



Stackable Instructionally- embedded Portable Science (SIPS) Assessments Project

Grade 5 Science Unit 4 Range Performance Level Descriptors Earth and Its Gravitational Force and Motion September 2023

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SIPS Grade 5 Unit 4 Range Performance Level Descriptors

Grade 5 Unit 4 EOU Assessment Performance Expectations

- 5-PS2-1.** Support an argument that the gravitational force exerted by Earth on objects is directed down. *[Clarification Statement: “Down” is a local description of the direction that points toward the center of the spherical Earth.] [Assessment Boundary: Assessment does not include mathematical representation of gravitational force.]*
- 5-ESS1-1.** Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth. *[Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).]*
- 5-ESS1-2.** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. *[Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]*

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SIPS tasks require students to apply and transfer their science learning through engagement with science and engineering practices (SEPs) and application of the crosscutting concepts (CCCs) to demonstrate their understanding of disciplinary core ideas (DCIs) to make sense of and explain phenomena and/or to design solutions to phenomena-rooted engineering problems.

Level 1	Level 2	Level 3 (Target)	Level 4
<p>A student performing at this level produces evidence of three-dimensional science learning by their ability to:</p> <ul style="list-style-type: none"> support or refute a claim regarding effects of the gravitational force of Earth. 	<p>A student performing at this level produces evidence of three-dimensional science learning by their ability to:</p> <ul style="list-style-type: none"> support or refute a claim regarding effects of the gravitational force of Earth, using some evidence as reasoning. 	<p>A student performing at this level produces evidence of three-dimensional science learning by their ability to:</p> <ul style="list-style-type: none"> support or refute a claim regarding effects of the gravitational force of Earth, and how these effects can be observed and/or measured, using relevant evidence/data as reasoning. 	<p>A student performing at this level produces evidence of three-dimensional science learning by their ability to:</p> <ul style="list-style-type: none"> support or refute a claim regarding effects of the gravitational force of Earth, multiple ways these effects can be observed and/or measured, using a scientifically accurate and complete explanation using evidence/data as reasoning.
<ul style="list-style-type: none"> use provided data to partially complete a graphical representation to show the apparent brightness of stars as seen from Earth. 	<ul style="list-style-type: none"> use provided data to partially complete a graphical representation of the apparent brightness of stars as seen from Earth to attempt an explanation of the apparent versus actual brightness of stars. 	<ul style="list-style-type: none"> use provided data to generate a graphical representation to support or refute a claim using an accurate explanation of the apparent brightness of stars as seen from Earth compared to their actual brightness. 	<ul style="list-style-type: none"> use provided data to generate a graphical representation to support or refute a claim using a scientifically accurate and complete explanation of the apparent brightness of stars as seen from Earth compared to their actual brightness.
<ul style="list-style-type: none"> complete a model to describe and predict a change in the length or direction of shadows. 	<ul style="list-style-type: none"> complete a model and use provided data to partially complete a graph to describe and predict a change in the length and direction of shadows during the day. 	<ul style="list-style-type: none"> complete a model and organize data into a graphical display to describe and predict the change in the length and direction of shadows as related to Earth’s rotation around its axis. 	<ul style="list-style-type: none"> accurately complete a model and organize data into a graphical display to describe and predict the patterns of change in the length and direction of shadows at different times of day as related to Earth’s rotation around its axis.
<ul style="list-style-type: none"> use data to partially complete a graphical display to describe lunar phases over a 	<ul style="list-style-type: none"> use data to partially complete a graphical display to describe lunar phases over a 	<ul style="list-style-type: none"> organize data into a graphical display to describe and predict lunar phases over a 	<ul style="list-style-type: none"> accurately organize data into a graphical display to describe and predict the

period of months to attempt to support a claim related to the Earth-moon system.	period of months to support a claim related to the Earth-moon system with limited evidence.	period of months to support a claim related to the Earth-moon system with relevant evidence.	patterns of lunar phases over a period of months to support a claim related to the Earth-moon system with scientifically accurate and relevant evidence.
<ul style="list-style-type: none"> use data to attempt to describe the change in the duration of the length of daylight during different times of the year. 	<ul style="list-style-type: none"> use data to describe the change in the duration of the length of daylight during different times of the year. 	<ul style="list-style-type: none"> use data to describe and compare the change in the duration of the length of daylight with relevant evidence, as it relates to the time of year as Earth orbits the sun. 	<ul style="list-style-type: none"> use data to describe and compare the patterns of change in the duration of the length of daylight with scientifically accurate and relevant evidence, as it relates to the time of year as Earth orbits the sun.
<ul style="list-style-type: none"> use models and/or graphical displays to attempt to describe the motion and seasonal appearance of stars and/or constellations in the night sky. 	<ul style="list-style-type: none"> use models and/or graphical displays to describe the motion and seasonal appearance of stars and/or constellations in the night sky with limited reasoning. 	<ul style="list-style-type: none"> use models and/or graphical displays to describe the motion and seasonal appearance of stars and/or constellations in the night sky. 	<ul style="list-style-type: none"> use models and/or graphical displays to describe the motion and patterns of the seasonal appearance of stars and/or constellations in the night sky as related to the revolution of Earth around the sun.