

Cycle II Progression of Learning S&T

Material World					
MATTER	ENERGY	FORCES AND MOTION	SYSTEMS AND INTERACTION	TECHNIQUES AND INSTRUMENTATION	APPROPRIATE LANGUAGE
Describe the shape, color, and texture of an object/substance	Describes different forms of energy (mechanical, electrical, light, chemical, heat, sound, nuclear)	describes the effect of electrostatic attraction (e.g. paper attracted by a charged object)	recognizes simple machines (lever, inclined plane, screw, pulley, winch, wheel) used in an object (e.g. lever in seesaw, incline plan for an access ramp)	appropriately uses simple measuring instruments (rulers, dropper, graduated cylinder, balance, thermometer, chronometer)	appropriately uses terminology related to the material world
distinguishes between the mass (quantity of matter) of an object and its weight (gravitational force acting on the mass)	Identifies sources of energy in his/her environment (e.g. moving water, chemical reaction in a battery, sunlight)	describes the characteristics of motion (e.g. direction, speed)	describes the uses of certain simple machines (to adjust the force required)	appropriately uses simple machines (lever, inclined plane, screw, pulley, winch, wheel)	distinguishes between the meaning of a term used in a scientific or technological context and its meaning in everyday language (e.g. source, matter, body, energy, machine)
classifies solids according to their density (identical volumes and different masses or identical masses and different volumes)	identifies the characteristics of a sound wave (e.g. volume timbre, echo)	identifies examples of a force (e.g. pulling, pushing, throwing, squeezing, stretching)	identifies the mechanical parts (e.g. gears, cams, springs, simple machines, connecting rods)	appropriately and safely uses tools (e.g. piers, screwdriver, hammer, wrench, simple template)	communicates using appropriate types of representations that reflect the rules and conventions of science and technology (e.g. symbols, graphs, tables, drawing sketches, norms and standardization)
associates the buoyancy of a volume of liquid in an identical volume of a different liquid with the densities of these liquids (relative density)	explains the motion of convection in liquids and gases (e.g. boiling water)	describes the effects of a force on an object (e.g. sets it in motion, stops it)	recognizes two types of motion (rotation and translation)	knows the symbols associated with types of motion, electrical components and mechanical parts	
demonstrates that physical changes (e.g. deforming, breaking, grinding, phase changes) do not change the properties of matter	describes situations in which human beings consume energy (e.g. heating, transportation, food consumption, recreation)	describes the effects of a force on a material or structure	describes a simple sequence of mechanical parts in motion	interprets a diagram or a plan containing symbols	
explains how household products are made (e.g. soap, paper)	methods used by human beings to limit their energy consumption (e.g. fluorescent light bulbs, timers) and to conserve energy (e.g. insulation)		recognizes the influence and impact of transportation technology on people's way of life and surroundings	uses symbols associated with mechanical parts and electrical components in a diagram or drawing	
	describes the transformations of energy from one form to another		recognizes the influence and the impact of electric appliances on people's way of life and surroundings (e.g. telephone, radio, television, computer)	draws and cuts parts out of various materials using appropriate tools	
				uses appropriate assembling methods	

				(e.g. screws, glue, nails, tacks, nuts)	
				uses appropriate tools for proper finishing work	
				uses simple machines, mechanisms or electrical components to design or make an object	

Earth and Space					
MATTER	ENERGY	FORCES AND MOTION	SYSTEMS AND INTERACTION	TECHNIQUES AND INSTRUMENTATION	APPROPRIATE LANGUAGE
Compares the properties of different types of soil (e.g. composition, capacity to retain water, capacity to retain heat)	Explains that the sun is the main source of energy on Earth	Associates the cycle of day and night with the rotation of the Earth	Describes the rotational and revolutionary motion of the Earth and the moon	appropriately uses simple observational instruments (e.g. magnifying glass, binoculars)	appropriately uses terminology related to an understanding of the Earth and the universe
Describes the various ways in which the quality of water, soil or air affects living things	Identifies natural sources of energy (sun, moving water, wind)		Illustrates the phases of the lunar cycle (full moon, new moon, first and last quarters)	appropriately uses simple measuring instruments (e.g. rulers, dropper, graduated cylinder, balance, thermometer, wind vane, barometer, anemometer, hygrometer)	distinguishes between the meaning of a term used in a scientific or technological context and its meaning in everyday language (e.g. space, revolution)
Distinguishes between a fossil (or a trace of a living thing) and a rock	Describes what renewable energy is		Illustrates the formation of eclipses (lunar, solar)	designs and manufactures measuring instruments and prototypes	communicates using appropriate types of representations that reflect the rules and conventions of science and technology (e.g. symbols, graphs, tables, drawings, sketches)
describes the observable properties of crystals (colour, geometric patterns)	Explain that sunlight, moving water and wind are renewable sources of energy		Recognizes the stars and the constellations on a map of the stars		
Explains the water cycle (evaporation, condensation, precipitation, runoff and infiltration)	Describes the methods invented by humans to transform renewable sources of energy into electricity (hydroelectric dam, wind turbine, solar panels)		Makes connections between weather conditions and the types of clouds in the sky		

Living Things					
MATTER	ENERGY	FORCES AND MOTION	SYSTEMS AND INTERACTION	TECHNIQUES AND INSTRUMENTATION	APPROPRIATE LANGUAGE
Explains the basic needs of the metabolism of living thing (e.g. nutrition, respiration)	Explains the nutritional needs common to all animals (water, sugars, lipids, proteins vitamins, minerals)	Describes the different ways animals move (walking, creeping, flying, jumping)	Identifies habitats and the animal and plant populations found in them	appropriately uses simple observational instruments (e.g. magnifying glass, binoculars)	appropriately uses terminology related to an understanding of living things
Distinguishes among the different types of embryonic development (viviparous for the majority of mammals, oviparous or ovoviviparous for the rest)	Associates familiar animals with their diet (carnivorous, herbivorous, omnivorous)	Names other ways animals move and why (e.g. defense, mating ritual)	Describes how animals meet their basic needs within their habitat	appropriately uses simple measuring instruments (e.g. rulers, dropper, graduated cylinder, balance, thermometer)	distinguishes between the meaning of a term used in a scientific or technological context and its meaning in everyday language (e.g. habitat, metamorphosis)
Describes the types of sexual reproduction in plants (pistil, stamen, pollen, seed and fruit)	describes agricultural and food technologies (e.g.g crossbreeding of plants and their propagation by cuttings, selection and breeding of animals, food production, pasteurization)		Describes relationships between living things (parasitism, predation)	designs and manufactures environments (e.g. aquarium, terrarium, incubator, greenhouse)	communicates using appropriate types of representations that reflect the rules and conventions of science and technology (e.g. symbols, graphs, tables, drawings, sketches)
Describes the characteristics of different kingdoms (microorganisms, fungi, plants, animals)	Illustrates a simple food chain (3 or 4 links)		Explains how animals and plants adapt to increase their chances of survival (e.g. mimicry, camouflage)		
Classifies life forms according to their kingdom			describes the impact of human activity on the environment (e.g. use of resources, pollution, waste management, land use, urbanization, agriculture)		
Lists animals according to their classification (mammals, reptiles, birds, fish, amphibians)			explains the scientific and technological concepts associated with recycling and composting (e.g. properties of matter, phase changes, physical changes, chemical changes, food chain, energy)		
Describes the anatomy of plants (roots, stems, leaves, flowers, fruits, seeds)					
Associates the parts of a plant with their general functions (roots, stems, leaves, flowers, fruits, seeds)					
Associates the parts and systems of the anatomy of animals with their general functions					

Explains the sensorial functions of certain parts of the anatomy (skin, eyes, mouth, ears, nose)					
Describes the growth stages of a flowering plant					
Describes the growth stages of various animals					