

## Secondary Science Standards & Objectives

*Instructions: Choose one of the following learning objectives for your sample lesson. The state standard is also provided to you for reference.*

\*SWBAT= Students will be able to

<b>Biology</b>
<b>Middle School</b>
<b>Objective:</b> SWBAT* classify a cell as a plant or animal cell. <b>TN State Standard:</b> 7.LS1.3- Evaluate evidence that cells have structural similarities and differences across kingdoms.
<b>Objective:</b> SWBAT explain how behavioral or structural adaptations affect the probability of survival and reproductive success. <b>TN State Standard:</b> 7.LS1.6- Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.
<b>Objective:</b> SWBAT use a Punnett square to make predictions about allele combinations passed to offspring. <b>TN State Standard:</b> 7.LS3.3- Predict the probability of individual dominant and recessive alleles to be transmitted from each parent to offspring during sexual reproduction and represent the genotypic and phenotypic patterns using ratios.
<b>High School</b>
<b>Objective:</b> SWBAT use a diagram to explain the net flow of energy and matter in photosynthesis. <b>TN State Standard:</b> BIO1.LS1.8- Create a model of photosynthesis demonstrating the net flow of matter and energy into a cell. Use the model to explain energy transfer from light energy into stored chemical energy in the product.
<b>Objective:</b> SWBAT analyze the impacts that humans have on biodiversity. <b>TN State Standard:</b> BIO1.LS4.3- Identify ecosystem services and assess the role of biodiversity in support of these services. Analyze the role human activities have on disruption of these services.
<b>Chemistry</b>
<b>Middle School</b>
<b>Objective:</b> SWBAT determine whether or not a chemical reaction is balanced. <b>TN States Standard:</b> 7.PS1.4- Analyze and interpret chemical reactions to determine if the total number of atoms in the reactants and products support the Law of Conservation of Mass.

**Objective:** SWBAT use a diagram to describe the location and charge of subatomic particles in an atom.

**TN State Standard:** 7.PS1.1- Develop and use models to illustrate the structure of atoms, including the subatomic particles with their relative positions and charges

### High School

**Objective:** SWBAT classify a substance as an acid or base based on its properties.

**TN State Standard:** CHEM1.PS1.8- Identify acids and bases as a special class of compounds with a specific set of properties.

**Objective:** SWBAT classify a chemical reaction as synthesis or decomposition.

**TN State Standard:** CHEM1.PS1.4- Use the reactants in a chemical reaction to predict the products and identify reaction classes (synthesis, decomposition, combustion, single replacement, double replacement).

### Physics

#### Middle School

**Objective:** SWBAT compare and contrast potential and kinetic energy.

**TN State Standard:** 6.PS3.1- Analyze the properties and compare the sources of kinetic, elastic potential, gravitational potential, electric potential, chemical, and thermal energy.

**Objective:** SWBAT explain Newton's Third Law of Motion.

**TN State Standard:** 8.PS2.5- Evaluate and interpret that for every force exerted on an object there is an equal force exerted in the opposite direction.

#### High School

**Objective:** SWBAT explain reflection OR SWBAT explain refraction.

**TN State Standard:** PHYS.PS.4.3- Understand that the reflection, refraction, and transmission of waves at an interference between two media can be modeled on the basis of the characteristics of specific wave parameters and parameters of the medium.