

# Functional Independence

## Spring 2011



**Science**

*Item Descriptors*

**Grade 11**

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**DIRECTIONS:** Read each question. Choose the **BEST** answer for each question.

**NOTE: For each item listed throughout this booklet, the first statement is a summary of the Michigan Extended Benchmark (EB) and the second statement or problem is the descriptor for the item's stem or question.**

**1 R.RO.FI.EB.II.1.h.1a:** Evaluate a plan based on the strengths and weaknesses of claims, arguments, or data

Identify the best science reference to evaluate a product opinion

- A** correct, identified the best scientific reference
- B** selected a reference that does not offer a scientific reference
- C** selected a reference that does not necessarily provide unbiased scientific information

**2 C.CN.FI.EB.I.1.m.3ADDh:** Identify and/or use tools and equipment appropriate to scientific investigations

Read a measurement using a scientific tool and predict a possible consequence based on the measured value

- A** correct, identified a likely consequence
- B** selected a consequence contrary to the interpretation of the physical measurement provided by the tool
- C** selected a consequence not related to the interpretation of the physical measurement provided by the tool

- 3 L.OR.FI.EB.III.2.h.3a:** Explain why plants and animals store food

Recognize a survival benefit for an organism's ability to store food

- A** selected an incorrect statement that makes the ability of the organism to store food irrelevant
- B** selected an incorrect statement that makes the consumption of food irrelevant
- C** correct, identified the benefit from stored food when an organism is unable to consume food

- 4 L.CE.FI.EB.III.1.h.1a:** Recognize that multi-cellular organisms grow and reproduce

Recognize how an embryo primarily increases in size due to cell growth

- A** correct, identified how cells primarily contribute to embryonic growth
- B** selected a type of cell growth that is not the primary form of growth in an embryo
- C** selected a form of cell differentiation, which is not a primary growth factor

- 5 L.CE.FI.EB.III.1.h.1a:** Recognize that multi-cellular organisms grow and reproduce

Recognize the meaning of reproductive fertilization

- A** selected an incorrect statement based on specified multicellular body parts
- B** selected a statement that applies to asexual reproduction
- C** correct, identified the process by which fertilization occurs

- 6 L.OR.FI.EB.III.2.h.1a:** Compare and/or classify organisms in major groups based on their structure

Given pictures of three different animals, each from a different animal class, recognize the animal that is a member of the specified class

- A** selected an animal not a member of the specified class
- B** correct, identified the animal that is a member of the specified class
- C** selected an animal not a member of the specified class

- 7 L.OR.FI.EB.III.2.h.2a:** Identify the life cycle of an organism associated with human disease

Recognize how injection of a vaccine promotes health

- A** selected a false statement regarding how a vaccine promotes health
- B** selected a false statement regarding the benefits from vaccines
- C** correct, identified how a vaccine protects against infectious disease

- 8 L.OR.FI.EB.III.2.h.4a:** Recognize how living things maintain a healthy balance

Recognize the health-maintenance function of a specified cell type

- A** correct, identified the function of the specified cell type for maintaining health
- B** selected a body process that is not a specialized function of the specified cells
- C** selected a body process that is not a specialized function of the specified cells

- 9 L.OR.FI.EB.III.2.h.1a:** Compare and/or classify organisms in major groups based on their structure

Given a picture of an animal, recognize its class and then select the animal within the same class among three different animal class choices

- A** selected an animal not of the same class as the given animal
- B** selected an animal not of the same class as the given animal
- C** correct, identified the animal that is a member in the same class as the given animal

- 10 L.OR.FI.EB.III.2.h.1a:** Compare and/or classify organisms in major groups based on their structure

Recognize an example plant that is a member of a specified class

- A** selected an incorrect plant example
- B** correct, selected a plant example of the specified class
- C** selected an incorrect plant example

**11 L.OR.FI.EB.III.2.h.4a:**

Recognize how living things maintain a healthy balance

Recognize which result of a blood test indicates a specified disease condition

- A** selected a result that does not indicate presence or absence of infection
- B** selected a result that does not indicate presence or absence of infection
- C** correct, identified the blood test result that indicates presence of an infection

**12 L.OR.FI.EB.III.2.h.1a:**

Compare and/or classify organisms in major groups based on their structure

Recognize an example animal that is a member of a specified class

- A** selected an incorrect animal example
- B** correct, selected an animal example of the specified class
- C** selected an incorrect animal example

**13 L.EC.FI.EB.III.5.h.2a:** Identify and/or explain that energy flows through familiar ecosystems

Identify the described role of organisms in a food chain

- A** selected a role in a food chain that was not described
- B** selected a role in a food chain that was not described
- C** correct, identified the described role of organisms in a food chain

**14 L.EC.FI.EB.III.5.h.3a:** Identify and/or describe general factors that influence population size

Identify an organism's population change that could likely occur in an ecosystem after a specified change to another organism population

- A** correct, selected the likely population change after the specified change
- B** selected an unlikely subsequent population change
- C** selected an unlikely subsequent population change

- 15 L.EC.FI.EB.III.5.h.3a:** Identify and/or describe general factors that influence population size

Identify a reasonable basis for removal of a given animal from the endangered species list

- A** selected a basis that could further threaten the given endangered animal's population size
- B** selected a basis that could further threaten the given endangered animal's population size
- C** correctly identified a reasonable basis for removal of the example animal from the endangered species list

- 16 L.EC.FI.EB.III.5.h.4a:** Describe responses of an ecosystem to events that cause it to change

Predict the population change likely to occur to prey organisms after a specified event occurred to all predator organisms in a food chain

- A** selected a change in prey population unlikely to occur
- B** correct, selected the immediate effect on the prey's population level
- C** selected a prey population change unlikely to occur

- 17 P.ME.FI.EB.IV.1.m.4ADDh:** Describe the arrangement and motion of molecules in solids, liquids, and gases

Recognize the effect on the freezing point of the solution of dissolving a specified compound into water

- A** selected the opposite effect on the freezing point after adding the compound
- B** correct, identified the effect the compound had on the freezing point of the solution
- C** selected the wrong effect on the freezing point of the solution after adding the compound

- 18 P.ME.FI.EB.IV.1.m.4ADDh:** Describe the arrangement and motion of molecules in solids, liquids, and gases

Identify the reason for space left between solid sections of road surfaces

- A** selected an incorrect reason for leaving space
- B** selected an incorrect reason for leaving space
- C** correct, identified the reason that space is necessary

- 19 P.ME.FI.EB.IV.1.h.1a:** Identify the risks and benefits of using common household and agricultural materials

Recognize the need for including warning labels on household products

- A** correct, identified a valid reason for the use of warning labels
- B** selected an unfounded reason for the use of warning labels
- C** selected an unfounded reason for the use of warning labels

- 20 P.ME.FI.EB.IV.1.h.4a:** Identify and/or explore how current is controlled in simple and parallel circuits

Recognize the control of current flow based on the description of a circuit

- A** selected the wrong circuit description for the corresponding current flow
- B** correct, identified the circuit description for the intended current flow
- C** selected the wrong circuit description for the corresponding current flow

- 21 P.ME.FI.EB.IV.1.h.3a:** Identify the structural parts and electrical charges of atoms

Recognize the relationship between charged atomic particles

- A** selected the opposite relationship between two identically charged particles
- B** correct, identified the relationship between two differently charged atomic particles
- C** selected the opposite relationship between two identically charged particles

- 22 P.ME.FI.EB.IV.1.h.4a:** Identify and/or explore how current is controlled in simple and parallel circuits

Given a simple electric circuit diagram, identify the action needed to enable the circuit to work

- A** selected an action that does not appear necessary in order for the circuit to work
- B** selected an action that does not appear necessary in order for the circuit to work
- C** correct, identified the action required for the circuit to work by establishing current flow

**23 P.ME.FI.EB.IV.1.h.3a:** Identify the structural parts and electrical charges of atoms

Recognize the location of subatomic particles in an atom

- A** selected a particle not in the specified atomic location
- B** selected a particle not in the specified atomic location
- C** correct, identified the correct location of the subatomic particle

**24 P.CM.FI.EB.IV.2.m.1ADDh:** Describe common physical changes in matter

Recognize the correct process for a change of state for a specified substance in a specified situation

- A** selected the incorrect process for the change of state
- B** selected the incorrect process for the change of state
- C** correct, selected the change of state process described

**25 P.CM.FI.EB.IV.2.h.4a:** Identify common energy transformations in everyday situations

Recognize the energy transformation process that occurs in the specified situation

- A** selected an incorrect energy transformation process
- B** selected an incorrect energy transformation process
- C** correct, identified the energy transformation that occurred in the specified situation

**26 P.CM.FI.EB.IV.2.h.4a:** Identify common energy transformations in everyday situations

Recognize that energy is neither lost nor produced by an energy transformation

- A** selected that an energy transformation always produces a gain or loss of energy
- B** correct, selected that the amount of energy remains constant although an energy transformation occurred
- C** selected that an energy transformation sometimes produces a gain or loss of energy

**27 P.MO.FI.EB.IV.3.m.3ADDh:**

Identify and/or describe the non-contact forces exerted by magnets and gravity

Identify which of three non-contact forces attracts matter to a specified location

- A** selected a non-contact force that does not attract matter as specified
- B** selected a non-contact force that does not attract matter as specified
- C** correct, identified the non-contact force that attracts matter to the specified location

**28 C.CN.FI.EB.I.1.m.3ADDh:**

Identify and/or use tools and equipment appropriate to scientific investigations

Identify the direction toward which a compass needle points

- A** selected an incorrect description
- B** selected an incorrect description
- C** correct, selected the direction toward which a compass needle points

**29 P.MO.FI.EB.IV.3.m.3ADDh:**

Identify and/or describe the non-contact forces exerted by magnets and gravity

Recognize a planet's characteristic that produces a non-contact force

- A** correct, identified the planet's non-contact force that attracts object from space
- B** selected a planet characteristic that is not a force
- C** selected a planet characteristic that is not a force

**30 P.WV.FI.EB.IV.4.m.4ADDh:**

Identify and/or describe ways in which light interacts with matter

Recognize the relationship between the absorption of light energy and the color of matter

- A** selected a color that does not absorb the most light energy
- B** selected a color that does not absorb the most light energy
- C** correct, selected the color of matter that absorbs the most light energy

- 31 P.WV.FI.EB.IV.4.h.3a:** Identify properties of waves

Recognize how the pitch of a sound from a moving object changes as the sounding object moves past a stationary person

- A** selected that the sound has no volume
- B** correct, recognized that the person would hear a sound that changes in pitch
- C** selected that the pitch of the sound heard does not change as the object moves past

- 32 P.WV.FI.EB.IV.4.h.3a:** Identify properties of waves

Recognize which characteristic of a transverse wave remained constant across three graphical wave illustrations

- A** selected a wave characteristic that changed across the three illustrations
- B** selected a wave characteristic that changed across the three illustrations
- C** correct, selected the wave characteristic that remained constant for each wave illustration

- 33 E.GE.FI.EB.V.1.h.4a:** Identify and design a plan to conserve and/or recycle at home, work, or school

Recognize which type of light source is expected to most efficiently use electricity

- A** selected a light source that does not have an efficient design for use of electricity
- B** correct, identified the light source that has an efficient design for using electricity
- C** selected a light source that does not have an efficient design for use of electricity

- 34 E.GE.FI.EB.V.1.m.1ADDh:** Identify and/or describe major features of the earth's surface using maps

Recognize the name of a specified Great Lake from a map of all the Great Lakes

- A** selected the name of a different Great Lake
- B** selected the name of a different Great Lake
- C** correct, identified the name of the specified Great Lake from a map of all the Great Lakes

- 35 E.GE.FI.EB.IV.1.h.1a:** Identify and/or describe surface features caused by the Ice Age

Recognize the specified land form based on description

- A** correct, identified the described land form
- B** selected a land form that does not match the description
- C** selected a land form that does not match the description

- 36 E.GE.FI.EB.V.1.e.2ADDh:** Identify and/or describe types of earth materials and their uses

Recognize which of three soil types through which water most readily flows

- A** selected a soil type not having the best water flow-through rate
- B** correct, identified the soil type having the best water flow-through rate
- C** selected a soil type not having the best water flow-through rate

- 37 E.GE.FI.EB.V.1.m.4ADDh:** Identify and/or explain how rocks and fossils help us understand the history of the earth

Understand how to interpret fossil evidence

- A** concluded that an organism exists today based on fossil evidence
- B** correct, used the evidence to conclude that the fossilized organism was once present in a specified location
- C** concluded that a population of the organism was once present beyond the area in which a single organism fossil was found

**38 E.HY.FI.EB.V.2.h.2a:** Identify and/or describe how human activities affect the quality of water

Recognize a possible problem associated with discharge of water, used for industry, into surface water sources

- A** correct, realized that the discharge of industrial water into fresh water sources may harm water later used for consumption
- B** selected that industrial water discharged into surface water sources would necessarily be filtered
- C** selected that industrial water discharged into surface water sources could benefit organisms that live in the water

**39 E.HY.FI.EB.V.2.m.2ADDh:** Describe how surface water in Michigan reaches the ocean and returns

Recognize flow pathways by which a specified form of water becomes another form of water in the environment

- A** selected only one of the two possible water pathways
- B** correct, selected the two pathways water flows from one form to another form
- C** selected only one of the two possible water pathways

**40 R.RO.FI.EB.II.1.h.6a:** Develop an awareness of and sensitivity to the natural world

Recognize the reason, among the three provided, that has a realistic basis to explain the observed change in wild animal behavior

- A** selected a reason that can apply to some animal types; however, there is no past evidence for this long-time-present stimulus having the observed effect
- B** correct, this reason could have realistic basis if existing controls on animal population have been removed or people are expanding towns into existing animal habitat
- C** selected a reason for which there is no past evidence that large predators are a stimulus for this observed effect on other animals

- 41 E.AW.FI.EB.V.3.h.3a:** Identify and/or use weather information from a variety of sources

Recognize the severe storm that forms over land

- A** correct, identified the severe storm that forms over land
- B** selected a type of severe storm that forms over water
- C** selected a large displacement of water that can damage Earth surface life and properties

- 42 E.AW.FI.EB.V.3.e.3ADDh:** Identify and explain appropriate safety precautions during severe weather

Using a table, select data that answers the question

- A** selected wrong information from the table
- B** selected wrong information from the table
- C** correct, selected the correct data from the table

- 43 E.SS.FI.EB.V.4.h.4a:** Investigate current events through print media (books and newspapers) and the Internet

Match the provided drawing representing a historical event in science and technology, to its description in text

- A** selected an important historical event that does not match the drawing
- B** correct, matched the drawing to the description of the event
- C** selected an important historical event that does not match the drawing

- 44 E.HY.FI.EB.V.2.e.1ADDh:** Identify safety precautions with the three states of water

Identify which water temperature is safest for the specified use

- A** selected a water temperature that is not safest for the specified use
- B** correct, identified the safest of the three water temperatures for its specified use
- C** selected a water temperature that is not safest for the specified use

- 45 E.AW.FI.EB.V.3.m.1ADDh:**  
Identify the uses of weather tools, such as thermometers, rain gauges, and weather maps
- Identify the best conditions for collecting data using a specified weather tool
- A** selected a condition under which the measurement tool will not work
  - B** correct, selected the condition under which the measurement tool will work accurately
  - C** selected a condition that could underestimate the measurement of the weather data









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