|  |  |
| --- | --- |
| **Unit 1**  *How are speed, velocity, acceleration used to describe motion?* | **Unit 1**  *How are speed, velocity, acceleration used to describe motion?* |
| 1. How do you make correct measurements using a meter stick? 2. What lab safety procedures should you always follow? 3. How is slope calculated from a graph? 4. How is the y-intercept of a graph determined? 5. What can the y-intercept tell you? 6. How do you write equations for lines on a graph? 7. How is distance different from displacement? 8. How is speed different from velocity? 9. How is average speed calculated? 10. How is average velocity calculated? 11. How are distance time graphs used to analyze speed? 12. How are position time graphs used to calculate and analyze velocity? 13. How are velocity time graphs used to calculate and analyze acceleration? | 1. How do you make correct measurements using a meter stick? 2. What lab safety procedures should you always follow? 3. How is slope calculated from a graph? 4. How is the y-intercept of a graph determined? 5. What can the y-intercept tell you? 6. How do you write equations for lines on a graph? 7. How is distance different from displacement? 8. How is speed different from velocity? 9. How is average speed calculated? 10. How is average velocity calculated? 11. How are distance time graphs used to analyze speed? 12. How are position time graphs used to calculate and analyze velocity? 13. How are velocity time graphs used to calculate and analyze acceleration? |

|  |  |
| --- | --- |
| **Unit 2**  *How are forces related to motion?* | **Unit 2**  *How are forces related to motion?* |
| 1. What is a Force? 2. What are the different types of forces? 3. What types of situations would be caused by balanced forces? 4. What types of situations would be caused by unbalanced forces? 5. How is force related to gravity? 6. How is mass different than weight? 7. How are force, mass and acceleration related? 8. How does air resistance affect the rate of free fall of an object? 9. How is net force calculated? 10. How are each of the forced described?     1. Static     2. Sliding     3. Rolling     4. Fluid 11. How are newton’s 3 laws defined? | 1. What is a Force? 2. What are the different types of forces? 3. What types of situations would be caused by balanced forces? 4. What types of situations would be caused by unbalanced forces? 5. How is force related to gravity? 6. How is mass different than weight? 7. How are force, mass and acceleration related? 8. How does air resistance affect the rate of free fall of an object? 9. How is net force calculated? 10. How are each of the forced described?     1. Static     2. Sliding     3. Rolling     4. Fluid 11. How are newton’s 3 laws defined? |

|  |  |
| --- | --- |
| **Unit 3**  *How is energy related to the ability to cause change?* | **Unit 3**  *How is energy related to the ability to cause change?* |
| 1. What is energy? 2. What are the different ways that energy can be stored? 3. How does increased height affect gravitational potential energy? 4. How does mass affect gravitational potential energy? 5. How does energy transfer from one type to another? (Examples) 6. What is the Law of conservation of energy? 7. How is potential energy calculated? 8. How is kinetic energy calculated? 9. What needs to occur in order for work to be done? 10. What is the difference between work and power? | 1. What is energy? 2. What are the different ways that energy can be stored? 3. How does increased height affect gravitational potential energy? 4. How does mass affect gravitational potential energy? 5. How does energy transfer from one type to another? (Examples) 6. What is the Law of conservation of energy? 7. How is potential energy calculated? 8. How is kinetic energy calculated? 9. What needs to occur in order for work to be done? 10. What is the difference between work and power? |

|  |  |
| --- | --- |
| **Unit 4 Learning Targets**  *You will describe the nature of waves as a form of energy transfer.* | **Unit 4 Learning Targets**  *You will describe the nature of waves as a form of energy transfer.* |
| 1. What is the difference between a transverse and a longitudinal (compressional) wave? 2. What are the parts of a transverse wave? 3. How are frequency and energy are related? 4. How are wavelength and frequency are related? 5. How are energy and amplitude are related? 6. How do wave properties affect wave speed. 7. What is the purpose of the electromagnetic spectrum? 8. How do you use the electromagnetic spectrum to answer simple questions? 9. What are the types of wave interference? 10. How do you calculate wavelength and frequency? 11. What does changing amplitude and frequency do to sound waves? | 1. What is the difference between a transverse and a longitudinal (compressional) wave? 2. What are the parts of a transverse wave? 3. How are frequency and energy are related? 4. How are wavelength and frequency are related? 5. How are energy and amplitude are related? 6. How do wave properties affect wave speed. 7. What is the purpose of the electromagnetic spectrum? 8. How do you use the electromagnetic spectrum to answer simple questions? 9. What are the types of wave interference? 10. How do you calculate wavelength and frequency? 11. What does changing amplitude and frequency do to sound waves? |

|  |  |
| --- | --- |
| **Unit 5 Learning Targets**  *What is matter, and what are some different ways that matter can be measured and changed?* | **Unit 5 Learning Targets**  *What is matter, and what are some different ways that matter can be measured and changed?* |
| 1. How is mass different from volume? 2. How is volume measured differently for solids and liquids? 3. How do you use water displacement to find density? 4. What are some physical properties? 5. What is density? 6. How is density calculated? 7. What can density tell you about an object? 8. How are physical changes different from chemical changes? 9. How are solid particles different from liquid and gas particles. 10. How are pure substances different from mixtures? 11. How is an element different than a compound? 12. How are homogeneous and heterogeneous mixtures different? 13. How are colloids, suspensions and solutions classified? 14. How is the tyndall effect used? | 1. How is mass different from volume? 2. How is volume measured differently for solids and liquids? 3. How do you use water displacement to find density? 4. What are some physical properties? 5. What is density? 6. How is density calculated? 7. What can density tell you about an object? 8. How are physical changes different from chemical changes? 9. How are solid particles different from liquid and gas particles. 10. How are pure substances different from mixtures? 11. How is an element different than a compound? 12. How are homogeneous and heterogeneous mixtures different? 13. How are colloids, suspensions and solutions classified? 14. How is the tyndall effect used? |

|  |  |
| --- | --- |
| **Unit 6 Learning Targets**  *How is thermal energy related to particle motion in phase changes, and dissolving?* | **Unit 6 Learning Targets**  *How is thermal energy related to particle motion in phase changes, and dissolving?* |
| 1. What are the two parts of a solution? 2. What does it mean for a solute to be soluble or insoluble? 3. How does dissolving work? 4. How do you read a solubility curve? 5. How are the terms saturated, unsaturated, and supersaturated defined? 6. What happens to particles when thermal energy increases or decrease? 7. What are the 6 different phase changes? 8. How does particle motion and arrangement change during each of the 6 phase changes? 9. What are the three types of thermal energy transfer? 10. What types of thermal energy transfer occur before during and after phase changes? (heating and cooling curves) | 1. What are the two parts of a solution? 2. What does it mean for a solute to be soluble or insoluble? 3. How does dissolving work? 4. How do you read a solubility curve? 5. How are the terms saturated, unsaturated, and supersaturated defined? 6. What happens to particles when thermal energy increases or decrease? 7. What are the 6 different phase changes? 8. How does particle motion and arrangement change during each of the 6 phase changes? 9. What are the three types of thermal energy transfer? 10. What types of thermal energy transfer occur before during and after phase changes? (heating and cooling curves) |

|  |  |
| --- | --- |
| **Unit 7**  *How can the periodic table be analyzed to determine information related to the structure of an element's atoms?* | **Unit 7**  *How can the periodic table be analyzed to determine information related to the structure of an element's atoms?* |
| 1. Where are protons, neutrons, and electrons located in an atom? 2. What charge do protons, neutrons, and electrons have? 3. How is the size of protons different from neutrons, and electrons? 4. How do you determine how many protons, neutrons, and electrons are in an atom? 5. What is an isotope? 6. What are some ways isotopes can be written? 7. What is an ion? 8. Define anion and cation. 9. What is the bohr model of the atom? 10. How do you make dot diagrams? 11. How can metals, nonmetals, and metalloids be identified using the periodic table? 12. How can the periodic table be used to identify valence electrons? 13. How are periods and groups organized? 14. What are the properties of the following main group?     1. Alkali metals     2. Alkaline earth metals     3. Halogens     4. Noble gases     5. Transition metals 15. What is a diatomic molecule? Identify the 7 elements that form them. | 1. Where are protons, neutrons, and electrons located in an atom? 2. What charge do protons, neutrons, and electrons have? 3. How is the size of protons different from neutrons, and electrons? 4. How do you determine how many protons, neutrons, and electrons are in an atom? 5. What is an isotope? 6. What are some ways isotopes can be written? 7. What is an ion? 8. Define anion and cation. 9. What is the bohr model of the atom? 10. How do you make dot diagrams? 11. How can metals, nonmetals, and metalloids be identified using the periodic table? 12. How can the periodic table be used to identify valence electrons? 13. How are periods and groups organized? 14. What are the properties of the following main group?     1. Alkali metals     2. Alkaline earth metals     3. Halogens     4. Noble gases     5. Transition metals 15. What is a diatomic molecule? Identify the 7 elements that form them. |

|  |  |
| --- | --- |
| **Unit 8 Learning Targets**  *How are chemical bonds formed?* | **Unit 8 Learning Targets**  *How are chemical bonds formed?* |
| 1. What determines each type of bond?:    1. Ionic    2. Covalent    3. Metallic 2. How do you name ionic compounds? 3. How do you write the chemical formulas for ionic compounds? 4. What is a polyatomic ion? 5. How do you write chemical formulas with polyatomic compounds? 6. How do you name chemical formulas with polyatomic ions? 7. How do you name covalent compounds? 8. How do you write the chemical formulas for covalent compounds? | 1. What determines each type of bond?:    1. Ionic    2. Covalent    3. Metallic 2. How do you name ionic compounds? 3. How do you write the chemical formulas for ionic compounds? 4. What is a polyatomic ion? 5. How do you write chemical formulas with polyatomic compounds? 6. How do you name chemical formulas with polyatomic ions? 7. How do you name covalent compounds? 8. How do you write the chemical formulas for covalent compounds? |

|  |  |
| --- | --- |
| **Unit 9**  *How is the law of conservation of mass shown in balancing different types of chemical equations?* | **Unit 9**  *How is the law of conservation of mass shown in balancing different types of chemical equations?* |
| 1. How is a chemical change identified? 2. How are physical and chemical changes similar and different? 3. How are coefficients used to balance chemical equations? 4. How is balancing chemical equations related to the law of conservation of mass? 5. What are the 5 different types of chemical equations?    1. How can you identify each? 6. How is a neutralization reaction related to acids and bases? 7. How are Acids and Bases similar/different? 8. How is pH related to how acidic or how basic a substance is? | 1. How is a chemical change identified? 2. How are physical and chemical changes similar and different? 3. How are coefficients used to balance chemical equations? 4. How is balancing chemical equations related to the law of conservation of mass? 5. What are the 5 different types of chemical equations?    1. How can you identify each? 6. How is a neutralization reaction related to acids and bases? 7. How are Acids and Bases similar/different? 8. How is pH related to how acidic or how basic a substance is? |

|  |  |
| --- | --- |
| **Unit 10**  *What is the role of the nucleus in radiation and radioactivity?* | **Unit 10**  *What is the role of the nucleus in radiation and radioactivity?* |
| 1. How are alpha, beta, and gamma radiation different from each other? 2. How are fission and fusion similar or different? 3. What is half-life? 4. How does the process of half-life occur? 5. How is half-life calculated? | 1. How are alpha, beta, and gamma radiation different from each other? 2. How are fission and fusion similar or different? 3. What is half-life? 4. How does the process of half-life occur? 5. How is half-life calculated? |

|  |  |
| --- | --- |
| **Unit 11**  *How are units 1-10 related to electricity?* | **Unit 11**  *How are units 1-10 related to electricity?* |
|  |  |