## Grades 6–8

**3.3.6-8.A Earth and Space Science:** Space Systems

**Students who demonstrate understanding can** *develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.*

**Clarifying Statement:** Examples of models can be physical, graphical, or conceptual.

**Assessment Boundary:** N/A

| Science and Engineering Practices (SEP) | Disciplinary Core Ideas (DCI) | Crosscutting Concepts (CCC) |
|---|---|---|
| **Developing and Using Models**<br>Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.<br>• Develop and use a model to describe phenomena. | **ESS1.A: The Universe and Its Stars**<br>• Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models.<br>**ESS1.B: Earth and the Solar System**<br>• This model of the solar system can explain eclipses of the sun and the moon. Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are a result of that tilt and are caused by the differential intensity of sunlight on different areas of Earth across the year. | **Patterns**<br>• Patterns can be used to identify cause-and-effect relationships.<br>***Connections to Nature of Science***<br>**Scientific Knowledge Assumes an Order and Consistency in Natural Systems**<br>• Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation. |

**Pennsylvania Context:** N/A

**PA Career Ready Skills:** Analyze various perspectives on a situation.

### Connections to Other Standards Content and Practices

| Standard Source | Possible Connections to Other Standard(s) or Practice(s) |
|---|---|
| **Agriculture (AFNR)** | CS.02.01.01.a: Research and describe different types of geographic data used in AFNR systems. |
| **Science, Environmental Literacy and Sustainability (NAAEE)** | 5-8 Strand 2.1.A. Earth's physical systems: Learners describe the physical processes that shape Earth, including weather, climate, plate tectonics, and the hydrologic cycle. They explain how matter cycles and energy flows among the abiotic and biotic components of the environment. They describe how humans affect and are affected by Earth's physical systems. |
| **PA Core Standards: ELA** | CC.1.5.8.E: Adapt speech to a variety of contexts and tasks. |

| Standard Source | Possible Connections to Other Standard(s) or Practice(s) |
|---|---|
| **PA Core Standards and Practices: Math** | MP.4: Model with mathematics.<br>CC.2.1.6.D.1: Understand ratio concepts and use ratio reasoning to solve problems.<br>CC.2.1.7.D.1: Analyze proportional relationships and use them to model and solve real-world and mathematical problems. |
| **PA Standards: Social Studies** | 7.1.6.A: Describe how common geographic tools are used to organize and interpret information about people, places, and environment. |
| **Educational Technology (ISTE)** | 1.6. Creative Communicator: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals. |
| **Technology and Engineering (ITEEA)** | STEL-3G: Explain how knowledge gained from other content areas affects the development of technological products and systems. |