Grade 8

meap™
Michigan Educational Assessment Program

Item Descriptors

5th

8th

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SCIENCE

FALL 2011

MICHIGAN STATE BOARD OF EDUCATION

STATEMENT OF ASSURANCE OF COMPLIANCE WITH FEDERAL LAW

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NOTE: For each item listed throughout this booklet, the first statement is the Michigan Science Curriculum Framework (MSCF) benchmark and the second statement is the descriptor for the item's stem or question. Note that some items only occur in certain forms as indicated by the form numbers in parenthesis after the item numbers (i.e., F1=Form 1, F2=Form 2, etc.).

Students were instructed to read the directions below silently as the test administrator read them aloud.

PART 1

DIRECTIONS:

In this part, you will answer multiple-choice science questions. Some questions will ask you to read a passage, table, or other science-related information. Use that information with what you know to answer the question.

You must mark all of your answers in Part 1 of your **Answer Document** with a No. 2 pencil. You may underline, circle, or write in this test booklet to help you, but nothing marked in this test booklet will be scored. No additional paper may be used.

Mark only one answer for each question. Completely fill in the corresponding circle on your **Answer Document**. If you erase an answer, be sure to erase completely. Remember that if you skip a question in the test booklet, you need to skip the answer space for that question on the **Answer Document**. If you are not sure of an answer, mark your **best** choice.

A Periodic Table of the Elements has been provided for your reference on the next page.

A sample question is provided for you below.

Sample Multiple-Choice Question:

Pill bugs can often be found underneath rocks and rotting logs. When exposed to light, they immediately try to find a dark place to hide. This reaction by the pill bugs is a result of

A migration.

B feeding behavior.

C energy requirements.

D changing environmental conditions.

For this sample question, the correct answer is **D**. Circle **D** is filled in for the sample question on your **Answer Document**.

Once you have reached the word **STOP** in your test booklet, do **NOT** go on to the next page. If you finish early, you may go back and check your work in Part 1 of the test **ONLY**. Check to make sure that you have answered every question. Do **NOT** look at any other part of the test.

NOTE: The directions for Part 2 are the same as the above instructions.

1 **L.OL.05.41:** Identify the general purpose of selected animal systems (digestive, circulatory, respiratory, skeletal, muscular, nervous, excretory, and reproductive).

Given four pairs of animal body systems, recognize the pair which serves a specified purpose for a familiar animal.

A selected a pair where one system is not directly involved with the specified process

B selected a pair where one system is not directly involved with the specified process

C selected the correct pair of body systems where both are directly involved with the specified process

D selected a pair where neither system is directly involved with the specified process

2 **(F1) L.EC.06.31:** Identify the living (biotic) and nonliving (abiotic) components of an ecosystem.

Given ten separate ecosystem components, arranged in four sets of three components each, recognize the set that is abiotic.

A selected a set that had one biotic component

B selected a set having two biotic components

C correct, selected the set having all abiotic components

D selected a set having two biotic components

2 **(F2) L.EC.06.22:** Explain how two populations of organisms can be mutually beneficial and how that can lead to interdependency.

Based on a brief description of two organisms in the same ecosystem, identify the relationship between the organisms.

A correctly selects the existing relationship between the two organisms

B incorrectly identifies the type of relationship

C incorrectly identifies the type of relationship

D incorrectly identifies the type of relationship

2 **(F3) L.EC.06.11:** Identify and describe examples of populations, communities, and ecosystems including the Great Lakes region.

Recognize the name for the biological target of a specified research method.

A correctly identified the biological target

B selected a target description that is smaller than required for the specified research method

C selected a target description that is greater than required for the specified research method

D selected a target description that is greater than required for the specified research method

2 **(F4) L.EC.06.31:** Identify the living (biotic) and nonliving (abiotic) components of an ecosystem.

Distinguish biotic and abiotic factor examples in a specified ecosystem.

A misclassified biotic factor examples

B misclassified abiotic factor examples

C misclassified biotic factor examples

D correctly classified abiotic factor examples

2 **(F5) L.EC.06.41:** Describe how human beings are part of the ecosystem of Earth and that human activity can purposefully, or accidentally, alter the balance in ecosystems.

Given a list of four facts about an ecosystem, identify the fact that exemplifies a human contribution to ecosystem change.

A selected a fact about ecosystem change that does not involve human activity

B selected a fact about ecosystem change that does not involve human activity

C recognized that human activity will impact the effect that animals will have on the otherwise prevailing ecosystem

D selected a fact about ecosystem change that does not involve human activity

3 **L.OL.07.63:** Describe evidence that plants make, use, and store food.

Given a familiar edible plant, recognize the part of this plant that primarily stores its energy.

A correct, selected the plant part that primarily stores its energy resource

B selected a part of the plant that could store a bit of its energy, but not the primary part for its energy resource

C selected a plant part where some energy is allocated for offspring germination

D selected a plant part that does not store the energy resource

4 **(F1) L.EV.05.11:** Explain how behavioral characteristics (adaptation, instinct, learning, habit) of animals help them to survive in their environment.

Among a list of four characteristics for a specified animal type, recognize which of the characteristics is a behavioral adaptation for survival.

A selected a growth characteristic found in the animal type

B correct, selected a behavioral characteristic that is a survival adaptation

C selected a body characteristic that serves many types of behaviors

D selected a body characteristic that changes in regard to threat but it is not a behavioral adaptation

4 (F2) L.EV.05.21: Relate degree of similarity in anatomical features to the classification of contemporary organisms.

Use common anatomical features to classify organisms.

A selected an anatomical feature for classification that does not apply to the set of organisms

B selected an anatomical feature for classification that does not apply to the set of organisms

C selected an anatomical feature for classification that does not apply to the set of organisms

D correctly selected an anatomical feature that would classify organisms within the set

4 (F3) L.EV.05.13: Describe how fossils provide evidence about how living things and environmental conditions have changed.

Identify the correct conclusion based on specific fossil evidence as applicable to Michigan geological history.

A selected a conclusion that has no basis from the fossil evidence

B selected a conclusion that is not applicable to the fossil evidence

C selected a conclusion which accounts for the fossil evidence in Michigan

D selected a non-sequitur conclusion irrelevant to the fossil evidence

4 (F4) L.EV.05.11: Explain how behavioral characteristics (adaptation, instinct, learning, habit) of animals help them to survive in their environment.

Recognize a survival value for sexual versus asexual reproduction.

A did not select a species survival benefit that stems from sexual reproduction

B did not select a species survival benefit that stems from sexual reproduction

C recognized a species survival benefit that is based on sexual reproduction

D did not select a species survival benefit that stems from sexual reproduction

4 **(F5) L.EV.05.14:** Analyze the relationship of environmental change and catastrophic events (for example: volcanic eruption, floods, asteroid impacts, tsunami) to species extinction.

Understand the environmental consequences from a specified catastrophic event on Earth's surface.

A selected a post-event consequence that does not occur due to the specified catastrophic event

B selected the environmental consequence attributed to the specified catastrophic event that can globally threaten life on Earth

C selected local damage from the catastrophic event that, by itself, does not have a global impact on the environment as another more serious life-threatening consequence attributed to the specified event

D selected local damage from the catastrophic event that, by itself, does not have a global impact on the environment as another more serious life-threatening consequence attributed to the specified event

5 **L.OL.07.21:** Recognize that all organisms are composed of cells (single cell organisms, multicellular organisms).

Recognize evidence that indicates life form.

A selected evidence of substance used for life, but not necessarily indicative of a life form

B selected evidence of substance used for life, but not necessarily indicative of a life form

C identified evidence of present or previous life form

D selected evidence that is not indicative of present or previous life form

6 **L.EV.05.14:** Analyze the relationship of environmental change and catastrophic events (for example: volcanic eruption, floods, asteroid impacts, tsunami) to species extinction.

Given a specified, permanent biotic change to a geographical-based ecosystem, recognize the most likely impact from the biotic change on the ecosystem's animal population.

A selected an incorrect concept implying the animals would adapt to the change via Lamarckian evolution

B correct, selected the most likely change in animal population levels and available species types

C selected an incorrect concept where the biotic change would have no effect on the animal populations

D selected a true point about the new environment, however the point is unlikely to facilitate animal adaptation or survival

7 (F1) L.HE.05.12: Distinguish between inherited and acquired traits.

Recognize whether and how a specified and familiar human trait is acquired or inherited.

A incorrectly selected the wrong process regarding how specified trait is acquired

B correct, selected the process regarding how specified trait is acquired

C selected a reproductive process not used by organisms that have eyes

D selected a genetic process not applicable to eye color

7 (F2) L.HE.05.12: Distinguish between inherited and acquired traits.

Recognize an example of an acquired trait in a specified (common) organism.

A correctly identified the described trait as acquired

B mischaracterized the description of the specified trait

C mischaracterized the description of the specified trait

D mischaracterized the description of the specified trait

7 (F3) L.HE.05.12: Distinguish between inherited and acquired traits.

Recognize the occurrence of an observable acquired trait.

A incorrectly attributed the occurrence of the acquired trait to genetics

B correctly attributed the acquired trait of an organism to its cause

C selected an incorrect fact about the part of the organism observed and an unsupported cause for the acquired trait of the organism part

D selected an incorrect fact about the part of the organism observed and an unsupported cause for the acquired trait of the organism part

7 (F4) L.HE.05.11: Explain that the traits of an individual are influenced by both the environment and the genetics of the individual.

Recognize the genetic basis of an organism's observable characteristics.

A attributed the observed characteristic of the organism as an acquired trait having an environmental source

B correctly identified that the basis for an observed organism characteristic is primarily genetic

C attributed the observed characteristic of the organism as an acquired trait having an environmental source

D attributed the observed characteristic of the organism as an acquired trait having an environmental source

7 **(F5) L.HE.07.21:** Compare how characteristics of living things are passed on through generations, both asexually and sexually.

For a specified multicellular organism that reproduces asexually, recognize the statement that best describes the genetics of the offspring.

A selected the correct description of the genetic composition of the offspring

B selected an incorrect description of the genetic component of the offspring

C selected an incorrect description of the genetic component of the offspring

D selected an incorrect description of the genetic component of the offspring

8 **S.IA.07.13:** Communicate and defend findings of observations and investigations.

Based on four specified findings from a naturalistic observation investigation, recognize the best source of support for one of the specified findings.

A selected evidence that does not address the setting of the investigation or the findings

B selected a source of authority to confirm the empirical finding as the expected finding, did not rely on the observations made

C correct, selected a graph displaying the observed data (e.g., bird counts) across various treatment conditions (e.g. food colors)

D selected other general sources of information regarding the investigation; however, these sources do not necessarily confirm the findings

9 **(F1) S.IP.05.16:** Identify patterns in data.

Recognize the line graph that accurately displays the pattern in a table of data.

A selected a graph that displays the opposite pattern in the data

B correct, selected the graph which accurately displays the pattern in the data

C selected a graph that inaccurately displays the data pattern

D selected a graph that inverts the pattern in the data

9 (F2) S.IP.07.16: Identify patterns in data.

Draw the correct conclusion based on information provided in a table.

A selected a conclusion not substantiated by the table data

B selected a conclusion not substantiated by the table data

C selected the correct conclusion based the table data

D selected a conclusion not substantiated by the table data

9 (F3) S.IP.07.14: Use metric measurement devices in an investigation.

Correctly read the measured amount of material based on the illustrated used of a specified scientific measurement tool.

A incorrectly selected the amount of material

B correctly identified the amount of material

C incorrectly selected the amount of material

D incorrectly selected the amount of material

9 (F4) S.IP.07.15: Construct charts and graphs from data and observations.

Accurately recognize a graph of data provided in a table.

A selected the correct graph

B selected an incorrect graphical representation of the table data

C selected an incorrect graphical representation of the table data

D selected an incorrect graphical representation of the table data

9 (F5) S.IP.07.12: Design and conduct scientific investigations.

Identify the hypothesis for a specified scientific investigation.

A selected a statement that considers a situation variable that is not manipulated or measured in the investigation

B selected a statement pertaining to a situation variable neither manipulated or measured in the investigation

C selected a statement pertaining to a situation variable neither manipulated or measured in the investigation

D selected the hypothesis for the investigation that identified the manipulated variable and the measured variable in a specified situation

10 (F1) S.RS.07.14: Evaluate scientific explanations based on current evidence and scientific principles.

Given four measures of physical characteristics for each of four unknown solids, determine which pair of solids is the same substance.

A selected the wrong pair of solids based on a characteristic that is not unique for just the pair

B selected the wrong pair of solids based on a characteristic that is not unique for just the pair

C correct, selected the pair of solids that have the same characteristic value that is unique for a single substance

D selected the wrong pair of solids based on a characteristic value that can be true for any pair of the listed substances

10 (F2) S.RS.07.12: Describe limitations in personal and scientific knowledge.

Understand the concept of a scientific theory.

A correctly identified the misconception regarding a scientific theory

B selected a true feature of a scientific theory as a misconception about a theory

C selected a true feature of a scientific theory as a misconception about a theory

D selected a true feature of a scientific theory as a misconception about a theory

10 (F3) S.RS.07.19: Describe how science and technology have advanced because of the contributions of many people throughout history and across cultures.

Recognize how science advances based, in part, on prior scientific work.

A correctly selected the concept how science can advance through time

B selected a misconception about variation in the universe for science to advance

C selected the misconception that science only advances through correction

D selected the misconception implying that some past scientists were clairvoyant regarding future science

10 (F4) S.RS.07.16: Design solutions to problems using technology.

Recognize which technological application satisfies specified design plans.

A recognized the application that provided the specified resource to satisfy the design plans

B selected an application that does not provide the specified resource for the design

C selected an application that does not provide the specified resource for the design

D selected an application that does not provide the specified resource for the design

10 **(F5) S.RS.07.18:** Describe what science and technology can and cannot reasonably contribute to society.

Given a brief description of a specified compound, identify, from the list of conclusions about the compound, the non-scientific conclusion.

A selected a scientific conclusion

B correct, selected the non-scientific conclusion

C selected a scientific conclusion

D selected a scientific conclusion

11 **P.PM.07.23:** Illustrate the structure of molecules using models or drawings (water, carbon dioxide, table salt).

Given four molecular drawings, with element atoms labeled, recognize the drawing that represents a familiar specified molecule.

A selected an incorrect drawing

B selected an incorrect drawing

C selected an incorrect drawing

D correct, selected the drawing of the specified molecule

12 **(F1) P.PM.07.22:** Describe how the elements within the Periodic Table are organized by similar properties into families (highly reactive metals, less reactive metals, highly reactive nonmetals, and some almost completely non-reactive gases).

Given a description of elements, recognize where the elements are presented in the Periodic Table.

A selected a location that incorrectly splits the element group across the Periodic Table

B identified correctly how the elements would be grouped in the Periodic Table

C selected a location that incorrectly splits the element group across the Periodic Table

D selected a location that incorrectly splits the element group across the Periodic Table

12 **(F2) P.PM.07.21:** Identify the smallest component that makes up an element.

Identify the correct statement about molecules, atoms, and elements.

A recognized the correct component of an element

B selected an incorrect response about molecules and elements

C selected an incorrect statement on the composition of atoms

D selected an incorrect statement on the composition of an element

12 (F3) P.PM.07.24: Describe examples of physical and chemical properties of elements and compounds (boiling point, density, color, conductivity, reactivity).

Distinguish the physical from the chemical properties of an element.

A selected an option that included a chemical property

B selected an option that included a chemical property

C correctly selected the option that listed only physical properties of the element

D selected an option that included chemical properties

12 (F4) P.PM.07.24: Describe examples of physical and chemical properties of elements and compounds (boiling point, density, color, conductivity, reactivity).

Distinguish between the chemical and physical properties of substances.

A incorrectly identified physical properties as chemical properties

B correctly distinguished chemical properties from physical properties

C incorrectly identified physical properties as chemical

D incorrectly identified chemical properties as physical

12 (F5) P.PM.07.21: Identify the smallest component that makes up an element.

Identify the smallest particle of an element.

A correctly identified the smallest component of an element

B selected a component that includes at least two of the smallest components from different elements

C selected a component that includes at least two of the smallest components for an element and most likely more than one element

D selected a concept that can include just the smallest particle of a single element to very many particles of more than one element

13 P.PM.07.24: Describe examples of physical and chemical properties of elements and compounds (boiling point, density, color, conductivity, reactivity).

Recognize the difference in a physical property of the same compound in different states of matter based on a described observation.

A correct, recognized the property and the difference between states of matter of the compound

B incorrectly recognized the amount of the compound as a physical property

C incorrectly recognized the amount of the compound as a physical property

D incorrectly attributed the observation to a rate of change in the state of matter for the compound

14 **P.CM.07.21:** Identify evidence of chemical change through color, gas formation, solid formation, and temperature change.

Given four different scientific observations, recognize which is the best evidence for a chemical change.

A selected the indicator that confirms a chemical reaction occurred

B selected an indicator that does not necessarily confirm that a chemical reaction occurred

C selected an indicator of a physical change

D selected a lab procedure that has nothing to do with a chemical reaction

15 **P.EN.06.41:** Explain how different forms of energy can be transferred from one place to another by radiation, conduction, or convection.

Given four different scientific observations, recognize which observation represents conduction.

A correct, selected the conduction observation example

B selected a convection observation example

C selected a convection observation example

D selected a radiation observation example

16 **P.CM.06.12:** Explain how mass is conserved as a substance changes from state to state in a closed system.

Given information regarding a lab exercise where a large amount of observed solid mass has become a small amount of observed solid mass due to a change in a closed system, select the best concept that explains how the total mass within the closed system remains the same before and after the change.

A selected an incorrect concept to explain how the mass remained constant

B selected an incorrect concept to explain how the mass remained constant

C selected an incorrect concept to explain how the mass remained constant

D selected the correct concept to explain how the total mass remained the same, though the solid mass decreased

17 **S.IA.07.15:** Use multiple sources of information to evaluate strengths and weaknesses of claims, arguments, or data.

Given a technical, mechanical, and electrical project, identify key words about the project to search and obtain information to complete the project.

A selected key words that did not address the project's objective

B selected key words that did not address the project's objective

C recognized the most appropriate keywords to use to obtain relevant and helpful information about the project

D selected key words that did not address the project's objective

18 **S.IP.07.16:** Identify patterns in data.

Given four visually-displayed temperature maps and a temperature key, recognize the statement that most accurately summarizes temperature change over time and direction of movement.

A selected a statement that recognized the amount of temperature change but not the direction of temperature movement

B selected the statement that correctly recognized the amount of temperature change and the direction of temperature movement

C selected a statement that misinterprets the amount of temperature change

D selected a statement that misinterprets both the amount of temperature change and the direction of temperature movement

19 **E.SE.06.62:** Explain how a compass works using the magnetic field of Earth, and how a compass is used for navigation on land and sea.

Recognize how a compass works.

A selected a statement that the compass points to a land location

B selected a statement that the compass points to a land location

C selected the incorrect magnetic location toward which the compass needle points

D selected the correct magnetic location toward which the compass needle points

20 **(F1, F4) E.SE.06.52:** Demonstrate how major geological events (earthquakes, volcanic eruptions, mountain building) result from these plate motions.

Given four diagrams of how tectonic plates move above the asthenosphere, select the diagram that indicates the plate movement that forms a specified Earth surface feature.

A selected an incorrect diagram of plate movement for the specified Earth feature formation

B selected an incorrect diagram of plate movement for the specified Earth feature formation

C correct, selected the diagram of plate movement for the specified Earth feature formation

D selected an incorrect diagram of plate movement for the specified Earth feature formation

20 (F2) E.SE.06.13: Describe how soil is a mixture made up of weather eroded rock and decomposed organic material.

Recognize the source of soil components.

A selected an incorrect source for the specified soil component

B correctly recognized the source of a specified soil component

C selected an incorrect source for the specified soil component

D selected an incorrect source for the specified soil component

20 (F3) E.SE.06.14: Compare different soil samples based on particle size and texture.

Recognize a method used to identify a specified earth material.

A selected a method that measures a nondefining feature of an earth material

B selected a method that measures a nondefining feature of an earth material

C selected the method that identifies the earth material by measuring the feature that defines the type of material

D selected a method that measures a nondefining feature of an earth material

20 (F5) E.SE.06.61: Describe Earth as a magnet and compare the magnetic properties of Earth to that of a natural or manufactured magnet.

Understand Earth's magnetic properties.

A selected a statement that does not factually describe the source of Earth's magnetic field

B selected an incorrect statement about magnetic pole attraction

C selected an incorrect statement about magnetic pole attraction

D correctly recognized the locations of Earth's greatest magnetic force

21 E.SE.06.41: Compare and contrast the formation of rock types (igneous, metamorphic, and sedimentary) and demonstrate the similarities and differences using the rock cycle model.

Identify two processes involved in the formation of a specified type of rock.

A correct, selected the two rock formation processes that distinguish the specific type of rock

B selected two processes that do not contribute to the formation of the specified type of rock

C selected two processes that do not contribute to the formation of the specified type of rock

D selected two processes that do not contribute to the formation of the specified type of rock

22 (F1, F3) E.SE.06.11: Explain how physical and chemical weathering lead to erosion and the formation of soils and sediments.

Recognize the similarity in both the physical and chemical breakdown of rock.

A selected a condition that is not necessary for the physical breakdown of rock

B selected a condition that is not true for the physical breakdown of rock

C correct, selected a common outcome from both the physical and chemical breakdown of rock

D selected a condition that is not true for the physical breakdown of rock

22 (F2, F4, F5) E.SE.06.12: Explain how waves, wind, water, and glacier movement, shape and reshape the land surface of the Earth by eroding rock in some areas and depositing sediments in other areas.

Recognize the best Earth surface, energy producing process by which Earth materials, from a far location (hundreds of kms), were relocated to another location.

A selected an Earth surface, energy producing process that can only move Earth material below the specified mass scale and only for a smaller distance range.

B selected an Earth surface, energy producing process that can only move Earth material below the specified mass scale and only for a smaller distance range.

C correct, selected an Earth surface, energy producing process that can move Earth material at the specified mass scale and for the specified distance range

D selected an Earth surface, energy producing process that can only move Earth material below the specified mass scale and only for a smaller distance range.

23 **E.ES.07.74:** Describe weather conditions associated with frontal boundaries (cold, warm, stationary, and occluded) and the movement of major air masses and the jet stream across North America using a weather map.

Using a conventional weather map, identify the type of front depicted on the map.

A selected a type of front that is not depicted on the map

B selected a name for a front that is not recognized in meteorology

C selected a type of front that is not depicted on the map

D correctly recognized the front depicted on the map

24 **E.ES.05.61:** Demonstrate and explain seasons using a model.

Recognize the reason why Michigan's average daily temperatures differ between two specified seasons of the year.

A correct, selected the reason for the difference in temperature between the two seasons

B selected a reason that is unrelated to a source of Earth's heat

C selected a reason that does not consider Earth's position in orbit

D selected a reason that is unrelated to a source of Earth's heat

25 **(F1) E.ES.07.13:** Describe how the warming of the Earth by the sun produces winds and ocean currents.

Given four statements, recognize the statement which best explains the occurrence of atmospheric convection currents.

A selected an incorrect explanation that associated convection currents with condensation of water

B selected an incorrect explanation that associated convection currents with the increasing speed and sinking of atmospheric molecules

C selected an incorrect explanation that associated convection currents with denser atmospheric materials rising

D correctly selected the explanation that indicates how applied energy causes convection currents

25 (F2) E.ES.05.62: Explain how the revolution of Earth around the Sun defines a year.

Recognize the periodicity of Earth's orbit around the Sun.

A incorrectly selected an illustration showing Earth at a different position relevant to the Sun 1 year later

B incorrectly selected an illustration showing Earth at a different position relevant to the Sun 1 year later

C incorrectly selected an illustration showing Earth at a different position relevant to the Sun 1 year later

D correctly recognized that Earth's position relative to the Sun is the same 1 year later

25 (F3) E.ES.05.62: Explain how the revolution of Earth around the Sun defines a year.

Recognize the definition for a specific period of time based on the motion of the Earth.

A correctly selected the motion of Earth that defines the specific period of time

B incorrect, selected the motion of Earth that defines a different period of time

C incorrectly selected a tabulation of Earth motion cycles that does not define the period of time

D incorrect, selected the motion of Earth that defines a different period of time

25 (F4, F5) E.ES.07.12: Describe the relationship between the warming of the atmosphere of Earth by the Sun and convection within the atmosphere and oceans.

Understand the process of convection in the specified situation.

A incorrectly selected the effect of heat on the motion of a gas

B correctly recognizes the effect of heat on the motion of a gas

C incorrect, selected a conclusion that was not tested in the specified situation

D incorrect, selected a conclusion that was not tested in the specified situation

26 S.RS.07.16: Design solutions to problems using technology.

Distinguish a disadvantage of a specified technology application from the advantages of the technology application.

A selected an advantage

B correct, selected the disadvantage

C selected an advantage

D selected an advantage

27 **S.IP.07.12:** Design and conduct scientific investigations.

Recognize the distinction among parts or stages of a scientific investigation from beginning to end.

A misclassified the described part of the experiment

B misclassified the described part of the experiment

C correctly identified the described part of the experimental process

D misclassified the described part of the experiment

28 **S.IP.07.13:** Use tools and equipment (spring scales, stop watches, meter sticks and tapes, models, hand lens, thermometer, models, sieves, microscopes, hot plates, pH meters) appropriate to scientific investigations.

Select the best scientific measurement tool to carry out a specified measurement task.

A selected a tool that is unable to complete the measurement task

B selected a tool that is unable to complete the measurement task

C selected a tool that is unable to complete the measurement task

D selected the appropriate tool to carry out the specified measurement task

29 **S.IA.07.15:** Use multiple sources of information to evaluate strengths and weaknesses of claims, arguments, or data.

Given a specific scientific task, review the list of four information references about the task to recognize the most helpful reference.

A selected a reference that is a source of information used to sell the product being studied, a potentially biased reference

B selected as a reference an article about the material being studied that does not provide information about the task's objective

C correct, selected as a reference objective scientific information about the material being studied from a credible, impartial source

D selected as a reference opinions from a non-scientific survey about an off-topic feature of the material being studied

30 (F1, F4) S.RS.07.15: Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.

Select the appropriate example diagram to present a model of an elementary Earth science concept.

A selected a diagram that incorrectly displays a model of an elementary Earth science concept

B selected a diagram that correctly displays an accurate model of an elementary Earth science concept

C selected a diagram that incorrectly displays a model of an elementary Earth science concept

D selected a diagram that incorrectly displays a model of an elementary Earth science concept

30 (F2, F5) S.RS.07.13: Identify the need for evidence in making scientific decisions.

Recognize the purpose of the evidence (i.e., results) gathered in a scientific investigation.

A incorrectly selected the concept that scientific evidence is absolute and definitive

B selected a concept that implies evidence must be interpreted based on existing frames of reference

C selected a concept that implies that evidence must be collected through a process not shared by other researchers

D recognized the purpose of evidence gathered through scientific investigation

30 (F3) S.RS.07.14: Evaluate scientific explanations based on current evidence and scientific principles.

Given four measures of physical characteristics for each of four unknown solids, determine which pair of solids is the same substance.

A selected the wrong pair of solids based on a characteristic that is not unique for just the pair

B selected the wrong pair of solids based on a characteristic that is not unique for just the pair

C correct, selected the pair of solids that have the same characteristic value that is unique for a single substance

D selected the wrong pair of solids based on a characteristic value that can be true for any pair of the listed substances

31 E.ES.07.82: Analyze the flow of water between the components of a watershed, including surface features (lakes, streams, rivers, wetlands) and groundwater.

Recognize the scientific label for the classification of water that soaks into the ground after precipitation.

A correctly recognized the classification label for water as described

B mislabeled the water classification

C mislabeled the water classification

D mislabeled the water classification

32 **E.FE.07.12:** Compare and contrast the composition of the atmosphere at different elevations.

Given four descriptions of change in atmospheric conditions, recognize the change that most likely occurs as location changes at a specified Earth-surface feature.

A correct, selected the most likely change in atmospheric conditions as location changes at the specified Earth-surface feature

B incorrectly selected the change in atmospheric conditions as location changes at the specified Earth-surface feature

C incorrectly selected the change in atmospheric conditions as location changes at the specified Earth-surface feature

D incorrectly selected the change in atmospheric conditions as location changes at the specified Earth-surface feature

33 **(F1) E.ES.07.72:** Describe how different weather occurs due to the constant motion of the atmosphere from the energy of the Sun reaching the surface of Earth.

Given four reasons, recognize which reason explains a difference in atmospheric conditions at two distinct locations on Earth.

A selected a reason that does not explain the difference in atmospheric conditions at the two Earth locations

B selected the correct reason which accounts for the difference in the atmospheric conditions at the two Earth locations

C selected a reason that does not explain the difference in atmospheric conditions at the two Earth locations

D selected a reason that does not explain the difference in atmospheric conditions at the two Earth locations

33 (F2) E.ES.07.71: Compare and contrast the difference and relationship between climate and weather.

Understand the differences between weather and climate.

A correctly selected a distinction between climate and weather

B selected a correct concept about weather but an incorrect concept about climate

C selected a correct statement about how climate influences weather but an incorrect statement about how weather influences climate

D selected a correct statement about the display of weather information but an incorrect statement about the display of climate information

33 (F3) E.ES.07.13: Describe how the warming of Earth by the Sun produces winds and ocean currents.

Recognize the sources of energy that enable wind motion and force.

A selected the two correct sources of wind energy

B selected two incorrect sources of wind energy

C selected two incorrect sources of wind energy

D selected two incorrect sources of wind energy

33 (F4) E.ES.07.73: Explain how the temperature of the oceans affects the different climates on Earth because water in the oceans holds a large amount of heat.

Understand how a specified ocean current influences land climate conditions.

A correctly recognized the specified ocean current's influence on climate

B selected the incorrect opposite influence of the ocean current on climate

C selected a statement about climate conditions not associated with ocean current influence

D selected a statement about climate conditions not associated with ocean current influence

33 (F5) E.ES.07.71: Compare and contrast the difference and relationship between climate and weather.

Distinguish climate from weather descriptions.

A selected a weather description over a period of days

B selected a next day weather forecast

C selected a severe weather-watch alert

D correctly selected a description of prevailing climate conditions

34 E.ST.05.11: Design a model of the solar system that shows the relative order and scale of the planets, dwarf planets, comets, and asteroids to the Sun.

Given an illustration of the solar system, including the Sun and planets, recognize the location of another specified component of the solar system.

A selected an incorrect location for the specified solar system component

B selected the correct location for the specified solar system component

C selected an incorrect location for the specified solar system component

D selected an incorrect location for the specified solar system component

35 (F1) E.ST.05.25: Explain the tides of the oceans as they relate to the gravitational pull and orbit of the moon.

Among a list of four statements, recognize the statement that explains tidal movement.

A selected a statement that incorrectly attributes tidal movement to an atmospheric force

B selected a statement that incorrectly attributes tidal movement to rapid changes in Earth's surface

C selected a statement that incorrectly attributes tidal movement to temperature variation

D selected a statement that correctly recognizes that tidal movement is caused by gravitational force other than Earth's

35 (F2) E.ST.06.42: Describe how fossils provide important evidence of how life and environmental conditions have changed.

Draw the most appropriate conclusion based on specified fossil evidence.

A selected a conclusion that relied on incorrect glacier movement

B correctly selected the appropriate conclusion based on the available fossil evidence

C selected a conclusion that could not account for the many fossils of this type distributed across Michigan

D selected a conclusion that is incorrect and not attributable to the specified fossil evidence

35 (F3) E.ST.06.41: Explain how Earth processes (erosion, mountain building, and glacier movement) are used for the measurement of geologic time through observing rock layers.

Recognize the type of scientific evidence found by the examination of rock layers in Earth's crust.

A selected a statement that is not supported by rock layer evidence

B selected a statement that reflects a purpose for the use of the rock layer evidence, not the type of evidence

C selected a statement that reflects a purpose for the use of the rock layer evidence, not the type of evidence

D correctly identified the type of evidence that rock layers provide for scientific investigation

35 (F4) E.ST.05.25: Explain the tides of the oceans as they relate to the gravitational pull and orbit of the moon.

Using an illustration, understand how high and low oceanic tides relate to the influence of the moon's gravity on Earth.

A selected the incorrect Earth locations for a specified tidal condition based on the moon's position relative to Earth

B selected the incorrect Earth locations for a specified tidal condition based on the moon's position relative to Earth

C selected the correct Earth locations for a specified tidal condition based on the moon's position relative to Earth

D selected the incorrect Earth locations for a specified tidal condition based on the moon's position relative to Earth

35 (F5) E.ST.05.22: Explain the phases of the moon.

Recognize how sunlight is reflected off the moon based on position of moon and Earth relative to the Sun in the provided illustration.

A incorrectly identified how the moon would reflect sunlight

B correctly identified the how sunlight would be reflected from the moon

C incorrectly interpreted how Earth would influence the sunlight reflected from the moon

D incorrectly interpreted how Earth would influence the sunlight reflected from the moon

36 E.ST.05.21: Describe the motion of planets and moons in terms of rotation on axis and orbits due to gravity.

Understand the force of gravity between the Sun and a planet as the planet orbits the Sun.

A selected a comparison between the specified planet's and Earth's force of gravity with the Sun that can not be determined by the information provided

B correctly recognized how the force of gravity between the planet and the Sun changes as the distance between both bodies change during the course of the planet's orbit

C selected an incorrect statement about the planet's force of gravity with the Sun as the planet's distance from the Sun changes in the course of its orbit

D selected an incorrect statement about the planet's force of gravity with the Sun as the planet's distance from the Sun changes in the course of its orbit

37 (F1) E.ST.06.42: Describe how fossils provide important evidence of how life and environmental conditions have changed.

Among a list of four factual statements, recognize the statement of fact that best supports the conclusion that Michigan's environment has changed over time.

A correct, selected the factual statement about Michigan's past environment

B selected a factual statement about an environmental impact that does not apply to Michigan

C selected a factual statement about early Michigan anthropology that does not provide evidence of an environmental change

D selected a factual statement about early Michigan anthropology that does not provide evidence of an environmental change

37 (F2) E.ST.05.23: Explain the apparent motion of the stars (constellations) and the Sun across the sky.

Understand how constellations appear to cyclically move during a year.

A selected an incorrect reason for apparent constellation motion in Earth's sky

B recognized how the constellations appear to move in the sky during the year

C selected an incorrect reason for apparent constellation motion in Earth's sky

D selected an incorrect reason for apparent constellation motion in Earth's sky

37 (F3) E.ST.05.25: Explain the tides of the oceans as they relate to the gravitational pull and orbit of the moon.

Among a list of four statements, recognize the statement that explains tidal movement.

A selected a statement that incorrectly attributes tidal movement to a atmospheric force

B selected a statement that incorrectly attributes tidal movement to rapid changes in Earth's surface

C selected a statement that incorrectly attributes tidal movement to temperature variation

D selected a statement that correctly recognizes that tidal movement is caused by gravitational force outside of Earth's

37 (F4) E.ST.06.42: Describe how fossils provide important evidence of how life and environmental conditions have changed.

Recognize the conclusion that is supported by the fossil evidence.

A selected a conclusion not supported by the fossil evidence

B selected a conclusion not supported by the fossil evidence

C selected the correct conclusion based on the fossil evidence presented

D selected a conclusion not supported by the fossil evidence

37 (F5) E.ST.05.23: Explain the apparent motion of the stars (constellations) and the Sun across the sky.

Explain the apparent motion of the Sun across Earth's sky.

A selected the correct reason that explains why the Sun appears to move across Earth's sky

B selected an incorrect concept about the Sun's motion relative to Earth

C selected a statement that did not apply to Earth's daily movement

D selected an untrue statement about Earth's position relative to the Sun

38 (F1, F3) S.IA.07.11: Analyze information from data tables and graphs to answer scientific questions.

Given a graph that represents change in speed over time, recognize the time during which a vehicle maintains a specified speed.

A incorrectly identified the time period where the vehicle maintains a specified speed

B correctly identified the time period where the vehicle maintained the specified speed

C incorrectly identified the time period where the vehicle maintains a specified speed

D incorrectly identified the time period where the vehicle maintains a specified speed

38 (F2) S.IA.07.11: Analyze information from data tables and graphs to answer scientific questions.

Given three graphs that illustrate the percentage and type of surface water within total fresh water and the percent of fresh water within Earth's total water, recognize the statement that is correct based on the information presented in the graphs.

A selected a statement of fact using information not provided by the graphs

B selected a statement that over represents the percentage of a water type in a location with respect to all Earth's water

C selected a statement that presents the opposite information in one of the graphs

D selected the correct statement that characterizes the state of matter of Earth's surface water

38 (F4) S.IA.07.13: Communicate and defend findings of observations and investigations.

Use data from tables and graphs to obtain information.

A selected a statement of information that is not substantiated by the data in the graph

B selected a statement of information that is not substantiated by the data in the graph

C selected correct information from a graph regarding a trend

D selected a statement of information that is not substantiated by the data in the graph

38 (F5) S.IA.07.15: Use multiple sources of information to evaluate strengths and weaknesses of claims, arguments, or data.

From a list of options, recognize the best way to gather information about a scientific prediction.

A selected an insufficient method to gather information about the prediction

B selected the most sufficient plan by which to gather information about the prediction

C selected an insufficient method to gather information about the prediction

D selected an insufficient method to gather information about the prediction

39 P.FM.05.21: Distinguish between contact forces and non-contact forces.

Given seven events of force on an object arranged into four separate pairs of events, recognize the pair that exhibits force from a contact and a non-contact force.

A selected a pair where both exhibit non-contact force

B correct, selected the pair that includes a contact and a non-contact force

C selected a pair where both exhibit contact force

D selected a pair where both exhibit contact force

40 (F1) P.FM.05.31: Describe what happens when two forces act on an object in the same or opposing directions.

Describe the force(s) acting on an specified object.

A incorrectly describes the force(s)

B incorrectly describes the force(s)

C incorrectly describes the force(s)

D correctly described the forces acting on the object based on its movement

40 (F2) P.FM.05.34: Relate the size of change in motion to the strength of unbalanced forces and the mass of the object.

Given a specified scenario regarding two objects of different mass moving at the same speed, recognize the best statement that describes the force needed to stop the objects within a set distance.

A selected an incorrect statement about the relationship between speed and stopping force

B selected an incorrect statement about the relationship between type of road surface and stopping force

C selected an incorrect statement about the relationship between mass difference and stopping force

D selected the correct statement about the relationship between mass difference and stopping force

40 (F3) P.FM.05.34: Relate the size of change in motion to the strength of unbalanced forces and the mass of the object.

Given four illustrations of force, identify the illustration that represents the greatest net force on an object.

A selected an illustration that did not present the greatest net force

B selected an illustration that did not present the greatest net force

C selected an illustration that did not present the greatest net force

D correctly identified the illustration that presented the greatest net force

40 (F4) P.FM.05.41: Explain the motion of an object relative to its point of reference.

Given an illustration of an object in motion, recognize the change in motion in relation to the points of reference provided in the illustration.

A selects an incorrect interpretation of the object's motion at a specified point of reference

B correctly recognized the change of the object's motion at the specified point of reference

C selects an incorrect interpretation of the object's motion at a specified point of reference

D selects an incorrect interpretation of the object's motion at a specified point of reference

40 (F5) P.FM.05.43: Illustrate how motion can be measured and represented on a graph.

Use information provided in a graph to make an estimate on object motion.

A underestimated the object's motion

B underestimated the object's motion

C underestimated the object's motion

D selected the correct estimate of the object's motion

41 P.FM.05.42: Describe the motion of an object in terms of distance, time and direction, as the object moves, and in relationship to other objects.

Given a scenario of two objects in motion at set speeds and directions from a specified starting point as illustrated, recognize the best factual statement regarding the objects' locations after a specified amount of time.

A selected a statement in which the relative locations are correct, however the relative speeds of the objects are incorrect

B selected a statement in which the relative locations are incorrect, however the relative speeds of the objects are correct

C selected a statement in which the relative locations and speeds of the objects are incorrect

D selected the correct statement regarding the relative locations and speeds of the objects

42 **P.EN.07.61:** Identify that nuclear reactions take place in the Sun, producing heat and light.

Given four processes that change existing matter, recognize the type of process by which the Sun produces heat and light.

A selected a process that conserves matter

B selected a process that does not change the original matter

C correct, selected the process that converts existing matter into different matter and energy

D selected an incorrect chemical reaction process

43 **(F1) P.EN.06.12:** Demonstrate the transformation between potential and kinetic energy in simple mechanical systems (for example: roller coasters, pendulums).

Given an illustration of a marble moving on the surface of an upright curved track, recognize the statement that best describes the energy of the moving marble at labeled distinct points along the curved track.

A selected a statement the does not appropriately identify the marble's type of energy at specified points on the track

B selected a statement the does not appropriately quantify the marble's type of energy at specified points on the track

C correctly selected the statement that appropriately identifies the marble's type of energy at specified points on the track

D selected a statement the does not appropriately quantify the marble's type of energy at specified points on the track

43 (F2) P.EN.07.62: Explain how only a tiny fraction of light energy from the Sun is transformed to heat energy on Earth.

Recognize the relative amount of transformation of a specified energy from the Sun to a specified energy on Earth.

A correctly identifies the relative amount of energy transformation

B overestimates the relative amount of energy transformation

C overestimates the relative amount of energy transformation

D overestimates the relative amount of energy transformation

43 (F3) P.EN.07.33: Demonstrate how waves transfer energy when they interact with matter (for example: tuning fork in water, waves hitting a beach, earthquake knocking over buildings).

Understand how a specified type of wave can transfer energy to other matter.

A selected an incorrect description of how the specified wave energy transfer interacts with other matter

B selected the correct visual description of how the wave can transfer energy to other matter

C selected an incorrect description of how the specified wave energy transfer interacts with other matter

D selected an incorrect description of how the specified wave energy transfer interacts with other matter

43 (F4)P.EN.07.32: Describe how waves are produced by vibrations in matter.

Recognize that all types of waves stem from vibrations.

A correctly recognized the cause of all waves

B selected an untrue statement regarding the motion of all waves

C selected an untrue statement regarding the motion of all waves

D selected an untrue statement regarding the motion of all waves

43 (F5) P.EN.07.33: Demonstrate how waves transfer energy when they interact with matter (for example: tuning fork in water, waves hitting a beach, earthquake knocking over buildings).

Identify the statement that indicates how a specified type of wave transfers energy.

A selected a true statement about the specified type of wave, which does not have any indication of energy transfer

B selected an untrue statement regarding how the specified type of wave transfers energy

C selected a true statement about the specified type of wave, which does not have any indication of energy transfer

D correctly selected the statement that would exemplify the effect of energy transfer by the specified type of wave

44 **P.EN.07.31:** Identify examples of waves, including sound waves, seismic waves, and waves on water.

Given four events that affect the Earth's surface, recognize the event that involves seismic waves.

A correct, selected an Earth crust event that involves seismic waves

B selected an Earth surface event that does not involve seismic waves

C selected an Earth surface event that does not involve seismic waves

D selected an Earth surface event that does not involve seismic waves

45 **(F1, F4) P.CM.07.23:** Describe the physical properties and chemical properties of the products and reactants in a chemical change.

Distinguish reactants, products, and their properties in a familiar chemical reaction.

A correctly identified the reactant, the product, and their properties.

B mischaracterized the property of both reactant and product

C did not recognize the process as a chemical reaction

D did not recognize the process as a chemical reaction

45 **(F2) P.CM.07.23:** Describe the physical properties and chemical properties of the products and reactants in a chemical change.

Recognize indicators of a chemical change.

A correctly selected a comparison between reactants and products which indicates that a chemical change occurred

B selected a comparison between reactants and products which does not indicate that a chemical change occurred

C selected the concept that no chemical change occurred

D selected the concept that no chemical change occurred

45 **(F3) P.CM.06.12:** Explain how mass is conserved as a substance changes from state to state in a closed system.

Given an illustrated observation on mass changing its state of matter, recognize how mass is conserved.

A correctly selects the correct statement about conservation of mass

B selected an incorrect statement about conservation of mass in reference to the illustration provided

C selected an incorrect statement about conservation of mass in reference to the illustration provided

D selected an incorrect statement about conservation of mass in reference to the illustration provided

45 **(F5) P.CM.07.23:** Describe the physical properties and chemical properties of the products and reactants in a chemical change.

Given an example of a chemical reaction, identify a descriptive characteristic for one of the reactants.

A correctly selected the descriptive characteristic of the reactant

B selected a descriptive characteristic for one of the reaction's products

C selected a descriptive characteristic for one of the reaction's products

D selected a descriptive characteristic that is not true for either reactant or product

46 **S.IA.06.14:** Draw conclusions from sets of data from multiple trials of a scientific investigation.

Given a two-line graph based on a specified scenario about a fish and its parasite, interpret the graph and select the best conclusion based on the scenario and the graphed results.

A selected a conclusion that does not agree with the information provided in the graph

B correct, selected a conclusion that shows the relationship between the fish population level and the control of the parasite population level

C selected a conclusion that is contrary to the resulting parasite population level as the fish population increases without parasite control

D selected a conclusion that is contrary to the information displayed in the graph

47 **S.RS.07.11:** Evaluate the strengths and weaknesses of claims, arguments, and data.

Given an observation task and corresponding observation data in a table, recognize which of the four statements provided best evaluates the data.

A selected a statement that implies the data are sufficient as basis for a conclusion

B correct, selected a statement recognizing that more data are needed as basis for a conclusion

C selected a statement that implies the data are sufficient as basis for a conclusion

D selected a statement that implies the data are sufficient as basis for a conclusion

48 **L.EV.05.21:** Relate degree of similarity in anatomical features to the classification of contemporary organisms.

Given four separate statements regarding applicable scientific methods, recognize the statement that provides the most reasonable basis for studying evolutionary relationships among different organisms.

A selected a statement that implies studying existing conditions, not changing conditions

B selected a statement that pertains to each specific organism's life characteristics

C correct, selected the statement that promotes comparison among organisms regarding their anatomical features

D selected a statement that pertains to each specific organism's life characteristics

49 (F1) L.EC.06.21: Describe common patterns of relationships between and among populations (competition, parasitism, symbiosis, predator/prey).

Recognize an example of the specified relationship between common organisms in an ecosystem.

A selected a relationship example other than the type of relationship specified

B selected a relationship example other than the type of relationship specified

C selected a relationship example other than the type of relationship specified

D correctly selected the example of the specified relationship

49 (F2) L.EC.06.22: Explain how two populations of organisms can be mutually beneficial and how that can lead to interdependency.

Identify the relationship between organisms where each organism benefits from the other organism's activities.

A selected a relationship that identifies a different interaction between organisms

B selected a relationship that identifies a different interaction between organisms

C correctly identified the specified relationship

D selected a relationship that identifies a different interaction between organisms

49 (F3) L.EC.06.31: Identify the living (biotic) and nonliving (abiotic) components of an ecosystem.

Identify examples of ecosystem components as biotic or abiotic.

A correctly identified the biotic factor

B misidentified an abiotic example as biotic

C misidentified an abiotic example as biotic

D misidentified an abiotic example as biotic

49 (F4) L.EC.06.22: Explain how two populations of organisms can be mutually beneficial and how that can lead to interdependency.

Recognize the extent of interdependency between two mutually beneficial populations in an ecosystem.

A selected a concept that does not recognize the mutually beneficial relationship and which, incidentally, mischaracterizes a species name

B selected a concept that did not recognize the many mutually beneficial relationships that one animal species has with many other plant species

C recognized that the animal species has many alternative, mutually beneficial relationships with other plant species

D selected a concept that incorrectly places a survival condition on the animal species

49 **(F5) L.EC.06.21:** Describe common patterns of relationships between and among populations (competition, parasitism, symbiosis, predator/prey).

Recognize how a change in population size of a specified organism in an ecosystem can subsequently change the population size of another organism in the ecosystem.

A correctly identified the change in population size of the specified organism but incorrectly selected the effect on the other populations in the ecosystem

B correctly identified the change in population size of the specified organism but incorrectly selected the effect on the other populations in the ecosystem

C correctly recognized that effect on the specified organism population and correctly identified the effect on other organism populations

D correctly identified the change in population size of the specified organism but incorrectly selected the effect on the other populations in the ecosystem

50 **L.HE.05.11:** Explain that the traits of an individual are influenced by both the environment and the genetics of the individual.

Given a specified plant that has a flower of a set color, recognize the statement that best describes how the flower of the plant exhibits this color.

A correct, selected the statement that best describes the transfer process of flower color from parent to offspring

B selected an incorrect description by which the flower exhibits its given color

C selected an incorrect description of the process by which the parent transfers flower color to its offspring

D selected an incorrect description by which the flower exhibits its given color

51 **L.EC.06.42:** Predict possible consequences of overpopulation of organisms, including humans, (for example: species extinction, resource depletion, climate change, pollution).

Recognize the most likely consequence due to a rapid increase of a specified population in a relatively closed ecosystem.

A selected a consequence unlikely to happen and not related to the effects due to a population increase

B selected a consequence that is the opposite of what would happen

C selected a consequence based on erroneous reasoning for the consequence

D correct, selected the consequence noting the change resulting from the increase in the specified population

52 **(F1) L.OL.05.42:** Explain how animal systems (digestive, circulatory, respiratory, skeletal, muscular, nervous, excretory, and reproductive) work together to perform selected activities.

Given four statements regarding how two specified body systems work together, recognize the statement that best describes the interaction between the two named body systems after a specified activity.

A correct, described the interaction of the two body systems after the specified activity

B one of the two body systems was misidentified

C selected an incorrect statement about body system physiology

D one of the two body systems was misidentified

52 **(F2) L.OL.07.22:** Explain how cells make up different body tissues, organs, and organ systems.

Recognize the common feature of tissue, organs, and organ systems.

A correctly recognized the common component of tissue, organs, and organ systems

B incorrectly selected the concept that tissue, organs, and organ systems in any nonliving object

C selected an incorrect concept about an organism's biological control of tissue, organs, and organ systems

D selected an incorrect concept about an organism's biological function of tissue, organs, and organ systems

52 (F3) L.OL.07.31: Describe growth and development in terms of increase of cell number and/or cell size.

Based on a table, understand organism growth in relation to cell number and cell size across life span.

A correctly recognized how cells account for organism size at the specified lifespan stage

B incorrectly selected a concept how cells account for organism size at the specified lifespan stage

C made an incorrect interpretation of the information in the table regarding how cells account for organism size at the specified lifespan stage

D made an incorrect interpretation of the information in the table regarding how cells account for organism size at the specified lifespan stage

52 (F4) L.OL.06.52: Distinguish between the ways in which consumers and decomposers obtain energy.

Identify the group of organisms that obtains energy solely from a specified resource.

A correct, selected the group of organisms that obtains their energy from the specified resource

B selected a group of organisms that do not obtain their energy from the specified resource

C selected a group of organisms that do not obtain their energy from the specified resource

D selected a group of organisms that do not obtain their energy from the specified resource

52 (F5) L.OL.07.32: Examine how through cell division, cells can become specialized for specific functions.

Recognize the source of a body specialized cells.

A correct, identified the source of all specialized body cells

B selected a scientifically fictitious statement on the source of specialized body cells

C selected a scientifically fictitious statement on the source of specialized body cells

D selected a scientifically fictitious statement on the source of specialized body cells

53 **L.EC.06.23:** Predict how changes in one population might affect other populations based upon their relationships in the food web.

Using the food web information provided, recognize the expected changes in an organism's population in an ecosystem after the change in another specified ecosystem population.

A correct, recognized the expected populations' change levels after the change in the specified population level

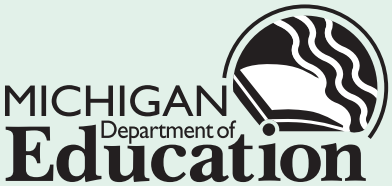
B selected populations' change levels not expected to occur after the change in the specified population level

C selected populations' change levels not expected to occur after the change in the specified population level

D selected populations' change levels not expected to occur after the change in the specified population level

5th

8th



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