Science
NYSAA Frameworks

Grade 8

2015–16

New York State Alternate Assessment
for Science and Social Studies

Standard and Essence(s) Science – Grade 8

Standard 1: Analysis, Inquiry, and Design (Scientific Inquiry)

Key Idea 3: The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.

Science Core Curriculum	Grade Level Indicators (GLI)		Essence(s) of Indicators
Pg. 5–6	S3.1	Design charts, tables, graphs and other representations of observations in conventional and creative ways to help the address their research question or hypothesis. S3.1a organize results, using appropriate graphs, diagrams, data tables, and other models to show relationships S3.1b generate and use scales, create legends, and appropriately label axes	• Organize data (results), using graphs, diagrams, tables, and models • Draw conclusions, based on data from an investigation
	S3.2	Interpret the organized data to answer the research question or hypothesis and to gain insight into the problem. S3.2a accurately describe the procedures used and the data gathered S3.2b identify sources of error and the limitations of data collected S3.2c evaluate the original hypothesis in light of the data S3.2d formulate and defend explanations and conclusions as they relate to scientific phenomena S3.2e form and defend a logical argument about cause-and-effect relationships in an investigation S3.2f make predictions based on experimental data S3.2g suggest improvements and recommendations for further studying S3.2h use and interpret graphs and data tables	
	S3.3	Modify their personal understanding of phenomena based on evaluation of their hypothesis.	

Alternate Grade Level Indicators (AGLIs) Science – Grade 8

AGLI 1

Standard 1: Analysis, Inquiry, and Design (Scientific Inquiry)

Key Idea 3: The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.

ALTERNATE GRADE LEVEL INDICATORS (AGLIs)

Less Complex ◀ ··· ··◀·· ···◀··· ···▶·· ···▶· ·····▶ **More Complex**

The student will: • recognize a result of a scientific investigation, using concrete objects, graphs, diagrams, tables, or models (81311) • recognize the cause of a science related event (81312) • recognize whether an event is possible, based on the result(s) of the investigation (81313)	The student will: • record the result of a scientific investigation, using a graph, diagram, table, or model (81321) • identify a trend in the results of a scientific investigation (81322) • identify the cause-and-effect relationship of a science-related event (81323) • identify a conclusion, based on the result(s) of an investigation (81324)	The student will: • compare the results of two or more scientific investigations, using graph(s), diagram(s), table(s), or model(s) (81331) • predict a future event, based on the result(s) of a scientific investigation (81332)

Assessment Tasks Science – Grade 8

AGLI 1

Standard 1: Analysis, Inquiry, and Design (Scientific Inquiry)

Key Idea 3: The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.

ASSESSMENT TASKS (ATs)

Assessment tasks are organized from less complex to more complex in accordance with AGLI ordering. Tasks must be used as written, cannot be modified, and no original tasks can be used for assessment

AT Alignment to AGLI	Assessment Tasks	POSSIBLE Datafolio Products and Verifying Evidence Assessment Strategies
AT81311A	The student will recognize the result of a scientific investigation shown, using concrete objects, graphs, diagrams, tables, or models. (e.g., answer a question or statement regarding the shown results. For the investigation "the distance objects travel," the student points to the place on the graph to where each object traveled after a specific period of time. For the investigation "What things can be added to soap to make the bubbles last longer?," the student circles the substance in the data table that produced the longest-lasting bubbles)	• Student work product showing marks that the student made (or the teacher marked for the student, based on his or her response) to indicate the result of a scientific investigation on a graph
AT81311B	The student will recognize the result of a scientific investigation shown, using stacking blocks to determine which set of blocks shows the result that is the most or least, highest or lowest, etc. of the investigation variables, as requested. (e.g., for the investigation "measurements of snowfall at certain times of the day," the student is presented with stacking blocks, each one representing each inch measured [five blocks, two blocks, one block], and the student chooses the result showing five stacking blocks when asked to indicate the result showing the most snowfall measured. For the investigation "surface tension of different liquids," the student is presented with stacking blocks representing the number of pennies that were dropped in each of the different liquids before the liquid overflowed [vinegar-15 blocks, water-5 blocks, syrup-24 blocks], and the student chooses the result showing 5 blocks when asked to indicate the result showing the least amount of surface tension)	• Sequenced, captioned, and dated photographs of the student determining the applicable set of stacking blocks that demonstrate the results of investigations as requested
AT81312	The student will recognize the cause of a science-related event. (e.g., choose between a heat lamp and a ball of ice to indicate which object caused the event of candle wax melting)	• DCS (multi-step) with steps describing student performance selecting the cause from a set of choices

AT81313	The student will recognize whether or not an event is possible, when shown the results of an investigation. (e.g., for the investigation "chart the rise in temperature as ice melts at room temperature," the student indicates "no" when asked the question "Is it possible to save a snowball in your room?"; the student will respond "yes" to the question, "Will the snowball melt at a high temperature?")	• Student work product showing the student's Yes or No responses, when considering whether the results of a scientific investigation will allow an event to be possible or not
AT81321	The student will record the result(s) of a scientific investigation in a graph, diagram, table, or model. (e.g., given the result(s) of a scientific investigation, student completes a graph, diagram, table, or model showing the results)	• Sequenced, captioned, and dated photographs of the student recording the result(s) of the investigation in a graph, diagram, table, or model • Student work product of a completed graph, diagram, table, or model, based on a given scientific investigation
AT81322	The student will identify a trend in the results of a scientific investigation by answering a question(s) regarding a trend(s) using previously recorded data. (e.g., using previously recorded data about temperatures in the month of July, ask the student to identify the trend that he or she would expect in July)	• Student work product showing the student identifying trends by eye gazing to the next temperature that would be expected in July, based on the July temperatures from previous year
AT81323	The student will identify the cause-and-effect relationship of a science-related event. (e.g., given two sets of pictures [one set showing an ice cube, a heat lamp, and a puddle, and one set showing a box, a road, and a car], the student selects the set of pictures that shows a cause-and-effect relationship)	• DCS (multi-step or multi-trial) with steps or trials describing student performance selecting by eye gazing, pointing, or verbalizing (in words, sign language, augmentative communication, etc.) the cause-and-effect relationship of a science-related event
AT81324	The student will identify a conclusion, based on the result(s) of a scientific investigation. (e.g., after completing an investigation that looked at what plants need to grow, and given photographs or actual objects of water and a rock, the student selects a conclusion, based on the result(s) of the investigation; using the results of an investigation in which weight was a determining factor in the distance traveled by a car coasting down a hill, the student identifies the conclusion that the heaviest car traveled the farthest)	• Sequenced, captioned, and dated photographs of the student selecting from a list, photographs, or symbols representing different conclusions, which is the correct conclusion, based on the result(s) of the investigation
AT81331	The student will compare the results of two or more investigations, using graph(s), diagram(s), table(s), or model(s) to show the comparison. (e.g., temperature results: the student records the temperature of the classroom at 10:00 a.m. and 2:00 p.m. and compares the morning temperature to the afternoon temperature [warmer/colder])	• Student work product of table showing the student's comparison of temperatures indicating warmer or colder at each time of day

AT81332	After reviewing the given result(s) of a scientific investigation, the student will indicate a prediction of a future event, based on the result(s). (e.g., given the results of an investigation of classroom temperature [recorded daily at 10:00 a.m. and 2:00 p.m. over five days], the student predicts tomorrow's temperatures)	• Student work product of given temperature results and the student's recording of a weather prediction for the next day

Standard and Essence(s) Science – Grade 8

Standard 4: The Physical Setting/Earth Science

Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.

Science Core Curriculum	Grade Level Indicators (GLI)	Essence(s) of Indicators
Pg. 24–25	**3.1 Observe and describe properties of materials, such as density, conductivity, and solubility.** 3.1a Substances have characteristic properties. Some of these properties include color, odor, phase at room temperature, density, solubility, heat and electrical conductivity, hardness, and boiling and freezing points. 3.1b Solubility can be affected by the nature of the solute and solvent, temperature, and pressure. The rate of solution can be affected by the size of the particles, stirring, temperature, and the amount of solute already dissolved. 3.1c The motion of particles helps to explain the phases (states) of matter as well as changes from one phase to another. The phase in which matter exists depends upon the attractive forces among its particles. 3.1d Gases have neither a determined shape nor a definite volume. Gases assume the shape and volume of a closed container. 3.1e A liquid has a definite volume, but takes the shape of a container. 3.1f A solid has definite shape and volume. Particles resist a change in position. 3.1g Characteristic properties can be used to identify different materials, and separate a mixture of substances into its components. For example, iron can be removed from a mixture by means of a magnet. An insoluble substance can be separated from a soluble substance by such processes as filtration, settling, and evaporation. 3.1h Density can be described as the amount of matter that is in a given amount of space. If two objects have equal volume, but one has more mass, the one with more mass is denser. 3.1i Buoyancy is determined by comparative densities. **3.2 Distinguish between chemical and physical changes.** 3.2a During a physical change a substance keeps its chemical composition and properties. Examples of physical changes include freezing, melting, condensation, boiling, evaporation, tearing, and crushing. 3.2b Mixtures are physical combinations of materials and can be separated by physical means. 3.2c During a chemical change, substances react in characteristic ways to form new substances with different physical and chemical properties. Examples of chemical changes include burning of wood, cooking of an egg, rusting of iron, and souring of milk. 3.2d Substances are often placed in categories if they react in similar ways. Examples include metals, nonmetals, and noble gases.	• Understand that matter can be described by its characteristics, such as color, odor, state of matter, density, solubility, heat and electrical conductivity, hardness, boiling point, and freezing point • Recognize that matter can change either physically or chemically, but matter is always conserved • Understand that matter is made up of atoms • Understand that elements combine to form all substances

	3.2e The Law of Conservation of Mass states that during an ordinary chemical reaction matter cannot be created or destroyed. In chemical reactions, the total mass of the reactants equals the total mass of the products.
	3.3 Develop mental models to explain common chemical reactions and changes in states of matter. 3.3a All matter is made up of atoms. Atoms are far too small to see with a light microscope. 3.3b Atoms and molecules are perpetually in motion. The greater the temperature, the greater the motion. 3.3c Atoms may join together in well-defined molecules or may be arranged in regular geometric patterns. 3.3d Interactions among atoms and/or molecules result in chemical reactions. 3.3e The atoms of any one element are different from the atoms of other elements. 3.3f There are more than 100 elements. Elements combine in a multitude of ways to produce compounds that account for all living and nonliving substances. Few elements are found in their pure form. 3.3g The periodic table is one useful model for classifying elements. The periodic table can be used to predict properties of elements (metals, nonmetals, noble gases).

Alternate Grade Level Indicators (AGLIs) Science – Grade 8

AGLI 2

Standard 4: The Physical Setting/Earth Science

Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.

ALTERNATE GRADE LEVEL INDICATORS (AGLIs)

Less Complex ◀ ····· ··◀·· ····◀··· ···▶·· ····▶· ·····▶ **More Complex**		
The student will: • recognize that everything is made of matter (83211) • identify one characteristic of matter (e.g., color, odor, mass, hardness, etc.) (83212) • recognize a solid and a liquid (83213) • recognize an object as hot (warm) or cold (cool) (83214)	The student will: • identify two or more characteristics to describe matter (e.g., color, odor, mass, hardness, etc.) (83221) • identify whether matter is a solid, a liquid, or a gas (83222) • identify whether a change occurs when materials interact (83223) • identify a physical change in a substance (e.g., salt dissolves in water) (83224) • identify a chemical change in a substance (e.g., oxygen and iron interact to cause iron to rust) (83225) • sort objects according to characteristic(s) such as mass, length, or size (83226)	The student will: • describe the properties of a solid, a liquid, and a gas (83231) • compare two objects that are the same size to determine which is more dense or less dense (83232) • demonstrate conservation of matter (83233) • recognize that matter is made of small parts (atoms) (83234) • perform an investigation involving a physical change (83235) • perform an investigation involving a chemical change (83236)

Assessment Tasks Science – Grade 8

AGLI 2

Standard 4: The Physical Setting/Earth Science

Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.

ASSESSMENT TASKS (ATs)

Assessment tasks are organized from less complex to more complex in accordance with AGLI ordering. Tasks must be used as written, cannot be modified, and no original tasks can be used for assessment

AT Alignment to AGLI	Assessment Tasks	POSSIBLE Datafolio Products and Verifying Evidence Assessment Strategies
AT83211A	The student will recognize the concept of matter by indicating an answer to a statement or question. (e.g., given the statement, "Everything is made up of . . ." the student selects a response from a set of choices [matter]; "How do you know it is matter?" ["it has mass and takes up space"])	• Student work product showing that the student has chosen (scribed, written, used augmented communication) the word/statement "matter" or "it has mass and takes up space" to complete the sentence or answer the question
AT83211B	The student will recognize that everything is made up of matter by looking at and interacting with different examples of matter. (e.g., a balloon with air, water, or beads in it)	• DCS (time-segment) of student performance interacting with different examples of matter • Sequenced, captioned, and dated photographs of students looking at and interacting/handling each of the balloons
AT83212	The student will identify a characteristic of matter (e.g., color, odor, mass, hardness, etc.). (e.g., given a pillow, the student identifies a characteristic of matter from a set of choices [soft]; given a brick, the student identifies a characteristic of matter from a set of choices [dense]. Note: Naming the object does not indicate a characteristic of matter	• DCS (multi-step) with steps describing student performance identifying the density or hardness of familiar object(s) • Student work product showing the item with the characteristic that the student identified
AT83213	The student will recognize a solid and a liquid. (e.g., presented with two objects (or picture representations), the student responds to a question about which object is the solid and which object is the liquid; the student labels two or more items as solids or liquids)	• Student work product showing that the student has labeled two or more objects as solid and liquid • Sequenced, captioned, and dated photographs of the student responding yes or no by activating a switch when shown a solid and a liquid and posed the question "Is this a solid? Is this a liquid"
AT83214	The student will recognize an object as hot (warm) or cold (cool). (e.g., based on having experienced hot or cold objects [such as the temperature of water, a baked potato, or ice cream], the student can, when asked, indicate whether an object is hot or cold; indicate hot (warm) or cold (cool) when presented with an object)	• Student work product showing the student's answer (written, scribed, done with augmented communication) as to whether an item was hot or cold • Student work product showing pictures of items that are sorted by the student into groups of those that are hot and those that are cold

AT83221	The student will identify two or more characteristics that describe an object's matter. (e.g., given a piece of pink granite, the student selects the word cards for hard, pink, and odorless from a set of choices on an interactive board)	• Sequenced, captioned, and dated photographs of the student selecting picture and/or word cards that indicate the characteristics of the matter that they were given • Student work product with the piece of matter indicated or shown and the recorded student responses or circled words from a list that describe the characteristics of the matter
AT83222	The student will identify whether a substance is a solid, a liquid, or a gas. (e.g., The student labels an item with the appropriate state of matter, ice as a solid; milk as a liquid; rock as a solid; air as a gas) Note: It is acceptable to represent the state of matter in a container; for example, air in a balloon or milk in a glass.	• Student work product of a table listing things as a solid, a liquid, or a gas
AT83223	The student will observe two materials being mixed together and indicate if changes occur. (e.g., observe vinegar and baking soda being mixed together and respond to the question "does a change occur?" [yes/no, change/no change]; mixing salt with pepper causes no change; pouring water on a pencil causes no change)	• DCS (multi-step) with steps describing student performance responding to the question "Did a change occur?" for different materials • Student work product with the mixtures indicated and "change" or "no change" next to each mixture with the student-marked response on "change" or "no change"
AT83224	The student will identify a physical change in a substance. (e.g., given the scenario of water freezing to form ice, the student indicates whether this is a physical change or not; water condensing on a pitcher; adding water to dirt; grinding a sugar cube; cutting a piece of cloth)	• Student work product from observing physical change shows the sequence from original state to final state (e.g., water at room temperature [liquid] becomes ice [solid] when frozen)
AT83225	The student will identify a chemical change in a substance. (e.g., after observing a chemical change occur, the student answers questions about his or her observation; burning paper; mixing baking soda and vinegar; food spoiling, composting)	• Sequenced, captioned, and dated photographs of the student indicating the chemical change that took place (e.g., new substances formed, bubbles [production of a gas])
AT83226	The student will sort two or more objects according to a characteristic of mass, length, or size. (e.g., place shorter objects inside a box or area and longer objects inside another box or area)	• DCS (multi-step) with steps describing student performance sorting objects into their respective boxes or areas • Sequenced, captioned, and dated photographs showing the student sorting the objects into two boxes or areas
AT83231A	The student will describe the properties of a solid, a liquid, and a gas by determining if objects are solid, liquid, or gas and indicating his or her reasoning. (e.g., rock is solid because it maintains its shape and size no matter what container it is in)	• Student work product identifying objects as solid, liquid, and gas and listing a reason for the each answer

AT83231B	The student will describe the properties of a solid, a liquid, and a gas.	• Student work product with a chart that the student has completed by gluing pictures of a solid, a liquid, and a gas and adding a property of matter to describe each
AT83232	The student will compare two objects that are the same size, and will indicate which object is more dense or less dense. (e.g., given two objects that are the same size, the student compares the mass by holding the objects and identifying which object is denser)	• DCS (multi-step) with steps describing student performance indicating which object is more/less dense when presented with different sets of objects (e.g., small rock and cotton ball, wooden block and same size sponge)
AT83233	The student will demonstrate that matter is conserved by investigating matter through phase changes. (e.g., put an ice cube in water; measure the mass of the ice cube and water together, observe that, as ice cube melts, the total mass remains the same and that matter does not disappear)	• Student work product from an investigation showing that matter is conserved
AT83234	The student will recognize that matter is made up of small parts (atoms). (e.g., respond to a question about how a particular piece of matter is made up of atoms; create a flyer, poster, or presentation to describe that matter is made up of atoms)	• Student work product with a student created (using words, sentence strips, images) a description of how a particular piece of matter is made up of atoms
AT83235	The student will perform an investigation involving a physical change. (e.g., dissolve Kool-Aid in water; make a fruit smoothie)	• DCS (multi-step) with steps describing student performing the investigation of a physical change • Sequenced, captioned, and dated photographs showing student performing investigation: 1.) Student putting water on stove, 2.) Student turning stove on, 3.) Student observing bubbles in water or observing tea kettle whistling
AT83236	The student will perform an investigation involving a chemical change. (e.g., follow a recipe, focusing on how the ingredients change to form a new substance [the flour is indistinguishable once mixed with other ingredients])	• Student work product with ingredients identified by their chemical characteristics (including solid and liquid) and how their chemical characteristics change in the final product