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| **Grade** | **Big Idea** | **Essential Questions** | **Concepts** | **Competencies** | **Vocabulary** | **2002 Standards** | **SAS Standards** | **Assessment Anchor Eligible Content** |
| **6-8** | The universe is composed of a variety of different objects, which are organized into systems, each of which develops according to accepted physical processes and laws. | What is the universe, and what is Earth’s place in it? | The phases of the Moon are caused by the orbit of the moon around the Earth. | Identify and explain monthly patterns in the phases of the Moon.   | Orbit PatternPhaseWaningWaxing | 3.4.4.D3.1.7.A3.1.7.B3.1.7.C3.1.7.D3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.4.B2 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.3.1.1 |
| **6-8** | The universe is composed of a variety of different objects, which are organized into systems, each of which develops according to accepted physical processes and laws. | What is the universe, and what is Earth’s place in it? | The phases of the Moon are caused by the orbit of the moon around the Earth. | Use a model of the relative positions of the sun, earth and moon to explain the phases of the moon.  | Orbit PatternPhaseWaningWaxing  | 3.4.4.D3.1.7.A3.1.7.B3.1.7.C3.1.7.D3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.6.B2 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.3.1.1 |
| **6-8** | The universe is composed of a variety of different objects, which are organized into systems, each of which develops according to accepted physical processes and laws. | What is the universe, and what is Earth’s place in it? | Observable patterns and changes in tides are caused by the Earth-Moon-Sun system. | Use models of the Earth-Sun-Moon system to support explanations and predict the cyclic patterns of tides.  | GravityNeap tideSpring tide SystemTide | 3.4.4.D3.1.7.A3.1.7.B3.1.7.C3.1.7.D3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.7.A43.3.6.B1 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.3.1.1S8.D.3.1.2 |
| **6-8** | The universe is composed of a variety of different objects, which are organized into systems, each of which develops according to accepted physical processes and laws. | What is the universe, and what is Earth’s place in it? | Observable eclipses are caused by motions in the Earth-Moon-Sun system.  | Use models of the Earth-Sun-Moon system to support explanations and predict the cyclic patterns of eclipses.  | Lunar EclipsePenumbra Solar EclipseUmbra  | 3.4.4.D3.1.7.A3.1.7.B3.1.7.C3.1.7.D3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.7.B2 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.3.1.1 |
| **6-8** | The universe is composed of a variety of different objects which are organized into systems, each of which develops according to accepted physical processes and laws. | What is the universe, and what is Earth’s place in it? | Earth’s spin axis is fixed in direction and tilted relative to its orbit around the sun. The seasons are a result of the Earth’s tilt on its axis and are caused by the differential intensity of sunlight on different areas of Earth throughout the year. | Use models of Earth's orientation and motion to explain how changes in intensity and duration of daily sunlight lead to seasons. | AxisCyclical patternEarth OrbitOrientationPositionRevolutionRotationSeasonTilt | 3.4.4.D3.1.7.A3.1.7.B3.1.7.C3.1.7.D3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.4.B2 3.3.6.B2 3.3.7.B2 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.3.1.1 |
| **6-8** | The universe is composed of a variety of different objects which are organized into systems, each of which develops according to accepted physical processes and laws. | What is the universe, and what is Earth’s place in it? | Earth’s spin axis is fixed in direction and tilted relative to its orbit around the sun. The seasons are a result of the Earth’s tilt on its axis and are caused by the differential intensity of sunlight on different areas of Earth across the year. | Identify and explain the position and orientation of the Earth as it orbits the Sun. | AxisCyclical patternEarth OrbitOrientationPositionRevolutionRotationSeasonTilt | 3.4.4.D3.4.7.D3.1.7.A3.1.7.B3.1.7.C3.1.7.D3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.4.B2 3.3.6.B2 3.3.7.B2 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.3.1.1S8.D.3.1.2 |
| **6-8** | The universe is composed of a variety of different objects, which are organized into systems, each of which develops according to accepted physical processes and laws. | What is the universe, and what is Earth’s place in it? | Earth and its solar system are part of the Milky Way Galaxy, which is one of many galaxies in the universe.  | Construct and use scale models to describe the relationship of Earth to the rest of the solar system, the Milky Way Galaxy, and the universe. | GalaxyMoonSatellite Solar system Universe | 3.4.7.D3.1.7.A3.1.7.B3.1.7.C3.1.7.D3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.6.B1 3.3.5.B1 3.3.7.B1 3.3.7.B23.3.8.B1 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.3.1.1S8.D.3.1.2S8.D.3.1.3 |
| **6-8** | The universe is composed of a variety of different objects, which are organized into systems, each of which develops according to accepted physical processes and laws. | What is the universe, and what is Earth’s place in it? | Our solar system is a collection of objects, including planets, their moons, and asteroids that are held in orbit around the Sun by its gravitational pull on them. | Construct and use scale models of the solar system to support the explanation of the role of gravity in the motions of the planets of the observed system.  | AsteroidsGravityMoonSatellite Solar system | 3.4.7.D3.1.7.A3.1.7.B3.1.7.C3.1.7.D3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.5.B1 3.3.6.B1 3.3.7.A4 3.3.7.B1 3.3.6.B2 3.3.7.B23.3.8.B1 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2 S8.A.3.3S8.D.3.1.1S8.D.3.1.2 |
| **6-8** | The universe is composed of a variety of different objects, which are organized into systems, each of which develops according to accepted physical processes and laws. | What is the universe, and what is Earth’s place in it? | Our solar system is a collection of objects, including planets, their moons, and asteroids that are held in orbit around the Sun by its gravitational pull on them. | Analyze and interpret data to determine scale properties (i.e. distance from sun, diameter, etc.) of objects in the solar system.  | AsteroidsGravityMoonSatellite Solar system | 3.4.7.D3.1.7.A3.1.7.B3.1.7.C3.1.7.D3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.5.B1 3.3.6.B1 3.3.7.A4 3.3.7.B1 3.3.6.B2 3.3.7.B23.3.8.B1 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.3.1.1S8.D.3.1.3 |
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| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | All Earth processes are the result of energy flowing and matter cycling within and among the planet’s systems. The energy is derived from the sun and the earth’s interior. These flows and cycles produce chemical and physical changes in Earth’s materials and living organisms.  | Construct and analyze models to describe systems interactions among the geosphere, hydrosphere, atmosphere, and biosphere. | AtmosphereBiosphereGeosphereHydrosphere | 3.5.7.A3.5.7.C3.5.7.D3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.4.A4 3.3.4.A53.3.8.A1 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.1.2S8.D.1.1.3S8.D.2.1.2 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | All Earth processes are the result of energy flowing and matter cycling within and among the planet’s systems. The energy is derived from the sun and the earth’s interior. These flows and cycles produce chemical and physical changes in Earth’s materials and living organisms.  | Classify rocks as one of three different types and explain the interrelationship of the rock types as part of the rock cycle. (e.g., igneous: granite, basalt, obsidian, pumice; sedimentary: limestone, sandstone, shale, coal; and metamorphic: slate, quartzite, marble, gneiss). | ErosionGeosphereIgneous rock Metamorphic rockRock cycle Sedimentary rockWeathering  | 3.5.7.A3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.4.A4 3.3.4.A53.3.7.A1 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.1.1 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | All Earth processes are the result of energy flowing and matter cycling within and among the planet’s systems. The energy is derived from the sun and the earth’s interior. These flows and cycles produce chemical and physical changes in Earth’s materials and living organisms.  | Plan and carry out investigations that investigate models of the chemical and physical processes that cycle earth materials and form rocks. | GeosphereEnergy flowErosionIgneousMetamorphicRock cycle SedimentaryWeathering  | 3.5.7.A3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.4.A4 3.3.4.A53.3.7.A13.3.8.A1 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.1.1S8.D.1.1.2 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | All Earth processes are the result of energy flowing and matter cycling within and among the planet’s systems. The energy is derived from the sun and the earth’s interior. These flows and cycles produce chemical and physical changes in Earth’s materials and living organisms.  | Compare and contrast various soil types and their characteristics found in different biomes (e.g, regionally, nationally, globally) and explain how they were formed. | Biome GeosphereEnergy flowErosionRock cycleSoil horizonsWeathering  | 3.5.7.A3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.4.A4 3.3.4.A53.3.6.A23.3.7.A2 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.1.3 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Water continually cycles among geosphere, hydrosphere, biosphere, and atmosphere via transpiration, evaporation, condensation, and precipitation. | Develop models for the movement of water within the Earth’s spheres (i.e., geosphere, hydrosphere, biosphere, atmosphere). | AtmosphereCondensation EvaporationHydrosphereInfiltrationPrecipitationRunoffTranspirationWater CycleWater System | 3.5.7.D3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.5.A4 3.3.6.A4 3.3.8.A4 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.3.1 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Water continually cycles among geosphere, hydrosphere, biosphere, and atmosphere via transpiration, evaporation, condensation, and precipitation. | Compare and contrast characteristicsof freshwater and saltwater systemson the basis of their physical characteristics. | DensityFreshwaterHydrosphereSalinitySaltwater | 3.5.7.D3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.5.A4 3.3.6.A4 3.3.8.A4 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.3.2 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Water continually cycles among geosphere, hydrosphere, biosphere, and atmosphere via transpiration, evaporation, condensation, and precipitation. | Investigate water systems to identify seasonal and annual variations in precipitation and streamflow and the causes of those variations.  | Flow rateHydrosphereOcean systemsRiver systemsWatershedWetland | 3.5.7.D3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.5.A4 3.3.6.A4 3.3.8.A4 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.3.2S8.D.1.3.3S8.D.1.3.4 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | W Water continually cycles among geosphere, hydrosphere, biosphere, and atmosphere via transpiration, evaporation, condensation, and precipitation as well as downhill flows on land.  | Assess the physical characteristics of a stream to determine the types of organisms found within the stream environment. | Biological diversityFlow rateRiver systemsStreamTributaryWatershed | 3.5.7.C3.5.7.D3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.5.A4 3.3.6.A4 3.3.8.A4 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.3.2S8.D.1.3.3S8.D.1.3.4 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude and local and regional geography resulting in complex patterns that are difficult to predict. | Collect data and generate evidence to show how changes in weather conditions result from the movement, interactions, and area of origin of air masses (e.g., cold, dry Canadian air mass vs. warm, moist southern air mass). | Air pressureAtmosphereAltitudeBarometerClimateDensityGeographyLatitudeWeatherWeather Front | 3.5.7.C3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.7.A6 3.3.6.A6 3.3.6.A5 3.3.8.A4 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.2.1.2 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude and local and regional geography resulting in complex patterns that are difficult to predict. | Construct and use models to support the explanation of how the uneven distribution of solar energy affects global patterns in atmospheric and oceanic circulation. | Air pressureAltitudeAtmosphereBarometerCirculation ClimateDownwelling GeographyHydrosphere LatitudeOceanic UpwellingWeather | 3.5.7.C3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.7.A6 3.3.6.A6 3.3.6.A5 3.3.8.A4 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.2.1.1S8.D.2.1.2 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude and local and regional geography resulting in complex patterns that are predicted with varying degrees of reliability. | Analyze weather patterns using cloud types, wind directions, and barometric pressure. | Air pressureAtmosphereBarometerCirrus Cumulus Stratus Weather | 3.5.7.C3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.7.A6 3.3.6.A6 3.3.6.A5 3.3.8.A4 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.2.1.3 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | The ocean and other large bodies of water exert a major influence on weather and climate by absorbing energy from the sun, releasing it over time, and globally redistributing it through ocean currents that are driven by differences in density relative to temperature and salinity.  | Construct explanations from models of oceanic and atmospheric circulation, and for the development of local and regional climates. | Atmosphere Atmospheric circulationClimateDensityHydrosphere Oceanic circulationSalinity | 3.5.7.C3.5.7.D3.1.7.A3.1.7.B3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3. .3.7.A6 3.3.6.A6 3.3.6.A5 3.3.8.A4 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.2.1.1S8.D.2.1.2 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Major events in Earth's history leave evidence in the geologic record that allow the construction of a geologic time scale based on relative ages. | Use geologic evidence to construct patterns and determine the relative ages and sequence of geologic events in Earth’s 4.6 billion year history. | Geosphere Geologic time Index fossilsLaw of superpositionRelative ageScale | 3.5.7.A3.5.7.B3.1.7.D3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.7.A3 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.1.2S8.D.1.1.4 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | The Earth’s systems interact on various time and size scales. These interactions have shaped Earth’s history and will determine its future. | Construct an explanation based on evidence for how various processes have changed Earth’s surface at varying time and spatial scales (e.g., short-term deposition vs. mountain building; short-term weathering and erosion vs. canyon or valley formation). | ErosionGeosphere Plate tectonics Sea floor spreadingSubduction Weathering | 3.5.7.A3.5.7.B3.1.7.A3.1.7.D3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.6.A13.3.7.A13.3.8.A13.3.10.A1 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.1.2S8.D.1.1.4 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Plate tectonics is the unifying theory that explains the past, and current, and future movements of the rocks at Earth’s surface and provides a framework for understanding its geological history. Tectonic processes continually generate new ocean seafloor at ridges and destroy old seafloor at trenches.  | Develop and use models of past plate motions to support explanations of existing patterns in the fossil record, rock record, continental shapes and sea floor structures. | Asthenosphere ContinentContinental driftConvectionFossil recordGeosphere LithosphereMantle Rock recordPlate motionPlate tectonicsSeafloor Spreading | 3.5.7.A3.1.7.A3.1.7.D3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.6.A1 3.3.7.A6 3.3.8.A6 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.1.2S8.D.1.1.4 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Plate tectonics is the unifying theory that explains the past, and current, and future movements of the rocks at Earth’s surface and provides a framework for understanding its geological history. Tectonic processes continually generate new ocean seafloor at ridges and destroy old seafloor at trenches.  | Incorporate a variety of data including geological evidence from maps and representations of current plate motions to predict future plate motions. | Asthenosphere Continental driftConvectionGeosphere Fossil recordLithosphereMantle Plate motionPlate tectonicsRock recordSeafloor Spreading | 3.5.7.A3.1.7.A3.1.7.D3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.6.A1 3.3.7.A6 3.3.8.A6 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.1.2 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Plate tectonics is the unifying theory that explains the past, and current, and future movements of the rocks at Earth’s surface and provides a framework for understanding its geological history. Tectonic processes continually generate new ocean seafloor at ridges and destroy old seafloor at trenches.  | Use models to explain how the flow of energy (convection of heat) drives the cycling of matter between Earth's surface and deep interior. | ConvectionConvergenceCrust DivergenceGeosphere Inner coreMantle Outer corePlate tectonics | 3.4.7.B3.5.7.A3.1.7.A3.1.7.D3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.6.A1 3.3.7.A6 3.3.8.A6 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.1.2 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Some natural hazards such as volcanic eruptions and severe weather may be preceded by phenomena that allow for reliable prediction. Others such as earthquakes occur suddenly with no notice and are not yet predictable. | Investigate or develop a map of the past and present natural hazards in a region to demonstrate an understanding of forecasting the likelihood of future events and to inform designs for development of technologies to mitigate their effects. | EarthquakeFloodsGeosphere HurricaneNatural hazardTornadoTsunami Volcanoes | 3.5.7.A3.1.7.A3.1.7.D3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.8.A63.3.10.A13.3.10.A6 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.1.2 |
| **6-8** | The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales. | How and why is Earth constantly changing? | Evolution is shaped by Earth’s varying geological and environmental conditions. Sudden changes in conditions (e.g., meteor impacts, major volcanic eruptions) have caused mass extinctions, but these changes, as well as more gradual ones, have ultimately allowed other life forms to flourish.  | Use evidence from the rock and fossil records to construct arguments that explain how past changes in earth’s conditions have caused major extinctions of some life forms and allowed others to flourish.  | Eruption Extinction Fossil recordGeosphere Mass Meteor impactVolcanic  | 3.4.7.D3.5.7.A3.1.7.A3.1.7.D3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.7.A3 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.1.4 |
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| **6-8** | The Earth's processes affect and are affected by human activities. | How do Earth's processes and human activities affect each other? | Humans depend on Earth’s land, ocean, atmosphere, and living things for many different resources.  | Describe a product’s transformationprocess from production to consumption. | Atmosphere Consumption Geosphere Hydrosphere Natural resources Nonrenewable resourcesOre ProductionRenewable resources | 3.5.7.B3.1.7.A3.1.7.D3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.8.A23.3.8.A3 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.B.3.2S8.D.1.2.1 |
| **6-8** | The Earth's processes affect and are affected by human activities. | How do Earth's processes and human activities affect each other? | Minerals, fresh water, and living resources are limited, and many are not renewable or replaceable over human lifetimes.  | Use maps and other data to explain how geologic processes have led to the uneven distribution of Earth's natural resources. | Atmosphere Climate Fossil record Geosphere Hydrosphere Mineral Natural Plate tectonicsResources | 3.5.7.A3.5.7.B3.1.7.A3.1.7.D3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.6.A13.3.8.A23.3.8.A3 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.B.3.2S8.D.1.1.2S8.D.1.2.1 |
| **6-8** | The Earth's processes affect and are affected by human activities. | How do Earth's processes and human activities affect each other? | Minerals, fresh water, and living resources are limited, and many are not renewable or replaceable over human lifetimes.  | Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems.  | Atmosphere Consumption Geosphere Hydrosphere Mineral Natural Nonrenewable resourcesPopulation growthRenewable resources Resources | 3.5.7.B3.1.7.A3.1.7.D3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.8.A23.3.8.A33.3.10.A2 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.B.3.3S8.D.1.2.2 |
| **6-8** | The Earth's processes affect and are affected by human activities. | How do Earth's processes and human activities affect each other? | Human activities influence Earth’s global temperature, and these effects can be mitigated through applying knowledge of climate science, engineering, etc.  | Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the pastcentury.  | Atmosphere Biosphere Carbon dioxide (CO2)Climate Global warming | 3.5.7.C3.1.7.A3.1.7.D3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D | 3.3.7.A53.3.8.A53.3.10.A6 | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.2.1.1S8.D.2.1.2S8.D.2.1.3 |
| **6-8** | The Earth's processes affect and are affected by human activities. | How do Earth's processes and human activities affect each other? | Human activities have significantly altered the biosphere and geosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species.  | Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.  | Biosphere  | 3.1.7.A3.1.7.D3.1.7.E3.2.7.A3.2.7.B3.2.7.C3.2.7.D |  | S8.A.1.1S8.A.1.2S8.A.1.3S8.A.2.1S8.A.2.2S8.A.3.1S8.A.3.2S8.A.3.3S8.D.1.2.2 |