

**Alberta Provincial
Achievement Testing**

**Assessment
Highlights
2012–2013**

**GRADE
9**

Knowledge and Employability Science

Alberta  Government

This document was written primarily for:

Students	
Teachers	✓ of KE Science
Administrators	
Parents	
General Audience	
Others	

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The [Alberta Education website](http://education.alberta.ca) is found at education.alberta.ca.

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The 2013 Grade 9 Knowledge and Employability Science Achievement Test

This report provides teachers, school administrators, and the public with an overview of the performance of those students who wrote the 2013 Grade 9 Knowledge and Employability Science Achievement Test. The examination statistics that are included in this document represent all writers, both French and English. If you would like to obtain English-only statistics or French-only statistics that apply to your school, please refer to your detailed reports, which are available on the Extranet. This report complements the detailed school and jurisdiction reports.

How Many Students Wrote the Test?

A total of 1 236 students wrote the 2013 Grade 9 Knowledge and Employability Science Achievement Test.

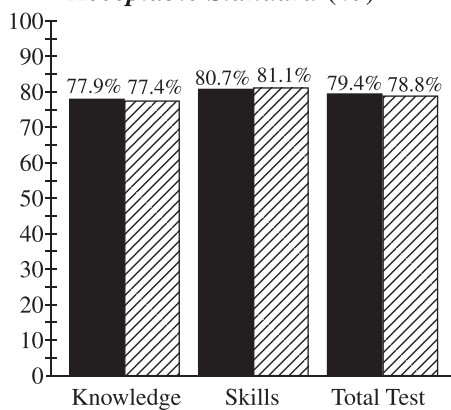
What Was the Test Like?

The 2013 Grade 9 Knowledge and Employability Science Achievement Test consisted of 50 multiple-choice questions based on five science topics: Biological Diversity, Matter and Chemical Change, Environmental Chemistry, Electrical Principles and Technologies, and Space Exploration.

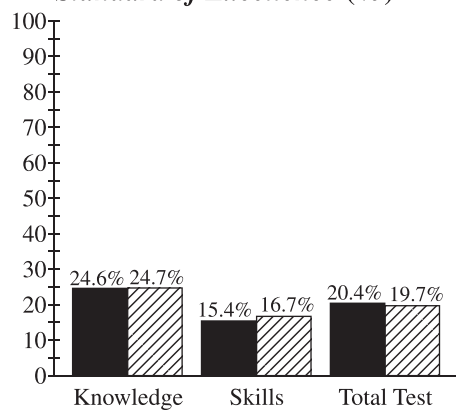
How Well Did Students Do?


The percentages of students meeting the *acceptable standard* and the *standard of excellence* in 2013 compared with 2012 are shown in the graphs below. Out of a total possible score of 50, the provincial average was 32.7 (65.4%).


Percentage of Students Meeting the *Acceptable Standard* (%)



Percentage of Students Meeting the *Standard of Excellence* (%)



 2012 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2012 Grade 9 Knowledge and Employability Science Achievement Test (based on those who wrote).

 2013 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2013 Grade 9 Knowledge and Employability Science Achievement Test (based on those who wrote).

2013 Test Blueprint and Student Achievement

In 2013, 78.8% of students who wrote the Grade 9 Knowledge and Employability Science Achievement Test achieved the *acceptable standard*, and 19.7% of students who wrote achieved the *standard of excellence*. These results are consistent with previous administrations of the achievement test.

The blueprint below shows the reporting categories and topics by which 2013 summary data are reported to schools and school authorities, and it shows the provincial average of student achievement by both raw score and percentage.

Topics	Reporting Category		Provincial Student Achievement Average (Raw Score and Percentage)
	Knowledge	Skills	
Biological Diversity			7.8/11 (70.9%)
Matter and Chemical Change			6.0/9 (66.7%)
Environmental Chemistry			7.0/10 (70.0%)
Electrical Principles and Technologies			6.4/11 (58.2%)
Space Exploration			5.4/9 (60.0%)
Provincial Student Achievement (Average Raw Score and Percentage)	13.0/20 (65.0%)	19.7/30 (65.6%)	Total Test Raw Score = 32.7/50 (65.4%)

Commentary on 2013 Student Achievement

The following is a brief summary of the areas where most students experienced difficulties and demonstrated strengths on the 2013 Grade 9 Knowledge and Employability Science Achievement Test. Four sample questions are also provided to highlight some of these areas. These questions are no longer secured and will not be reused on future achievement tests.

Students demonstrated relative strength by being able to:

- Interpret information to make an inference related to a species and extinction
- Analyze information to distinguish similar characteristics between the given species
- Relate safety standards to identify an unsafe laboratory practice in the classroom
- Analyze given actions to identify the action that would likely result in ground water contamination
- Recognize and identify an example of a constellation

For **multiple-choice question 7**, students had to interpret information to make an inference related to a species and extinction. Approximately 89.3% of students who met the *acceptable standard* and about 92.5% of students who met the *standard of excellence* answered this question correctly.

Use the following chart to answer question 7.

Whale Species	Population Before Hunting	Population at Present
Northern right whale	10 000	350
Blue whale	228 000	14 000
Sei whale	256 000	54 000
Humpback whale	115 000	10 000
Bowhead whale	30 000	7 800
Grey whale	20 000	21 000

7. Which whale species is **most likely** at risk to become extinct?

- A. Sei whale
- B. Blue whale
- C. Bowhead whale
- D. Northern right whale

6.0% of the students chose A
5.4% of the students chose B
3.1% of the students chose C
85.4% of the students chose D (correct answer)

For **multiple-choice question 21**, students had to analyze given actions to identify the action that would likely result in ground water contamination. Approximately 82.9% of students who met the *acceptable standard* and about 93.6% of students who met the *standard of excellence* answered this question correctly.

- 21.** Which of the following actions will **most likely** result in the contamination of surface water?
- A.** Cutting the grass with a gas-powered lawn mower
 - B.** Pouring used motor oil down a storm drain
 - C.** Buying products with excess packaging
 - D.** Throwing recyclables into the garbage

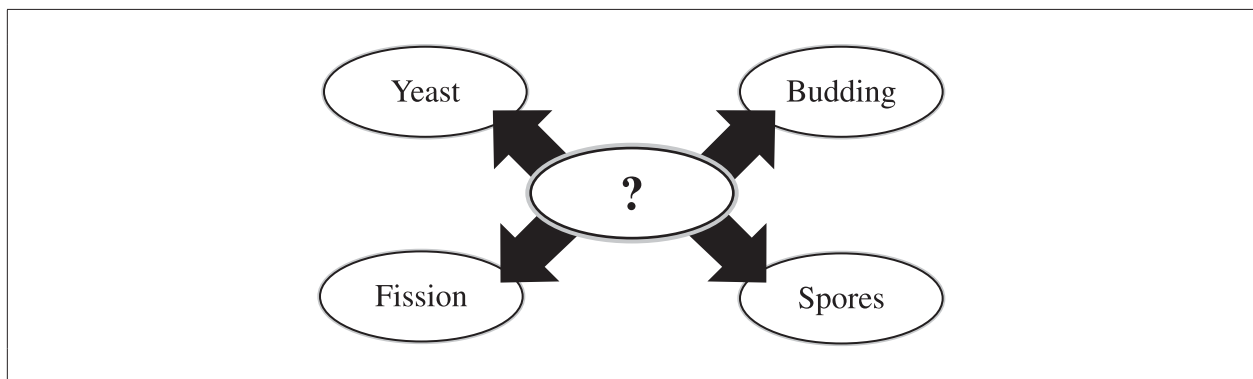
9.9% of the students chose A
78.4% of the students chose B (correct answer)
5.1% of the students chose C
6.6% of the students chose D

Students demonstrated relative difficulty with:

- Recognizing and identifying characteristics of asexual reproduction to complete a graphic
- Analyzing information in order to identify an inference that is supported by the two information sources
- Recalling how a resistor affects current flow in an electrical cell
- Differentiating between information to identify the potential impact of power generation on a lake
- Recognizing and identifying a statement related to characteristics of solar flares

For **multiple-choice question 11**, students had to recognize and identify characteristics of asexual reproduction to complete a graphic. Approximately 48.9% of students who met the *acceptable standard* and about 77.0% of students who met the *standard of excellence* answered this question correctly.

Use the following information to answer question 11.



- 11.** Which of the following processes **best** replaces the question mark in the diagram above?
- A.** Species variation
 - B.** Artificial selection
 - C.** Physical adaptation
 - D.** Asexual reproduction

13.8% of the students chose A
24.0% of the students chose B
13.8% of the students chose C
48.3% of the students chose D (correct answer)

For **multiple-choice question 41**, students had to differentiate between pieces of information to identify the potential impact of power generation on a lake. Approximately 56.9% of students who met the *acceptable standard* and about 71.7% of students who met the *standard of excellence* answered this question correctly.

Use the following information to answer question 41.

A group of fishermen is concerned about a coal-burning power plant that might be built close to a lake.

- 41.** Which of the following factors is **most likely** their **greatest** concern?
- A. Burning coal produces thermal pollution.
 - B. Burning coal contributes to smog.
 - C. Coal is a non-renewable resource.
 - D. The power plant will create jobs.

55.8% of the students chose A (correct answer)

28.1% of the students chose B

11.3% of the students chose C

4.6% of the students chose D

Achievement Testing Program Support Documents

The Alberta Education website contains several documents that provide valuable information about various aspects of the achievement testing program. To access these documents, go to the Alberta Education website at education.alberta.ca. From the home page, follow this path: *Teachers > Provincial Testing > Achievement Tests*, and then click on one of the specific links under the *Achievement Tests* heading to access the following documents.

Achievement Testing Program General Information Bulletin

The [*General Information Bulletin*](#) is a compilation of several documents produced by Alberta Education and is intended to provide superintendents, principals, and teachers with easy access to information about all aspects of the achievement testing program. Sections in the bulletin contain information pertaining to schedules and significant dates; security and test rules; test administration directives, guidelines, and procedures; calculator and computer policies; test accommodations; test marking and results; field testing; resources and web documents; forms and samples; and Assessment Sector contacts.

Subject Bulletins

At the beginning of each school year, subject bulletins are posted on the Alberta Education website for all achievement test subjects for grades 3, 6, and 9. Each bulletin provides descriptions of assessment standards, test design and blueprinting, and scoring guides (where applicable) as well as suggestions for preparing students to write the tests and information about how teachers can participate in test development activities.

Examples of the Standards for Students' Writing

For achievement tests in grades 3, 6, and 9 English Language Arts and Français/French Language Arts, writing samples have been designed to be used by teachers and students to enhance students' writing and to assess this writing relative to the standards inherent in the scoring guides for the achievement tests. The exemplars documents contain sample responses with scoring rationales that relate student work to the scoring categories and scoring criteria.

Previous Achievement Tests and Answer Keys

All January achievement tests (parts A and B) for Grade 9 semestered students are secured and must be returned to Alberta Education. All May/June achievement tests are secured except Part A of grades 3, 6, and 9 English Language Arts and Français/French Language Arts. Unused or extra copies of only these Part A tests may be kept at the school after administration. Teachers may also use the released items and/or tests that are posted on the Alberta Education website.

Parent Guides

Each school year, versions of the [*Parent Guide to Provincial Achievement Testing*](#) for grades 3, 6, and 9 are posted on the Alberta Education website. Each guide presents answers to frequently asked questions about the achievement testing program as well as descriptions of and sample questions for each achievement test subject.

Involvement of Teachers

Teachers of grades 3, 6, and 9 are encouraged to take part in activities related to the achievement testing program. These activities include item development, test validation, field testing, and marking. In addition, arrangements can be made through the Alberta Regional Professional Development Consortia for teacher in-service workshops on topics such as Interpreting Achievement Test Results to Improve Student Learning.