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Universe, Earth, Environment (Earth Science)

Essential Question: What are the movements and relative positions of the earth,

Enduring Knowledge	Science Concepts	GE	Evidence of Understanding
<p><u>Solar System:</u> The universe, earth and all earth systems have undergone change in the past, continue to change in the present, and are predicted to continue changing in the future.</p>	<p>a. The earth orbits the sun in a near circular path that takes a year to complete. b. The moon's orbit around the earth once in about 28 days changes the portion of the moon visible to us, as a result of the sun's reflected light (phases of the moon).</p>	44	<p>Creating a diagram or model of the orbit of the earth around the sun and the moon around the earth</p>
<p><u>Scale, Distances, Star Formation, Theories, Instrumentation:</u> The universe, earth and all earth systems have undergone change in the past, continue to change in the present, and are predicted to continue changing in the future.</p>	<p>a. From earth, the moon and the sun appear to be the same size, because the moon is so much closer to the earth than the sun. b. Telescopes magnify the appearance of some very distant objects in the sky, including the moon and the planets. The number of stars that can be seen through telescopes is dramatically greater than can be seen by the unaided eye.</p>	45	<p>Explaining (after viewing a picture or illustration with sun/moon showing true relative size) why the sun and moon appear to be the same size when seen from the earth Relating this phenomenon to lunar and solar eclipses</p>

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moon and sun within the solar system?

Focusing Questions	Potential Inquiries/Activities	Resources/Notes
<p>What causes a year to be defined as 365 days?</p> <ul style="list-style-type: none"> - The earth is a planet within the solar system. - The earth moves around the sun in a predictable path. - The sun is the relative center of the solar system. - A year is defined as one revolution of the earth around the sun (365 1/4 days). <p>What causes the phases of the moon?</p> <ul style="list-style-type: none"> - The moon moves around the sun in predictable ways. - The moon phases are caused by the relative positions of the sun, moon, and earth. <p>Why is the same side of the moon always facing the earth?</p> <ul style="list-style-type: none"> - The moon rotates on its axis at the same rate it orbits the earth, so the same side of the moon always faces the earth. 	<p>Using a ball and a light source, demonstrate how the positions of the sun, earth, and moon cause the phases of the moon.</p>	
<p>What is the relative size of the sun and the moon compared to the earth?</p> <ul style="list-style-type: none"> - The diameter of the moon is roughly 1/4 of the diameter of the earth. - The diameter of the sun is roughly 10 times that of earth. <p>Why do the sun and moon appear to be the same size from earth?</p> <ul style="list-style-type: none"> - The distance between the earth and sun is roughly 20 times the distance between the earth and moon. - The farther away an object is the smaller it appears. <p>How do solar and lunar eclipses occur?</p> <ul style="list-style-type: none"> - An eclipse occurs when the sun, moon, and earth align. - A lunar eclipse occurs when the earth is between the moon and the sun. - A solar eclipse occurs when the moon is between the earth and the sun. <p>How do telescopes help with the study of space?</p>	<p>Create a closed system (bottle, bag, etc.) to demonstrate the water cycle.</p>	

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Essential Question: What are Earth's systems, how have they changed through

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<p><u>Atmosphere, Water Cycle, Weather, Seasons:</u> The universe, earth and all earth systems have undergone change in the past, continue to change in the present, and are predicted to continue changing in the future.</p>	<p>a. The cycling of water in and out of the atmosphere plays an important role in determining climatic patterns. Water evaporates from the surface of the earth, rises and cools, and falls again to the surface as rain. The water falling on land collects in rivers and lakes, soil, and porous layers of rock, and much of it flows back into the ocean.</p>	48	<p>Diagramming, labeling, and explaining the process of the water cycle (e.g., evaporation, precipitation, run-off)</p>
<p><u>Natural Resources:</u> The universe, earth and all earth systems have undergone change in the past, continue to change in the present, and are predicted to continue changing in the future.</p>	<p>a. Responsible management of the earth's resources (air, soil, water, trees) is beneficial for the environment and for human use.</p>	49	<p>Identifying examples of good and poor management of natural resources Explaining how overpopulation of living things can degrade an environment due to increased use of resources</p>

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time, and what affects them?

Focusing Questions	Potential Inquiries/Activities	Resources/Notes
<p>What happens to water as it is cycled through the environment?</p> <ul style="list-style-type: none">- All the water currently on earth is all that ever was on earth ... water is ancient.- The water cycle includes evaporation, condensation, precipitation, run-off and ground water.	<p>What are some examples of good and poor management of resources? What are some natural examples of overpopulation that degrades the environment? (e.g., deer and elk in Yellowstone, deer in other regions, locusts, etc.)</p>	
<ul style="list-style-type: none">- Humans, throughout history, have interacted with the environment and used its resources; they continue to do so.- Ecosystems require equilibrium to be stable.- Because people use natural resources, people must manage their use in sustainable and ethical ways.- Poor management practices are unsustainable and unethical.- Unsustainable and unethical practices cause ecosystems to become out of balance.		