Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period:\_\_\_\_\_\_\_

**Title:** The Nature of Science and The Big Bang

**Materials**: book, butcher paper, markers

**Purpose**: To understand what a theory is, how the Big Bang theory developed, and how this development follows the pattern of scientific development.

**Background**: Science distinguishes itself from other ways of knowing and from other bodies of knowledge through the use of measurable standards, logical arguments, and skepticism, as science strives for explanations of the world. Scientists develop theories to explain a large range of observations. Theories are tested by many independent scientists and allow a scientist to make accurate predictions about new situations. The theory of the Big Bang has been developed over time and new knowledge is often based on technological breakthroughs.

What are the main ideas stated by the Big Bang theory?



**Procedures**:

1. Read pages \_\_\_\_\_\_\_\_\_\_ in your book, describing what Science is.

2. Three examples of main ideas have been given for you in Table 1. In the remaining cells of Table 1, summarize **in your own words** 7 other main ideas you found in these pages.

3. Now read pages \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in your book, which explains the Big Bang theory and how our ideas of the universe have changed over time.

4. Using the timeline and information you just read, correlate something related to how the Big Bang theory developed, with the main ideas you found in the previous reading discussing the nature of science.

5. Finally, in partners create a poster (using butcher paper), which **visually** represents the information in Table 2. Try not to use any words. Make sure that your poster is neat, creative, colorful and accurate.

Another picture

picture

picture

Another picture

**Research Tables:**

|  |
| --- |
| **Table 1: Descriptions of how Science Works** |
| 1. Science uses experimentation and observation to understand the natural world |
| 2. Science is reproducible, because nature usually behaves in a predictable manner |
| 3. As technology advances scientists are able to obtain new, and more accurate evidence |
| 4. |
| 5. |
| 6. |
| 7. |
| 8. |
| 9. |
| 10. |

|  |  |
| --- | --- |
| **Table 2: The Application of Science at Work** | |
| **Principle of Science** | Applications to the Developmentof the Big Bang Theory |
| Science uses experimentation and observation to understand the universe | Galileo uses careful observation of the phases of Venus’ moons, to support a sun-centered solar system model |
| As technology advances scientists are able to obtain new, and more accurate evidence | Construction of the first telescope by Galileo results in more accurate observation about the universe like the sun-centered solar system model |
| Science is reproducible, because nature usually behaves in a predictable manner |  |
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**Conclusions**: Please explain, in complete sentences, 4 major concepts that you learned.