



## You and Outer Space

Your students will explore our solar system, our universe, and other galaxies. Some special points of focus are Earth, the sun and moon, and other objects in the sky, as well as how people observe and interact with outer space.

**Grades K-1**

**Grade 5**

**Grade 2**

**Grade 6**

**Grade 3**

**Grade 7**

**Grade 4**

**Grade 8**

## You in Outer Space - Curriculum Guide

| <u>Grades K-1</u>                                |                                                                                                                                            |                                                                                                         |                                                                                                                |                                                                                       |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Curriculum Themes:                               | Earth                                                                                                                                      | The Moon                                                                                                | The Sun                                                                                                        | Forces & Objects in Space                                                             |
| Theme Topics:                                    | features of Earth's surface;<br>Earth's rotation on its axis;<br>Earth's orbit around the sun                                              | phases of the moon; the moon's orbit around Earth                                                       | the age, size, location, and composition of the sun;<br>how the sun affects life on Earth                      | effects of gravity on Earth and in space; inventions that help scientists study space |
| Key Terms:                                       | axis, season, orbit, revolve, rotate, leap year                                                                                            | phase, new moon, half moon, crescent moon, full moon                                                    | star, planet, gas, heat, light, sunrise, sunset, temperature                                                   | gravity, telescope, astronomer                                                        |
| Additional Learning:<br>Vocabulary Skill & Drill | <ul style="list-style-type: none"> <li>Comprehensive multiple-choice quiz with vocabulary drawn from the Outer Space curriculum</li> </ul> |                                                                                                         |                                                                                                                |                                                                                       |
| Additional Learning:<br>Math Skill & Drill       | <ul style="list-style-type: none"> <li><b>Counting Numbers:</b> skip counting with whole numbers</li> </ul>                                | <ul style="list-style-type: none"> <li><b>Counting Money:</b> identifying and counting coins</li> </ul> | <ul style="list-style-type: none"> <li><b>Solving Equations:</b> arithmetic (addition, subtraction)</li> </ul> | <ul style="list-style-type: none"> <li><b>Shapes:</b> 2D and 3D Shapes</li> </ul>     |

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| <u>Grade 2</u>                                      |                                                                                                                                            |                                                                                                         |                                                                                                                                          |                                                                                                                                             |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Curriculum Themes:                                  | Earth                                                                                                                                      | The Moon                                                                                                | The Sun                                                                                                                                  | Forces & Objects in Space                                                                                                                   |
| Theme Topics:                                       | features of Earth's surface; Earth's rotation on its axis; Earth's orbit around the sun                                                    | phases of the moon; the moon's orbit around Earth                                                       | the age, size, location, and composition of the sun; how the sun affects life on Earth                                                   | effects of gravity on Earth and in space; inventions that help scientists study space                                                       |
| Key Terms:                                          | axis, season, orbit, revolve, rotate, leap year                                                                                            | phase, new moon, half moon, crescent moon, full moon                                                    | star, planet, gas, heat, light, sunrise, sunset, temperature                                                                             | gravity, telescope, astronomer                                                                                                              |
| Additional Learning:<br>Vocabulary<br>Skill & Drill | <ul style="list-style-type: none"> <li>Comprehensive multiple-choice quiz with vocabulary drawn from the Outer Space curriculum</li> </ul> |                                                                                                         |                                                                                                                                          |                                                                                                                                             |
| Additional Learning:<br>Math Skill & Drill          | <ul style="list-style-type: none"> <li><b>Counting Numbers:</b> skip counting with whole numbers</li> </ul>                                | <ul style="list-style-type: none"> <li><b>Counting Money:</b> identifying and counting coins</li> </ul> | <ul style="list-style-type: none"> <li><b>Solving Equations:</b> arithmetic (addition, subtraction, multiplication, division)</li> </ul> | <ul style="list-style-type: none"> <li><b>Shapes:</b> 2D and 3D shapes, shapes of everyday objects, symmetrical vs. asymmetrical</li> </ul> |

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| Grade 3                                             |                                                                                                                                            |                                                                                                                               |                                                                                                                                          |                                                                                                                                                                   |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Curriculum Themes:                                  | Earth & the Moon                                                                                                                           | The Sun                                                                                                                       | Our Solar System & Beyond                                                                                                                | Study & Exploration of Space                                                                                                                                      |
| Theme Topics:                                       | the relationship between Earth and the moon;<br>phases of the moon;<br>composition of Earth's atmosphere                                   | properties of solar energy and how it can be used;<br>how light and heat from the sun impact Earth;<br>composition of the sun | planets & other objects in our solar system; forces in the universe; stars & other objects beyond our solar system                       | tools used to study space from Earth; inventions that help astronauts to work in space; missions into outer space                                                 |
| Key Terms:                                          | rotation, atmosphere, ozone, full moon, new moon, gibbous moon, crescent moon                                                              | shadow, sundial, solar energy, hydrogen, helium                                                                               | force, mass, gravity, magnetism, gas giant, comet, asteroid, constellation, galaxy                                                       | telescope, astronaut, astronomer, spacecraft, lunar module, mission                                                                                               |
| Additional Learning:<br>Vocabulary<br>Skill & Drill | <ul style="list-style-type: none"> <li>Comprehensive multiple-choice quiz with vocabulary drawn from the Outer Space curriculum</li> </ul> |                                                                                                                               |                                                                                                                                          |                                                                                                                                                                   |
| Additional Learning:<br>Math Skill & Drill          | <ul style="list-style-type: none"> <li><b>Counting Numbers:</b> skip counting with whole numbers</li> </ul>                                | <ul style="list-style-type: none"> <li><b>Counting Money:</b> identifying and counting coins and bills</li> </ul>             | <ul style="list-style-type: none"> <li><b>Solving Equations:</b> arithmetic (addition, subtraction, multiplication, division)</li> </ul> | <ul style="list-style-type: none"> <li><b>Shapes:</b> 2D and 3D shapes, shapes of everyday objects, symmetry, identifying triangles, identifying lines</li> </ul> |

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| Grade 4                                       |                                                                                                                                            |                                                                                                                         |                                                                                                                                                      |                                                                                                                                              |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Curriculum Themes:                            | Earth & the Moon                                                                                                                           | The Sun                                                                                                                 | Our Solar System & Beyond                                                                                                                            | Study & Exploration of Space                                                                                                                 |
| Theme Topics:                                 | the relationship between Earth and the moon; phases of the moon; composition of Earth's atmosphere                                         | properties of solar energy and how it can be used; how light and heat from the sun impact Earth; composition of the sun | planets & other objects in our solar system; forces in the universe; stars & other objects beyond our solar system                                   | tools used to study space from Earth; inventions that help astronauts to work in space; missions into outer space                            |
| Key Terms:                                    | rotation, atmosphere, ozone, full moon, new moon, gibbous moon, crescent moon                                                              | shadow, sundial, solar energy, hydrogen, helium                                                                         | force, mass, gravity, magnetism, gas giant, comet, asteroid, constellation, galaxy                                                                   | telescope, astronaut, astronomer, spacecraft, lunar module, mission                                                                          |
| Additional Learning: Vocabulary Skill & Drill | <ul style="list-style-type: none"> <li>Comprehensive multiple-choice quiz with vocabulary drawn from the Outer Space curriculum</li> </ul> |                                                                                                                         |                                                                                                                                                      |                                                                                                                                              |
| Additional Learning: Math Skill & Drill       | <ul style="list-style-type: none"> <li><b>Counting Numbers:</b> skip counting with whole numbers and decimals</li> </ul>                   | <ul style="list-style-type: none"> <li><b>Counting Money:</b> identifying and counting coins and bills</li> </ul>       | <ul style="list-style-type: none"> <li><b>Solving Equations:</b> arithmetic and algebra (addition, subtraction, multiplication, division)</li> </ul> | <ul style="list-style-type: none"> <li><b>Shapes:</b> 2D and 3D shapes; triangles and quadrilaterals; identifying lines; symmetry</li> </ul> |

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| Grade 5                                             |                                                                                                                                            |                                                                                                                      |                                                                                                                                                      |                                                                                                                                              |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Curriculum Themes:                                  | Earth & Its Orbit                                                                                                                          | Our Solar System                                                                                                     | The Sun & Other Stars                                                                                                                                | Study & Exploration of Space                                                                                                                 |
| Theme Topics:                                       | how the tilt of the Earth's axis causes day, night & seasons; the relationship between Earth and the sun                                   | structure of our solar system; orbits & properties of planets in our solar system; other objects in our solar system | properties of the sun's surface and atmosphere; composition of the sun and other stars                                                               | discoveries of planets & stars outside our solar system; types of telescopes and how they are used; missions into outer space                |
| Key Terms:                                          | axis, rotation, revolution, equinox, solstice, hemisphere, airglow, earthshine, terrestrial                                                | asteroid, asteroid belt, comet, crater, meteor, meteorite, meteoroid, gravitational pull                             | corona, chromosphere, photosphere, solar flare, sunspot, convection, nuclear fusion, radiant energy                                                  | astronomy, lunar module, space telescope, optical telescope, ultraviolet telescope, scientific notation, universe                            |
| Additional Learning:<br>Vocabulary<br>Skill & Drill | <ul style="list-style-type: none"> <li>Comprehensive multiple-choice quiz with vocabulary drawn from the Outer Space curriculum</li> </ul> |                                                                                                                      |                                                                                                                                                      |                                                                                                                                              |
| Additional Learning:<br>Math Skill & Drill          | <ul style="list-style-type: none"> <li><b>Counting Numbers:</b> skip counting with whole numbers and decimals</li> </ul>                   | <ul style="list-style-type: none"> <li><b>Counting Money:</b> identifying and counting coins and bills</li> </ul>    | <ul style="list-style-type: none"> <li><b>Solving Equations:</b> arithmetic and algebra (addition, subtraction, multiplication, division)</li> </ul> | <ul style="list-style-type: none"> <li><b>Shapes:</b> 2D and 3D shapes; triangles and quadrilaterals; identifying lines; symmetry</li> </ul> |

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| Grade 6                                             |                                                                                                                                            |                                                                                                                      |                                                                                                                                                      |                                                                                                                                              |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Curriculum Themes:                                  | Earth & Its Orbit                                                                                                                          | Our Solar System                                                                                                     | The Sun & Other Stars                                                                                                                                | Study & Exploration of Space                                                                                                                 |
| Theme Topics:                                       | how the tilt of the Earth's axis causes day, night & seasons; the relationship between Earth and the sun                                   | structure of our solar system; orbits & properties of planets in our solar system; other objects in our solar system | properties of the sun's surface and atmosphere; composition of the sun and other stars                                                               | discoveries of planets & stars outside our solar system; types of telescopes and how they are used; missions into outer space                |
| Key Terms:                                          | axis, rotation, revolution, equinox, solstice, hemisphere, airglow, earthshine, terrestrial                                                | asteroid, asteroid belt, comet, crater, meteor, meteorite, meteoroid, gravitational pull                             | corona, chromosphere, photosphere, solar flare, sunspot, convection, nuclear fusion, radiant energy                                                  | astronomy, lunar module, space telescope, optical telescope, ultraviolet telescope, scientific notation, universe                            |
| Additional Learning:<br>Vocabulary<br>Skill & Drill | <ul style="list-style-type: none"> <li>Comprehensive multiple-choice quiz with vocabulary drawn from the Outer Space curriculum</li> </ul> |                                                                                                                      |                                                                                                                                                      |                                                                                                                                              |
| Additional Learning:<br>Math Skill & Drill          | <ul style="list-style-type: none"> <li><b>Counting Numbers:</b> skip counting with whole numbers and decimals</li> </ul>                   | <ul style="list-style-type: none"> <li><b>Counting Money:</b> identifying and counting coins and bills</li> </ul>    | <ul style="list-style-type: none"> <li><b>Solving Equations:</b> arithmetic and algebra (addition, subtraction, multiplication, division)</li> </ul> | <ul style="list-style-type: none"> <li><b>Shapes:</b> 2D and 3D shapes; triangles and quadrilaterals; identifying lines; symmetry</li> </ul> |

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| <u>Grade 7</u>                                      |                                                                                                                                            |                                                                                                                                     |                                                                                                                                                      |                                                                                                                                               |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Curriculum Themes:                                  | Earth & the Moon                                                                                                                           | Earth & the Sun                                                                                                                     | The Sun & Other Stars                                                                                                                                | Forces, Laws & Theories                                                                                                                       |
| Theme Topics:                                       | causes of the moon's phases; observations of the moon from Earth; relationships between Earth, the sun & the moon                          | energy from the sun and its effects on Earth; how energy can be converted and used; types of waves on the electromagnetic spectrum  | life cycle of the sun and other stars; formation and composition of stars; types of star systems                                                     | the study of astronomy throughout history; laws of planetary motion and features of a planet's orbit; theories for the origin of the universe |
| Key Terms:                                          | lunar cycle, full moon, new moon, gibbous moon, crescent moon, blue moon, wax, wane, lunar eclipse, solar eclipse                          | solar radiation, thermal energy, electrical energy, radiant energy, electromagnetic spectrum, wavelength, frequency, photosynthesis | nebula, protostar, supergiant, supernova, neutron star, black hole, event horizon, singularity                                                       | microgravity, gravitational pull, perihelion, aphelion, orbital period, orbital speed, big bang theory                                        |
| Additional Learning:<br>Vocabulary<br>Skill & Drill | <ul style="list-style-type: none"> <li>Comprehensive multiple-choice quiz with vocabulary drawn from the Outer Space curriculum</li> </ul> |                                                                                                                                     |                                                                                                                                                      |                                                                                                                                               |
| Additional Learning:<br>Math Skill & Drill          | <ul style="list-style-type: none"> <li><b>Counting Numbers:</b> skip counting with whole numbers and decimals</li> </ul>                   | <ul style="list-style-type: none"> <li><b>Counting Money:</b> identifying and counting coins and bills</li> </ul>                   | <ul style="list-style-type: none"> <li><b>Solving Equations:</b> arithmetic and algebra (addition, subtraction, multiplication, division)</li> </ul> | <ul style="list-style-type: none"> <li><b>Shapes:</b> 2D and 3D shapes; triangles and quadrilaterals; identifying lines; symmetry</li> </ul>  |



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| Grade 8                                          |                                                                                                                                            |                                                                                                                                     |                                                                                                                                                      |                                                                                                                                               |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Curriculum Themes:                               | Earth & the Moon                                                                                                                           | Earth & the Sun                                                                                                                     | The Sun & Other Stars                                                                                                                                | Forces, Laws & Theories                                                                                                                       |
| Theme Topics:                                    | causes of the moon's phases; observations of the moon from Earth; relationships between Earth, the sun & the moon                          | energy from the sun and its effects on Earth; how energy can be converted and used; types of waves on the electromagnetic spectrum  | life cycle of the sun and other stars; formation and composition of stars; types of star systems                                                     | the study of astronomy throughout history; laws of planetary motion and features of a planet's orbit; theories for the origin of the universe |
| Key Terms:                                       | lunar cycle, full moon, new moon, gibbous moon, crescent moon, blue moon, wax, wane, lunar eclipse, solar eclipse                          | solar radiation, thermal energy, electrical energy, radiant energy, electromagnetic spectrum, wavelength, frequency, photosynthesis | nebula, protostar, supergiant, supernova, neutron star, black hole, event horizon, singularity                                                       | microgravity, gravitational pull, perihelion, aphelion, orbital period, orbital speed, big bang theory                                        |
| Additional Learning:<br>Vocabulary Skill & Drill | <ul style="list-style-type: none"> <li>Comprehensive multiple-choice quiz with vocabulary drawn from the Outer Space curriculum</li> </ul> |                                                                                                                                     |                                                                                                                                                      |                                                                                                                                               |
| Additional Learning:<br>Math Skill & Drill       | <ul style="list-style-type: none"> <li><b>Counting Numbers:</b> skip counting with whole numbers and decimals</li> </ul>                   | <ul style="list-style-type: none"> <li><b>Counting Money:</b> identifying and counting coins and bills</li> </ul>                   | <ul style="list-style-type: none"> <li><b>Solving Equations:</b> arithmetic and algebra (addition, subtraction, multiplication, division)</li> </ul> | <ul style="list-style-type: none"> <li><b>Shapes:</b> 2D and 3D shapes; triangles and quadrilaterals; identifying lines; symmetry</li> </ul>  |