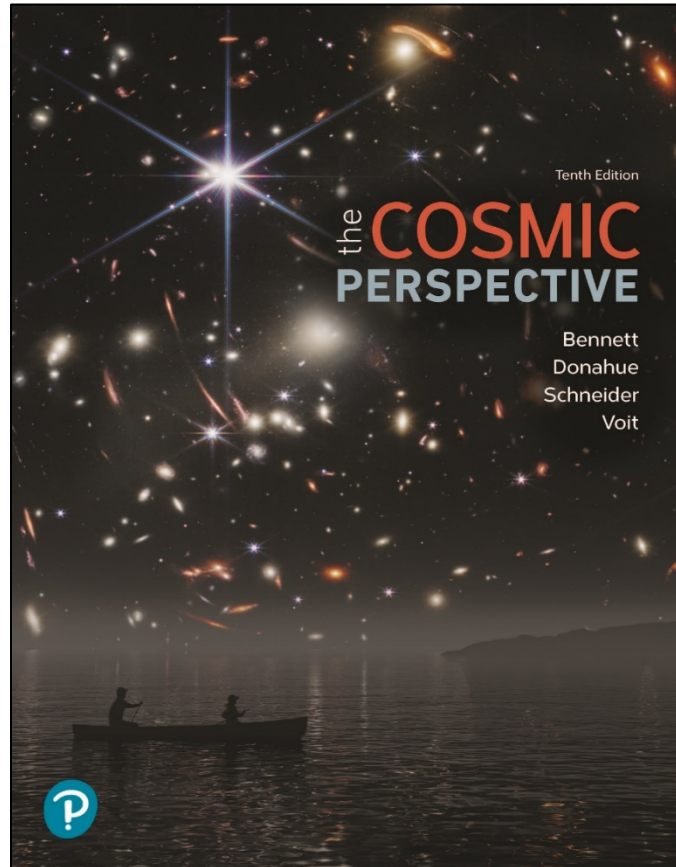


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To the

Next Generation Science Standards Performance Expectation for Earth & Space Science High School

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NGSS Performance Expectations for Earth & Space Science, High School	<i>The Cosmic Perspective, 10th Edition</i>, © 2024
HS-ESS1 Earth's Place in the Universe	
HS-ESS1-1. Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.	Chapter 14: Our Star 14.1 A Closer Look at the Sun, pp. 477-480 14.2 Nuclear Fusion in the Sun, pp. 480-487
HS-ESS1-2. Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.	Chapter 22: The Birth of the Universe 22.1 The Big Bang Theory, pp. 659-663 22.2 Evidence for the Big Bang, pp. 663-669 22.3 The Big Bang and Inflation, pp. 669-673 22.4 Observing the Big Bang for Yourself, pp. 673-674
HS-ESS1-3. Communicate scientific ideas about the way stars, over their life cycle, produce elements.	Chapter 1: A Modern View of the Universe 1.2 The History of the Universe, pp. 11-14 Chapter 16: Star Birth 16.1 Stellar Nurseries, pp. 523-530
HS-ESS1-4. Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.	Chapter 3: The Science of Astronomy 3.3 The Copernican Revolution, pp. 63-70 Appendix B: Useful Formulas, p. A3
HS-ESS1-5. Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.	Chapter 9: Planetary Geology 9.6 The Unique Geology of Earth, pp. 264-270 Chapter 10: Planetary Atmospheres 10.6 Earth's Unique Atmosphere, pp. 302-311
HS-ESS1-6. Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.	Chapter 1: A Modern View of the Universe 1.2 The History of the Universe, pp. 11-14 Chapter 3: The Science of Astronomy 3.1 The Ancient Roots of Science, pp. 54-58
HS-ESS2 Earth's Systems	
HS-ESS2-1. Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.	Chapter 9: Planetary Geology 9.1 Connecting Planetary Interiors and Surfaces, pp. 238-244 9.2 Shaping Planetary Surfaces, pp. 244-250 9.6 The Unique Geology of Earth, pp. 264-270
HS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.	Chapter 9: Planetary Geology 9.6 The Unique Geology of Earth, pp. 264-270 Chapter 10: Planetary Atmospheres 10.6 Earth's Unique Atmosphere, pp. 302-312
HS-ESS2-3. Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.	Chapter 5: Light and Matter 5.3 Properties of Matter, pp. 143-150 Chapter 10: Planetary Atmospheres 10.6 Earth's Unique Atmosphere, 302-311

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HS-ESS2-4. Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.	Chapter 10: Planetary Atmospheres 10.2 Weather and Climate, pp. 286-292 10.6 Earth's Unique Atmosphere, pp. 302-311
HS-ESS2-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.	Chapter 9: Planetary Geology 9.1 Connecting Planetary Interiors and Surfaces, pp. 238-244 9.2 Shaping Planetary Surfaces, pp. 244-250 9.6 The Unique Geology of Earth, pp. 264-269
HS-ESS2-6. Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.	Chapter 10: Planetary Atmospheres 10.6 Earth's Unique Atmosphere, pp. 302-311
HS-ESS2-7. Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.	Chapter 1: A Modern View of the Universe 1.2 The History of the Universe, pp. 11-14 Chapter 24: Life in the Universe 24.1 Life on Earth, 709-718
HS-ESS3 Earth and Human Activity	
HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.	Chapter 10: Planetary Atmospheres 10.6 Earth's Unique Atmosphere, pp. 302-311
HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.	Chapter 10: Planetary Atmospheres 10.6 Earth's Unique Atmosphere, pp. 302-311
HS-ESS3-5. Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.	Chapter 10: Planetary Atmospheres 10.6 Earth's Unique Atmosphere, pp. 302-311
HS-ESS3-6. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.	Chapter 10: Planetary Atmospheres 10.6 Earth's Unique Atmosphere, pp. 302-311