5th

8th

Grade 5

meap™

Michigan Educational Assessment Program

Item Descriptors

SCIENCE

FALL 2009

MICHIGAN STATE BOARD OF EDUCATION

STATEMENT OF ASSURANCE OF COMPLIANCE WITH FEDERAL LAW

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

PART 1

DIRECTIONS

This test includes multiple-choice questions. For these multiple-choice questions, use only a No. 2 pencil to mark your answers. Make a dark mark that completely fills the corresponding circle in your **Answer Document**. If you are not sure of the answer to a question, mark your **best** choice and go on to the next question. If you change an answer, be sure to erase the first mark completely. Mark only one answer for each question.

If you finish early, you may check your work for Part 1 only. Do **NOT** work on Part 2 of this test until you are told to do so.

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

NOTE: For each item listed throughout this booklet, the first statement represents the Michigan Science Curriculum Framework (MSCF) benchmark and the second statement is the descriptor for the item's stem or question.

1 **L.5.e.2:** Describe the basic requirements for all living things to maintain their existence.

Given a common animal type and a description of its environment, select its most likely food source from a list of choices provided.

A not common to the described environment

B correct, food choice readily found in the environment

C not readily found in the described environment

D not directly found in the described environment

2 **L.4.e.1:** Explain how fossils provide evidence about the nature of ancient life.

Use fossil evidence to draw a founded conclusion, within scope of the evidence, that best describes the likely relationship between the two animals.

A conclusion beyond scope of evidence which misrepresents competition

B correct, the observation limited to scope of evidence

C conclusion does not sufficiently account for all fossil evidence provided

D conclusion is speculative and does not account for all the fossil evidence

3 **L.2.e.1:** Explain characteristics and functions of observable body parts in a variety of animals.

Identify two main functions of a specific human body system.

A neither of the two are main functions of the body system

B only one of the two is a main function of the body system

C correct, both are main functions of body system

D only one of the two is a main function by the body system

4 **L.2.e.5:** Explain functions of specified seed plant parts.

From the list provided, identify the function that is not a primary function of the specified plant part.

A a primary function

B a primary function

C a primary function

D correct, not a primary function

5 **L.3.e.1:** Give evidence that characteristics are passed from parents to young.

From a list of observations about two trees, which observation provides evidence that one tree is the offspring of the other tree.

A observation is not evidence

B correct, evidence that one tree is the offspring of the other tree

C observation is not evidence

D observation is not evidence

6 **L.4.e.2:** Explain how physical and behavioral characteristics of animals help them survive in their environments.

A specified animal has a specific behavioral trait that is not readily common among other animals. Recognize how this trait provides an advantage for the animal to survive.

A a reason necessary for survival, but not a consequence of the described trait

B a reason important for survival, but not a consequence of the described trait

C correct, how the trait provides a survival advantage

D a reason that has no relationship to the trait

7 **C.1.e.6:** Construct charts and graphs and prepare summaries of observations.

Given some numerical and categorical data, identify the chart that makes an orderly presentation of the data.

A does not separate the data categories by similarity in class

B misplaces similar data levels within and across different class levels

C incorrectly assigns wrong numerical data in data categories

D correct, a chart that placed observations in a correct general class, correct and specific subclasses, and with accurate assignment of numeric data

8 **C.1.e.1:** Generate questions about the world based on observations.

Recognize the best scientific question which supports a testable hypothesis regarding the relationship between specified predictor and criterion variables for a class of organisms.

A does not consider the specified predictor and criterion variables

B does not consider the specified predictor and criterion variables

C does not consider the specified predictor and criterion variables

D correct, the question that leads to development of an investigation hypothesis

9 **R.1.e.3:** Describe ways in which technology is used in everyday life.

From the list of investigation activities, select the activity which did not use technology.

A technology used to prepare the report

B technology used to get to a source of relevant information for the report

C correct, a method to obtain information from a valid source that does not use technology

D technology used to communicate information in the report

10 **P.1.e.1:** Classify common objects and substances according to observable attributes/properties.

Recognize the set of two physical properties common to all three specified items.

A neither property was applicable to the three items

B neither property was applicable to the three items

C correct, set where each of the three items have the two properties

D neither property was applicable to the three items

11 **P.2.e.1:** Describe common physical changes in matter: size, shape, melting, freezing, dissolving, evaporating.

Recognize the type of change in a specified material from the procedure applied to the material.

A correct, the change occurred in the material by the procedure performed on the material

B a change that did not occur from the procedure applied to the material

C a change that did not occur from the procedure applied to the material

D a change that did not occur from the procedure applied to the material

12 **P.1.e.4:** Construct simple, useful electrical circuits.

Given a description and diagram of an electrical circuit, understand how current pathways activate devices (e.g., light bulbs).

A an incorrect description of current flow

B correct, the path how current flow in the given circuit

C an electrical device not part of the circuit, as a control of current flow

D a source of electric energy not part of the circuit

13 **P.1.e.2:** Identify properties of materials that make them useful.

Identify how a property of the material used to make a tool avoids a hazard from the situation in which the tool is used.

A a property that the material does not have

B a property that the tool does not have

C correct, the material property so that situation hazard is avoided when using the tool

D a property that the material does not have

14 **P.3.e.5:** Manipulate simple mechanical devices and explain how their parts work together.

Identify two simple machines that are assembled together to make a specific common tool.

A only one is part of the specific tool

B only one is part of the specific tool

C neither simple machine is part of the specific tool

D correct, the two simple machines are present in the specific tool

15 **P.3.e.3:** Describe patterns of interaction of magnetic materials with other magnetic and non-magnetic materials.

Understand why an object is attracted to a magnet.

A a material that does not attract a magnet

B a material that does not attract a magnet

C correct, a material that is attracted to a magnet

D a material that does not attract a magnet

16 **C.1.e.4:** Use simple measurement devices to make measurements in scientific investigations.

Choose the appropriate metric unit for measuring an amount of a specified material.

A an inappropriate metric unit for the given measurement task

B correct, the appropriate metric unit for the given measurement task

C an inappropriate metric unit for the given measurement task

D an appropriate, but non-metric unit for the given measurement task

17 **R.1.e.1:** Develop an awareness of the need for evidence in making decisions scientifically.

Compare and recognize the best scientific procedure to gather evidence from a specific investigation to make a valid conclusion.

A a procedure that does not gather appropriate evidence

B a procedure that does not gather evidence, but rather methods of the investigation

C correct, a procedure that gathers and compares appropriate evidence to reach a conclusion

D a procedure that is part of the investigation's design

18 **E.3.e.3:** Explain appropriate safety precautions during severe weather.

Know what behavior to take given specific severe and potentially dangerous weather conditions.

A correct, the appropriate behavior for safety, given the resources available

B behavior that puts personal safety at risk

C behavior that puts personal safety at risk

D behavior that puts personal safety at risk

19 **E.1.e.1:** Describe major features of the Earth's surface.

Identify a type of Earth-surface feature, given observation data of the feature.

A a surface feature not characterized by the given observations

B a surface feature not characterized by the given observations

C correct, the surface feature that is characterized by the observation data

D a surface feature not characterized by the given observations

20 **E.3.e.2:** Describe seasonal changes in Michigan weather.

Compare the expected weather conditions of one Michigan season to the expected weather conditions of another season.

A two weather conditions where only one change is expected during the next season

B correct, both weather condition changes expected during the next season

C two weather conditions where neither change is characteristic of the next season

D two weather conditions where neither change is characteristic of the next season

21 **E.3.e.2:** Describe seasonal changes in Michigan weather.

Identify the advantage for a given animal to migrate from Michigan during a given season.

A correct, the reason migration is an advantage for the specific animal's survival, given the weather conditions of the season

B a reason that is not an advantage

C a reason that is opposite of the advantage

D a reason that is not a survival advantage regardless of the season in Michigan

22 **E.4.e.2:** Describe the motions of the Earth around the Sun and the moon around the Earth.

Understand why the moon appears in different shapes in the sky across nights of observation.

A correct, the appearance regarding the moon's movement to an observer on Earth

B an incorrect understanding of the movement of the moon in relationship to Earth

C incorrect movement of the Sun in relation to Earth

D correct movement of Earth in relation to Sun, but does not explain phases of the moon

23 **E.4.e.1:** Compare and contrast characteristics of the Sun, moon, and the Earth.

Understand the apparent likeness in size of the full moon and Sun when safely observed in the sky.

A correct, the reason regarding the Sun's and moon's relative distance to Earth

B incorrect statement about the Sun's and moon's relative distance to Earth

C incorrect statement about the moon's distance from Earth and the Sun

D incorrect statement about the actual size of the Sun and moon

24 **C.1.e.5:** Develop strategies and skills for information gathering and problem solving.

Given information displayed in a bar graph, select the correct conclusion.

A an incorrect interpretation of the graph's information

B correct, the appropriate conclusion based on factual information displayed by the graph

C an incorrect conclusion

D a conclusion not supported by the graph's trend information

25 **C.1.e.2:** Develop solutions to problems through reasoning, observation, and investigation.

Classify the type of investigation activity as described.

A correct, the correct type of investigation activity

B an investigation activity, but not the type described

C an investigation activity, but not the type described

D an investigation activity, but not the type described

26 **R.1.e.1:** Develop an awareness of the need for evidence in making decisions scientifically.

Identify the type of information a scientist needs to support the scientific meaning or conclusion from an initial research discovery.

A does not verify the scientist's findings

B does not verify the scientist's findings

C does not verify the scientist's findings

D correct, the type of information scientists use to support and verify investigation findings

27 **R.1.e.1:** Develop an awareness of the need for evidence in making decisions scientifically.

Identify the type of information obtained from a specific statement made about a scientific exhibit.

A does not apply to the specific statement

B does not apply to the specific statement

C correct, the type of information conveyed by the specific statement

D does not apply to the specific statement

28 **C.1.e.3:** Manipulate simple devices that aid observation and data collection.

Identify which objects are best observed using the specified simple scientific tool.

A correct, the objects that can be meaningfully observed for data

B object not meaningfully observed with specified tool; use of tool will not provide better observation data

C object not meaningfully observed with specified tool; use of tool will not provide better observation data

D object not meaningfully observed with specified tool; use of tool will not provide better observation data

29 **E.2.e.1:** Describe how water exists on Earth in three states.

Identify two water description examples in a specified state.

A correct, water descriptions where both are water in the specified state

B only one of two is water in the specified state

C neither is water in the specified state

D only one of two is water in the specified state

30 **E.1.e.3:** Describe natural changes in the Earth's surface.

Identify the force (energy) that most likely caused the change in a specified Earth-surface feature.

A a force that would not produce the observed change

B a force that mostly likely did not cause the observed change

C correct, the force does produce the observed change in the specified Earth-surface feature

D a force that mostly likely did not cause the observed change

31 **E.1.e.4:** Explain how rocks and fossils are used to understand the history of the Earth.

Recognize how fossils of animals from a defined ecosystem can be found later in a different ecosystem that would have been hostile for these animals to survive.

A correct, ecosystems change over time in a given location on Earth

B states that animals did not need the conditions of their original ecosystem to survive in the new ecosystem

C states that the animals' remains were moved to the new ecosystem

D states that the animals' remains were moved to the new ecosystem.

32 **E.2.e.3:** Identify sources of water and their uses.

Identify three sources of water to be used for a specific purpose.

A one of three sources cannot be used for the specified purpose

B one of three sources cannot be used for the specified purpose

C correct, three sources of water that can be used for the intended purpose

D one of three sources cannot be used for the specified purpose

33 **E.4.e.1:** Compare and contrast characteristics of the Sun, the moon, and Earth.

Identify a characteristic which is true for both Earth and the moon.

A true for Earth, but not for the moon

B neither true for Earth nor the moon

C the measure is not the same for Earth and the moon

D correct, true for both Earth and the moon

34 **E.2.e.2:** Trace the path that rain water flows after it falls.

Understand the movement of ground water.

A a source of water that does not directly flow into ground water

B correct, how ground water moves below the surface

C a process that does not result in ground water flow

D an incorrect source of ground water

35 **R.1.e.1:** Develop an awareness for the need of evidence in making decisions scientifically.

Identify the best source of evidence from a list of opportunities to gather evidence for a specific investigation.

A correct, source of factual information about the investigation's criterion variable

B non-factual information from remote sources

C an inappropriate, inaccurate evidence-gathering technique

D the option to look for evidence of criterion variable from comparative sources other than the specified source of the investigation's criterion variable

36 **C.1.e.3:** Manipulate simple devices that aid observation and data collection.

Identify a source of data, based on the description, used by scientists to study stars.

A correct, the correct source of data based on its description

B a data source that is not operable for use in such studies as described

C a source of data that can be used for such studies, but it does not have one of the listed characteristics

D a source of data, though possibly useful, not yet obtainable for such studies

37 **C.1.e.2:** Develop solutions to problems through reasoning, observation, and investigations.

Recognize the appropriate investigation method and measurement plan for a specific investigation.

A correct, the method and measurement technique that will provide valid data for the investigation

B a method that will not provide valid data

C a method that does not answer the investigation question

D a data source that does not apply to the investigation

38 **P.3.e.4:** Identify and use simple machines and describe how they change effort.

Recognize the reason for using a specific simple machine to accomplish a specific task.

A correct, the simple machine provides an advantage for completing the task

B a statement that is not true about overcoming forces

C a statement that is not true about overcoming task effort

D a statement that increases task effort

39 **P.4.e.4:** Explain how shadows are made.

Given a specific drawing of a shadow and a moving source of light, recognize how the shadow will change in size.

A an incorrect light condition for the shadow to have the specified condition

B correct, the correct light condition to produce the specific shadow condition

C an incorrect light condition for the shadow to have the specified condition

D an incorrect light condition for the shadow to have the specified condition

40 **P.2.e.2:** Prepare mixtures and separate them into their component parts.

Recognize the process used to prepare a mixture.

A a process to separate components of a mixture

B a process to separate components of a mixture

C a process to separate components of a mixture

D correct, a process to combine components into a single mixture

41 **P.2.e.2:** Prepare mixtures and separate them into their component parts.

Recognize a process to separate two specific components of a mixture.

A a process that will not separate the specified component of the mixture

B a process that will not separate the specified component of the mixture

C correct, a process that will remove one component and leave the remaining component

D a process that will not separate the specified component of the mixture

42 **P.4.e.1:** Describe sounds in terms of their properties.

Recognize how pitch changes.

A correct, the correct change in pitch based on manipulations made

B a sound characteristic that does not apply to pitch

C the incorrect change in pitch based on the change made

D no pitch change occurs though the process described does change pitch

43 **P.4.e.3:** Use prisms and filters with light sources to produce various colors of light.

Recognize how to use white light to project a specific color of light on a screen.

A a process that does not transmit light

B correct, a process that transmits the specified color of light

C a process that does not transmit light

D a process that does not transmit light

44 **R.1.e.1:** Develop an awareness of the need for evidence in making decisions scientifically.

Recognize the best method among those listed to gather evidence to test a specified hypothesis.

A a process that does not investigate the predictor variable of the hypothesis

B a process that is irrelevant to manipulating the predictor variable

C correct, a process that systematically observes and records criterion data in relation to the predictor variable

D a non-empirical source of information

45 **C.1.e.5:** Develop strategies and skills for information gathering and problem solving.

Recognize the best source of background information for making a scientific decision.

A a source of information that could be helpful, but only through a related activity

B a source of information that could be helpful, but has limited experience

C data from a related activity that may be helpful, but which would require years of observation

D correct, information from expert sources that have experience with the actual activity

46 **L.3.e.1:** Give evidence that characteristics are passed from parents to young.

Using picture information of a young plant, select the picture of the parent plant.

A a picture dissimilar in young to parent plant characteristics

B a picture dissimilar in young to parent plant characteristics

C correct, a parent plant picture which has similar appearing characteristics to the young plant picture

D a picture dissimilar in young to parent plant characteristics

47 **L.4.e.1:** Explain how fossils provide evidence about the nature of ancient life.

From the choices listed, recognize the object that is not likely to become a fossil.

A an object known to form fossils

B an object known to form fossils

C an object known to form fossils

D correct, an object that does not have durable characteristics and is highly unlikely to form a fossil

48 **L.4.e.1:** Explain how fossils provide evidence about the nature of ancient life.

Based on a specific example of fossil evidence, identify the appropriate statement that can be made using that evidence.

A a statement that is not necessarily true based on the fossil evidence

B correct, a statement that is true about the organism represented by the fossil

C a statement that is not true about the formation of the fossil

D a statement that has nothing to do with the fossil or the organism it represents

49 **L.5.e.1:** Identify familiar organisms as part of a food chain or food web and describe their feeding relationships with the web.

Recognize the pair of common animals that are classified as predators.

A a pair of animals that are not predators

B a pair in which one is a predator

C a pair of animals that are not predators

D correct, a pair of animals where both are predators

50 **L.5.e.2:** Describe the basic requirements for all living things to maintain their existence.

Recognize the energy flow pathway from a source through specified organisms in a given environment.

A an incorrect energy flow pathway based on the order in which organisms are listed

B correct, the correct pathway through the ordered arrangement of organisms in the specified environment

C an incorrect energy flow pathway based on the order in which organisms are listed

D an incorrect energy flow pathway based on the order in which organisms are listed

51 **L.2.e.4:** Compare and contrast food, energy, and environmental needs of organisms.

Given a labeled food chain showing energy flow, select the statement the characterizes a specified organism in the food chain.

A incorrectly characterizes the specific organism

B incorrectly characterizes the specific organism

C correct, the statement correctly characterizes the organism with the food chain

D incorrectly characterizes the specific organism

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