Start the year off with a strong foundation. Begin with a unit on **Design Thinking** or **Scientific Method**.

### Disciplinary Core Ideas

#### Matter and its Interactions
- **9-12 weeks**
- **MS-PS1-1.** Develop models to describe the atomic composition of simple molecules and extended structures.
- **MS-PS1-2.** Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
- **MS-PS1-3.** Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
- **MS-PS1-4.** Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
- **MS-PS1-5.** Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

#### From Molecules to Organisms
- **2-3 weeks**
- **MS-LS1-6.** Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
- **MS-LS1-7.** Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.
- **MS-LS2-3.** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

#### Ecosystems
- **6-8 weeks**
- **MS-LS2-1.** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- **MS-LS2-2.** Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
- **MS-LS2-4.** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- **MS-LS2-5.** Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

#### Earth's Systems and Human Activity
- **6-9 weeks**
- **MS-ESS2-1.** Develop a model to describe the cycling of Earth’s materials and the flow of energy that drives this process.
- **MS-ESS2-2.** Construct an explanation based on evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales.
- **MS-ESS2-3.** Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
- **MS-ESS3-1.** Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.
- **MS-ESS3-2.** Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

### MOSA Mack Units

- **Atoms & Molecules**
- **States of Matter**
- **Physical vs. Chemical Changes**
- **Photosynthesis**
- **Interaction of Organisms**
- **Biodiversity**
- **Rock Cycle**
- **Plate Tectonics**
- **Earthquakes and Volcanoes**
- **Renewable Resources**