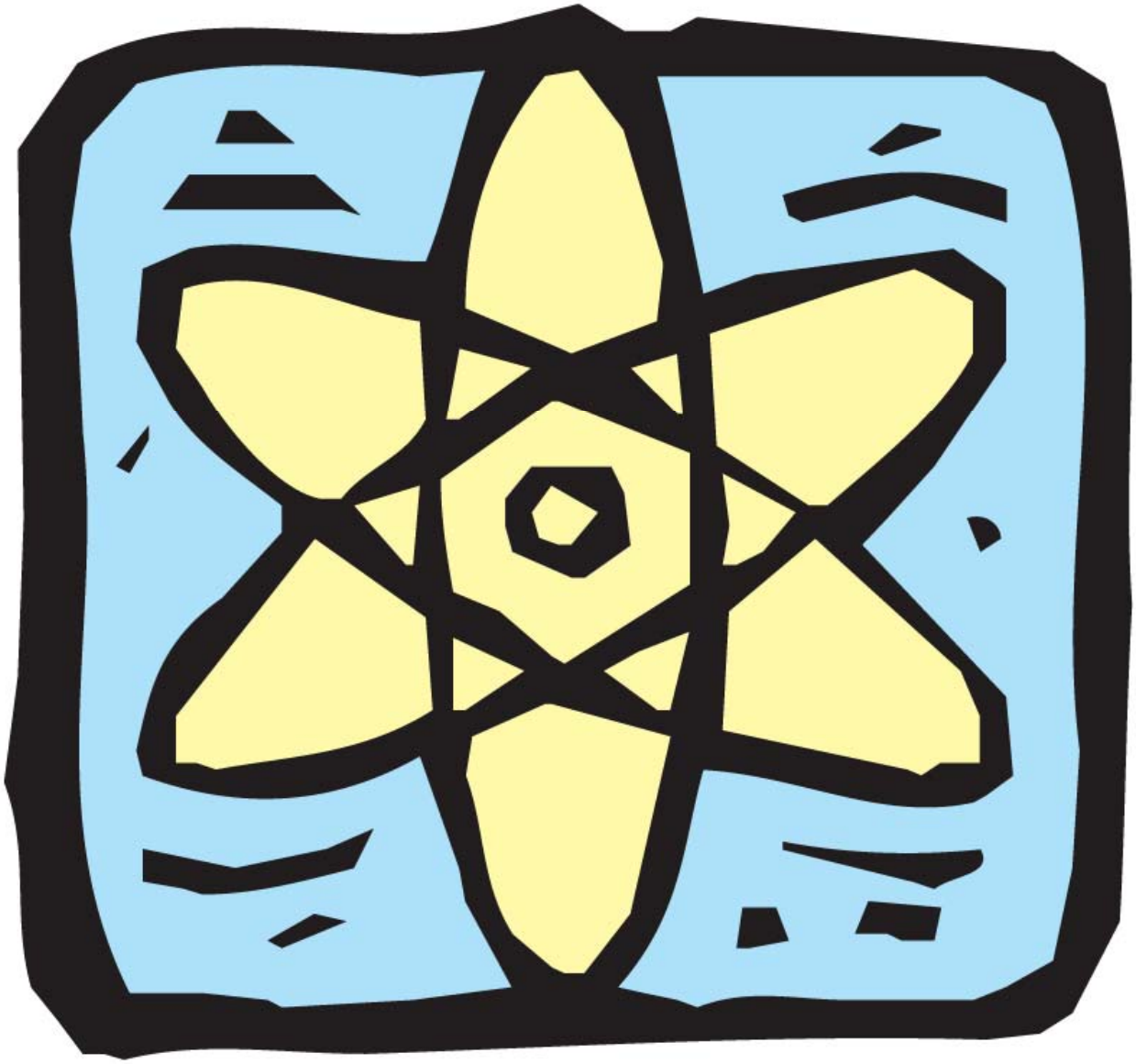
ALABAMA EXTENDED STANDARDS

SCIENCE

GRADES K–12



Joseph B. Morton, State Superintendent of Education • Alabama Department of Education

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Organization of the
ALABAMA EXTENDED STANDARDS

Course of Study	Extended Standard	Complexity	
General Education Standard 1.2 Identify basic properties of objects.	**SCI. ES 1.1** **Identify objects by a basic property (e.g., size, shape, color, texture).**	(4)	• Identify objects by two or more basic properties
		(3)	• Identify objects by a basic property (e.g., size, shape, color, texture)
		(2)	• Match objects by a basic property
		(1)	• Interact with objects of different size, shape, color, or texture

Course of Study
The Course of Study lists the general education standard(s) for each grade level. The Alabama Extended Standards are linked to general education grade level content. The general education standard is provided as a reference.

Extended Standard
The Alabama Extended Standards are the academic content for students with significant cognitive disabilities. These standards define what students with significant cognitive disabilities are expected to know and be able to do.

Complexity
The extended standards are divided into four levels of complexity, with four being the most complex and one being the least complex.

When developing goals and planning instruction, strive for the highest level of complexity that the student can achieve. Complexity 3 is the same as the extended standard. Always begin by considering complexity 3. If the student is unable to work at complexity 3, consider complexity 2, then 1. Complexity 4 should be considered for any student who has achieved complexity 3 or above.

Alabama Extended Standards
Science Grades K-12

Course of Study	Extended Standard	Complexity	
General Education Standard K.4 Identify properties of motion, including change of position and change of speed.	**SCI. ES K.1** **Identify a property of motion (e.g., change in speed, position, or direction).**	(4)	• Identify properties of force and motion including magnetic attraction, and change in speed, position or direction
		(3)	• Identify a property of motion (e.g., change in speed, position, or direction)
		(2)	• Imitate a change of direction using objects
		(1)	• Respond to a change of direction
General Education Standard K.6 Compare size, shape, structure, and basic needs of living things.	**SCI. ES K.2** **Identify basic needs of living things.**	(4)	• Describe ways to meet basic needs
		(3)	• Identify basic needs of living things
		(2)	• Identify basic needs of self
		(1)	• Indicate a basic need of self
General Education Standard K.10 Identify objects observed in the day sky with the unaided eye, including the sun, clouds, moon, and rainbows.	**SCI. ES K.3** **Distinguish between basic types of weather including rainy, sunny, and cloudy.**	(4)	• Describe different types of weather
		(3)	• Distinguish among basic types of weather including rainy, sunny, and cloudy
		(2)	• Match picture of weather to outside weather
		(1)	• Participate in matching picture of weather to outside weather
General Education Standard 1.2 Identify basic properties of objects.	**SCI. ES 1.1** **Identify objects by a basic property (e.g., size, shape, color, texture).**	(4)	• Identify objects by two or more basic properties
		(3)	• Identify objects by a basic property (e.g., size, shape, color, texture)
		(2)	• Match objects by a basic property
		(1)	• Interact with objects of different size, shape, color, or texture
General Education Standard 1.5	**SCI. ES 1.2**	(4)	• Relate basic body parts with their specific function

Course of Study	Extended Standard	Complexity	
Identify parts of the human body, including the head, neck, shoulders, arms, spine, and legs.	**Identify basic parts of the human body.**	(3)	• Identify basic parts of the human body
		(2)	• Match parts of the human body
		(1)	• Participate in identifying basic body parts
General Education Standard 1.10 Describe uses of recycled materials.	**SCI. ES 1.3** **Identify items to be recycled.**	(4)	• Identify reasons for recycling
		(3)	• Identify items to be recycled
		(2)	• Sort items that can be recycled (example: paper & cans)
		(1)	• Participate in recycling activities
General Education Standard 2.1 Identify states of matter as solids, liquids, and gases.	**SCI. ES 2.1** **Distinguish between a solid and a liquid.**	(4)	• Contrast a solid and a liquid
		(3)	• Distinguish between a solid and a liquid
		(2)	• Sort solids and liquids
		(1)	• Interact with solids and liquids
General Education Standard 2.5 Identify the relationship of structure to function in plants, including roots, stems, leaves, and flowers.	**SCI. ES 2.2** **Identify two parts of a plant.**	(4)	• Describe two or more parts of a plant
		(3)	• Identify two parts of a plant
		(2)	• Match a part of a plant to a picture of a part of a plant
		(1)	• Interact with parts of a plant as they are named
General Education Standard 2.7 Identify geological features as mountains, valleys, plains, deserts, lakes, rivers, and oceans	**SCI. ES 2.3** **Identify features of the Earth's surface on a map or globe, including bodies of water and land masses.**	(4)	• Identify bodies of water as rivers, lakes, or oceans
		(3)	• Identify features of the Earth's surface on a map or globe, including bodies of water and land masses
		(2)	• Match water and soil to representations of water and land on a map or globe
		(1)	• Distinguish between water and soil
General Education Standard 3.3 Describe ways energy from	**SCI. ES 3.1** **Identify the**	(4)	• Identify sources of light and heat other than the sun
		(3)	• Identify the sun as a source of light and heat

Course of Study	Extended Standard	Complexity	
the sun is used.	**sun as a source of light and heat.**	(2)	• Recognize change in light when the sun is shining and not shining
		(1)	• Recognize the sun or a representation of the sun
General Education Standard 3.7 Describe the life cycle of plants, including seed, seed germination, growth, and reproduction.	**SCI. ES 3.2** **Identify the life cycle of a plant including seed, seed germination, and growth.**	(4)	• Describe the life cycle of a plant including seed, seed germination, and growth
		(3)	• Identify the life cycle of a plant including seed, seed germination, and growth
		(2)	• Identify water and light as factors that influence seed germination
		(1)	• Participate in germinating a plant seed
General Education Standard 3.12 Identify conditions that result in specific weather phenomena, including thunderstorms, tornado, and hurricanes.	**SCI. ES 3.3** **Identify appropriate response to a specific weather phenomena.**	(4)	• Describe preparation for different weather phenomena
		(3)	• Identify appropriate response to a specific weather phenomena
		(2)	• Imitate appropriate response to a specific weather phenomena
		(1)	• Participate in preparation for different weather phenomena
General Education Standard 4.1 Describe how electrical circuits can be used to produce light, heat, sound, and magnetic fields.	**SCI. ES 4.1** **Identify electrical objects that produce light, heat, or sound.**	(4)	• Describe safety considerations related to electricity
		(3)	• Identify electrical objects that produce light, heat, or sound
		(2)	• Use electrical objects that produce light, heat, or sound
		(1)	• Activate an electrical object that produces light, sound, or heat
General Education Standard 4.5 Describe the interdependence of plants and animals.	**SCI. ES 4.2** **Identify ways that a plant and an animal help each other.**	(4)	• Describe characteristics that help a plant or an animal survive
		(3)	• Identify ways that a plant and an animal help each other
		(2)	• Identify ways that a plant or an animal protects itself
		(1)	• Participate in grouping plants or animals according to size, color, or body coverings

Course of Study	Extended Standard	Complexity	
General Education Standard 4.9 Describe the appearance and movement of Earth and its moon.	**SCI. ES 4.3** **Identify the sun and the Earth's moon as basic components of our solar system.**	(4)	• Illustrate components of our solar system including the sun and the Earth's moon
		(3)	• Identify the sun and the Earth's moon as basic components of our solar system
		(2)	• Match the sun with the day sky and the moon with the night sky (based upon when they are most visible)
		(1)	• Participate in matching the sun with the day sky and the moon with the night sky (based upon when they are most visible)
General Education Standard 5.1 Identify evidence of chemical changes through color, gas formation, solid formation, and temperature change.	**SCI. ES 5.1** **Identify examples of a chemical change in matter.**	(4)	• Distinguish between a chemical and a physical change in matter
		(3)	• Identify examples of a chemical change in matter
		(2)	• Match matter before a chemical change with matter after a chemical change (e.g., new steel wool pad and rusted steel wool pad, bread and toast, sugar and caramel)
		(1)	• Participate in an activity related to chemical changes in matter (e.g., bread and toast, batter and cupcakes)
General Education Standard 5.9 Describe the relationship of populations within a habitat to various communities and ecosystems.	**SCI. ES 5.2** **Identify animals and plants that are dependent on each other within a habitat (e.g., monarch butterflies and the forests of Mexico).**	(4)	• Describe ways animals and/or plants are interdependent within an ecosystem (animal to animal, plant to plant, or animal to plant)
		(3)	• Identify animals and plants that are dependent on each other within a habitat (e.g., monarch butterflies and the forests of Mexico)
		(2)	• Match a plant or an animal to their natural habitat
		(1)	• Distinguish between a plant and an animal (e.g., daisy = plant; cat = animal)
General Education Standard 5.11	**SCI. ES 5.3**	(4)	• Describe the position of the planets in relation to the sun

Course of Study	Extended Standard	Complexity	
Compare distances from the sun to planets in our solar system.	**Identify the four planets in our solar system closest to the sun.**	(3)	• Identify the four planets in our solar system closest to the sun
		(2)	• Compare distances of the sun and moon to Earth
		(1)	• Interact with a model of the solar system
General Education Standard 6.1 Identify global patterns of atmospheric movement, including El Nino, the Gulf Stream, the jet stream, the Coriolis effect, and global winds that influence local weather.	**SCI. ES 6.1** **Identify weather conditions using an instrument or technology (e.g., wind direction and speed, temperature).**	(4)	• Compare seasonal weather conditions
		(3)	• Identify weather conditions using an instrument or technology (e.g., wind direction and speed, temperature)
		(2)	• Match a weather condition with an appropriate measurement instrument or technology
		(1)	• Distinguish between basic types of weather conditions (e.g., rainy, sunny)
General Education Standard 6.2 Describe factors that cause changes to Earth's surface over time.	**SCI. ES 6.2** **Identify factors that cause changes in the Earth's surface over time (e.g., farming and conservation, erosion, earthquakes, volcanoes, hurricanes).**	(4)	• Describe human actions that cause changes in the Earth's surface over time
		(3)	• Identify factors that cause change in the Earth's surface over time (e.g., farming and conservation, erosion, earthquakes, volcanoes, hurricanes)
		(2)	• Identify one environmental factor that has caused change in the state or local community
		(1)	• Participate in an experiment simulating changes to the Earth's surface

Course of Study	Extended Standard	Complexity	
General Education Standard 6.10 Describe the components of the universe and their relationships to each other, including stars, planets and their moons, solar systems, and galaxies.	**SCI. ES 6.3** **Describe the relationships among Earth, the sun, and Earth's moon.**	(4)	• Describe the position of the sun over time in relation to a specific location on the school campus
		(3)	• Describe the relationships among Earth, the sun, and Earth's moon
		(2)	• Identify the moon's relationship to the Earth
		(1)	• Match representations of the Earth, the sun, or the Earth's moon (e.g., sun to sun, moon to moon)
General Education Standard 7.3 Relate major tissues and organs of the skeletal, circulatory, reproductive, muscular, respiratory, nervous, and digestive system to their functions.	**SCI. ES 7.1** **Match body tissues or organs (e.g., skin, bones, muscles, stomach, lungs) to their function.**	(4)	• Describe body tissues or organs (e.g., skin, bones, muscles, stomach, lungs) and their function
		(3)	• Match body tissues or organs (e.g., skin, bones, muscles, stomach, lungs) to their function
		(2)	• Identify body tissues or organs (e.g., skin, bones, muscles, stomach, lungs)
		(1)	• Respond to questions related to body systems and physical needs (e.g., *Are you hungry?, Is your stomach empty?, Are your braces too tight?*)
General Education Standard 7.7 Describe biotic and abiotic factors in the environment.	**SCI. ES 7.2** **Distinguish between living (biotic) and nonliving (abiotic) factors (examples: living-plants, animals; nonliving-water, soil).**	(4)	• Describe characteristics of living things
		(3)	• Distinguish between living (biotic) and nonliving (abiotic) factors (examples: living - plants, animals; nonliving – water, soil)
		(2)	• Match living and non-living things (e.g., match living to living)
		(1)	• Identify living things
General Education Standard 7.11 Identify Mendel's laws of genetics.	**SCI. ES 7.3** **Identify inherited traits, (e.g., hair, eye**	(4)	• Describe physical differences among classmates based on inherited traits
		(3)	• Identify inherited traits (e.g., hair, eye color, or height)
		(2)	• Identify own hair and eye color

Course of Study	Extended Standard	Complexity	
	color, or height).	(1)	• Indicate whether traits (e.g., hair, eye color, or height) of two people are the same
General Education Standard 8.1 Identify steps within the scientific process.	**SCI. ES 8.1** **Use steps in the scientific process to solve a problem (e.g., observe, communicate, classify).**	(4)	• Use steps in the scientific process including measurement and classification to solve a problem
		(3)	• Use steps in the scientific process to solve a problem (e.g., observe, communicate, classify)
		(2)	• Use one step in the scientific process to help solve a problem (e.g., observe, communicate, classify)
		(1)	• Interact with the environment using one or more of the senses to gain information
General Education Standard 8.8 Identify Newton's three laws of motion.	**SCI. ES 8.2** **Identify Newton's first law of motion.**	(4)	• Describe an object in motion staying in motion or an object at rest staying at rest
		(3)	• Identify Newton's first law of motion.
		(2)	• Identify the effect of securing or not securing an object in motion (e.g., identify what happens when not wearing a seatbelt in a car that stops suddenly)
		(1)	• Participate in an activity demonstrating an effect of Newton's first law of motion
General Education Standard 8.9 Describe how mechanical advantages of simple machines reduce the amount of force needed for work.	**SCI. ES 8.3** **Describe how simple machines (e.g., lever, pulley, incline plane) are used to reduce the amount of force needed for work.**	(4)	• Utilize a simple machine to solve a problem
		(3)	• Describe how a simple machine (e.g., lever, pulley, incline plane) is used to reduce the amount of force needed for work
		(2)	• Match a simple machine to its function
		(1)	• Participate in utilizing a simple machine

Course of Study	Extended Standard	Complexity	
General Education Standard PS.2 Identify solutions in terms of components, solubility, concentration, and conductivity.	**SCI. ES 9.1** **Identify the composition of a solution (e.g., components of Kool-Aid, salt water).**	(4)	• Describe what happens when selected solids are mixed with water
		(3)	• Identify the composition of a solution (e.g., components of Kool-Aid, salt water)
		(2)	• Identify a mixture as a solution
		(1)	• Participate in creating a solution
General Education Standard PS.5 Describe physical and chemical changes in terms of endothermic and exothermic processes.	**SCI. ES 9.2** **Recognize a chemical and a physical change in matter (e.g., chemical- rusting iron, burning wood, cooking eggs; physical- crushing a can, melting ice).**	(4)	• Compare chemical and physical changes
		(3)	• Recognize a chemical and a physical change in matter (e.g., chemical- rusting iron, burning wood, cooking eggs; physical- crushing a can, melting ice)
		(2)	• Match matter that has been chemically or physically changed to original form of matter (e.g., match raw egg to cooked egg, match wood chips to wood)
		(1)	• Participate in matching matter that has been chemically or physically changed to original form of matter
General Education Standard PS.10 Explain the relationship between electricity and magnetism.	**SCI. ES 9.3** **Explain how to make an electromagnet stronger.**	(4)	• Compare and contrast magnets and electromagnets
		(3)	• Explain how to make an electromagnet stronger
		(2)	• Identify the fundamental law of magnets (i.e., opposites attract and likes repel)
		(1)	• Identify a material that attracts magnets
General Education Standard PS.7 Relate velocity, acceleration, and kinetic energy to mass, distance, force, and time.	**SCI. ES 10.1** **Describe the relationship between action and reaction**	(4)	• Predict the reaction created by various forces
		(3)	• Describe the relationship between action and reaction (i.e., for every action there is a reaction)
		(2)	• Demonstrate action and reaction of various forces

Course of Study	Extended Standard	Complexity	
	(i.e., for every action there is a reaction).	(1)	• Participate in an activity involving action and reaction
Science Process Skill	**SCI. ES 10.2** **Identify safe laboratory procedures.**	(4)	• Describe reasons for safe laboratory procedures
		(3)	• Identify safe laboratory procedures
		(2)	• Identify location of laboratory safety equipment
		(1)	• Participate in laboratory safety exercises
Science Process Skill General Education Standard BIO.1 Select appropriate laboratory glassware, balances, time measuring equipment, and optical instruments to conduct an experiment.	**SCI. ES 10.3** **Identify the purpose of basic scientific instruments (e.g., stopwatch-measure time; thermometer-measure temperature; microscope-view small things; graduated cylinder-measure liquids).**	(4)	• Select the appropriate scientific instrument(s) to conduct an experiment
		(3)	• Identify the purpose of basic scientific instruments (e.g., stopwatch-measure time; thermometer-measure temperature; microscope-view small things; graduated cylinder-measure liquids)
		(2)	• Identify three basic scientific instruments (e.g., stopwatch, thermometer, microscope)
		(1)	• Participate in using a basic scientific instrument
General Education Standard BIO.3 Identify reactants and products associated with photosynthesis and cellular respiration and the purposes of these two processes.	**SCI. ES 11.1** **Identify ways a plant is helpful or harmful to the environment.**	(4)	• Predict an effect of removing plants from the environment
		(3)	• Identify ways a plant is helpful or harmful to the environment
		(2)	• Match plants to their use in the environment (e.g., trees for lumber and paper; homes for animals; fruits and vegetables for food)

Course of Study	Extended Standard	Complexity	
		(1)	• Identify two foods that come from plants
General Education Standard BIO.6 Describe the roles of mitotic and meiotic divisions during reproduction, growth, and repair of cells.	**SCI. ES 11.2** **Identify ways a plant responds to growing conditions.**	(4)	• Explain how plant growth responds to changes in the seasons
		(3)	• Identify ways a plant responds to growing conditions
		(2)	• Identify factors that affect plant growth (e.g., light, water, soil)
		(1)	• Participate in caring for plants
General Education Standard BIO.12 Describe protective adaptations of animals, including mimicry, camouflage, beak type, migration, and hibernation.	**SCI. ES 11.3** **Identify two protective adaptations of animals (e.g., mimicry, camouflage, beak type, migration, hibernation).**	(4)	• Describe how one group of animals uses protective adaptations to survive
		(3)	• Identify two protective adaptations of animals (e.g., mimicry, camouflage, beak type, migration, hibernation)
		(2)	• Identify survival traits of a living thing (e.g., color, shape, size, texture, covering)
		(1)	• Identify an animal that uses camouflage to protect itself
General Education Standard BIO.11 Classify animals according to type of skeletal structure, method of fertilization and reproduction, body symmetry, body coverings, and locomotion.	**SCI. ES 12.1** **Classify animals based on locomotion and body coverings.**	(4)	• Describe the function of body covering for a group of animals (e.g., birds, lizards, fish)
		(3)	• Classify animals based on locomotion and body coverings
		(2)	• Describe physical traits of animals including color, shape, and body covering
		(1)	• Match animals with their body coverings (e.g., birds to feathers, turtle to turtle shell)
General Education Standard BIO.16 Identify density-dependent and density-independent limiting factors that affect populations in an ecosystem.	**SCI. ES 12.2** **Identify ways the environment affects animals in an**	(4)	• Describe one positive and one negative way that humans affect animals in an ecosystem
		(3)	• Identify ways the environment affects animals in an ecosystem
		(2)	• Identify one way that a natural disaster affects animals (e.g., tornadoes destroy animal habitats)

Course of Study	Extended Standard	Complexity	
	ecosystem.	(1)	• Participate in matching an animal with its environment
General Education Standard BIO.13 Trace the flow of energy as it decreases through the trophic levels from producers to the quaternary level in food chains, food webs, and energy pyramids.	**SCI. ES 12.3** **Identify a simple food chain (e.g., grass gets energy from the sun, grasshoppers from grass, snakes from grasshoppers, and hawks from snakes).**	(4)	• Describe what can happen when a food chain is interrupted (e.g., drought causes grass to die…)
		(3)	• Identify a simple food chain (e.g., grass gets energy from the sun, grasshoppers from grass, snakes from grasshoppers, and hawks from snakes)
		(2)	• Match plants with the animal that uses them as a source of energy (e.g., oats with horses, grass with cows, apple with people)
		(1)	• Identify fruits, vegetables, and meats as things people eat