

Name _____

Period _____

Date: _____

How the Universe Works: Big Bang

1. When were the hydrogen atoms in water made?

2. What did Edwin Hubble discover about galaxies at Mt. Wilson Observatory in 1929?

3. The first force to emerge from the Big Bang was gravity.
 - a. What would the universe be like if gravity were weaker?

 - b. What would it be like if it were stronger?

4. Write down the famous equation that describes how matter formed from the energy of the Big Bang.

5. How do the physicists at CERN study the conditions of the Big Bang?

6. Since matter and antimatter will annihilate each other, how is it possible that anything exists?

7. Atoms could not form until after the universe was one second old. The first element to form was _____ . During the first three minutes of the universe's existence, the elements _____ and _____ also formed.

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8. When astronomers say that the universe became transparent 380,000 years after the Big Bang, what do they mean?

9. The COBE and WMAP space observatories mapped the temperature of the early universe. How would the present universe be different if there were no temperature variations in the early universe?

10. The first stars formed _____ million years after the Big Bang and the first galaxies formed _____ billion years after the Big Bang.

11. The expansion of the universe is accelerating because of _____.

12. Describe how the universe will look 100 billion years from now.