

**Released Items**  
**2010**  
**Achievement Test**

**Knowledge  
and Employability**  
**Science**

**GRADE**  
**9**



**Government  
of Alberta** ■

*Alberta* ■

Freedom To Create. Spirit To Achieve.

This document contains released items from the 2010 Grade 9 Knowledge and Employability Science Achievement Test.

A test blueprint and an answer key that includes the difficulty, reporting category, curricular content area, and item description for each test item are also included. These materials, along with the *Program of Studies* and subject bulletin, provide information that can be used to inform instructional practice.

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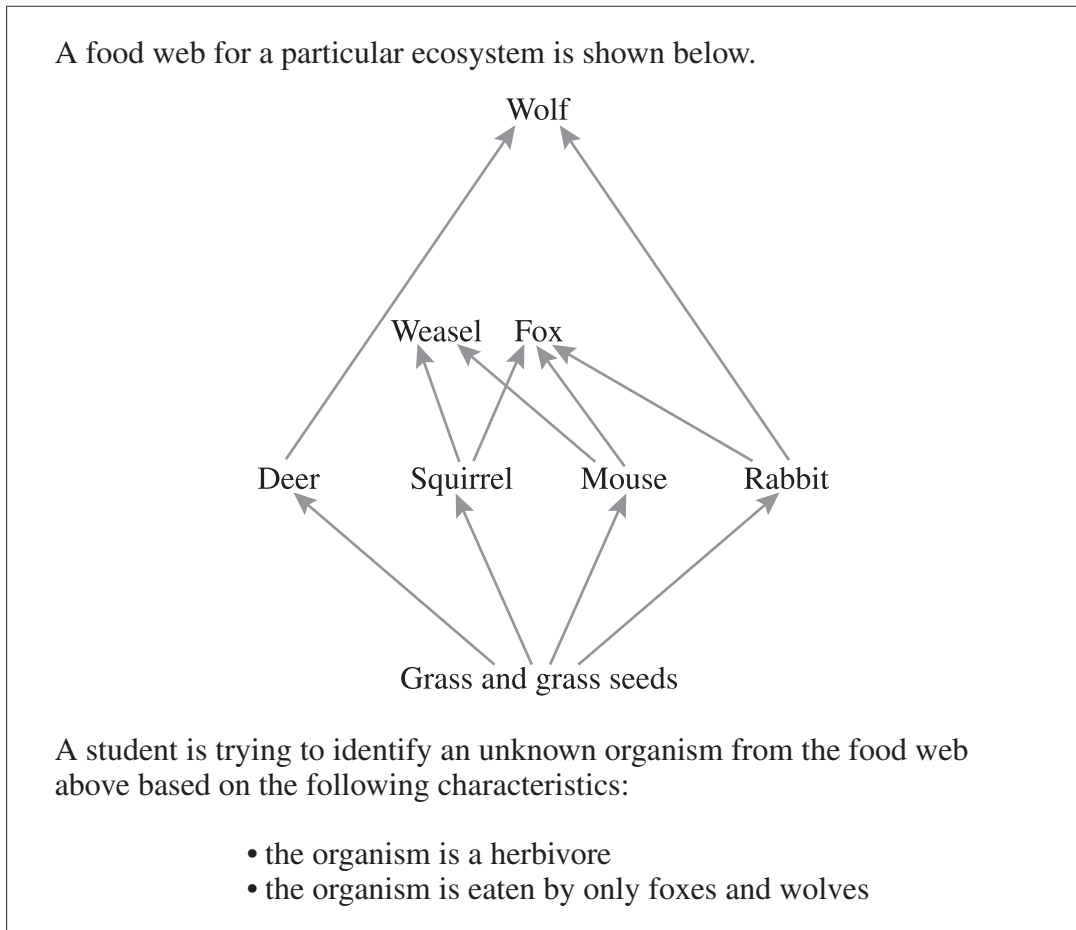
## ***2010 Achievement Test Released Items***

The items presented in this document are from the secured 2010 Grade 9 Knowledge and Employability Science Achievement Test. These items are released by Alberta Education.

# **Grade 9 Knowledge and Employability Science Achievement Test Released Items 2010**

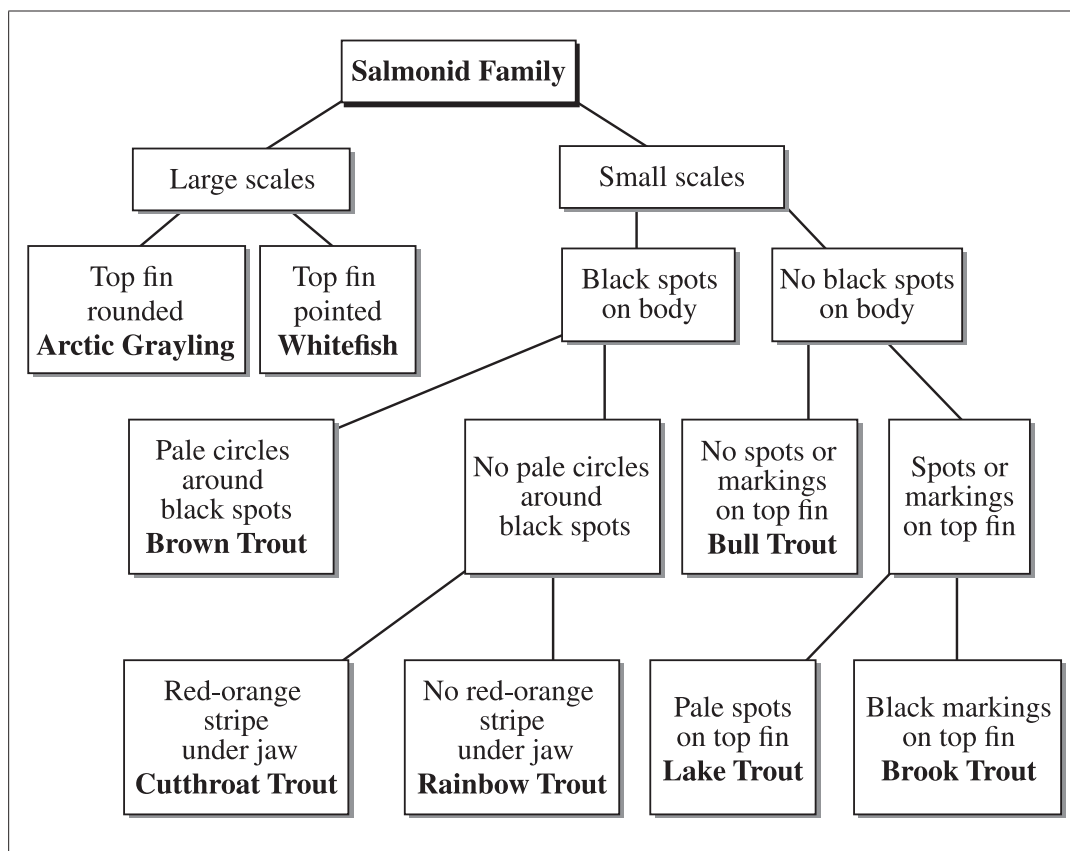
1. If a species is unable to adapt to a change in its habitat, it may
  - A. become extinct
  - B. consume more prey
  - C. become more specialized
  - D. produce stronger offspring

*Use the following information to answer question 2.*



2. The unknown organism described above is a
  - A. deer
  - B. rabbit
  - C. mouse
  - D. squirrel

Use the following flow chart to answer question 3.



3. One difference between an Arctic Grayling and a Whitefish is
- A. spot colour
  - B. scale size
  - C. fin shape
  - D. fin size
- 
4. Which of the following events is an example of a chemical reaction?
- A. Ice melts
  - B. Paper is cut
  - C. Clothes dry
  - D. Wood is burned

Use the following information to answer questions 5 and 6.

**PRODUCT INFORMATION**

**RISK PHRASE(S)**  
Highly irritating to skin, eyes, and nose



**HEALTH HAZARD DATA**  
Strong acid: Treat as per sulfuric acid

**EFFECTS OF OVEREXPOSURE:** Skin and eyes

**PRECAUTIONARY MEASURES**  
Specific personal protective equipment  
Eyes: Face shield and goggles  
Gloves: Rubber  
Other clothing and equipment: Rubber apron, rubber boots

**FIRST AID MEASURES**  
Eyes: Flush with large amounts of water for 15 minutes. Consult physician.  
Skin: Flush with water as per sulfuric acid. Consult physician.

**REFER TO MATERIAL SAFETY DATA SHEET FOR FURTHER INFORMATION**

5. On the label shown above,   i   explain how to handle the chemical, and   ii   explain how to treat a person who has been hurt by the chemical.

Which of the following rows completes the statement above?

Row	<i>i</i>	<i>ii</i>
A.	PRECAUTIONARY MEASURES	RISK PHRASE(S)
B.	PRECAUTIONARY MEASURES	FIRST AID MEASURES
C.	FIRST AID MEASURES	RISK PHRASE(S)
D.	FIRST AID MEASURES	PRECAUTIONARY MEASURES

6. Which of the following WHMIS symbols is **most likely** the unknown symbol on the label on the previous page?

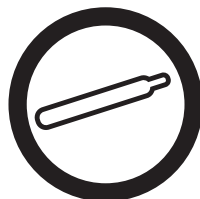
A.



B.



C.



D.



Use the following information to answer question 7.

A chemical company needs to transport toxic waste to a specialized disposal site over 500 km away.

7. Which of the following illustrations depicts the **safest** method of transporting toxic waste?

A.



B.



C.

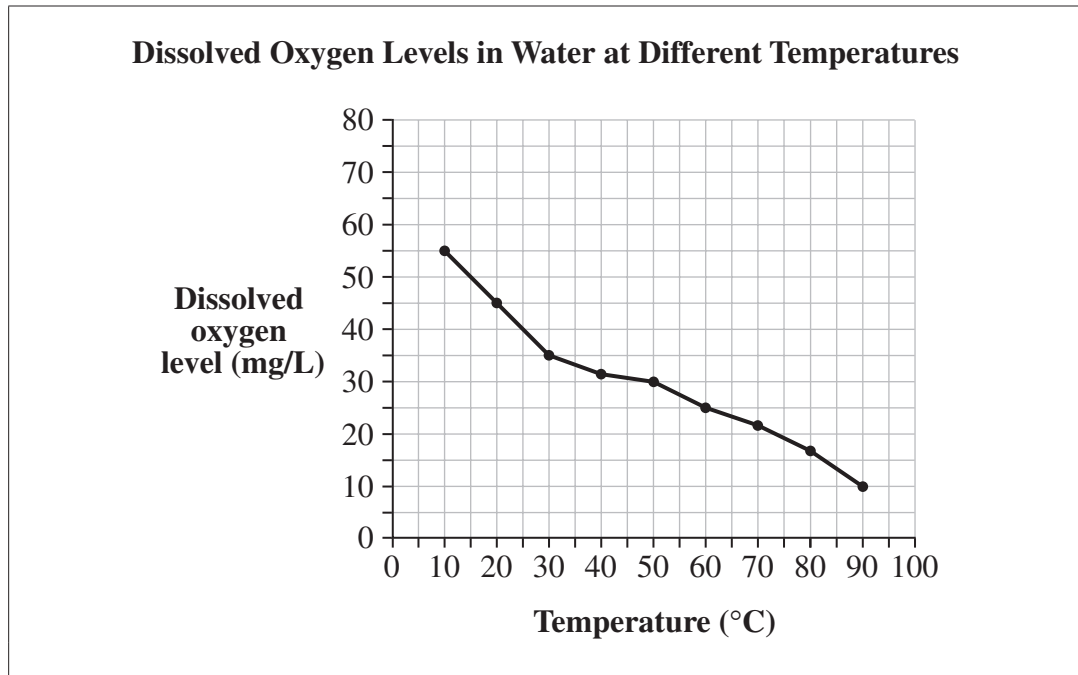


D.



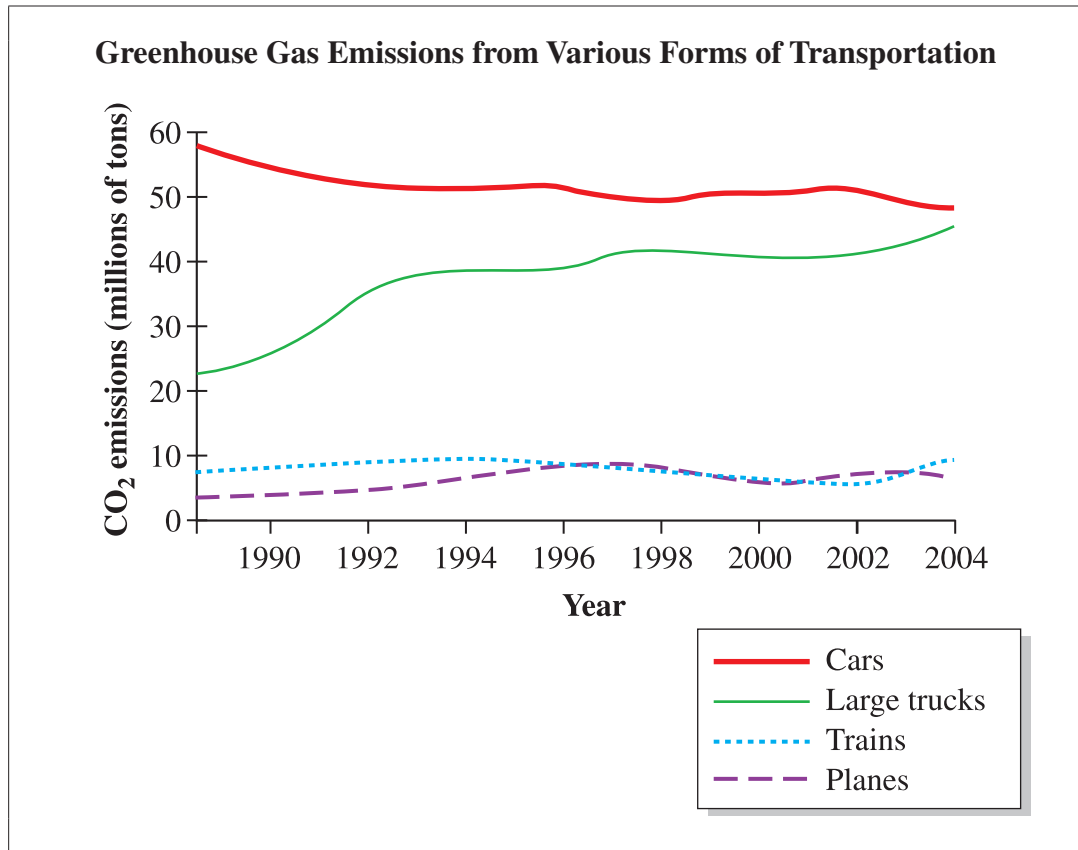


Use the following information to answer question 8.



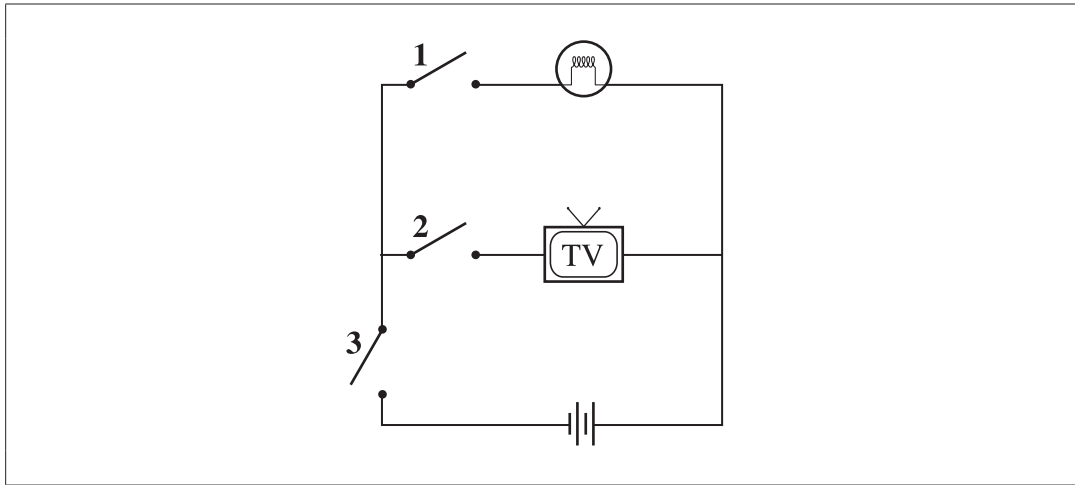
8. Which of the following conclusions can **best** be drawn from the data in the graph?
- A. A decrease in temperature results in no change in dissolved oxygen levels.
  - B. A decrease in temperature results in a decrease in dissolved oxygen levels.
  - C. An increase in temperature results in a decrease in dissolved oxygen levels.
  - D. An increase in temperature results in an increase in dissolved oxygen levels.

Use the following information to answer question 9.



9. Based on the information in the graph above, which of the following statements is correct?
- A. Emissions from cars have increased.
  - B. Emissions from planes decreased between 1990 and 1996.
  - C. Emissions from large trucks have doubled between 1990 and 2004.
  - D. Emissions from trains account for most of the CO<sub>2</sub> in the environment.

Use the following information to answer question 10.



10. Which of the switches in the circuit shown above must be closed in order to turn on the light?
- A. Switch 1
  - B. Switch 2
  - C. Switches 1 and 3
  - D. Switches 2 and 3
- 
11. Materials that allow electricity to flow easily are called
- A. resistors
  - B. insulators
  - C. generators
  - D. conductors
12. Which of the following statements **best** describes why astronauts weigh more on Earth than on the moon?
- A. Astronauts have more mass on the moon.
  - B. Astronauts have less mass on the moon.
  - C. The moon has more gravity than Earth.
  - D. The moon has less gravity than Earth.

Use the following information to answer question 13.

**Some Characteristics of Three Planets in Our Solar System**

	<b>Mercury</b>	<b>Venus</b>	<b>Mars</b>
<b>Distance from the sun (millions of km)</b>	60	110	230
<b>Length of year (Earth days)</b>	88 days	225 days	687 days
<b>Length of day (Earth days)</b>	59 days	243 days	1 day

13. Which of the following conclusions can be made from the information in the chart above?
- A. As the distance from the sun increases, the length of a year increases.
  - B. As the distance from the sun increases, the length of a year decreases.
  - C. As the distance from the sun decreases, the length of a day increases.
  - D. As the distance from the sun decreases, the length of a day decreases.

## *Knowledge and Employability Science – 2010 Test Blueprint and Item Descriptions*

The following blueprint provides information on 13\* test items that appeared on the 2010 Grade 9 Knowledge and Employability Science Achievement Test.

Topic	Reporting Category		Number and Proportion of Questions (on 2010 PAT)
	Knowledge	Skills	
<b>Biological Diversity</b>	1	2 3	<b>11 (22%)</b>
<b>Matter and Chemical Change</b>	4	5 6	<b>10 (20%)</b>
<b>Environmental Chemistry</b>	7	8 9	<b>9 (18%)</b>
<b>Electrical Principles and Technologies</b>	10	11	<b>11 (22%)</b>
<b>Space Exploration</b>	12	13	<b>9 (18%)</b>
<b>Number and Proportion of Questions (on 2010 PAT)</b>	<b>21 (42%)</b>	<b>29 (58%)</b>	<b>50 (100%)</b>

\* **Please note:** 37 items have **not** been released from the 2010 Grade 9 Knowledge and Employability Science Achievement Test.

The table below provides information about each question: the keyed response, the difficulty of the item (the percentage of students who answered the question correctly), the reporting category, the topic, and the item description.

Question	Key	Difficulty %	Reporting Category	Topic	Item Description
1	A	77.0	Knowledge	Biological Diversity	Recognize that species are dependent on their environment for survival.
2	B	60.8	Skill	Biological Diversity	Interpret information to identify a relationship based on information in a food web.
3	C	74.9	Skill	Biological Diversity	Apply given criteria in a classification key to distinguish differences between two organisms.
4	D	61.5	Knowledge	Matter & Chemical Change	Recognize an example of a chemical change.
5	B	66.4	Skill	Matter & Chemical Change	Interpret a product information label to identify a statement related to safety measures.
6	A	63.5	Skill	Matter & Chemical Change	Apply information to determine the appropriate WHMIS symbol for a solution.
7	B	84.7	Knowledge	Environmental Chemistry	Determine the safest method given, to dispose of hazardous work place chemicals safely.
8	C	44.5	Skill	Environmental Chemistry	Interpret information from a graph to draw a conclusion.
9	C	70.7	Skill	Environmental Chemistry	Analyze information in a graph to identify how human actions affect air quality.
10	C	57.4	Knowledge	Electrical Principles & Technologies	Interpret information to determine components needed to perform a particular function in a given circuit.
11	D	64.9	Skill	Electrical Principles & Technologies	Identify a characteristic of electrical conductors.
12	D	67.6	Knowledge	Space Exploration	Recall characteristics of the Moon and Earth to identify a statement related to gravity.
13	A	48.6	Skill	Space Exploration	Analyze information from a chart to draw a conclusion related to the planets' distances from the Sun.

