Ohio Achievement Assessment
Grade 8 Science

Spring 2010

Answer Key
and
Scoring Guidelines

Grade 8 Science
Answer Key
Spring 2010

Item No.	Type	Content Standard	Content Standard Benchmark	Key
1	Multiple choice	Physical sciences	D	Not for public release
2	Multiple choice	Life sciences	C	Not for public release
3	Multiple choice	Physical sciences	A	Not for public release
4	Multiple choice	Earth and space science	D	Not for public release
5	Multiple choice	Earth and space science	D	Not for public release
6	Short answer	Physical sciences	A	Not for public release
7	Multiple choice	Physical sciences	B	Not for public release
8	Multiple choice	Life sciences	C	B
9 - 14	**Field Test Items Not Used in Student Score**			
15	Multiple choice	Scientific inquiry	A	C
16	Short answer	Scientific inquiry	B	2 pt rubric
17	Multiple choice	Scientific inquiry	B	D
18	Multiple choice	Earth and space science	C	A
19	Multiple choice	Physical sciences	D	Not for public release
20	Multiple choice	Earth and space science	B	Not for public release
21	Extended Response	Earth and space science	E	Not for public release
22	Multiple choice	Physical sciences	C	B
23	Multiple choice	Life sciences	A	Not for public release
24	Multiple choice	Life sciences	A	B
25	Multiple choice	Earth and space science	B	A
26	Multiple choice	Life sciences	C	Not for public release
27	Extended Response	Science and technology	A	4 pt rubric
28	Multiple choice	Life sciences	B	Not for public release
29	Multiple choice	Life sciences	C	A
30	Multiple choice	Earth and space science	A	Not for public release
31	Multiple choice	Life sciences	A	Not for public release
32	Short answer	Scientific ways of knowing	A	Not for public release
33	Multiple choice	Physical sciences	B	C
34	Multiple choice	Scientific inquiry	B	B
35	Multiple choice	Life sciences	A	A
36	Multiple choice	Scientific ways of knowing	A	Not for public release
37	Multiple choice	Earth and space science	A	B
38	Short answer	Life sciences	C	2 pt rubric
39	Multiple choice	Earth and space science	E	C
40	Multiple choice	Earth and space science	E	B
41	Multiple choice	Life sciences	A	Not for public release
42	Multiple choice	Physical sciences	A	A
43	Multiple choice	Physical sciences	A	D
44	Multiple choice	Physical sciences	A	D

Limited = 0-10; Basic = 11-20; Proficient = 21-29; Accelerated = 30-34; Advanced = 35-48
Multiple Choice = 1 point; Short Answer = 2 points; Extended Response = 4 points

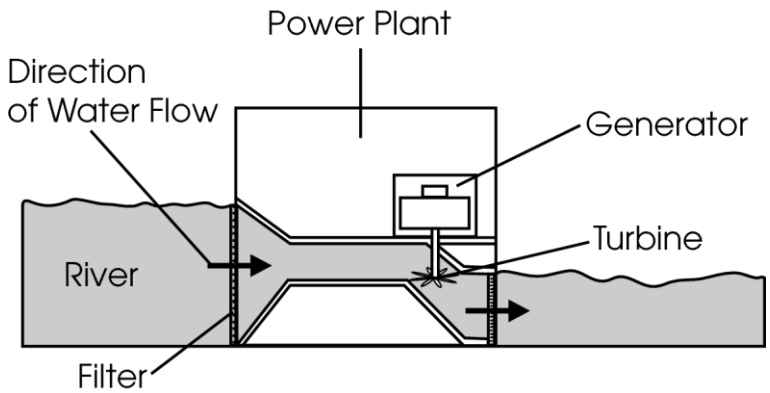
16. In 2002, the club reported to the North American Butterfly Association that the Striped Hairstreak butterfly was extinct. In their report, the students wrote that they suspected that the local pesticide spraying in 2000 was the cause of the extinction of this butterfly species. The students received a reply stating that their conclusion was not scientifically valid.

In your **Answer Document**, give two reasons why their conclusion was not scientifically valid. (**2 points**)

Scoring Guidelines

Points	Student Response
2 point	**Exemplar Response:** It was not valid to declare the Striped Hairstreak extinct because an extinct species has no living members any place in the world – this data is only for one town in Ohio. Also, local pesticide spraying is not enough of change to the environment to cause the extinction of a species. **Other Correct Response(s):** There have only been 2 years without sighting of the butterfly – it could just be chance that they weren't seen. Also the butterfly may be in other parts of the world and it is just not living in this town. Possible reasons why the students' conclusion was not scientifically valid: • Data are limited to one town in Ohio/area sampled is very small. • The butterfly may be in other parts of the world. • The data are only for 4 years. • There have been only 2 years with no sightings of the butterfly. • Local pesticide spraying is not a large-scale environmental change. • Lack of definitive evidence that the pesticides actually killed the butterflies/were responsible for the decrease in the number of butterflies. The response provides two appropriate reasons for the conclusion not being scientifically valid.
1 point	The response provides one appropriate reason for the conclusion not being scientifically valid. **Sample Response**: The butterfly may be in other parts of the world and it is just not living in this town.
0 point	The response fails to demonstrate any understanding of why the students' conclusions were not scientifically valid. The response does not meet the criteria required to earn one point. The response indicates inadequate or no understanding of the task and/or the idea or concept needed to answer the item. It may only repeat information given in the test item. The response may provide an incorrect solution/response and the provided supportive information may be totally irrelevant to the item, or possibly, no other information is shown. The student may have written on a different topic or written, “I don't know”. **Sample Response**: The students are not scientists.

27. The members of a city council are researching the construction of a new hydroelectric power plant on an existing dam. The city currently burns coal for its power. In the new plant, water from the river would pass through a turbine in the power plant as shown. The turbine would turn, which would cause the generator to produce electricity. The hydroelectric power plant and dam would not block the entire river.



The council members discuss the advantages and disadvantages of using a hydroelectric power plant to generate electricity.

In your **Answer Document**, describe two environmental advantages and two environmental disadvantages of building the hydroelectric power plant proposed by the city council. (**4 points**)

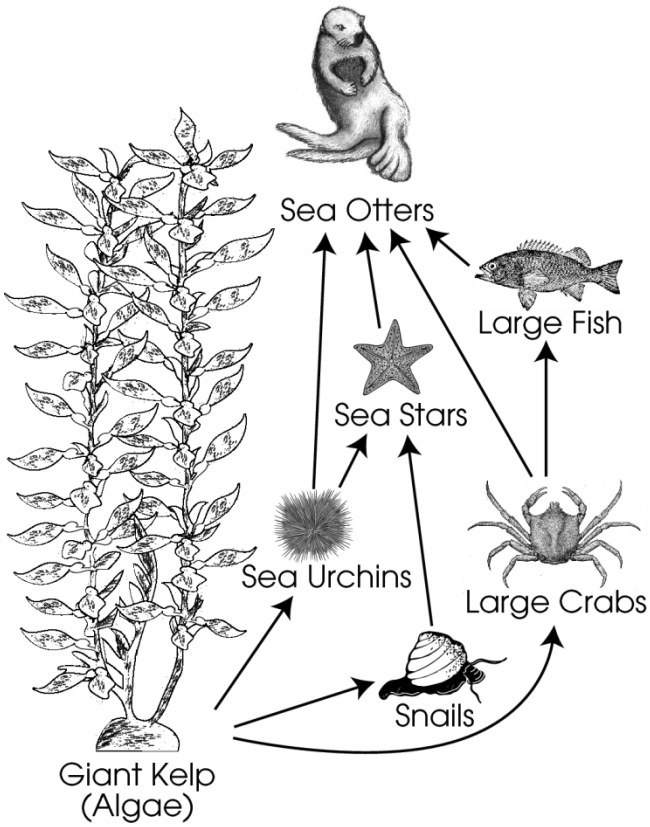
Scoring Guidelines

Points	Student Response
4 point	**Exemplar Response:** Building a hydroelectric plant would be an advantage because it produces electricity without causing a lot of air pollution such as smoke like burning coal does. Water is also a renewable resource while coal is not. Building a hydroelectric plant would hurt the environment because the metal in the power plant could break down and pollute the river. Also, the power plant would disturb the land/habitats along the river where the plant is built. **Sample Response**: Other advantages of building the hydroelectric plant may include: • Water is a resource, providing the community with a renewable supply. • Reducing the use of coal as an energy source would decrease air pollution (e.g. smoke, greenhouse gases, and carbon dioxide). Other disadvantages of building the hydroelectric plant may include: • Change of river flow has environmental impacts on organisms and ecosystems. • Water pollution from the corrosion of the metal/concrete in the power plant would affect the plants and animals. • Filtration of sediment may result in increased erosion of river beds further downstream.

	• The power plant may change the temperature of the water behind the dam; this may negatively affect the plants and animals in the river. **NOTE**: Pollution of the river does not receive credit. The students must identify a type of pollution. The response correctly: Provides a correct description of two environmental advantages **AND** two environmental disadvantages of building a hydroelectric power plant.
3 point	The response correctly: Provides a correct description of two environmental advantages **AND** one environmental disadvantage of building the hydroelectric power plant. **OR** Provides a correct description of one environmental advantage **AND** two environmental disadvantages of building the hydroelectric power plant. **Sample Response**: Using water for electricity would not release smoke into the air like coal does. Also, water is a renewable resource. It could be bad if the metal in the power plant corroded and small pieces polluted the river.
2 point	The response correctly: Provides a correct description of two environmental advantages of building the hydroelectric power plant. **OR** Provides a correct description of two environmental disadvantages of building the hydroelectric power plant. **OR** Provides a correct description of one environmental advantage **AND** one environmental disadvantage of building the hydroelectric power plant. **Sample Response**: It's good because water is a renewable resource and its use would not pollute the air with smoke like the burning of coal does.
1 point	The response correctly: Provides a correct description of one environmental advantage of building the hydroelectric power plant. **OR** Provides a correct description of one environmental disadvantage of building the hydroelectric power plant. **Sample Response**: It's good because water is always available in the river.
0 point	The response fails to describe two environmental advantages **AND** two environmental disadvantages of using a hydroelectric power plant. The response indicates inadequate or no understanding of the task and/or the idea or concept needed to answer the item. It may only repeat information given in the test item. The student may have written on a different topic or written, "I don't know." 0 point sample answer: Building the hydroelectric plant would be good for the community because it would provide more electric power.

38. Use the following information and food web to answer question 38.

Sea otters are marine mammals that live in giant kelp forests along the Pacific coast of North America. Sea otters have an important role in the food web of this ecosystem. When sea otters are removed from the giant kelp forest, the kelp also begins to disappear.



In your **Answer Document**, explain why the absence of sea otters would lead to a decrease in the giant kelp.

Then, choose another organism in the food web and explain why the decreasing amount of giant kelp would affect that organism. (**2 points**)

Scoring Guidelines

Points	Student Response
2 point	**Exemplar Response:** If there were no sea otters in the kelp forest, there would be more sea urchins. The larger than normal number of sea urchins would eat more kelp than usual and cause the kelp to decrease in abundance. The decrease in kelp could lead to a decrease in the number of snails because the snails would have less food. **Sample Response:** Possible explanations of why the absence of sea otters would lead to a decrease in the giant kelp:

	• If there were no sea otters in the kelp forest, there would be more sea urchins. The larger than normal number of sea urchins would eat more kelp than usual and cause the kelp to decrease in abundance. • If there were no sea otters in the kelp forest, there would be more large crabs. The larger than normal number of crabs would eat more kelp than usual and cause the kelp to decrease in abundance. Possible effects of the decrease in giant kelp on another organism in the food web: • The sea urchins would lose their main food source and would decrease in number. • The snails would lose their main food source and would decrease in number. • The large crabs would lose their main food source and would decrease in number. • The sea stars would have less available food because its prey, the sea urchins and snails, feed on the kelp. The large fish that eat the large crabs would have less available food because the crabs would have a diminished food source. The response provides a correct explanation of why the absence of sea otters would lead to a decrease in the giant kelp **AND** a correct explanation of how the decrease in the amount of giant kelp would affect one other organism in food web. **NOTE**: No credit is awarded for the word “overgrazing” unless the student identifies what is causing the overgrazing. **NOTE**: A response that includes an explanation of how the decrease in kelp would affect the sea otters is not awarded a second point because the sea otters are absent from the ecosystem as stated in the first portion of the stem.
1 point	The response provides a correct explanation of why the absence of sea otters would lead to a decrease in the giant kelp **OR** A correct explanation of how the decrease in the amount of giant kelp would affect one other organism in food web. **Sample Response**: If there were no sea otters in the kelp forest there would be more large crabs. The larger than normal number of crabs would eat more kelp than usual and cause the kelp to decrease in abundance.

0 point	The response fails to demonstrate any understanding of the relationships depicted in the food web of a kelp forest ecosystem. The response does not meet the criteria required to earn one point. The response indicates inadequate or no understanding of the task and/or the idea or concept needed to answer the item. It may only repeat information given in the test item. The response may provide an incorrect solution/response and the provided supportive information may be totally irrelevant to the item, or possibly, no other information is shown. The student may have written on a different topic or written, “I don't know”. **Sample Response**: Sea otters have an important role in the food web of the giant kelp forest. When sea otters are removed from the giant kelp forest the kelp begins to disappear.