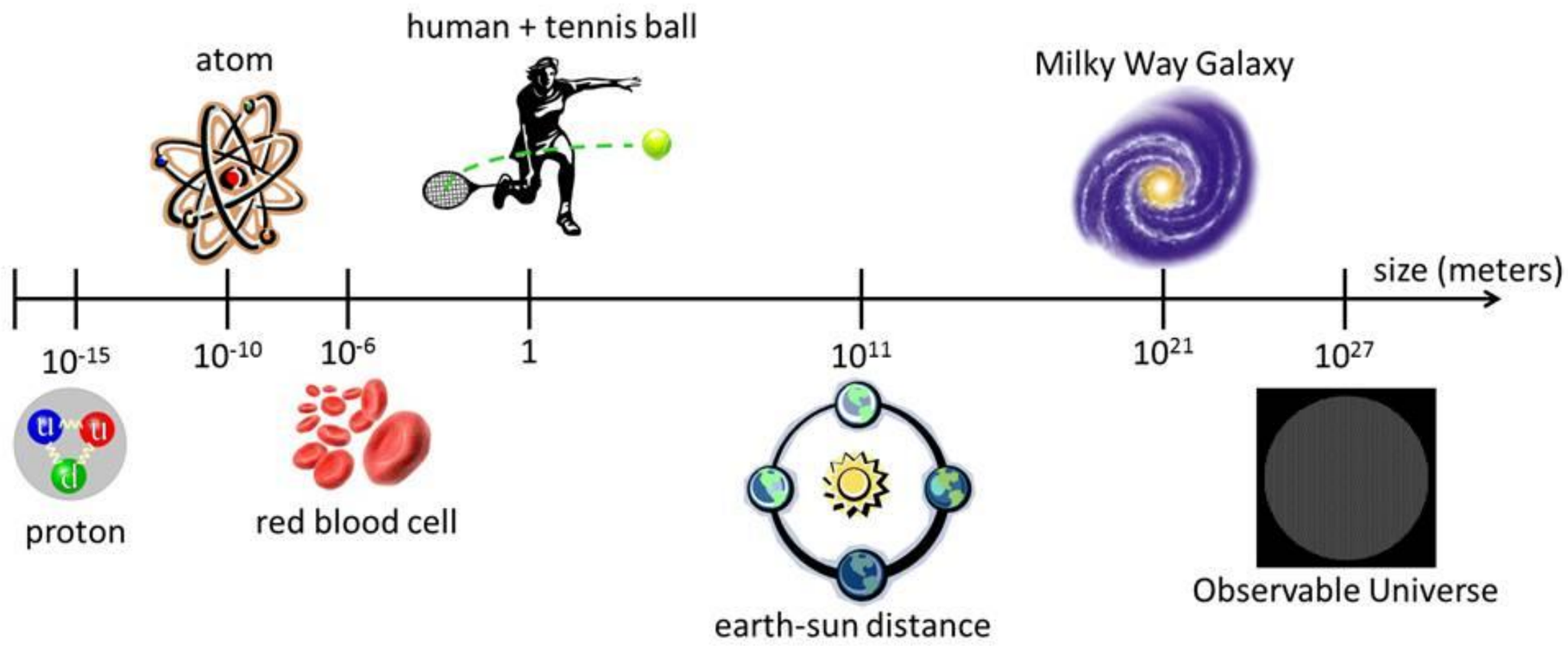
What does the Y-axis imply _____

Summarize what this graph represents or conveys

_____

https://unusmundusart.wordpress.com/2017/05/11/universal-scale/

Universal Scale



Date: May 11, 2017

Author: Jasmine Raskas

This project is an attempt to understand the nature of the human scale. By scale, I mean our understanding of size. For we can say that we are big or that we are small, yet both of those words depend on a comparison to another form of size. By studying a “universal scale”, I’m trying to focus on the ratios of scale. Understanding the patterns of how size evolves in the physical world will give us a better understanding of size than any number could ever explain. Ratios are a tool for understanding scale independently of an egocentric world view.