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| 1. Define the following terms:a. scienceb. chemistry

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| *ANSWER:* | a. Science - a framework for gaining and organizing knowledge. It is a procedure for processing and understanding certain information.b. Chemistry - the science that deals with the matter of the universe and the changes it can undergo. |
| *POINTS:* | 1 |
| *DIFFICULTY:* | easy |
| *QUESTION TYPE:* | Subjective Short Answer |
| *HAS VARIABLES:* | False |
| *TOPICS:* | general conceptsdefinition of chemistry |
| *OTHER:* | general chemistry |
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| 2. Define the following terms:a. Scientific methodb. Natural lawc. Hypothesisd. Theory

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| *ANSWER:* | a. Scientific method - The process that lies at the center of scientific inquiry.b. Natural law - A statement that describes an observed behavior.c. Hypothesis - A possible explanation for an observation.d. Theory - A set of tested hypotheses that gives an overall explanation of some part of nature. |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Easy |
| *QUESTION TYPE:* | Subjective Short Answer |
| *HAS VARIABLES:* | False |
| *TOPICS:* | The Scientific Method |
| *KEYWORDS:* | hypothesis | theory |
| *OTHER:* | general chemistry |
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| 3. Which of the following is **not** a step in the scientific method?

|  |  |  |
| --- | --- | --- |
|   | a.  | Make an observation. |
|   | b.  | Formulate a hypothesis. |
|   | c.  | Perform an experiment. |
|   | d.  | Change results to agree with your hypothesis. |
|   | e.  | Develop a theory (or model). |

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| *ANSWER:* | d |
| *POINTS:* | 1 |
| *DIFFICULTY:* | easy |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *TOPICS:* | general conceptsscientific method |
| *OTHER:* | general chemistry |
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| 4. A \_\_\_\_\_\_\_\_\_\_ is a summary of observed behavior, and a \_\_\_\_\_\_\_\_\_\_ is an explanation of behavior.

|  |  |  |
| --- | --- | --- |
|   | a.  | law, measurement |
|   | b.  | theory, scientific method |
|   | c.  | theory, law |
|   | d.  | law, theory |
|   | e.  | hypothesis, theory |

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| --- | --- |
| *ANSWER:* | d |
| *POINTS:* | 1 |
| *DIFFICULTY:* | easy |
| *QUESTION TYPE:* | Multi-Mode (Multiple choice) |
| *HAS VARIABLES:* | False |
| *TOPICS:* | general conceptsscientific method |
| *KEYWORDS:* | law | theory |
| *OTHER:* | general chemistry |
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| 5. Generally, observed behavior that can be formulated into a statement, sometimes mathematical in nature, is called a(n)

|  |  |  |
| --- | --- | --- |
|   | a.  | observation |
|   | b.  | measurement |
|   | c.  | theory |
|   | d.  | natural law |
|   | e.  | experiment |

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| --- | --- |
| *ANSWER:* | d |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Easy |
| *REFERENCES:* | 1.4 |
| *QUESTION TYPE:* | Multi-Mode (Multiple choice) |
| *HAS VARIABLES:* | False |
| *TOPICS:* | general conceptsscientific method |
| *KEYWORDS:* | law |
| *OTHER:* | general chemistry |
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| 6. The statement “The total mass of materials is not affected by a chemical change in the materials” is called a(n) \_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | observation |
|   | b.  | measurement |
|   | c.  | theory |
|   | d.  | natural law |
|   | e.  | experiment |

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| --- | --- |
| *ANSWER:* | d |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Easy |
| *REFERENCES:* | 1.4 |
| *QUESTION TYPE:* | Multi-Mode (Multiple choice) |
| *HAS VARIABLES:* | False |
| *TOPICS:* | The Scientific Method |
| *KEYWORDS:* | law |
| *OTHER:* | general chemistry |
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| 7. A set of tested hypotheses that gives an overall explanation of some part of nature, is called a(n)

|  |  |  |
| --- | --- | --- |
|   | a.  | observation |
|   | b.  | measurement |
|   | c.  | theory |
|   | d.  | natural law |
|   | e.  | experiment |

|  |  |
| --- | --- |
| *ANSWER:* | c |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Easy |
| *REFERENCES:* | 1.4 |
| *QUESTION TYPE:* | Multi-Mode (Multiple choice) |
| *HAS VARIABLES:* | False |
| *TOPICS:* | general conceptsscientific method |
| *KEYWORDS:* | theory |
| *OTHER:* | general chemistry |
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| 8. Something done to test a hypothesis that produces new observations is called a(n)

|  |  |  |
| --- | --- | --- |
|   | a.  | observation |
|   | b.  | measurement |
|   | c.  | theory |
|   | d.  | natural law |
|   | e.  | experiment |

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| --- | --- |
| *ANSWER:* | e |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Easy |
| *REFERENCES:* | 1.4 |
| *QUESTION TYPE:* | Multi-Mode (Multiple choice) |
| *HAS VARIABLES:* | False |
| *TOPICS:* | general conceptsscientific method |
| *KEYWORDS:* | experiment |
| *OTHER:* | general chemistry |
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| 9. A quantitative observation

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|   | a.  | contains a number and a unit |
|   | b.  | does not contain a number |
|   | c.  | always makes a comparison |
|   | d.  | must be obtained through experimentation |
|   | e.  | is none of these |

|  |  |
| --- | --- |
| *ANSWER:* | a |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Easy |
| *REFERENCES:* | 1.4 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *TOPICS:* | general conceptsscientific method |
| *KEYWORDS:* | quantitative |
| *OTHER:* | general chemistry |
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| 10. Which of the following is an example of a quantitative observation?

|  |  |  |
| --- | --- | --- |
|   | a.  | The piece of metal is longer than the piece of wood. |
|   | b.  | Solution 1 is much darker than solution 2. |
|   | c.  | The liquid in beaker A is blue. |
|   | d.  | The temperature of the liquid is 60 °C. |
|   | e.  | Both a and d are quantitative observations. |

|  |  |
| --- | --- |
| *ANSWER:* | d |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Moderate |
| *REFERENCES:* | 1.2 |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *TOPICS:* | The Scientific Method |
| *KEYWORDS:* | Quantitative |
| *OTHER:* | general chemistry |
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| 11. A quantitative observation is called a measurement. Is this statement true or false?

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

|  |  |
| --- | --- |
| *ANSWER:* | True |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Easy |
| *QUESTION TYPE:* | True / False |
| *HAS VARIABLES:* | False |
| *TOPICS:* | The Scientific Method |
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| 12. Which of the following is an example of a qualitative observation?

|  |  |  |
| --- | --- | --- |
|   | a.  | The leaf is 9 cm long. |
|   | b.  | The temperature of the room increases by 8 °C. |
|   | c.  | The veins are 3 mm wide. |
|   | d.  | The weight of the book is 4.5 pounds. |
|   | e.  | The plant is short. |

|  |  |
| --- | --- |
| *ANSWER:* | e |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Moderate |
| *QUESTION TYPE:* | Multiple Choice |
| *HAS VARIABLES:* | False |
| *TOPICS:* | The Scientific Method |
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