

# **VTAAP Science GE Entry Points**

**Grades 5-8**

2016-2017

This document contains the VTAAP Science assessment targets, also known as “entry points”. GE entry points are not to be confused with the assessed target behaviors. Entry points can be found in the VTAAP Student Performance Scoring Guide.

Each entry point is written to reflect the assessment of academic learning as demonstrated at different levels of symbolic development. The student’s level of symbolic development, indicated on VTAAP Form 2, will determine which set of entry points will be used as their instructional outcome measures. The entry points in this document have been grouped according to the levels A, B, and C, as the student will use the same level for all strands and across all content areas. Please refer to the Student Performance Scoring Guide when selecting entry points for the VTAAP Form 2. DO NOT select entry points from this document.

Since there is no separate generalization score, the strength of learning must be demonstrated within the assessment target. Efforts were made to identify applications of each entry point that are associated with strength of performance. *As a general rule, the emphasis of all the entry points is the strength of learning of the concepts, skills and knowledge.* Teams can expect endline scoring to reflect this focus on demonstration of learning that is enduring and meaningful, not just an isolated performance task. *The use of supports and applications of skills across contexts, materials and content are presumed criteria for all GE entry points, at all levels.*

Entry Point	CONDITIONS	TARGET BEHAVIORS	CRITERIA
	<i>Given...</i>	<i>Student will demonstrate understanding that various objects and materials have characteristic properties by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Determining the density of a variety of solids and liquids.	Measures and calculates density ( $D = m/V$ ) of at least 5 selected solids and liquids (e.g., determines density for cup of oil, cup of water, metal cube, plastic die, glass paperweight, etc.).
<b>B</b>	AT supports	Comparing the relative densities of different materials.	Orders at least 8 objects with the same volume according to density and compares behavior in water (e.g., uses film canisters packed with sand, cotton, BB shot, etc. in water to determine relative density).
<b>C</b>	AT supports	Indicates different objects that have the same properties.	Matches different objects that share the same property* for at least 6 objects (e.g., red rock to red cloth; shiny rock to shiny metal; rough rock to rough wood, etc.). * Properties include texture, luster, elasticity, color, odor, magnetic, conductivity, density, and hardness. Weight and size are characteristics of objects, and are <u>not</u> considered properties.

	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>Entry Point</b>	<i>Given...</i>	<i>Student will demonstrate understanding that solids, liquids and gases have unique properties by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Describing how the motion of molecules defines solids, liquids, and gases.	Describes, or illustrates with labels the molecular motion of at least 10 different solids, liquids, and gases, providing at least 3 examples of each (e.g., shows understanding that molecules of gases move rapidly; molecules in liquids move moderately; and molecules in solids move slowly).
<b>B</b>	AT supports	Connecting the properties of solids, liquids, and gases with actual examples.	Matches physical or illustrative models of the molecular motion in a solid, a liquid, and a gas with at least 3 specific examples of each (e.g., matches molecules of gases moving rapidly with water vapor from teapot; molecules in liquids moving moderately with a glass of water; molecules in solids moving slowly with an ice cube, etc.).
<b>C</b>	AT supports	Indicating differences in the state of matter of solids, liquids and gases.	Distinguishes between the different states of matter in the same material (e.g., matches red balloon with frozen water, red balloon with liquid water, and red balloon with air with yellow balloons representing the same states of matter).

	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>Entry Point</b>	<i>Given...</i>	<i>Student will demonstrate understanding that energy can cause a physical change of state in a substance by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Describing how heating or cooling would affect the movement of molecules in solids, liquids and gases.	Describes or illustrates with labels how heating and cooling affect molecular motion within at least 4 solids, 4 liquids, and 2 gases (e.g., uses labeled diagrams to show that molecules move more rapidly when heated - solid chocolate changes into liquid chocolate when heated and back to solid chocolate when cooled; and water changes into a water vapor when heated and back to water and then ice if cooled).
<b>B</b>	AT supports	Identifying the effects of heating and cooling on solids, liquids or gases.	Identifies the change in volume of 4 solids, 4 liquid, and 1 gas when either heated or cooled by demonstrating that cooling slows molecular motion and decreases volume of materials, except for liquid water (e.g., shows a helium balloon at room temperature shrinks when cooled in refrigerator; cooking oil in a graduated cylinder at room temperature shrinks in freezer; and small piece of dry ice at room temperature vaporizes to fill a sealed glass container).
<b>C</b>	AT supports	Indicating a difference in the state of materials after heating.	Identifies how at least 5 different solids are affected by heat (e.g., matches pat of butter melts with liquid butter; and matches ice cube to pool of water, etc.).

	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>Entry Point</b>	<i>Given...</i>	<i>Student will demonstrate understanding that different amounts of force (push-pull) affect the speed and direction of motion of objects by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Predicting how the strength of an external force will affect the speed or direction of a moving object.	Predicts and then tests how change in external force (stronger or weaker push/pull) will affect the speed or direction of 3 different moving objects (e.g., predicts and measures how the speed a skate-board and rider change when the number of pushes is increased to demonstrate that the greater the force, then the greater the speed and distance OR shows how the direction/movement of a canoe changes when the number of paddles on one side is increased).
<b>B</b>	AT supports	Connecting the change in speed or direction of an object to the force (backward, forward, or diagonal) that is applied.	Identifies how at least 5 different forces, including at least 1 opposing force, affect the speed or direction of objects (e.g., shows how pushing a ball with the index finger results in the ball slowly moving in the direction of the push and the ball traveling a short distance; rolling the ball under-hand results in an increase in speed and distance; kicking the ball results in a rapid movement of the ball over a long distance; and blocking a rolling ball results a new direction and/or the sudden reduction of speed).
<b>C</b>	AT supports	Applying forces to everyday objects to change speed.	Imitates motion, direction, or strength of applied force for at least 6 occurrences (e.g., shows the application of force to brake or reduce speed on a moving scooter or wheelchair and/or application of a force to accelerate a vehicle from stop to go.

	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>Entry Point</b>	<i>Given...</i>	<i>Student will demonstrate understanding that electrical energy can be transformed into other forms by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Describing how electrical energy is transformed into heat, light, or sound.	Describes or illustrates with labels how electrical energy is transformed to practical use through the operation of at least 10 common objects (e.g., shows how electricity moves a fan and electric car; lights a light bulb and TV screen; generates sound in a guitar, heats a toaster and microwave, etc.).
<b>B</b>	AT supports	Identifying multiple forms of energy that can be produced from electricity.	Locates at least 8 examples representing 4 different energy forms produced from electricity in everyday environments (e.g., identifies light from the lamp and computer monitor, heat from the oven range, sound from stereo or doorbell, motion from an elevator, etc.).
<b>C</b>	AT supports	Identifying or utilizing electrical switches to produce intended effect (heat, light, sound, or motion).	Repeats the action required to activate or deactivate an electronic device for at least 2 different switches on at least 6 occurrences (e.g., uses head switch to activate communication device; looks at power button to turn on TV or computer, etc.).

Entry Point	CONDITIONS	TARGET BEHAVIORS	CRITERIA
	<i>Given...</i>	<i>Student will demonstrate understanding that the strength of a magnetic force field can vary by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Predicting how distance affects the magnetic force on an object.	Predicts and tests the greatest distance at which an object will be attracted by at least 3 magnets of different strength using a minimum of 3 trials for each (e.g., uses a fixed magnet and multiple locations at a variety of distances from magnet to determine the location that represents the furthest distance at which a paperclip will still be attracted for each of 3 different strength magnets).
<b>B</b>	AT supports	Classifying objects which are attracted to, not attracted to, and repelled by magnets.	Sorts at least 10 common objects into 3 labeled categories – 1) attracted, 2) not attracted, and 3) repelled by magnets, with at least 2 items in each category (e.g., iron-based nut, bolts, paperclips, staples are attracted; like poles of different magnets and carbon-based materials are repelled by magnets; plastic and most organic materials are not attracted).
<b>C</b>	AT supports	Indicating the correct location for objects to be attracted to magnets.	Signaling when an object is placed within the magnetic field of attraction at least 6 times (e.g., uses eye point to signal when an object is within the magnetic field of a fixed magnet).

Entry Point	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>A</b>	AT supports if needed	Describing how living organisms obtain materials they need to produce energy to live and grow.	<p><i>As demonstrated by a Student Product that...</i></p> <p>Describes or illustrates with labels how 3 living things (including at least 1 animal and 1 plant) obtain at least 3 basic materials to produce energy they need to function (e.g., frog breathes air for oxygen, eats insects for food, and drinks water from pond which are all necessary to produce the energy to grow new cells, swim, hop, etc.; humans needs water from well, food from garden, and oxygen from air to produce the energy to grow, perform work, and recreate, etc.).</p> <p>Note: This entry point focuses on the materials needed <i>to produce energy</i> and the various uses/ outcomes of that energy.</p>
<b>B</b>	AT supports	Identifying what plants and animals require to produce energy to live and grow.	<p>Identifies the sources of energy required to live for at least 1 plant and 1 animal (e.g., a flower needs sunlight, water, and carbon dioxide to make food which, when combined with oxygen, produces energy to grow new leaves and blossoms; an animal or human needs food, water, and oxygen to produce energy to grow larger, add muscle strength, work, run, play).</p> <p>Note: This entry point focuses on the materials needed <i>to produce energy</i> and the various uses/outcomes of that energy.</p>
<b>C</b>	AT supports	Matching an energy source necessary for living things to live and grow to specific organisms.	<p>Connects energy sources to the plants or animals that need them for at least 6 relationships (e.g., plant belongs in window to get sunlight; pumpkin needs to grow outside in garden to get sunlight and water; frog eats flies and drinks from pond, etc.).</p>

	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>Entry Point</b>	<i>Given...</i>	<i>Student will demonstrate understanding that living things exist in a balance with other organisms in their environment (food webs) by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Describing how living things are affected by changes in a food web within the environment.	Describes or demonstrates how at least 5 organisms are affected by changes in the food web of their environment. (e.g., shows a decrease in grasshoppers may cause an increase in grasses; a decrease in milkweed may cause a decrease in monarch butterflies; a decrease in bats may cause an increase in insects, etc.).
<b>B</b>	AT supports	Identifying organisms as producers or consumers for a food web in the local environment.	Identifies or sorts at least 4 producers and 4 consumers in their local environment (e.g., identifies and labels grasses, trees, and algae as 'producers'; rabbits, squirrels, hawks, coyotes as 'consumers', etc.).
<b>C</b>	AT supports	Connects living things to a primary food source in a food web.	Identifies foods that are directly connected with the related organism for at least 6 organisms (e.g., fox is connected to rabbit; human is connected to vegetables, bird is connected to worm, etc.).

	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>Entry Point</b>	<i>Given...</i>	<i>Student will demonstrate understanding that physical features of humans are inherited from parents by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Describing how cells from parents join to produce offspring.	Describes or illustrates with labels how all human offspring are produced by the joining of reproductive cells from each parent.  AND Identifies at least 3 shared physical traits of parents and offspring (e.g., describes how an egg cell from female and a sperm cell from male join to produce the first combined cell of the offspring and identifies eyes, hair color, and height as shared characteristics).
<b>B</b>	AT supports	Identifying physical similarities between biological parents and their offspring.	Attributes at least 3 physical characteristics of a biological child to the contributing parent(s) for at least 3 different children (e.g., connects eye color to mother, hair color to both mother and father, and height to father for oldest child, etc.).
<b>C</b>	AT supports	Indicating prominent inheritable physical features of humans.	Matches the same physical features in 1 person to similar feature in another person for at least 6 features (e.g., Roman nose to Roman nose and not with snub nose; curly hair to curly hair and not straight hair; black skin to black skin and not white skin, etc.).

	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>Entry Point</b>	<i>Given...</i>	<i>Student will demonstrate understanding that human body organs work together in systems to help humans survive by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Describing functions of human body systems and their related organs.	Describes or demonstrates how at least 3 distinct human body organs function within a system to help humans survive (e.g., shows respiratory system combines functions of lungs, trachea, and nose/mouth to obtain oxygen).
<b>B</b>	AT supports	Connecting external human parts to larger body systems.	Connects at least 6 observable human body parts in 3 different body systems (e.g., links mouth and teeth to digestive system; mouth and nose to respiratory system; biceps and quadriceps to muscle system).
<b>C</b>	AT supports	Identifying senses (sight, sound, smell, taste, touch) necessary to explore a variety of materials.	Identifies at least 4 different senses that are required to gather information of a variety of inputs (e.g., uses nose to smell perfume, uses eyes to determine color, uses taste to experience salt, uses ears to hear music, etc.).

Entry Point	CONDITIONS	TARGET BEHAVIORS	CRITERIA
	<i>Given...</i>	<i>Student will demonstrate understanding that the human body changes during its life span by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Comparing similarities and differences across human life stages.	Compares the 5 stages of the human life span (e.g., shows infants as smallest and unable to feed themselves or walk; toddlers as starting to walk and talk and having short legs and long bodies; children as having longer arms, legs, and bodies and able to run; teenagers as approaching full size and having bigger muscles; and adults as having full stature and strength).
<b>B</b>	AT supports	Sequencing the stages in a human life span.	Sequences and labels the 5 stages of the human life span (e.g., orders and names pictures of baby, toddler, child, teenager, adult in the correct sequence).
<b>C</b>	AT supports	Showing the order of development in the human life span.	Indicates the correct order of life span development for 3 real people (or figure representations) (e.g., places 3 people in different stages of human development in the correct sequence development - child first, then teenager, then adult; child, adult, geriatric).

	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>Entry Point</b>	<i>Given...</i>	<i>Student will demonstrate understanding that the earth orbits around the sun and the moon orbits around the earth by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Comparing the length of time for earth to orbit the sun and the moon to orbit the earth.	Compares, diagrams, or models the length of time for the earth to orbit the sun, and the moon to orbit the earth (e.g., shows earth’s orbit around the sun as 365 days and the moon’s orbit around the earth as approximately 30 days).
<b>B</b>	AT supports	Identifying the orbit and rotation of the earth around the sun, and the moon around the earth.	Represents the earth’s orbit around the sun and the moon’s orbit around earth (e.g., uses a labeled diagram or model to illustrate the orbit of earth around the sun and the orbit of the moon around the earth).
<b>C</b>	AT supports	Showing that the earth orbits around the sun and the moon orbits the earth.	Uses models to represent the earth traveling around the sun and the moon travels around the earth (e.g., student representing planet earth follows ‘orbit path’ around model of sun while moon follows orbit path around student).

	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>Entry Point</b>	<i>Given...</i>	<i>Student will demonstrate understanding that characteristics of rocks provide clues to rocks' history by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Explaining how the characteristics of rocks indicate their history.	Identifies the characteristics (crystals, minerals, layers) of 3 types of rock (igneous, sedimentary, and metamorphic) and provides at least one example of each.  AND Explains how each type of rock was formed (e.g., shows how sand or shells from the sea floor has been layered into limestone; layered rock has been compressed into marble; and igneous gabbro has been cooled from magma into a crystalline form with the crystal size revealing how quickly the magma cooled).
<b>B</b>	AT supports	Identifying rock examples with their position in the Rock Cycle.	Examines the characteristics of at least 4 different rock samples and matches them with their correct location in the Rock Cycle (e.g., uses a chart of the rock cycle with detailed illustrations or pictures to match 4 rock samples in at least 3 different locations in the Rock Cycle).
<b>C</b>	AT supports	Matches samples of rock types to other samples with the same characteristics.	Matches igneous to igneous, sedimentary to sedimentary, and metamorphic to metamorphic rock for at least 6 similar samples (e.g., matches granite to granite, marble to marble, pumice to pumice, etc.).

	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>Entry Point</b>	<i>Given...</i>	<i>Student will demonstrate understanding that the surface of the earth undergoes changes (slow--weathering; fast--volcanoes, earthquakes) by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Describing how new landforms produced by relocation of earth materials.	Describes or illustrates with labels at least 5 circumstances in which landforms have been produced by relocation of earth materials (e.g., shows how volcanoes create ash deposition or island growth; how glacier melt produces streams and lakes; and how sediment deposits at the mouth of a river create deltas, how stream hydraulics create meanders, how beach sand is redistributed by ocean current and waves, etc.).
<b>B</b>	AT supports	Identifying the changes in the earth’s surface due to weathering and erosion of earth materials.	Identifies the effects of at least 4 examples of weathering and erosion on the earth’s surface with at least 1 example of each (e.g., uses before and after pictures to document erosion showing how water washes away soil on a hill; a river erodes its banks to create meanders; and water freezes in the cracks of a cliff face to break rocks apart).
<b>C</b>	AT supports	Uses models to illustrate changes in landforms.	Initiates at least 3 changes in landform models (e.g., pours water on dirt ‘mountain’ to show stream erosion; blows sand in ‘desert’ with hair dryer in to create dunes, makes waves on ‘coast’ to erode dirt, etc.).

<b>Entry Point</b>	<b>CONDITIONS</b>	<b>TARGET BEHAVIORS</b>	<b>CRITERIA</b>
<b>A</b>	AT supports if needed	Explaining the processes of the water cycle on earth.	Explains, sequences, and labels the major processes of the water cycle (e.g., shows precipitation as water falling to earth as rain; evaporation as heating causing liquid water to change into an invisible gas (water vapor); and condensation as water vapor cooling and condensing into clouds that, in turn, produce more precipitation).
<b>B</b>	AT supports	Identifying the path of water in the environment during the water cycle.	Identifies the different parts of the water cycle and sequences the path of water through at least 3 transitions (e.g., uses labeled pictorial images of the processes to recreate the path of water during the water cycle - water moves from a lake to water vapor to cloud to rain to runoff to groundwater to lake).
<b>C</b>	AT supports	Recognizing different forms of water in the environment.	Locates at least 6 different forms of water in the environment (e.g., finds bodies of water in ponds and rivers, precipitation in rain, hail, snow, and sleet, and evaporated water vapor in clouds and condensation on windows).

	CONDITIONS	TARGET BEHAVIORS	CRITERIA
<b>Entry Point</b>	<i>Given...</i>	<i>Student will demonstrate understanding that humans cause both positive and negative changes in the natural environment. by:</i>	<i>As demonstrated by a Student Product that...</i>
<b>A</b>	AT supports if needed	Describing how a human activity positively and negatively affects specific (local) natural resources.	Describes or demonstrates an example of at least 3 human activities that have a positive effect and 3 human activities that have had a negative effect on specific natural resources in the local environment (e.g., shows how having doe hunting season produces a healthier deer herd by controlling the population; and how industrial pollution contributes to acid rain which harms trees, etc.).
<b>B</b>	AT supports	Identifying changes in the local environment that are caused by humans.	Identifies at least 6 different changes (before/after) in the local environment caused by human activity (e.g., shows gravel pits become landfills, rock deposits become quarries, rivers are dammed to create reservoirs, etc.).
<b>C</b>	AT supports	Identifying human activities as positive or negative in the environment.	Associating human behavior in the environment as either beneficial or harmful for at least 6 different circumstances (e.g., windmills, recycling, composting, and home gardening are positive; automobile exhaust, littering, and oil spills are negative).