

SIXTH GRADE SCIENCE MONITORING SHEET

- ___ **Tri. S.6.1** The student will plan and conduct investigations in which
- ___ S.6.1.a. observations are made involving fine discrimination between similar objects and organisms
 - ___ S.6.1.b. precise and approximate measurements are recorded
 - ___ S.6.1.c. scale models are used to estimate distance, volume, and quantity
 - ___ S.6.1.d. hypotheses are stated in ways that identify the independent (manipulated) and dependent (responding) variables
 - ___ S.6.1.e. a method is devised to test the validity of predictions and inferences
 - ___ S.6.1.f. data are collected recorded, analyzed, and reported using appropriate metric measurements
 - ___ S.6.1.g. data are organized and communicated through graphical representation (graphs, charts, and diagrams)
 - ___ S.6.1.h. models are designed to explain a sequence
 - ___ S.6.1.i. an understanding of the nature of science is developed and current applications are used to reinforce science concepts
 - ___ S.6.1.j. one variable is manipulated over time, using many repeated trials
- ___ **Tri. S. 6.2** The student will investigate and understand the role of solar energy in driving most natural processes within the atmosphere, the hydrosphere, and on the Earth's surface
- ___ S.6.2.a. Earth's energy budget (total power entering and leaving the physical system of Earth)
 - ___ S.6.2.b. the role of radiation and convection in the distribution of the Earth's energy
 - ___ S.6.2.c. the motion of the atmosphere and the oceans
 - ___ S.6.2.d. cloud formation
 - ___ S.6.2.e. the role of thermal energy in weather-related phenomena including thunderstorms and hurricanes
- ___ **Tri. S.6.3** The student will investigate and understand the properties of air and the structure and dynamics of Earth's atmosphere
- ___ S.6.3.a. air as a mixture of gaseous elements and compounds
 - ___ S.6.3.b. air pressure, temperature, and humidity
 - ___ S.6.3.c. how the atmosphere changes with altitude
 - ___ S.6.3.d. natural and human-caused changes to the atmosphere
 - ___ S.6.3.e. the relationship of atmospheric measures and weather conditions
 - ___ S.6.3.f. basic information from weather maps including fronts, systems, and basic measurements
 - ___ S.6.3.g. the importance of protecting and maintaining air quality

- ___ **Tri. S.6.4** The student will investigate and understand the unique properties and characteristics of water and its roles in the natural and human-made environment
- ___ S.6.4.a. water as the universal solvent
 - ___ S.6.4.b. the properties of water in all three states
 - ___ S.6.4.c. the action of water in physical and chemical weathering
 - ___ S.6.4.d. the ability of large bodies of water to store heat and moderate climate
 - ___ S.6.4.e. the importance of water for agriculture, power generation and public health
 - ___ S.6.4.f. the importance of protecting and maintain water resources
- ___ **Tri. S.6.5** The student will investigate and understand the natural processes and human interactions that affect watershed systems
- ___ S.6.5.a. the health of ecosystems and the abiotic factors of a watershed
 - ___ S.6.5.b. the location and structure of Virginia’s regional watershed systems
 - ___ S.6.5.c. divides, tributaries, river systems, and river and stream processes
 - ___ S.6.5.d. wetlands
 - ___ S.6.5.e. estuaries
 - ___ S.6.5.f. major conservation, health and safety issues associated with watersheds
 - ___ S.6.5.g. water monitoring and analysis using field equipment including hand-held technology
- ___ **Tri. S.6.6** The student will investigate and understand environmental issues
- ___ S.6.6.a. management of renewable resources (water, air, soil, plant life, animal life)
 - ___ S.6.6.b. management of nonrenewable resources (coal, oil, natural gas, nuclear power, mineral resources)
 - ___ S.6.6.c. the mitigation of land-use and environmental hazards through preventative measures
 - ___ S.6.6.d. cost/benefit tradeoffs in conservation policies
- ___ **Tri. S. 6.7** The student will investigate the earth’s surface
- ___ S.6.7.a. surface layers include lithosphere, hydrosphere, atmosphere
 - ___ S.6.7.b. Earth’s structure consisting of a crust (including the ocean floor), mantle and core
 - ___ S.6.7.c. rocks are classified by how they are formed; the rock cycle
 - ___ S.6.7.d. geological history, topics include fossils, carbon dating
 - ___ S.6.7.e. Earth’s landscape includes mountains, valleys, caves, glaciers, floodplains, deltas and sand dunes
- ___ **Tri. S.6.8** The student will investigate and understand how Earth’s surface is constantly changing.
- ___ S.6.8.a. plate tectonic theory explains the movement of the Earth’s crust
 - ___ S.6.8.b. geological changes may be sudden or gradual
 - ___ S.6.8.c. earthquakes and volcanoes, as well as how they might be predicted
 - ___ S.6.8.d. surface changes are caused by weathering, erosion and deposition

- ___ S.6.8.e. weathering may be physical or chemical
- ___ S.6.8.f. natural agents of change are water (running water, groundwater, waves, glaciers) and wind
- ___ S.6.8.g. human impact on the physical features of the Earth

___ **Tri. S.6.9** The student will review the organization of the solar system and the relationships among the various bodies that comprise it.

- ___ S.6.9.a. the sun, moon, Earth, other planets and their moons, meteors, dwarf planets, asteroids and comets
- ___ S.6.9.b. relative size of and distance between planets
- ___ S.6.9.c. the role of gravity

___ **Tri. S.6.10** Students will understand the interrelationship of the earth, sun and moon.

- ___ S.6.10.a. revolution and rotation
- _ S.6.10.b. the mechanics of day and night and the phases of the moon
- _ S.6.10.c. the unique properties of Earth as a planet
- _ S.6.10.d. the relationship of the Earth's tilt and the seasons
- _ S.6.10.e. the cause of tides
- _ S.6.10.f. the history and technology of space exploration
- _ S.6.10.g. solar and lunar eclipses

___ **Tri. S.6.11** Students will investigate and understand scientific concepts as they relate to evolution of the universe.

- ___ S.6.11.a. LeMaitre Origin Theory
- ___ S.6.11.b. Life cycle of stars
- ___ S.6.11.c. Star systems and galaxies
- ___ S.6.11.d. The history and technology of space exploration