Performance Expectations at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Performance Expectations.

Performance Expectations	Module: **The Sun-Earth-Moon System**	Module: **Exploring the Universe**
MS-ESS1-1	●	
MS-ESS1-2		●
MS-ESS1-3		●

Correlations by Module to the NGSS

MODULE: The Sun-Earth-Moon System

MS-ESS1	Earth's Place in the Universe	
MS-ESS1-1.	**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.** [Clarification Statement: Examples of models can be physical, graphical, or conceptual.]	61–68, 69
SEP Science and Engineering Practices		
Developing and Using Models 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. • Develop and use a model to describe phenomena. (MS-ESS1-1)		15, 18, *33–35*, 39, *49–50*, 58, 61–68
DCI Disciplinary Core Ideas		
ESS1.A: The Universe and Its Stars • Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models. (MS-ESS1-1)		*12*, 12, 17–18, 21–22, *31–32*, 31, 32, *33–35*, 35–36, 38–40, *49–50*, 52–54, *54–55*, 55, 61–68
ESS1.B: Earth and the Solar System • 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. (MS-ESS1-1)		11, *13–14*, 15–17, 19–20, 22–23, *46–47*, 48, *49–50*, 51–56, 58–59, 61–68

Labs and investigations are in italics.

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CCC Crosscutting Concepts	
Patterns • Patterns can be used to identify cause-and-effect relationships. (MS-ESS1-1)	*12*, 12, 15–19, 21, 23, 31, *31*, 32, *33–35*, 35, 38–39, *49–50*, 51–54, 56, 58–59, 61–68
Connections to Nature of Science **Scientific Knowledge Assumes an Order and Consistency in Natural Systems** Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation. (MS-ESS1-1)	*33–35, 49–50*
CCSS ELA/Literacy Connections	
ELA SL.8.5	61–68, Literacy Skill Handbook (online)
CCSS Math Connections	
Math MP.4	65, 68, Math Skill Handbook (online)
Math 6.RP.A.1	65, 68, Math Skill Handbook (online)
Math 7.RP.A.2	65, Math Skill Handbook (online)

ALSO INTEGRATES:	
SEP Planning and Carrying Out Investigations	*33–35, 46–47, 69*
SEP Analyzing and Interpreting Data	*33–35*, 39
SEP Using Mathematics and Computational Thinking	20
SEP Constructing Explanations and Defining Solutions	8–9, *13–14*, 23, 28–29, 32, *33–35*, 44–45, *47*, *49–50*, 53–54, *54–55*, 56, 61–68
SEP Obtaining, Evaluating, and Communicating Information	19
DCI PS2.B: Types of Interactions	11, Scientific Text *Testing Einstein's Theory of Gravity* (online)
CCC Cause and Effect	15, 20, *33–35*, 36, 38, *49–50, 52–53*
CCC Structure and Function	*30*
CCSS ELA RST.6–8.1	8–9, 28–29, 44–45
CCSS ELA RST.6–8.3	*33–35, 46–47, 49–50*
CCSS ELA RST.6–8.10	19, 21, 37, 57
CCSS ELA WHST.6–8.6	57

Labs and investigations are in italics.

MODULE: Exploring the Universe

MS-ESS1	Earth's Place in the Universe	
MS-ESS1-2.	**Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.** [Clarification Statement: Emphasis for the model is on gravity as the force that holds together the solar system and Milky Way galaxy and controls orbital motions within them. Examples of models can be physical (such as the analogy of distance along a football field or computer visualizations of elliptical orbits) or conceptual (such as mathematical proportions relative to the size of familiar objects such as their school or state).] [*Assessment Boundary: Assessment does not include Kepler's Laws of orbital motion or the apparent retrograde motion of the planets as viewed from Earth*.]	113–118, 119
SEP Science and Engineering Practices		
Developing and Using Models 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. • Develop and use a model to describe phenomena. (MS-ESS1-2)		79, 88, *100–101*, *101–103,* 103, *104*, 113–118
DCI Disciplinary Core Ideas		
ESS1.A: The Universe and Its Stars • Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe. (MS-ESS1-2)		*86*, 86–87, 113–118
ESS1.B: Earth and the Solar System • The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (MS-ESS1-2)		*78*, 78–80, 84–85, 88–89, 96, *98–99*, *100–101*, *101–103*, *104*, 105–106, *106–107*, 107, 111, 113–118
ESS1.B: Earth and the Solar System • The solar system appears to have formed from a disk of dust and gas drawn together by gravity. (MS-ESS1-2)		*80–81*, 82–83, 86, 88, 113–118
CCC Crosscutting Concepts		
Systems and System Models • Models can be used to represent systems and their interactions—such as inputs, processes and outputs—and energy, matter, and information flows within systems. (MS-ESS1-2)		82, 113–118
Connections to Nature of Science **Scientific Knowledge Assumes an Order and Consistency in Natural Systems** • Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation. (MS-ESS1-2)		85, 113–118

Labs and investigations are in italics.

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CCSS ELA/Literacy Connections	
ELA SL.8.5	84, *104*, 113–118, Literacy Skill Handbook (online)
CCSS Math Connections	
Math MP.4	113–116, Math Skill Handbook (online)
Math 6.RP.A.1	*100–101, 101–103,* 113–118, Math Skill Handbook (online)
Math 7.RP.A.2	*100–101, 101–103,* 113–118, *100–101, 101–103,* 113–118, Math Skill Handbook (online)
Math 6.EE.B.6	113–118, Math Skill Handbook (online)
Math 7.EE.B.4	113–118, *100–101, 101–103,* 113–118, Math Skill Handbook (online)

MS-ESS1	**Earth's Place in the Universe**	
MS-ESS1-3.	**Analyze and interpret data to determine scale properties of objects in the solar system.** [Clarification Statement: Emphasis is on the analysis of data from Earth-based instruments, space-based telescopes, and spacecraft to determine similarities and differences among solar system objects. Examples of scale properties include the sizes of an object's layers (such as crust and atmosphere), surface features (such as volcanoes), and orbital radius. Examples of data include statistical information, drawings and photographs, and models.] [*Assessment Boundary: Assessment does not include recalling facts about properties of the planets and other solar system bodies.*]	113–118, 119
SEP Science and Engineering Practices		
Analyzing and Interpreting Data Analyzing data in 6–8 builds on K–5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis. • Analyze and interpret data to determine similarities and differences in findings. (MS-ESS1-3)		*80–81*, 84, *96–97*, *98–99*, *100–101*, *101–103*, *104*, 105, *106–107*, 111, 113–118
DCI Disciplinary Core Ideas		
ESS1.B: Earth and the Solar System • The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (MS-ESS1-3)		*78*, 78, 80, 84–85, 88–89, 96, *98–99, 100–101, 101–103, 104,* 105–106, *106–107*, 107–111, 113–118

Labs and investigations are in italics.

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CCC Crosscutting Concepts	
Scale, Proportion, and Quantity • Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small. (MS-ESS1-3)	*100–101*, *101–103*, 103, *104*, *106–107*, 113–118
Connections to Engineering, Technology, and Applications of Science **Interdependence of Science, Engineering, and Technology** • Engineering advances have led to important discoveries in virtually every field of science and scientific discoveries have led to the development of entire industries and engineered systems. (MS-ESS1-3)	96, *96–97*, 97–98, 105, 113–118
CCSS ELA/Literacy Connections	
ELA RST.6–8.1	105, 113–118, Literacy Skill Handbook (online)
ELA RST.6–8.7	88, 110, 113–118, Literacy Skill Handbook (online)
CCSS Math Connections	
Math MP.2	113–116, Math Skill Handbook (online)
Math 6.RP.A.1	*100–101, 101–103*, 113–118, Math Skill Handbook (online)
Math 7.RP.A.2	*100–101, 101–103*, 113–118, Math Skill Handbook (online)

ALSO INTEGRATES:	
SEP Constructing Explanations and Defining Solutions	*80–81*, 82, *100–101*, *101–103*, 103, *106–107*, 112
SEP Planning and Carrying Out Investigations	*80–81*, *84–85*, *100–101*, 101–102, 113–118
SEP Using Mathematics and Computational Thinking	*98–99*, *100–101*, *101–103*
DCI PS2.B: Types of Interactions	79–80
CCC Cause and Effect	80, *80–81*, 89
CCC Patterns	84, 99, *100–103*, 111
CCC Structure and Function	82–83, 85–87, *86*, *104*, 106, *106–107*, 110
CCSS Math 8.F.A.3	98–99

Labs and investigations are in italics.