NM Public Education Department

SCIENCE:
8th Grade
Physical Science Concentration

END-OF-COURSE EXAM | GRADE 8 | YEAR 18–19

ASSESSMENT BLUEPRINT

Purpose Statement
8th Grade Physical Science
Concentration

The 8th Grade Science End-of-Course (EOC) exam is intended to measure student proficiency of the New Mexico Science Standards. This course-level exam is provided to all students who have completed 8th Grade Physical Science or related courses. This exam can be given for the following STARS course codes:

1703 – Physical Science
1708 – Physical Science

Intended as a final exam for the course, this is a summative assessment covering a range of content, skills, and applications. Scores are reported to the teacher, school, district, and state levels for the purposes of student grades, curriculum review, and NMTeach summative reports.

"The EOCs are exams written by New Mexico Teachers for New Mexico Students."
During the 2018 summer, teachers were brought together in person or online as part of the blueprint and exam revision process. The NM PED extends our gratitude to all those who contributed to this improvement process. Although we were unable to implement every suggestion due to conflicting viewpoints at times, this blueprint reflects the best collaborative effort among dedicated peers.

The NM PED would like to especially recognize the following people who led the revision of this blueprint:

- *Christy Krenek, Santa Fe Public Schools, Content Lead*
- *Sandra Beaudret, The ASK Academy*
- *Tammy Hernandez, North Valley Academy*
- *Joe Dan Lovato, La Resolana Leadership Academy*
- *Ella Rael, Taos Municipal Schools*
- *Saji Sebastian, Gallup-McKinley County Schools*
- *Nancy Smith, Tucumcari Public Schools*

Explanation of Blueprint Layout & Test Specifications Table

Topics	Topics with Test Item Specifications:
The performance expectations (PEs) identified in this portion of the blueprint are aligned to the New Mexico STEM Ready! Science Standards. *The PEs have been deconstructed to highlight the three dimensionality. Consult your NM STEM Ready! Standards for the full PE:* *https://webnew.ped.state.nm.us/bureaus/math-science/nm-STEM Ready-science/nm-STEM Ready-science-standards/* *and Middle School Recommended Discipline Specific Course Map:* *https://webnew.ped.state.nm.us/bureaus/math-science/nm-STEM Ready-science/nm-STEM Ready-science-standards/recommended-secondary-course-maps/* *New Mexico Teachers identified the PEs to be measured on the EOC exam using the following criteria: 1) a great deal of instructional time is spent on the PE as identified in the curriculum and/or; 2) the PE is important to subsequent learning.* *It is important to note that the PEs in the blueprint are only a **subset** of PEs to be measured with the understanding that teachers cover more PEs during the course of instruction than what has been selected to be measured.*	● *This portion of the blueprint identifies the disciplinary core idea (DCI) that students will have to demonstrate knowledge of during the exam. These items are not fully aligned to the science and engineering practices (SEP) and crosscutting concepts (CCC).* ● *Although the PE measures other dimensions, the item specifications may place constraints on portions of the DCI in order to provide more transparency as to what specifically will be measured relative to the PE.* ● *Items on this year's NM STEM Ready! transition EOC are content aligned and are items from the existing EOC and/or SBA item banks. PED will be field testing NM STEM Ready! cluster items for EOCs, which are optional for school participation.*
	Item Types: *The item types for this EOC exam are limited to:* *MC = multiple choice with or without stimulus (e.g., picture, graph, chart)*
	Sample Question: *Sample questions have been provided for some PEs to assist teachers to correlate the questions with the performance standards and the test item specification, when applicable. Sample questions could not be provided for all PEs due to the limitations in the existing EOC and SBA item bank.* ● *An * or box denotes the correct answer* ● *DOK = Depth of Knowledge* ● *Some sample questions may be items released items from prior EOC exams*

Blueprint Table – 8th Grade Physical Science Concentration

Topic: Engineering Design	DCI with Test Item Specifications:
MS-ETS1-2 **SEP**: Evaluate competing design solutions **DCI**: using a systematic process to determine how well they meet the criteria and constraints of the problem. **CCC**: None **Clarification Statement:** None **Assessment Boundary:** None	**ETS1.B: Developing Possible Solutions** There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. **Essential Question:** **What is the process for developing potential design solutions?** **Item Types:** *MC = multiple choice with or without stimulus*

Topic: Engineering Design	DCI with Test Item Specifications:
MS-ETS1-3 **SEP**: Analyze data from tests to determine similarities and differences **DCI**: among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. **CCC**: None **Clarification Statement:** None **Assessment Boundary:** None	**ETS1.B: Developing Possible Solutions** There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors. **ETS1.C: Optimizing the Design Solution** Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process—that is, some of those characteristics may be incorporated into the new design. **Essential Questions:** **What is the process for developing potential design solutions?** **How can the various proposed design solutions be compared and improved?**
	Item Types: *MC = multiple choice with or without stimulus*

Topic: Engineering Design	DCI with Test Item Specifications:
MS-ETS1-4 **SEP**: Develop a model to generate data **DCI**: for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. **CCC**: None **Clarification Statement:** None **Assessment Boundary:** None	**<u>ETS1.B: Developing Possible Solutions</u>** A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. Models of all kinds are important for testing solutions. **<u>ETS1.C: Optimizing the Design Solution</u>** The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution. **Essential Questions:** **What is the process for developing potential design solutions?** **How can the various proposed design solutions be compared and improved?**
	Item Types: *MC = multiple choice with or without stimulus*

Topic: Earth and Human Activity	DCI with Test Item Specifications:
MS-ESS3-2 **SEP**: Analyze and interpret data **DCI**: on natural hazards to forecast future catastrophic events **CCC**: and inform the development of technologies to mitigate their effects. **Clarification Statement:** Emphasis is on how some natural hazards, such as volcanic eruptions and severe weather, are preceded by phenomena that allow for reliable predictions, but others, such as earthquakes, occur suddenly and with no notice, and thus are not yet predictable. Examples of natural hazards can be taken from interior processes (such as earthquakes and volcanic eruptions), surface processes (such as mass wasting and tsunamis), or severe weather events (such as hurricanes, tornadoes, and floods). Examples of data can include the locations, magnitudes, and frequencies of the natural hazards. Examples of technologies can be global (such as satellite systems to monitor hurricanes or forest fires) or local (such as building basements in tornado-prone regions or reservoirs to mitigate droughts). **Assessment Boundary:** None	**ESS3.B: Natural Hazards** Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events. **Essential Question:** **How do natural hazards affect individuals and societies?** **Item Types:** *MC = multiple choice with or without stimulus* **Sample Question:** Scientists have learned that some natural disasters, such as earthquakes and hurricanes, can damage electrical and water systems. This damage can cause microorganisms to get into drinking water and cause diseases. Which statement describes a precaution for people in such situations? (A) Tap water should be boiled before anyone drinks it.* (B) Backup generators should be on hand to provide electricity. (C) Cell phones should be used sparingly to conserve battery power. (D) Cars should be packed with food, water, and clothes in case of an evacuation order.

<table>
<tr><th>Topic: Earth and Human Activity</th><th>DCI with Test Item Specifications:</th></tr>
<tr><td rowspan="3">MS-ESS3-3

SEP: Apply scientific principles to design

DCI: a human impact on the environment.

CCC: a method for monitoring and minimizing

Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).

Assessment Boundary: None</td><td><u>ESS3.C: Human Impacts on Earth Systems</u>
Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth’s environments can have different impacts (negative and positive) for different living things.

Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.

Essential Question:
How do humans change the planet?</td></tr>
<tr><td>Item Types:
MC = multiple choice with or without stimulus</td></tr>
<tr><td>Sample Question:

In some tropical areas, people burn acres of rain forest habitat to grow food and feed farm animals for a short time. Once the area is no longer productive, the people leave.

Which statement describes what will most likely happen next?

(A) The soil that remains will need a long time to replenish nutrients.*
(B) The farm plants will grow, spread, and produce more food.
(C) The main source of food for most of the rain forest animals will be ash.
(D) The rain forest animals will return and adapt to the conditions they find.</td></tr>
</table>

<table>
<tr><th>Topic: Earth and Human Activity</th><th>DCI with Test Item Specifications:</th></tr>
<tr><td rowspan="3">MS-ESS3-4

SEP: Construct an argument supported by evidence for how

DCI: increases in human population and per-capita consumption of natural resources

CCC: impact Earth's systems.

Clarification Statement: Examples of evidence include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth’s systems as well as the rates at which they change. The consequences of increases in human populations and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.

Assessment Boundary: None</td><td><u>ESS3.C: Human Impacts on Earth Systems</u>
Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.

Essential Question:
How do humans change the planet?</td></tr>
<tr><td>Item Types:
MC = multiple choice with or without stimulus</td></tr>
<tr><td>Sample Question:

A teacher explains to her class that the number of lions in Africa has been decreasing. She reads the following information to her class.

“Scientists found that a number of lions in Africa has declined over the past 50 years. Images from satellites show that only 25% of the lion’s original habitat remains untouched. Scientists explain that human activity has caused this loss of habitat and has therefore decreased the number of lions.”

Four students comment on the scientists’ explanation.

Which comment shows the best scientific reasoning?
(A) It is not possible for humans to change habitats in such a big way, so scientists must be mistaken.
(B) Humans typically change landscape where they live, so the scientists are likely correct.*
(C) The populations of other living things decrease whenever humans live, so the scientists are correct.
(D) It is likely that the data gathered by the satellites was completely inaccurate, so the scientists are likely mistaken.</td></tr>
</table>

Topic: Matter and Its Interactions	DCI with Test Item Specifications:
MS-PS1-2 **SEP**: Analyze and interpret data **DCI**: before and after the substances interact to determine if a chemical reaction has occurred. **CCC**: on the properties of substances **Clarification Statement:** Examples of reactions could include burning sugar or steel wool, fat reacting with sodium hydroxide, and mixing zinc with hydrogen chloride. **Assessment Boundary:** Assessment is limited to analysis of the following properties: density, melting point, boiling point, solubility, flammability, and odor.	**PS1.A: Structure and Properties of Matter** Each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it. **PS1.B: Chemical Reactions** Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. **Essential Questions:** **How do particles combine to form the variety of matter one observes?** **How do substances combine or change (react) to make new substances?** **How does one characterize and explain these reactions and make predictions about them?** **Item Types:** *MC = multiple choice with or without stimulus*

Topic: Matter and Its Interactions	DCI with Test Item Specifications:
MS-PS1-4 **SEP**: Develop a model that **DCI**: in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. **CCC**: predicts and describes changes **Clarification Statement:** Emphasis is on qualitative molecular-level models of solids, liquids, and gases to show that adding or removing thermal energy increases or decreases kinetic energy of the particles until a change of state occurs. Examples of models could include drawing and diagrams. Examples of particles could include molecules or inert atoms. Examples of pure substances could include water, carbon dioxide, and helium. **Assessment Boundary:** None	**PS1.A: Structure and Properties of Matter** Gases and liquids are made of molecules or inert atoms that are moving about relative to each other. In a liquid, the molecules are constantly in contact with others; in a gas, they are widely spaced except when they happen to collide. In a solid, atoms are closely spaced and may vibrate in position but do not change relative locations. The changes of state that occur with variations in temperature or pressure can be described and predicted using these models of matter. **PS3.A: Definitions of Energy** The term "heat" as used in everyday language refers both to thermal energy (the motion of atoms or molecules within a substance) and the transfer of that thermal energy from one object to another. In science, heat is used only for this second meaning; it refers to the energy transferred due to the temperature difference between two objects. The temperature of a system is proportional to the average internal kinetic energy and potential energy per atom or molecule (whichever is the appropriate building block for the system's material). The details of that relationship depend on the type of atom or molecule and the interactions among the atoms in the material. Temperature is not a direct measure of a system's total thermal energy. The total thermal energy (sometimes called the total internal energy) of a system depends jointly on the temperature, the total number of atoms in the system, and the state of the material. **Essential Questions:** **How do particles combine to form the variety of matter one observes?** **What is energy?**
	Item Types: *MC = multiple choice with or without stimulus*
	Sample Question: Which statement correctly describes a substance changing from a liquid to a solid? (A) The number of particles increases. (B) The number of particles decreases. (C) The particles speed up. (D) The particles slow down.*

Topic: Energy	DCI with Test Item Specifications:
MS-PS3-1 **SEP**: Construct and interpret graphical displays of data to describe DCI: kinetic energy to the mass of an object and to the speed of an object. **CCC**: the relationships of **Clarification Statement:** Emphasis is on descriptive relationships between kinetic energy and mass separately from kinetic energy and speed. Examples could include riding a bicycle at different speeds, rolling different sizes of rocks downhill, and getting hit by a wiffle ball versus a tennis ball. **Assessment Boundary:** None	**PS3.A: Definitions of Energy** Motion energy is properly called kinetic energy; it is proportional to the mass of the moving object and grows with the square of its speed. **Essential Question:** **What is energy?** **Item Types:** *MC = multiple choice with or without stimulus*

Topic: Energy	DCI with Test Item Specifications:
MS-PS3-2 **SEP**: Develop a model **DCI**: the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system. **CCC**: to describe that when **Clarification Statement:** Emphasis is on relative amounts of potential energy, not on calculations of potential energy. Examples of objects within systems interacting at varying distances could include: the Earth and either a roller coaster cart at varying positions on a hill or objects at varying heights on shelves, changing the direction/orientation of a magnet, and a balloon with static electrical charge being brought closer to a classmate's hair. Examples of models could include representations, diagrams, pictures, and written descriptions of systems. **Assessment Boundary:** Assessment is limited to two objects and electric, magnetic, and gravitational interactions.	**PS3.A: Definitions of Energy** A system of objects may also contain stored (potential) energy, depending on their relative positions. **PS3.C: Relationship Between Energy and Forces** When two objects interact, each one exerts a force on the other that can cause energy to be transferred to or from the object. **Essential Questions:** **What is energy?** **How are forces related to energy?** **Item Types:** *MC = multiple choice with or without stimulus*

Topic: Energy	DCI with Test Item Specifications:
MS-PS3-3 **SEP**: Apply scientific principles to design, construct, and test a device that **DCI**: either minimizes or maximizes **CCC**: thermal energy transfer. **Clarification Statement:** Examples of devices could include an insulated box, a solar cooker, and a Styrofoam cup. **Assessment Boundary:** Assessment does not include calculating the total amount of thermal energy transferred.	**PS3.A: Definitions of Energy** Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present. **PS3.B: Conservation of Energy and Energy Transfer** Energy is spontaneously transferred out of hotter regions or objects and into colder ones **ETS1.A: Defining and Delimiting an Engineering Problem** The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that is likely to limit possible solutions. **ETS1.B: Developing Possible Solutions** A solution needs to be tested, and then modified on the basis of the test results in order to improve it. There are systematic processes for evaluating solutions with respect to how well they meet criteria and constraints of a problem. **Essential Questions:** **What is energy?** **What is meant by conservation of energy?** **How is energy transferred between objects or systems?** **What is a design for?** **What are the criteria and constraints of a successful solution?** **What is the process for developing potential design solutions?**
	Item Types: *MC = multiple choice with or without stimulus*
	Sample Question: The air above the top bunk of a bunk bed is warmer than the air above the bottom bunk. Which of the following describes the method of heating that causes this difference in temperature? (A) radiation from the room (B) heat transfer through the walls (C) convection currents in the room* (D) conduction through the bed

<table>
<tr><th>Topic: Motion and Stability:
Forces and Interactions</th><th>DCI with Test Item Specifications:</th></tr>
<tr><td rowspan="3">MS-PS2-1

SEP: Apply…to design

DCI: Newton’s Third Law… the motion of

CCC: a solution to a problem involving…two colliding objects.

Clarification Statement: Examples of practical problems could include the impact of collisions between two cars, between a car and stationary objects, and between a meteor and a space vehicle.

Assessment Boundary: Assessment is limited to vertical or horizontal interactions in one dimension.</td><td><u>PS2.A: Forces and Motion</u>
For any pair of interacting objects, the force exerted by the first object on the second object is equal in strength to the force that the second object exerts on the first, but in the opposite direction (Newton’s third law).

Essential Question:
How can one predict an object’s continued motion, changes in motion, or stability?</td></tr>
<tr><td>Item Types:
MC = multiple choice with or without stimulus</td></tr>
<tr><td>Sample Question:

When one force of 10N is acting on the right side of an object and another force of 10N is acting on the left side of an object, what will be the result?

(A) the object is moving
(B) the object is moving to the left
(C) the object is not moving *
(D) the object is moving to the right</td></tr>
</table>

Topic: Motion and Stability: Forces and Interactions	DCI with Test Item Specifications:
MS-PS2-2 **SEP**: Plan an investigation to provide evidence that **DCI**: an object's motion depends on the sum of the forces on the object and the mass of the object. **CCC**: that change in **Clarification Statement:** Emphasis is on balanced (Newton's First Law) and unbalanced forces in a system, qualitative comparisons of forces, mass and changes in motion (Newton's Second Law), frame of reference, and specification of units. **Assessment Boundary:** Assessment is limited to forces and changes in motion in one-dimension in an inertial reference frame and to change in one variable at a time. Assessment does not include the use of trigonometry.	**PS2.A: Forces and Motion** The motion of an object is determined by the sum of the forces acting on it; if the total force on the object is not zero, its motion will change. The greater the mass of the object, the greater the force needed to achieve the same change in motion. For any given object, a larger force causes a larger change in motion. All positions of objects and the directions of forces and motions must be described in an arbitrarily chosen reference frame and arbitrarily chosen units of size. In order to share information with other people, these choices must also be shared. **Essential Question:** **How can one predict an object's continued motion, changes, or stability?** **Item Types:** *MC = multiple choice with or without stimulus*

Topic: Motion and Stability: Forces and Interactions	DCI with Test Item Specifications:
MS-PS2-3 **SEP**: Ask questions about data to determine **DCI**: the factors and strength of electric and magnetic forces. **CCC**: that affect **Clarification Statement:** Examples of devices that use electric and magnetic forces could include electromagnets, electric motors, or generators. Examples of data could include the effect of the number of turns of wire on the strength of an electromagnet, or the effect of increasing the number or strength of magnets on the speed of an electric motor. **Assessment Boundary:** Assessment about questions that require quantitative answers is limited to proportional reasoning and algebraic thinking.	**<u>PS2.B: Types of Interactions</u>** Electric and magnetic (electromagnetic) forces can be attractive or repulsive, and their sizes depend on the magnitudes of the charges, currents, or magnetic strengths involved and on the distances between the interacting objects **Essential Question:** **Why are some physical systems more stable than others?** **Item Types:** *MC = multiple choice with or without stimulus*

Topic: Motion and Stability: Forces and Interactions	DCI with Test Item Specifications:
MS-PS2-4 **SEP**: Construct and present arguments using evidence to support the claim **DCI**: gravitational interactions are attractive and depend on the masses **CCC**: of interacting objects. **Clarification Statement:** Examples of evidence for arguments could include data generated from simulations or digital tools; and charts displaying mass, strength of interaction, distance from the Sun, and orbital periods of objects within the solar system. **Assessment Boundary:** Assessment does not include Newton's Law of Gravitation or Kepler's Laws.	**<u>PS2.B: Types of Interactions</u>** Gravitational forces are always attractive. There is a gravitational force between any two masses, but it is very small except when one or both of the objects have large mass—e.g., Earth and the sun. **Essential Question:** **What underlying forces explain the variety of interactions observed?** **Item Types:** *MC = multiple choice with or without stimulus* **Sample Question:** Which two factors determine the strength of gravitational force according to Newton's law of universal gravitation? (A) mass and distance * (B) distance and weight (C) mass and weight (D) gravity and mass

Topic: Motion and Stability: Forces and Interactions	DCI with Test Item Specifications:
MS-PS2-5 **SEP**: Conduct an investigation and evaluate the experimental design to provide evidence that **DCI**: fields exist between objects…even though the objects are not in contact. **CCC**: exerting forces on each other **Clarification Statement:** Examples of this phenomenon could include the interactions of magnets, electrically-charged strips of tape, and electrically-charged pith balls. Examples of investigations could include first-hand experiences or simulations. **Assessment Boundary:** Assessment is limited to electric and magnetic fields, and limited to qualitative evidence for the existence of fields.	**<u>PS2.B: Types of Interactions</u>** Electric and magnetic (electromagnetic) forces can be attractive or repulsive, and their sizes Forces that act at a distance (electric, magnetic, and gravitational) can be explained by fields that extend through space and can be mapped by their effect on a test object (a charged object, a magnet, or a ball, respectively). **Essential Question:** **What underlying forces explain the variety of interactions observed?** **Item Types:** *MC = multiple choice with or without stimulus*

Topic: Waves and Their Applications in Technologies for Information Transfer	DCI with Test Item Specifications:
MS-PS4-2 **SEP**: Develop and use a model to describe **DCI**: that waves are reflected, absorbed, or transmitted **CCC**: through various materials. **Clarification Statement:** Emphasis is on both light and mechanical waves. Examples of models could include drawings, simulations, and written descriptions. **Assessment Boundary:** Assessment is limited to qualitative applications pertaining to light and mechanical waves.	**PS4.A: Wave Properties** A sound wave needs a medium through which it is transmitted. **PS4.B: Electromagnetic Radiation** When light shines on an object, it is reflected, absorbed, or transmitted through the object, depending on the object's material and the frequency (color) of the light. The path that light travels can be traced as straight lines, except at surfaces between different transparent materials (e.g., air and water, air and glass) where the light path bends. A wave model of light is useful for explaining brightness, color, and the frequency-dependent bending of light at a surface between media. However, because light can travel through space, it cannot be a matter wave, like sound or water waves. **Essential Questions:** **What are the characteristic properties and behaviors of waves?** **What is light?** **How can one explain the varied effects that involve light?** **What other forms of electromagnetic radiation are there?**
	Item Types: *MC = multiple choice with or without stimulus*
	Sample Question: Why does a swimming pool not appear as deep as it actually is? (A)The light is diffused. (B)The light is diffracted. (C) The light is refracted. * (D) The light is reflected.

Topic: Waves and Their Applications in Technologies for Information Transfer	DCI with Test Item Specifications:
MS-PS4-3 **SEP**: Integrate qualitative scientific and technical information to support the claim **DCI**: digitized signals to encode and transmit information than analog signals. **CCC**: more reliable way **Clarification Statement:** Emphasis is on a basic understanding that waves can be used for communication purposes. Examples could include using fiber optic cable to transmit light pulses, radio wave pulses in wifi devices, and conversion of stored binary patterns to make sound or text on a computer screen. **Assessment Boundary:** Assessment does not include the specific mechanism of any given device.	**PS4.C: Information Technologies and Instrumentation** Digitized signals (sent as wave pulses) are a more reliable way to encode and transmit information. **Essential Question:** **How are instruments that transmit and detect waves used to extend human senses?** **Item Types:** *MC = multiple choice with or without stimulus*

8th Grade Physical Science Concentration Reporting Category Alignment Framework					
Reporting Category	**Performance Expectation**	**DOK (Count by DOK)**			**Grand Total**
		1	**2**	**3**	
Engineering Design	MS-ETS1-1				
	MS-ETS1-2		1		**1**
	MS-ETS1-3				
	MS-ETS1-4		1		**1**
Earth and Human Activity	MS-ESS3-2				
	MS-ESS3-3	1			**1**
	MS-ESS3-3 NM				
	MS-ESS3-4			1	**1**
Matter and Its Interactions	MS-PS1-2	1			**1**
	MS-PS1-3				
	MS-PS1-4		5		**5**
	MS-PS1-5				
	MS-PS1-6				
Energy	MS-PS3-1				
	MS-PS3-2	1	3		**4**
	MS-PS3-3		1		**1**
	MS-PS3-4				
	MS-PS3-5				
Motion and Stability: Forces and Interactions	MS-PS2-1		2		**2**
	MS-PS2-2	2	1		**3**
	MS-PS2-3		1		**1**
	MS-PS2-4	1			**1**

	MS-PS2-5		2		**2**
	MS-PS1-1				
Waves and Their Applications in Technologies for Information Transfer	MS-PS4-1				
	MS-PS4-2		2		**2**
	MS-PS4-3				
	Grand Total	**6**	**19**	**1**	**26**