

Grades 6-8 Scope and Sequence for Outer Planets Compendium

Topic	Lesson	Prior Knowledge and Experience	Learning Goals	NSES Stds.	AAAS Stds.	Colo. Sci. Stds.	Colo. Math Stds.
<b>Comparing Planets</b>	Clay Planets	<ul style="list-style-type: none"> <li>general knowledge of the solar system</li> </ul>	<ul style="list-style-type: none"> <li>knowledge of the scale of the solar system</li> </ul>	D	4a, 11d	4	5
	Modeling Sizes of Planets	<ul style="list-style-type: none"> <li>basic algebra and geometry</li> <li>weight, density, composition</li> </ul>	<ul style="list-style-type: none"> <li>comparing relative sizes and the order of the planets</li> </ul>	B, D	4a, 4b, 11d	4	2, 4
	Looking Inside Planets	<ul style="list-style-type: none"> <li>general astronomy</li> <li>understanding of scale models</li> </ul>	<ul style="list-style-type: none"> <li>comparing planetary interiors</li> <li>understanding the different interior structures of inner and outer planets</li> </ul>	B, D	4b	4	5
	Terra Bagga	<ul style="list-style-type: none"> <li>use of magnets</li> <li>characteristics of planets</li> </ul>	<ul style="list-style-type: none"> <li>understanding the orientation of planetary magnetic fields</li> </ul>	B, D, E	4a, 12d	1, 4	-
<b>Planetary Systems</b>	Space Travel Guide	<ul style="list-style-type: none"> <li>characteristics of the planets</li> <li>expressing ideas in writing and drawing</li> </ul>	<ul style="list-style-type: none"> <li>understanding science as a human endeavor</li> </ul>	D	4a, 12d	4	-
	Great Red Spot Pinwheel	<ul style="list-style-type: none"> <li>planetary atmospheres</li> </ul>	<ul style="list-style-type: none"> <li>understanding of atmospheric dynamics</li> </ul>	B	4e, 4f	2	-
	The Jovian System: A Scale Model	<ul style="list-style-type: none"> <li>characteristics of the Jovian system</li> <li>discovery of the Galilean satellites</li> <li>the Galileo probe mission</li> </ul>	<ul style="list-style-type: none"> <li>comparing the size and scale of the Jovian system</li> </ul>	D, E	4a, 11d	4	-
	Rings and Things	<ul style="list-style-type: none"> <li>Saturn's rings</li> <li>nature of sunlight</li> </ul>	<ul style="list-style-type: none"> <li>knowledge of light scattering and light interactions</li> </ul>	B	-	2	-
	The Moons of Jupiter	<ul style="list-style-type: none"> <li>plotting data</li> <li>interpreting data</li> </ul>	<ul style="list-style-type: none"> <li>using data to compare the density, diameter, and distance of Jupiter's moons</li> </ul>	A, B	4d	2, 4	3
	Phases of Charon	<ul style="list-style-type: none"> <li>latitude and longitude</li> <li>planetary and lunar orbits</li> </ul>	<ul style="list-style-type: none"> <li>understanding the rotational and orbital periods of planets and moons</li> </ul>	D	4a	4	4
<b>Space Technology</b>	Distance = Rate x Time	<ul style="list-style-type: none"> <li>understanding of basic equations and arithmetic</li> </ul>	<ul style="list-style-type: none"> <li>using data to compute distance</li> </ul>	B	3a, 3b	2	2
	Happy Landings: A Splash or a Splat?	<ul style="list-style-type: none"> <li>data collection and measurement</li> <li>graphing</li> </ul>	<ul style="list-style-type: none"> <li>understanding planetary atmospheres</li> </ul>	A, B, D	1b, 4f	2, 4	2, 3
	Spacecraft Speed	<ul style="list-style-type: none"> <li>multiplication and division</li> <li>linear and (optional) logarithmic graphing</li> </ul>	<ul style="list-style-type: none"> <li>comparing and graphing speeds</li> </ul>	D, E	4a, 11d	4	1, 2
	Strange New Planet	<ul style="list-style-type: none"> <li>gathering data</li> <li>observation</li> </ul>	<ul style="list-style-type: none"> <li>understanding planetary exploration</li> </ul>	A, D, E, G	1a, 1b, 1c, 4b	4, 5	-
	The Jovian Basketball Hoop	<ul style="list-style-type: none"> <li>radio waves</li> <li>electricity and magnetism</li> </ul>	<ul style="list-style-type: none"> <li>understanding instrumentation</li> </ul>	A, B, E	3a, 3b, 4e	3	-
<b>Solar System</b>	Planetary Distances on the Playground	<ul style="list-style-type: none"> <li>characteristics of the planets</li> <li>creating scale models</li> </ul>	<ul style="list-style-type: none"> <li>understanding relative distances of the planets</li> </ul>	D	4a	4	1
	Are All Asteroids' Surfaces the Same Age?	<ul style="list-style-type: none"> <li>characteristics of asteroids</li> </ul>	<ul style="list-style-type: none"> <li>understanding the characteristics of solar system bodies</li> </ul>	A, D	1b, 4a	4	5
<b>Search for Life</b>	Is There Life on Earth?	<ul style="list-style-type: none"> <li>web research</li> </ul>	<ul style="list-style-type: none"> <li>understanding science as a human endeavor</li> </ul>	-	-	1, 4	-
	Can Photosynthesis Occur at Saturn?	<ul style="list-style-type: none"> <li>Saturn's place in the solar system</li> <li>nature of sunlight</li> </ul>	<ul style="list-style-type: none"> <li>understanding the basic principles of photosynthesis</li> </ul>	B, C	4a, 4e	3, 4	2

<b>Spectra</b>	Astro-Chronology	<ul style="list-style-type: none"> <li>• general astronomy</li> <li>• general knowledge of the history of science</li> </ul>	<ul style="list-style-type: none"> <li>• understanding the history and discovery of the solar system</li> </ul>	E, H	3a, 4a, 10a	-	-
	Patterns and Fingerprints	<ul style="list-style-type: none"> <li>• ability to recognize and describe patterns</li> <li>• data interpretation</li> <li>• general understanding of energy</li> </ul>	<ul style="list-style-type: none"> <li>• understanding patterns and relationships</li> </ul>	C	2a	3	2, 4
	Using Spectral Data to Explore Saturn and Titan	<ul style="list-style-type: none"> <li>• identifying patterns</li> <li>• nature of light</li> </ul>	<ul style="list-style-type: none"> <li>• ability to describe how scientific data relates to scientific discovery</li> </ul>	A, B, D	1b, 4b, 4e	3, 4	3