

**Alberta Provincial  
Achievement Testing**

**Assessment  
Highlights  
2012–2013**

**GRADE  
6**

# Science

*Alberta*  Government

This document contains assessment highlights from the 2013 Grade 6 Science Achievement Test.

The *Assessment Highlights* document provides information about the overall test, the test blueprint, and student performance on the 2013 Grade 6 Science Achievement Test. Also provided is commentary on areas of strength and weakness in student performance at the *acceptable standard* and the *standard of excellence* on selected items from the 2013 achievement tests. This information is intended for teachers and is best used in conjunction with the multi-year and detailed school reports that are available to schools via the extranet. *Assessment Highlights* reports for all achievement test subjects and grades are posted on the Alberta Education website every year in the fall.

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.

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The Alberta Education Internet address is [education.alberta.ca](http://education.alberta.ca).

This document was written primarily for:

Students	
Teachers	✓ of Grade 6 Science
Administrators	✓
Parents	
General Audience	
Others	

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## The 2013 Grade 6 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 6 Science Achievement Test. It complements the detailed school and jurisdiction reports.

### How Many Students Wrote the Test?

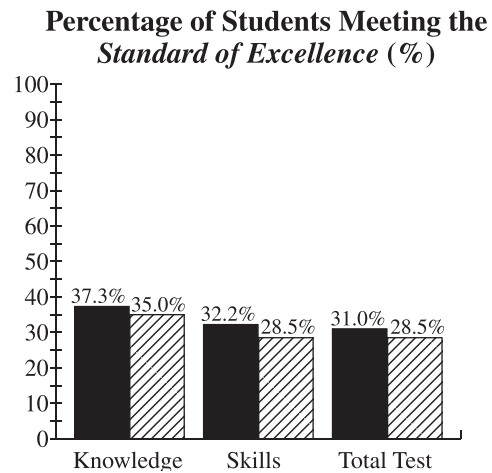
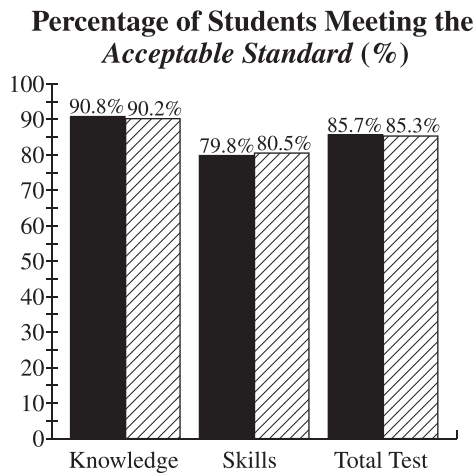
A total of 40 146 students wrote the 2013 Grade 6 Science Achievement Test.


### What Was the Test Like?


The 2013 Grade 6 Science Achievement Test consisted of 50 multiple-choice items based on five science topics: Inquiry and Problem Solving; Air, Aerodynamics, and Flight; Sky Science; Evidence and Investigation; and Trees and Forests.

### 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 33.0 (66.0%). The results presented in this report are based on scores achieved by all students who wrote the test. Detailed provincial assessment results are provided in school and jurisdiction reports.



 2012 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2012 Grade 6 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 6 Science Achievement Test (based on those who wrote).

## 2013 Test Blueprint and Student Achievement

In 2013, 85.3% of students who wrote the Grade 6 Science Achievement Test achieved the *acceptable standard*, and 28.5% of students who wrote achieved the *standard of excellence*. These results are consistent with previous administrations of the achievement test.

Student achievement on the 2013 Grade 6 Science Achievement Test averaged 33.0 out of a total score of 50 (66.0%).

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	
	Fundamental understanding of both the concepts and the processes of science	Application of science processes and the use of higher-level thinking to solve problems	
<b>Inquiry and Problem Solving</b>			<b>7.2/11 (65.3%)</b>
<b>Air, Aerodynamics, and Flight</b>			<b>9.5/14 (67.6%)</b>
<b>Sky Science</b>			<b>5.3/8 (66.0%)</b>
<b>Evidence and Investigation</b>			<b>4.5/7 (64.4%)</b>
<b>Trees and Forests</b>			<b>6.6/10 (66.5%)</b>
<b>Provincial Student Achievement Average Raw Score and Percentage for Students Who Wrote the Test</b>	<b>13.4/20 (66.8%)</b>	<b>19.6/30 (65.4%)</b>	<b>Total Test 33.0/50 (66.0%)</b>

## ***Commentary on 2013 Student Achievement***

The following is a brief summary of the areas where most students demonstrated strengths and experienced difficulties on the 2013 Grade 6 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:**

- Analyze a scenario and make a conclusion about the behaviour of air
- Describe the change in composition of air in a sealed jar caused by a burning candle
- Identify a tree cookie that would result from a specified condition
- Analyze descriptions of various forest insects and identify insects that are beneficial to trees

For **multiple-choice item 44**, a Knowledge item, students had to identify the role decomposers play in a plant's nutrient cycle. Approximately 82.4% of students who met the *acceptable standard* and 98.3% of students who met the *standard of excellence* answered this question correctly.

- 44.** Plants rely on decomposers for their survival because decomposers
- A.** provide chlorophyll for photosynthesis
  - B.** feed on living animals that eat plants
  - C.** use up oxygen provided by plants
  - D.** return nutrients to the soil

7.1% of students chose A

5.9% of students chose B

5.9% of students chose C

81.1% of students chose D (correct answer)

For **multiple-choice item 24**, a Skills item, students had to identify the question that initiated the collection of data shown in a source. Approximately 81.3% of students who met the *acceptable standard* and 96.5% of students who met the *standard of excellence* answered this question correctly.

*Use the following information to answer question 24.*

A group of Grade 6 students gathers the following information while researching planets.

Planet	Number of Moons
Mercury	0
Venus	0
Earth	1
Mars	2
Jupiter	63
Saturn	62
Uranus	27
Neptune	13

24. Which of the following research questions is best answered by the information above?
- A. “Why do some planets have moons and others do not?”
  - B. “How many moons does each planet have?”
  - C. “How many moons are in the universe?”
  - D. “What are moons made up of?”

12.2% of students chose A

79.8% of students chose B (correct answer)

5.9% of students chose C

2.1% of students chose D

**Students demonstrated relative difficulty when asked to:**

- Identify the motion of an aircraft based on the position of the control surfaces
- Identify the constant variables in an experiment
- Use Bernoulli's principle to predict an experimental result
- Analyze a crime scene and identify an observation that can be made from the scene

For **multiple-choice item 17**, a Knowledge item, students had to identify the length of time it takes the Moon to revolve around Earth. Approximately 52.5% of students who met the *acceptable standard* and 81.8% of students who met the *standard of excellence* answered this question correctly.

17. The Moon makes a complete revolution around Earth approximately once each
- A. day
  - B. week
  - C. year
  - D. month

22.5% of students chose A

7.2% of students chose B

13.0% of students chose C

57.3% of students chose D (correct answer)



For **multiple-choice item 49**, a Skills item, students had to analyze four statements to determine which statement represented opposition to forest development. Approximately 51.3% of students who met the *acceptable standard* and 64.9% of students who met the *standard of excellence* answered this question correctly.

*Use the following information to answer question 49.*

A community met to discuss the future use of a nearby forest. Four citizens shared their views.

- Citizen 1** “Although I enjoy the natural environment, the forest is too close to our town. I have many problems with deer and other animals eating my flowers and destroying my garden.”
- Citizen 2** “I enjoy living close to the forest. It is a very peaceful area free of pollution and garbage.”
- Citizen 3** “Research shows that an organism’s natural forest habitat is extremely important in ensuring its health and survival. We should protect that forest habitat.”
- Citizen 4** “We should turn a portion of the forest into a playground. It is important that families have a place to enjoy themselves as the town grows.”

**49.** Which two citizens would **most likely** oppose future development of the forest?

- A. Citizens 1 and 2
- B. Citizens 1 and 4
- C. Citizens 2 and 3
- D. Citizens 3 and 4

4.6% of students chose A

35.4% of students chose B

54.1% of students chose C (correct answer)

5.9% of 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](http://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.