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| 1. Which of the following is NOT a practice that would be employed by a scientist?

|  |  |  |
| --- | --- | --- |
|   | a.  | testing ideas by experimentation |
|   | b.  | organizing findings in specific ways |
|   | c.  | predicting the outcome of an experiment and then not testing the prediction |
|   | d.  | trying to explain how nature works |
|   | e.  | making physical models to explain the behavior of matter |

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| --- | --- |
| *ANSWER:* | c |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method |

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| 2. Which of the following is NOT normally a part of scientific inquiry?

|  |  |  |
| --- | --- | --- |
|   | a.  | making observations |
|   | b.  | philosophizing |
|   | c.  | suggesting an explanation |
|   | d.  | testing hypotheses |
|   | e.  | performing experiments |

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| *ANSWER:* | b |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method |

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| 3. Which of the following statements is incorrect?

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|   | a.  | The scientific method is a way of looking at the world that is different from nonscientific forms of inquiry. |
|   | b.  | The scientific method does not allow for the use of inferences, and everything must be proven by direct observation. |
|   | c.  | A theory is a guess about the behavior or properties of matter. |
|   | d.  | Scientists must isolate and study one variable at a time when performing experiments. |
|   | e.  | A behavior of matter that has universal validity is called a natural law. |

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| *ANSWER:* | c |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method |

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| 4. Which of the following observations does NOT relate specifically to the law of definite proportions?

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| --- | --- | --- |
|   | a.  | Pure water is composed of the elements oxygen and hydrogen in a mass ratio of 8 to 1. |
|   | b.  | Any sample of a given compound always contains the same proportions by mass of the component elements. |
|   | c.  | The mass of the products of a chemical reaction is equal to the mass of the starting materials of the reaction. |
|   | d.  | When a metal reacts with oxygen, the oxygen content of the products is fixed at one or two values. |
|   | e.  | When water is broken down into its elements by electrolysis, elemental oxygen and hydrogen are formed in an 8 to 1 mass ratio. |

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| *ANSWER:* | c |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws |

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| 5. Which of the following statements regarding fundamental chemical laws is incorrect?

|  |  |  |
| --- | --- | --- |
|   | a.  | John Dalton’s experimental results led to the law of conservation of mass. |
|   | b.  | Antoine Lavoisier’s experiments showed that the mass of the products of a chemical reaction equals the mass of the reacting substances. |
|   | c.  | When wood is burned, the ashes weigh less than the original wood, but this is not a violation of the law of conservation of matter. |
|   | d.  | John Dalton observed that carbon and oxygen can form two compounds, one of which has twice as much oxygen per gram of carbon as the other. |
|   | e.  | Joseph Proust’s findings regarding the composition of various compounds led to the law of definite proportions. |

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| --- | --- |
| *ANSWER:* | a |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws |

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| 6. Which of the following statements regarding atoms and atomic theory is incorrect?

|  |  |  |
| --- | --- | --- |
|   | a.  | Elements are made of tiny particles called atoms. |
|   | b.  | The atoms of different elements are different in some fundamental way. |
|   | c.  | Chemical compounds are formed when atoms of different elements combine with each other.  |
|   | d.  | An element is a substance that cannot be broken down into simpler substances. |
|   | e.  | By the 1700s, all chemists believed that elements were made of atoms. |

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| *ANSWER:* | e |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory |

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| 7. Which of the following statements regarding atoms and atomic theory is incorrect?

|  |  |  |
| --- | --- | --- |
|   | a.  | Antoine Lavoisier discovered that matter is not gained or lost in a chemical reaction. |
|   | b.  | Joseph Proust showed that when elements combine to form new substances, they do so in specific mass ratios. |
|   | c.  | According to John Dalton’s observations, when water forms, the mass ratio of hydrogen to oxygen is variable. |
|   | d.  | John Dalton’s atomic theory stated that all atoms of a given element are identical. |
|   | e.  | John Dalton discovered that in two different compounds of carbon and oxygen, the ratio of oxygen to carbon was two times higher in one compound than the other. |

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| *ANSWER:* | c |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory |

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| 8. Which of the following is NOT part of Dalton’s atomic theory?

|  |  |  |
| --- | --- | --- |
|   | a.  | Elements are made of tiny particles called atoms. |
|   | b.  | All atoms of a given element are identical to each other. |
|   | c.  | Atoms of one element can be changed to atoms of another element in a chemical reaction. |
|   | d.  | Atoms combine in fixed ratios to form chemical compounds. |
|   | e.  | Chemical reactions involve a reorganization of the atoms in the starting materials. |

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| *ANSWER:* | c |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory |

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| 9. Which of the following statements regarding early atomic experiments is incorrect?

|  |  |  |
| --- | --- | --- |
|   | a.  | J. J. Thomson postulated that the “ray” that was observed in cathode ray tubes was a stream of negatively charged particles. |
|   | b.  | J. J. Thomson reasoned that since electrons could be produced from electrodes made of different metals, that all atoms must contain electrons. |
|   | c.  | J. J. Thomson postulated that an atom consists of a diffuse cloud of positive charge with negative electrons randomly embedded in it. |
|   | d.  | Ernest Rutherford’s experiment necessitated a revision of Thomson’s plum pudding model of the atom. |
|   | e.  | All of these statements are correct. |

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| *ANSWER:* | e |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.4 - Early Atomic Experiments and Models |

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| 10. Which of the following statements regarding early atomic experiments is incorrect?

|  |  |  |
| --- | --- | --- |
|   | a.  | J. J. Thomson postulated that the “ray” that was observed in cathode ray tubes was a stream of negatively charged particles. |
|   | b.  | Ernest Rutherford was not surprised by the result of his experiment with the metal foil and α-particles. |
|   | c.  | J. J. Thomson postulated that an atom consists of a diffuse cloud of positive charge with negative electrons randomly embedded in it. |
|   | d.  |  Ernest Rutherford’s experiment necessitated a revision of Thomson’s plum pudding model of the atom. |
|   | e.  | Henri Becquerel’s discovery of radioactivity was critical to the experiments that helped elucidate the structure of the atom. |

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| *ANSWER:* | b |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.4 - Early Atomic Experiments and Models |

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| 11. The subatomic particles studied by chemists that make up the atom include all of the following except the \_\_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | proton |
|   | b.  | All of these choices are part of the atom. |
|   | c.  | electron |
|   | d.  | neutron |
|   | e.  | phlogiston |

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| --- | --- |
| *ANSWER:* | e |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure |

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| 12. In any neutral atom,

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| --- | --- | --- |
|   | a.  | the number of electrons equals the number of protons. |
|   | b.  | the number of electrons is less than the number of protons. |
|   | c.  | the number of electrons is greater than the number of protons. |
|   | d.  | the number of electrons is equal to the number of neutrons. |
|   | e.  | the number of neutrons is always equal to the number of protons. |

|  |  |
| --- | --- |
| *ANSWER:* | a |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure |

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| 13. Which of the following statements regarding the nucleus of the atom is incorrect?

|  |  |  |
| --- | --- | --- |
|   | a.  | The nucleus is the central core of the atom. |
|   | b.  | The nucleus contains the electrons and the protons. |
|   | c.  | The nucleus contains most of the mass of the atom. |
|   | d.  | The nucleus contains the neutrons. |
|   | e.  | The nucleus contains the neutrons and protons, as well as most of the mass of the atom. |

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| *ANSWER:* | b |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure |

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| 14. The number of \_\_\_\_\_\_\_\_\_\_ determines the identity of an element.

|  |  |  |
| --- | --- | --- |
|   | a.  | electrons |
|   | b.  | protons |
|   | c.  | neutrons |
|   | d.  | neutrons plus protons |
|   | e.  | protons plus electrons |

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| *ANSWER:* | b |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure |

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| 15. Consider the element indium, atomic number 49. The nucleus of an atom of indium-112 contains

|  |  |  |
| --- | --- | --- |
|   | a.  | 49 protons, 63 neutrons, 49 electrons. |
|   | b.  | 49 protons, 49 neutrons. |
|   | c.  | 49 protons, 49 alpha particles. |
|   | d.  | 49 protons, 63 neutrons. |
|   | e.  | 49 protons, 112 neutrons. |

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| *ANSWER:* | d |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure |

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| 16. has \_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | 20 protons, 20 neutrons, and 18 electrons |
|   | b.  | 22 protons, 20 neutrons, and 20 electrons |
|   | c.  | 20 protons, 22 neutrons, and 18 electrons |
|   | d.  | 22 protons, 18 neutrons, and 18 electrons |
|   | e.  | 20 protons, 20 neutrons, and 22 electrons |

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| *ANSWER:* | a |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure |

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| 17. Which of the following statements is (are) true?

|  |  |  |
| --- | --- | --- |
|   | a.  |  and have the same number of neutrons. |
|   | b.  |  and are isotopes of each other because their mass numbers are the same. |
|   | c.  |  has the same number of electrons as . |
|   | d.  | Two of the statements are true. |
|   | e.  | All of the statements are true. |

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| *ANSWER:* | e |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure |

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| 18. A species with 12 protons and 10 electrons is \_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | Ne2+ |
|   | b.  | Ti2+ |
|   | c.  | Mg2+ |
|   | d.  | Mg |
|   | e.  | Ne2– |

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| --- | --- |
| *ANSWER:* | c |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure |

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| 19. The numbers of protons, neutrons, and electrons in are

|  |  |  |
| --- | --- | --- |
|   | a.  | 20 p, 19 n, 19 e. |
|   | b.  | 20 p, 19 n, 20 e. |
|   | c.  | 19 p, 20 n, 20 e. |
|   | d.  | 19 p, 20 n, 19 e. |
|   | e.  | 19 p, 20 n, 18 e. |

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| --- | --- |
| *ANSWER:* | e |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure |

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| 20. An ion is formed

|  |  |  |
| --- | --- | --- |
|   | a.  | by either adding or subtracting protons from the atom. |
|   | b.  | by either adding or subtracting electrons from the atom |
|   | c.  | by either adding or subtracting neutrons from the atom. |
|   | d.  | all of these are true. |
|   | e.  | two of these are true. |

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| *ANSWER:* | b |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure |

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| 21. All of the following are true EXCEPT

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| --- | --- | --- |
|   | a.  | ions are formed by adding electrons to a neutral atom. |
|   | b.  | ions are formed by changing the number of protons in an atom's nucleus. |
|   | c.  | ions are formed by removing electrons from a neutral atom. |
|   | d.  | an ion has a positive or negative charge. |
|   | e.  | metals tend to form positive ions. |

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| *ANSWER:* | b |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure |

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| 22. The formula of water, H2O, suggests

|  |  |  |
| --- | --- | --- |
|   | a.  | there is twice as much mass of hydrogen as oxygen in each molecule. |
|   | b.  | there are two hydrogen atoms and one oxygen atom per water molecule. |
|   | c.  | there is twice as much mass of oxygen as hydrogen in each molecule. |
|   | d.  | there are two oxygen atoms and one hydrogen atom per water molecule. |
|   | e.  | none of these are correct. |

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| *ANSWER:* | b |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws |

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| 23. A natural law summarizes what happens in a set of experiments.

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| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| --- | --- |
| *ANSWER:* | True |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method |

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| 24. Scientific thinking is useful only for science and has no application in everyday life.

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| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | False |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method |

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| 25. A theory (model) is an attempt to explain some aspect of natural behavior.

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| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | True |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.6 - Models (Theories) Are Explanations of Why Nature Behaves in a Particular Way. |

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| 26. The law of conservation of mass is an example of a scientific theory.

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| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | False |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.6 - Models (Theories) Are Explanations of Why Nature Behaves in a Particular Way. |

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| 27. Once a scientific theory (model) is formulated, it can never be changed.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | False |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.6 - Models (Theories) Are Explanations of Why Nature Behaves in a Particular Way. |

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| 28. A natural law is a rule that is enacted by a group of influential scientists.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| --- | --- |
| *ANSWER:* | False |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws |

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| 29. The law of conservation of mass states that mass is neither created nor destroyed in a chemical reaction.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | True |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws |

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| 30. Scientific theories are explanations of natural behavior.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | True |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.6 - Models (Theories) Are Explanations of Why Nature Behaves in a Particular Way. |

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| 31. The first “chemist” to perform truly quantitative experiments was J. J. Thomson.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
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| *ANSWER:* | False |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory |

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| 32. John Dalton’s atomic theory accounted for the existence of different isotopes of elements.

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| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | False |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory |

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| 33. John Dalton’s atomic theory stated that chemical compounds are formed when atoms of different elements combine with each other.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | True |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory |

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| 34. J. J. Thomson reasoned that since electrons could be produced from electrodes made of different metals, then all atoms must contain electrons.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | True |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.4 - Early Atomic Experiments and Models |

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| 35. J. J. Thomson postulated that atoms consist of a diffuse cloud of negative charge.

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| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | False |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.4 - Early Atomic Experiments and Models |

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| 36. Ernest Rutherford proposed the “plum pudding” model of the atom.

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| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | False |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.4 - Early Atomic Experiments and Models |

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| 37. The process at the center of scientific inquiry is called the \_\_\_\_\_\_\_\_\_\_.

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| --- | --- |
| *ANSWER:* | scientific method |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Subjective Short Answer |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method |

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| 38. A \_\_\_\_\_\_\_\_\_\_ is a possible explanation for an observation.

|  |  |
| --- | --- |
| *ANSWER:* | hypothesis |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Subjective Short Answer |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method |

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| 39. A natural \_\_\_\_\_\_\_\_\_\_ summarizes what happens in a series of experiments, and a \_\_\_\_\_\_\_\_\_\_ is an attempt to explain why it happens.

|  |  |
| --- | --- |
| *ANSWER:* | law; theory |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Subjective Short Answer |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method |

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| 40. The law of \_\_\_\_\_\_\_\_\_\_ states that mass is neither created nor destroyed in a chemical reaction.

|  |  |
| --- | --- |
| *ANSWER:* | conservation of mass |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Subjective Short Answer |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws |

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| 41. The law of \_\_\_\_\_\_\_\_\_\_ states that a given compound always contains exactly the same proportion of elements by mass.

|  |  |
| --- | --- |
| *ANSWER:* | definite proportions |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Subjective Short Answer |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws |

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| 42. \_\_\_\_\_\_\_\_\_\_ states that at the same temperature and pressure, equal volumes of different gases contain the same number of particles.

|  |  |
| --- | --- |
| *ANSWER:* | Avogadro’s hypothesis |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Subjective Short Answer |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws |

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| 43. The \_\_\_\_\_\_\_\_\_\_ in a chemical formula represent the number of atoms in a particular molecule or formula unit.

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| --- | --- |
| *ANSWER:* | subscripts |
| *POINTS:* | 1 |
| *QUESTION TYPE:* | Subjective Short Answer |
| *HAS VARIABLES:* | False |
| *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws |

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