

Science 8

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
P	Physical Science		
P.1	Identify and calculate the direction and magnitude of forces that act on an object, and explain the results in the object's change of motion		
P.1.a	Predict and evaluate the movement of an object by examining the forces applied to it		
P.1.b	Use mathematical expressions to describe the movement of an object	Force and Motion	Page 8 (Newton's Second Law)
P.1.c	Develop and design a scientific investigation to collect and analyze speed and acceleration data to determine the net forces acting on a moving object		
P.2	There are different forms of energy, and those forms of energy can be changed from one form to another - but total energy is conserved	Kinetic and Potential Energy	Page 10 "Energy Conversions"
P.2.a	Gather, analyze, and interpret data to describe the different forms of energy and energy transfer	Kinetic and Potential Energy	"Sea Links Energy Conversion Table" Assignment
P.2.b	Develop a research-based analysis of different forms of energy and energy transfer	Kinetic and Potential Energy	"Sea Links Energy Conversion Table" Assignment
P.2.c	Use research-based models to describe energy transfer mechanisms, and predict amounts of energy transferred		
P.3	Distinguish between physical and chemical changes, noting that mass is conserved during any change		
P.3.a	Identify the distinguishing characteristics between a chemical and a physical change	Formulas and Equations	Page 6

Science 8

P.3.b	Gather, analyze, and interpret data on physical and chemical changes		
P.3.c	Gather, analyze, and interpret data that show mass is conserved in a given chemical or physical change		
P.3.d	Identify evidence that suggests that matter is always conserved in physical and chemical changes	Formulas and Equations	Page 10
P.3.e	Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate physical and chemical changes		
P.4	Recognize that waves such as electromagnetic, sound, seismic, and water have common characteristics and unique properties		
P.4.a	Compare and contrast different types of waves	Waves	Page 5 presentation
P.4.b	Describe for various waves the amplitude, frequency, wavelength, and speed	Waves	Pages 12-13 (Including drag and drop activity)

Science 8

P.4.c	Describe the relationship between pitch and frequency in sound		
P.4.d	Develop and design a scientific investigation regarding absorption, reflection, and refraction of light		
L	Life Science		
L.1	Human activities can deliberately or inadvertently alter ecosystems and their resiliency	Habitat Destruction and Pollution	Page 8
L.1.a	Develop, communicate, and justify an evidence-based scientific example of how humans can alter ecosystems	Habitat Destruction and Pollution	Oil Spill Lab
L.1.b	Analyze and interpret data about human impact on local ecosystems	Local Environmental Issues	Action plan to alleviate local environmental issues
L.1.c	Recognize and infer bias in print and digital resources while researching an environmental issue		
L.1.d	Use technology resources such as online encyclopedias, online databases, and credible websites to locate, organize, analyze, evaluate, and synthesize information about human impact on local ecosystems	Local Environmental Issues	Action plan to alleviate local environmental issues

Science 8

L.1.e	Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate an environmental issue	Local Environmental Issues	Action plan to alleviate local environmental issues
L.2	Organisms reproduce and transmit genetic information (genes) to offspring, which influences individuals' traits in the next generation	Genetics	Page 6 "Genes"
L.2.a	Develop, communicate, and justify an evidence-based scientific explanation for how genetic information is passed to the next generation	Genetics	Page 6 "Genes"
L.2.b	Use direct and indirect observations, evidence, and data to support claims about genetic reproduction and traits of individuals		
L.2.c	Gather, analyze, and interpret data on transmitting genetic information		
L.2.d	Use models and diagrams to predict the phenotype and genotype of offspring based on the genotype of the parents	Genetics	"Mr. Mars Man" Lab
L.2.e	Use computer simulations to model and predict phenotype and genotype of offspring based on the genotype of the parents		
E	Earth Systems Science		

Science 8

E.1	Weather is a result of complex interactions of Earth's atmosphere, land and water, that are driven by energy from the sun, and can be predicted and described through complex models		
E.1.a	Differentiate between basic and severe weather conditions, and develop an appropriate action plan for personal safety and the safety of others		
E.1.b	Observe and gather data for various weather conditions and compare to historical data for that date and location		
E.1.c	Use models to develop and communicate a weather prediction		
E.2	Earth has a variety of climates defined by average temperature, precipitation, humidity, air pressure, and wind that have changed over time in a particular location		
E.2.a	Develop, communicate and justify an evidence-based scientific explanation to account for Earth's different climates		
E.2.b	Research and evaluate direct and indirect evidence to explain how climates vary from one location to another on Earth		
E.2.c	Examine, evaluate, and question information from a variety of sources and media to investigate how climates vary from one location to another on Earth		

Science 8

E.3	The solar system is comprised of various objects that orbit the Sun and are classified based on their characteristics		
E.3.a	Construct a scale model of the solar system, and use it to explain the motion of objects in the system such a planets, Sun, Moons, asteroids, comets, and dwarf planets		
E.3.b	Describe methods and equipment used to explore the solar system and beyond	Astronomy	Page 13
E.3.c	Design an investigation that involves direct observation of objects in the sky, and analyze and explain results		
E.3.d	Research, critique, and communicate scientific theories that explain how the solar system was formed	Astronomy	Pages 6-8 (Including True-False Quiz on Big Bang Theory)
E.3.e	Use computer data sets and simulations to explore objects in the solar system		
E.3.f	Recognize that mathematical models are used to predict orbital paths and events		
E.4	The relative positions and motions of Earth, Moon, and Sun can be used to explain observable effects such as seasons, eclipses, and Moon phases		

Science 8

E.4.a	Develop, communicate, and justify an evidence-based explanation using relative positions of Earth, Moon, and Sun to explain the following natural phenomenon:		
E.4.a.1	Tides		
E.4.a.2	Eclipses of the Sun and Moon		
E.4.a.3	Different shapes of the Moon as viewed from Earth		
E.4.b	Analyze and interpret data to explain why we have seasons		
E.4.c	Use models to explain the relative motions of Earth, Moon, and Sun over time		