

**Alberta Provincial
Achievement Testing**

**Assessment
Highlights
2010-2011**

**GRADE
6**

Science



**Government
of Alberta ■**

Alberta ■

Freedom To Create. Spirit To Achieve.

This document contains assessment highlights from the 2011 Grade 6 Science Achievement Test.

The *Assessment Highlights* document provides information about the overall test, the test blueprint, and student performance on the 2011 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 2011 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.

This document was written primarily for:

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

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The 2011 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 2011 Grade 6 Science Achievement Test. It complements the detailed school and jurisdiction reports.

How Many Students Wrote the Test?

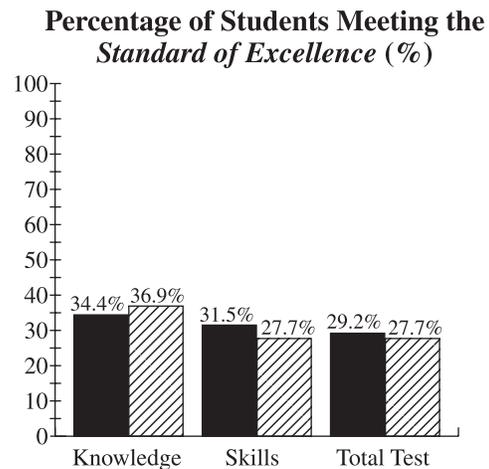
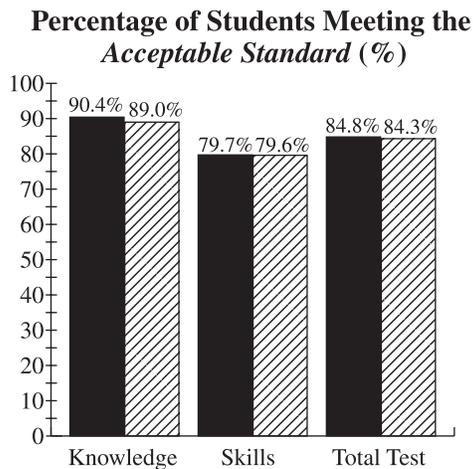
A total of 39 327 students wrote the 2011 Grade 6 Science Achievement Test.

What Was the Test Like?

The 2011 Grade 6 Science Achievement Test consisted of 50 multiple-choice questions 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 2011 compared with 2010 are shown in the graphs below. Out of a total possible score of 50, the provincial average was 34.2 (68.4%). 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.



 2010 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2010 Grade 6 Science Achievement Test (based on those who wrote).

 2011 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2011 Grade 6 Science Achievement Test (based on those who wrote).

2011 Test Blueprint and Student Achievement

In 2011, 84.3% of students who wrote the Grade 6 Science Achievement Test achieved the *acceptable standard*, and 27.7% of students who wrote achieved the *standard of excellence*. These results are consistent with previous administrations of the achievement test.

Student achievement on the 2011 Grade 6 Science Achievement Test averaged 34.2 out of a total score of 50 (68.4%).

The blueprint below shows the reporting categories and topics by which 2011 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 | |
| Inquiry and Problem Solving | | | 7.1/11 (64.4%) |
| Air, Aerodynamics, and Flight | | | 9.9/14 (70.7%) |
| Sky Science | | | 5.6/8 (70.1%) |
| Evidence and Investigation | | | 4.6/7 (65.7%) |
| Trees and Forests | | | 7.0/10 (69.9%) |
| Provincial Student Achievement Average Raw Score and Percentage for Students Who Wrote the Test | 13.7/20 (68.4%) | 20.5/30 (68.3%) | Total Test 34.2/50 (68.4%) |

Commentary on 2011 Student Achievement

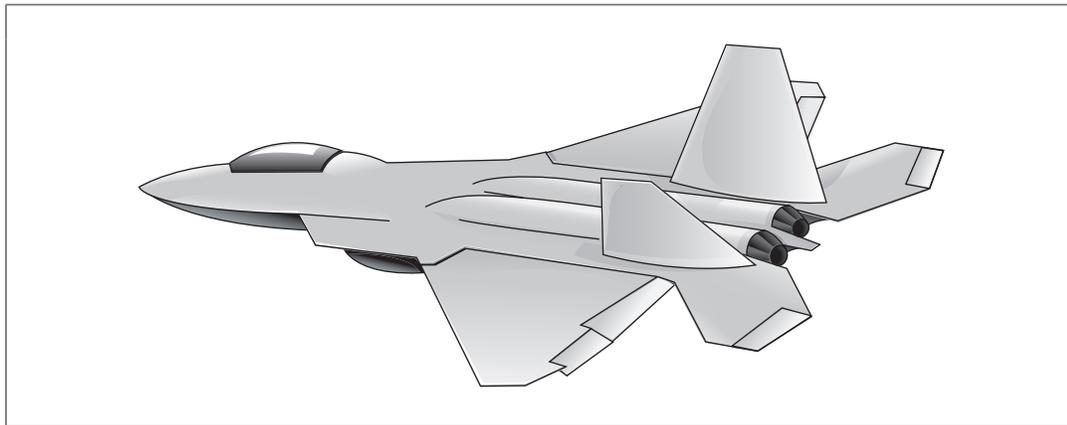
The following is a brief summary of the areas where most students demonstrated strengths and experienced difficulties on the 2011 Grade 6 Science Achievement Test. Four sample questions are also provided to highlight some of these areas. These questions are no longer secured and will not be reused on future achievement tests.

Students demonstrated relative strength by being able to:

- Determine movement in an airplane caused by the elevators
- Evaluate planetary data to determine a correct statement regarding those planets
- Identify the appropriate characteristics of a handwriting sample that would be used in a comparison
- Evaluate statements to determine why trees are valued for recreation

For **multiple-choice question 13**, a Knowledge question, students had to recognize a control surface and its function. Approximately 72.8% of students who met the *acceptable standard* and 93.9% of students who met the *standard of excellence* answered this question correctly.

Use the following illustration to answer question 13.



- 13.** The fighter plane above has two horizontal and two vertical stabilizers, which help give it more
- A.** lift
 - B.** drag
 - C.** thrust
 - *D.** control

9.8% of students chose A

4.6% of students chose B

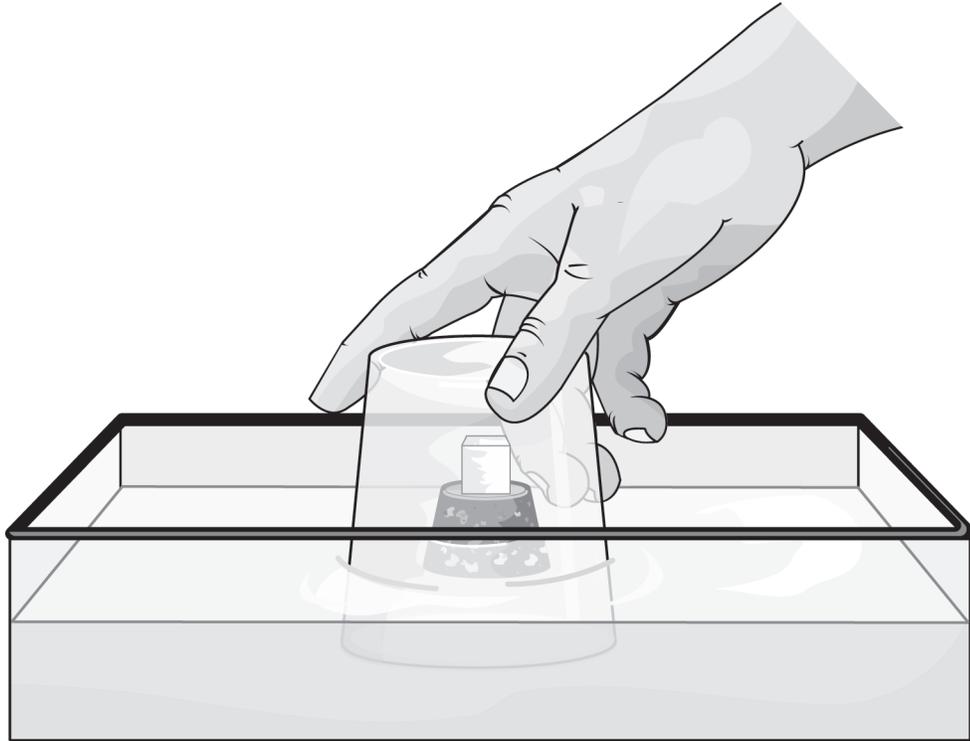
11.5% of students chose C

74.1% of students chose D (correct answer)

For **multiple-choice question 3**, a Skills question, students had to evaluate a situation and explain it using an understanding of the properties of air. Approximately 79.9% of students who met the *acceptable standard* and 94.0% of students who met the *standard of excellence* answered this question correctly.

Use the following information to answer question 3.

A sugar cube is balanced on a piece of cork floating in a small fish tank. An empty glass is inverted and placed over the cork and sugar cube. The glass is then pushed down to the bottom of the tank.



3. When the glass reaches the bottom of the tank, the sugar cube will **most likely**
- A. stay dry, because the air in the glass will expand
 - *B. stay dry, because the air in the glass will take up space
 - C. get wet, because the water will exert less pressure than the air
 - D. get wet, because the water will exert more pressure than the air

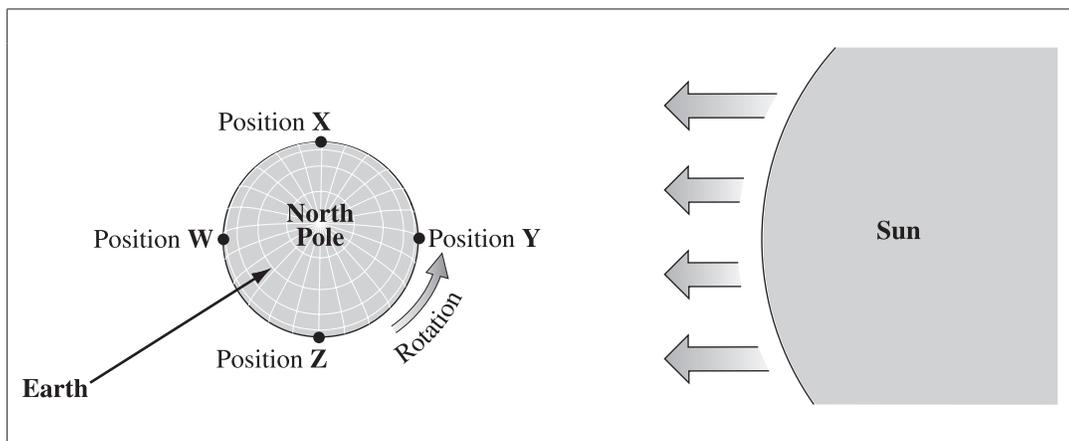
6.1% of students chose A
80.3% of students chose B (correct answer)
4.7% of students chose C
8.9% of students chose D

Students demonstrated relative difficulty with:

- Identifying a method of increasing the reliability of an experiment
- Identifying the proper procedure for conducting a chromatography test
- Recognizing descriptive words used to describe leaf margin
- Determining the manipulated variable in an experiment

For **multiple-choice question 23**, a Skills question, students had to indicate the length of time it takes Earth to rotate to a certain position. Approximately 55.7% of students who met the *acceptable standard* and 86.0% of students who met the *standard of excellence* answered this question correctly.

Use the following diagram to answer question 23.



23. How long will it take for Earth to rotate so that position X is directly facing the Sun?

- A.** 6 hours
- B.** 8 hours
- C.** 12 hours
- *D.** 18 hours

11.9% of students chose A

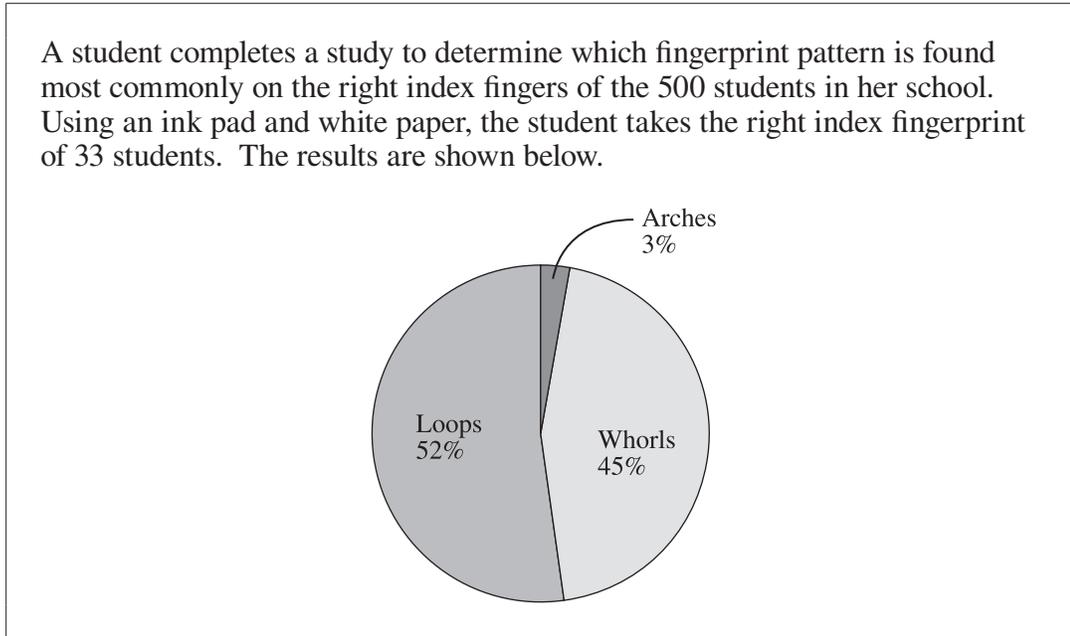
7.7% of students chose B

20.8% of students chose C

59.6% of students chose D (correct answer)

For **multiple-choice question 35**, a Skills question, students had to evaluate an experimental design to determine a modification that would improve the design. Approximately 46.4% of students who met the *acceptable standard* and 77.2% of students who met the *standard of excellence* answered this question correctly.

Use the following information to answer question 35.



35. To obtain more accurate results in a repeat of this experiment, the student should
- A. take fingerprints from a different finger
 - B. take the fingerprints of students from a different grade
 - *C. obtain more fingerprints from other students in the school
 - D. use a different procedure to obtain fingerprints from students in the school

22.7% of students chose A

9.5% of students chose B

51.9% of students chose C (correct answer)

15.9% 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. 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 and directives; test accommodations; field testing; resources and web documents; calculator and computer policies; test marking and results; samples, forms, and letters; and the Assessment Sector contacts.

Subject Bulletins

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

Writing Samples

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 *Part A: Writing* achievement tests. The writing samples documents contain sample responses with scoring rationales, student self-assessment checklists, and scoring categories and criteria for the writing assignments.

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 the 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, sample questions for each achievement testing subject, and excerpts from the [Curriculum Handbook for Parents](#) identifying what students should know and be able to do in each subject by the end of Grades 3, 6, and 9.

Involvement of Teachers

Teachers of Grades 3, 6, and 9 are encouraged to take part in a variety of activities related to the achievement-testing program. These activities include item development, test validation, field testing, and marking. In addition, regional consortia can make arrangements for teacher in-service workshops on topics such as Interpreting Achievement Test Results to Improve Student Learning.