

Celestial Motions

Grades 4-12

Live interactive program

OHIO Standards

Earth & Space Sciences (unless otherwise marked)

Rating Scale	Grade Level	Benchmark	Indicator
1 (main topic)	5	A	1. Describe how night and day are caused by the Earth's rotation.
1 (main topic)	8	A	1. Describe how objects in the Solar System are in regular and predictable motions that explain such phenomena as days, years, season, eclipses, tides, and Moon cycles.
2 (covered in detail)	5	A	2. Explain that the Earth is one of several planets to orbit the Sun, and that the Moon orbits the Earth.
2 (covered in detail)	5	A	3. Describe the characteristics of Earth and its orbit about the Sun (e.g. elliptical orbit, tilted axis, spherical planet).
2 (covered in detail)	8	A	4. Describe the effect that asteroids or meteoroids have when moving through space and sometimes entering planetary atmospheres (e.g. shooting stars).
3 (briefly discussed)	8	A	2. Explain that gravitational force is the dominant force determining motions in the Solar System, and in particular keeps the planets in orbit around the Sun.
3 (briefly discussed)	8	A	3. Compare the orbits and compositions of comets and asteroids with that of the Earth.
3	8	B	5. Explain that the universe consists of

(briefly discussed)			billions of galaxies that are classified by shape.
3 (briefly discussed)	9	A	3. Explain that gravitational forces govern the characteristics and movement patterns of the planets, comets, and asteroids in the Solar System.

3-5

Benchmark A: Explain the characteristics, cycles, and patterns involving the Earth and its place in the Solar System.

6-8

Benchmark B: Explain that the universe is composed of vast amounts of matter, most of which is at incomprehensible distances and held together by a gravitational force. Describe how the universe is studied by the use of equipment such as telescopes, probes, satellites, and spacecraft.

9-11

Benchmark A: Explain how evidence from stars and other celestial objects provide information about the processes that cause changes in the composition and scale of the physical universe.

MICHIGAN Standards

Standard V.4 Solar System, Galaxy, and Universe (ES)

Rating Scale	S.C.# (Strand)	S.C.# Grade Level	Indicator
1 (main topic)	2	Elementary	3. Describe the motion of the Earth around the Sun and the Moon around the Earth.
1 (main topic)	2	Middle School	2. Describe and explain common observations of the night sky.
2 (covered in detail)	1	Elementary	1. Compare and contrast the characteristics of the Sun, Moon, and Earth.
3 (briefly discussed)	2	High School	2. Describe the position and motion of our Solar System in our galaxy, and the overall scale,

			structure, and age of the universe.
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Standard component #1: All Students will compare and contrast our planet and Sun to other planets and star systems.

Standard component #2: All students will describe and explain how objects in our Solar System move.

TOLEDO DIOCESE Guidelines

Earth & Space Sciences (unless otherwise marked)

Rating Scale	L.O.	Grade Level	Indicator
1 (main topic)	1	5	Know and investigate the phases of the Moon.
1 (main topic)	1	5	Discuss how the Earth's tilt on its axis and the angle at which the Sun's light strikes the Earth determines seasonal changes.
1 (main topic)	1	8	Examine the origin, evolution, composition, and RELATIONSHIP of celestial bodies (rotation, revolution seasons, orbit, tilt, Moon phases, tides).
1 (main topic)	Unit 1:B	H.S. Integrated Science	The learner will explain the cause of: phases of the Moon, the tides, and day and night.
2 (covered in detail)	1	5	Know that the Solar System is composed of the Sun, Planets, Moon, asteroids, comets, and meteors.
2 (covered in detail)	1	5	Investigate and observe constellations, and explore legends associated with them.
2 (covered in detail)	1	5	Examine the Earth's rotation and revolution.
3 (briefly discussed)	Unit 1:B	H.S. Integrated Science	The learner will distinguish a planet, moon, star, asteroid, and comet.

Grade 5

Learning Objective 1: Understands the composition and structure of the universe, and the Earth's place in it.

Grade 8 Learning Objective 1: Understands structure and composition of universe and Earth's place through a study of space exploration and the universe.

UNIT 1: Earth/Space Science; B. Earth, Moon, and Sun