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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  Pattern  Phase  Waning  Waxing | 3.4.4.D  3.1.7.A  3.1.7.B  3.1.7.C  3.1.7.D  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.4.B2 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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  Pattern  Phase  Waning  Waxing | 3.4.4.D  3.1.7.A  3.1.7.B  3.1.7.C  3.1.7.D  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.6.B2 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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. | Gravity  Neap tide  Spring tide System  Tide | 3.4.4.D  3.1.7.A  3.1.7.B  3.1.7.C  3.1.7.D  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.7.A4  3.3.6.B1 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.3.1.1  S8.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 Eclipse  Penumbra Solar Eclipse  Umbra | 3.4.4.D  3.1.7.A  3.1.7.B  3.1.7.C  3.1.7.D  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.7.B2 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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. | Axis  Cyclical pattern  Earth  Orbit  Orientation  Position  Revolution  Rotation  Season  Tilt | 3.4.4.D  3.1.7.A  3.1.7.B  3.1.7.C  3.1.7.D  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.4.B2 3.3.6.B2 3.3.7.B2 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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. | Axis  Cyclical pattern  Earth  Orbit  Orientation  Position  Revolution  Rotation  Season  Tilt | 3.4.4.D  3.4.7.D  3.1.7.A  3.1.7.B  3.1.7.C  3.1.7.D  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.4.B2 3.3.6.B2 3.3.7.B2 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.3.1.1  S8.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. | Galaxy  Moon  Satellite Solar system  Universe | 3.4.7.D  3.1.7.A  3.1.7.B  3.1.7.C  3.1.7.D  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.6.B1 3.3.5.B1 3.3.7.B1 3.3.7.B2  3.3.8.B1 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.3.1.1  S8.D.3.1.2  S8.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. | Asteroids  Gravity  Moon  Satellite  Solar system | 3.4.7.D  3.1.7.A  3.1.7.B  3.1.7.C  3.1.7.D  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.5.B1 3.3.6.B1 3.3.7.A4 3.3.7.B1 3.3.6.B2 3.3.7.B2  3.3.8.B1 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.3.1.1  S8.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. | Asteroids  Gravity  Moon  Satellite  Solar system | 3.4.7.D  3.1.7.A  3.1.7.B  3.1.7.C  3.1.7.D  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.5.B1 3.3.6.B1 3.3.7.A4 3.3.7.B1 3.3.6.B2 3.3.7.B2  3.3.8.B1 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.3.1.1  S8.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. | Atmosphere  Biosphere  Geosphere  Hydrosphere | 3.5.7.A  3.5.7.C  3.5.7.D  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.4.A4 3.3.4.A5  3.3.8.A1 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.1.1.2  S8.D.1.1.3  S8.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). | Erosion  Geosphere  Igneous rock  Metamorphic rock  Rock cycle Sedimentary rock  Weathering | 3.5.7.A  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.4.A4 3.3.4.A5  3.3.7.A1 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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. | Geosphere  Energy flow  Erosion  Igneous  Metamorphic  Rock cycle Sedimentary  Weathering | 3.5.7.A  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.4.A4 3.3.4.A5  3.3.7.A1  3.3.8.A1 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.1.1.1  S8.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 Geosphere  Energy flow  Erosion  Rock cycle  Soil horizons  Weathering | 3.5.7.A  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.4.A4 3.3.4.A5  3.3.6.A2  3.3.7.A2 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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). | Atmosphere  Condensation Evaporation  Hydrosphere  Infiltration  Precipitation  Runoff  Transpiration  Water Cycle  Water System | 3.5.7.D  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.5.A4 3.3.6.A4 3.3.8.A4 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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 characteristics  of freshwater and saltwater systems  on the basis of their physical characteristics. | Density  Freshwater  Hydrosphere  Salinity  Saltwater | 3.5.7.D  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.5.A4 3.3.6.A4 3.3.8.A4 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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 rate  Hydrosphere  Ocean systems  River systems  Watershed  Wetland | 3.5.7.D  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.5.A4 3.3.6.A4 3.3.8.A4 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.1.3.2  S8.D.1.3.3  S8.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 diversity  Flow rate  River systems  Stream  Tributary  Watershed | 3.5.7.C  3.5.7.D  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.5.A4 3.3.6.A4 3.3.8.A4 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.1.3.2  S8.D.1.3.3  S8.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 pressure  Atmosphere  Altitude  Barometer  Climate  Density  Geography  Latitude  Weather  Weather Front | 3.5.7.C  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.7.A6 3.3.6.A6 3.3.6.A5 3.3.8.A4 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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 pressure  Altitude  Atmosphere  Barometer  Circulation Climate  Downwelling Geography  Hydrosphere  Latitude  Oceanic  Upwelling  Weather | 3.5.7.C  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.7.A6 3.3.6.A6 3.3.6.A5 3.3.8.A4 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.2.1.1  S8.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 pressure  Atmosphere  Barometer  Cirrus  Cumulus  Stratus  Weather | 3.5.7.C  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.7.A6 3.3.6.A6 3.3.6.A5 3.3.8.A4 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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 circulation  Climate  Density  Hydrosphere  Oceanic circulation  Salinity | 3.5.7.C  3.5.7.D  3.1.7.A  3.1.7.B  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3. .3.7.A6 3.3.6.A6 3.3.6.A5 3.3.8.A4 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.2.1.1  S8.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 fossils  Law of superposition  Relative age  Scale | 3.5.7.A  3.5.7.B  3.1.7.D  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.7.A3 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.1.1.2  S8.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). | Erosion  Geosphere  Plate tectonics  Sea floor spreading  Subduction  Weathering | 3.5.7.A  3.5.7.B  3.1.7.A  3.1.7.D  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.6.A1  3.3.7.A1  3.3.8.A1  3.3.10.A1 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.1.1.2  S8.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 Continent  Continental drift  Convection  Fossil record  Geosphere  Lithosphere  Mantle  Rock record  Plate motion  Plate tectonics  Seafloor Spreading | 3.5.7.A  3.1.7.A  3.1.7.D  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.6.A1 3.3.7.A6 3.3.8.A6 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.1.1.2  S8.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 drift  Convection  Geosphere  Fossil record  Lithosphere  Mantle  Plate motion  Plate tectonics  Rock record  Seafloor Spreading | 3.5.7.A  3.1.7.A  3.1.7.D  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.6.A1 3.3.7.A6 3.3.8.A6 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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. | Convection  Convergence  Crust Divergence  Geosphere  Inner core  Mantle  Outer core  Plate tectonics | 3.4.7.B  3.5.7.A  3.1.7.A  3.1.7.D  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.6.A1 3.3.7.A6 3.3.8.A6 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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. | Earthquake  Floods  Geosphere  Hurricane  Natural hazard  Tornado  Tsunami  Volcanoes | 3.5.7.A  3.1.7.A  3.1.7.D  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.8.A6  3.3.10.A1  3.3.10.A6 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.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 record  Geosphere  Mass  Meteor impact  Volcanic | 3.4.7.D  3.5.7.A  3.1.7.A  3.1.7.D  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.7.A3 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.1.1.4 |
|  | | | | | | | | |
| **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 transformation  process from production to consumption. | Atmosphere Consumption  Geosphere  Hydrosphere Natural resources Nonrenewable resources  Ore Production  Renewable resources | 3.5.7.B  3.1.7.A  3.1.7.D  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.8.A2  3.3.8.A3 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.B.3.2  S8.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 tectonics  Resources | 3.5.7.A  3.5.7.B  3.1.7.A  3.1.7.D  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.6.A1  3.3.8.A2  3.3.8.A3 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.B.3.2  S8.D.1.1.2  S8.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 resources  Population growth  Renewable resources  Resources | 3.5.7.B  3.1.7.A  3.1.7.D  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.8.A2  3.3.8.A3  3.3.10.A2 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.B.3.3  S8.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 past  century. | Atmosphere Biosphere  Carbon dioxide (CO2)  Climate  Global warming | 3.5.7.C  3.1.7.A  3.1.7.D  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D | 3.3.7.A5  3.3.8.A5  3.3.10.A6 | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.2.1.1  S8.D.2.1.2  S8.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.A  3.1.7.D  3.1.7.E  3.2.7.A  3.2.7.B  3.2.7.C  3.2.7.D |  | S8.A.1.1  S8.A.1.2  S8.A.1.3  S8.A.2.1  S8.A.2.2  S8.A.3.1  S8.A.3.2  S8.A.3.3  S8.D.1.2.2 |