

MS. Space Systems

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A Performance Expectations MS.ESS1.SS

- 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. MS.ESS1.1
- 2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. MS.ESS1.2
- 3 Analyze and interpret data to determine scale properties of objects in the solar system. MS.ESS1.3

B Science and Engineering Practices MS.SS.SEP

- 1 Developing and Using Models MS.SS.SEP.1
 - a Develop and use a model to describe phenomena. (MS-ESS1- 1),(MS-ESS1-2) MS.SS.SEP.1A
- 2 Analyzing and Interpreting Data MS.SS.SEP.2
 - a Analyze and interpret data to determine similarities and differences in findings. (MS-ESS1-3) MS.SS.SEP.2A

C Disciplinary Core Ideas MS.SS.DCI**1** ESS1.A: The Universe and Its Stars MS.SS.DCI.ESS1.A

- a** 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) MS.SS.DCI.ESS1.A.1
- b** Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe. (MS-ESS1-2) MS.SS.DCI.ESS1.A.2

2 ESS1.B: Earth and the Solar System MS.SS.DCI.ESS1.B

- a** (NYSED) The solar system consists of the Sun and a collection of objects, including planets, their moons, comets, and asteroids that are held in orbit around the Sun by its gravitational pull on them. (MS-ESS1-2),(MS-ESS1-3) MS.SS.DCI.ESS1.B.1
- b** 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) MS.SS.DCI.ESS1.B.2
- c** The solar system appears to have formed from a disk of dust and gas, drawn together by gravity. (MS-ESS1-2) MS.SS.DCI.ESS1.B.3

D Crosscutting Concepts MS.SS.CC**1** Patterns MS.SS.CC.1

- a** Patterns can be used to identify cause and effect relationships. (MS-ESS1-1) MS.SS.CC.1A

2 Scale, Proportion, and Quantity MS.SS.CC.2

- a** 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) MS.SS.CC.2A

3 Systems and System Models MS.SS.CC.3

- a** Models can be used to represent systems and their interactions. (MS-ESS1-2) MS.SS.CC.3A

4 Interdependence of Science, Engineering, and Technology MS.SS.CC.4

- a** 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) MS.SS.CC.4A

5 Scientific Knowledge Assumes an Order and Consistency in Natural Systems MS.SS.CC.5

- a** Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation. (MS-ESS1-1),(MS-ESS1-2) MS.SS.CC.5A