

**Alberta Provincial
Achievement Testing**

**Assessment
Highlights
2016–2017**

**GRADE
6**

Science



Alberta  Government

This document contains assessment highlights from the 2017 Grade 6 Science Achievement Test.

This *Assessment Highlights* document provides information about the overall test, the test blueprint, and student performance on the 2017 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 2017 achievement test. 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 both French and English writers. 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](http://www.education.alberta.ca) website 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 2017 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 2017 Grade 6 Science Achievement Test. It complements the detailed school and jurisdiction reports.

How Many Students Wrote the Test?

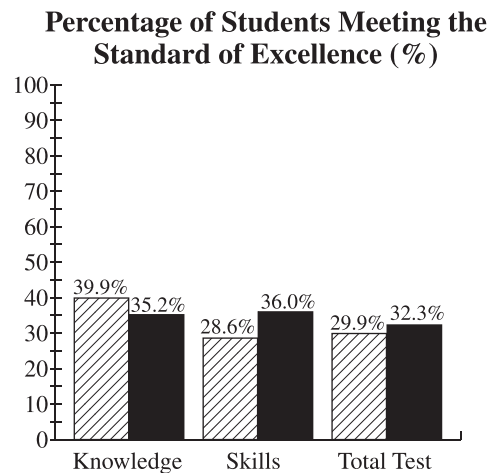
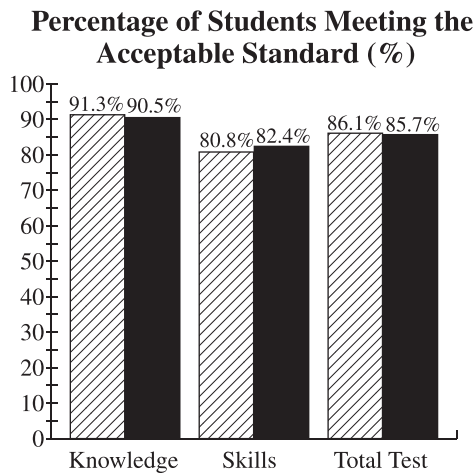
A total of 44 411 students wrote the 2017 Grade 6 Science Achievement Test.



What Was the Test Like?

The 2017 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 2017 compared with 2016 are shown in the graphs below. Out of a total possible score of 50, the provincial average was 34.8 (69.6%). The examination statistics that are included in this document represent both French and English writers. If you would like to obtain English-only or French-only statistics that apply to your school, please refer to the detailed reports that are available on the extranet.



-  2016 Achievement Standards: The percentage of students in the province who met the acceptable standard and the standard of excellence on the 2016 Grade 6 Science Achievement Test (based on those who wrote).
-  2017 Achievement Standards: The percentage of students in the province who met the acceptable standard and the standard of excellence on the 2017 Grade 6 Science Achievement Test (based on those who wrote).

2017 Test Blueprint and Student Achievement

In 2017, 85.7% of students who wrote the Grade 6 Science Achievement Test achieved the acceptable standard, and 32.3% of students who wrote achieved the standard of excellence. These results are consistent with previous administrations of the achievement test.

Student achievement on the 2017 Grade 6 Science Achievement Test averaged 34.8 out of a total score of 50 (69.6%).

The blueprint below shows the categories and topics by which 2017 summary data are reported to schools and school authorities and lists 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			8.0/11 (72.7%)
Air, Aerodynamics, and Flight			9.0/14 (64.3%)
Sky Science			5.5/8 (68.8%)
Evidence and Investigation			5.0/7 (71.4%)
Trees and Forests			7.3/10 (73.0%)
Provincial Student Achievement Average Raw Score and Percentage for Students Who Wrote the Test	13.4/20 (67.0%)	21.4/30 (71.3%)	Total Test 34.8/50 (69.6%)

Commentary on 2017 Student Achievement

The following is a brief summary of the areas where most students demonstrated strengths and experienced difficulties on the 2017 Grade 6 Science Achievement Test. Four sample items are also provided to highlight some of these areas. These items are no longer secured and will not be reused on future achievement tests.

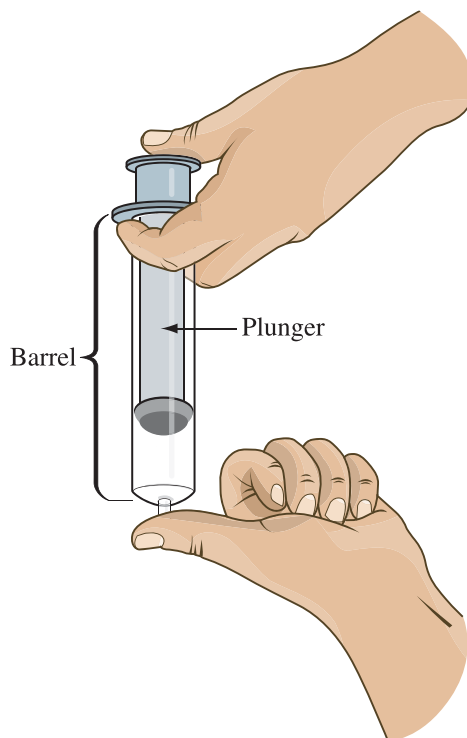
Students demonstrated relative strength by being able to

- identify the most streamline position of an athlete in a given scenario
- identify a celestial object in our solar system that emits light
- identify an unknown sample of fabric based on the characteristics of that fabric
- classify a tree based on its leaf type using a key

For **multiple-choice question 1**, a Knowledge item, students had to explain how air confined in a space reacts to an outside force. Approximately 82.4% of students who met the acceptable standard and 92.7% of students who met the standard of excellence answered this item correctly.

Use the following information to answer question 1.

Jennifer and Ezekiel conduct an experiment to learn about the properties of air. Jennifer covers the opening at the bottom of the syringe while Ezekiel pushes on the plunger. They observe the plunger moving in the syringe barrel.



1. Which of the following statements **best** explains why the plunger can move in the syringe barrel?
 - A. There is less air pressure outside the syringe.
 - B. The air inside the syringe is being compressed.
 - C. There is greater air pressure outside the syringe.
 - D. The air inside the syringe is being pulled downward by gravity.

5.8% of the students chose A
82.6% of the students chose B (correct answer)
6.0% of the students chose C
5.6% of the students chose D

For **multiple-choice question 26**, a Skills item, students had to analyze information presented about planets and identify a conclusion that could be made from the information. Approximately 83.0% of students who met the acceptable standard and 98.0% of students who met the standard of excellence answered this item correctly.

Use the following information to answer question 26.

Planet	Type	Approximate Distance From the Sun (million km)	Diameter (compared to Earth)	Mass ($\times 10^{21}$ kg)
Mercury	Rocky	57.9	0.382	330.2
Mars	Rocky	227.9	0.532	641.9
Venus	Rocky	108.2	0.949	4 868.5
Earth	Rocky	149.6	1.00	5 974.2
Neptune	Gaseous	4 497.1	3.883	102 430
Uranus	Gaseous	2 871.0	4.007	86 832
Saturn	Gaseous	1 427.0	9.449	568 460
Jupiter	Gaseous	778.3	11.209	1 899 000

26. Which of the following conclusions is supported by the information presented in the table?
- A. The gaseous planets have more mass than the rocky planets.
 - B. The larger planets are closer to the Sun than the smaller planets.
 - C. The gaseous planets have smaller diameters than the rocky planets.
 - D. The rocky planets are further from the Sun than the gaseous planets.

81.3% of the students chose A (correct answer)

6.3% of the students chose B

6.3% of the students chose C

5.9% of the students chose D

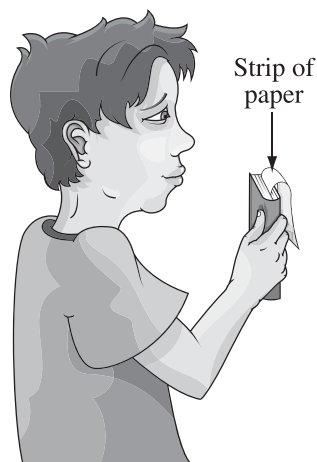
Students demonstrated relative difficulty when asked to

- explain how the different parts of a hot-air balloon influence its flight
- relate the means for propulsion used by birds to those used by airplanes
- identify a specified leaf arrangement and shape, from a set of leaf diagrams
- identify an action that would be most harmful to a forest ecosystem

For **multiple-choice question 2**, a Skills item, students had to identify the explanation for experimental results by applying knowledge of Bernoulli's principle. Approximately 40.7% of students who met the acceptable standard and 75.3% of students who met the standard of excellence answered this item correctly.

Use the following information to answer question 2.

Marcel places a strip of paper between the pages of his textbook so that half of the paper hangs over the front of the book.



2. If Marcel blows air over the top of the paper, it will **most likely**
- A. lift up because there is an area of low pressure below the paper
 - B. lift up because there is an area of low pressure above the paper
 - C. remain still because there is an area of low pressure below the paper
 - D. remain still because there is an area of low pressure above the paper

32.4% of the students chose A

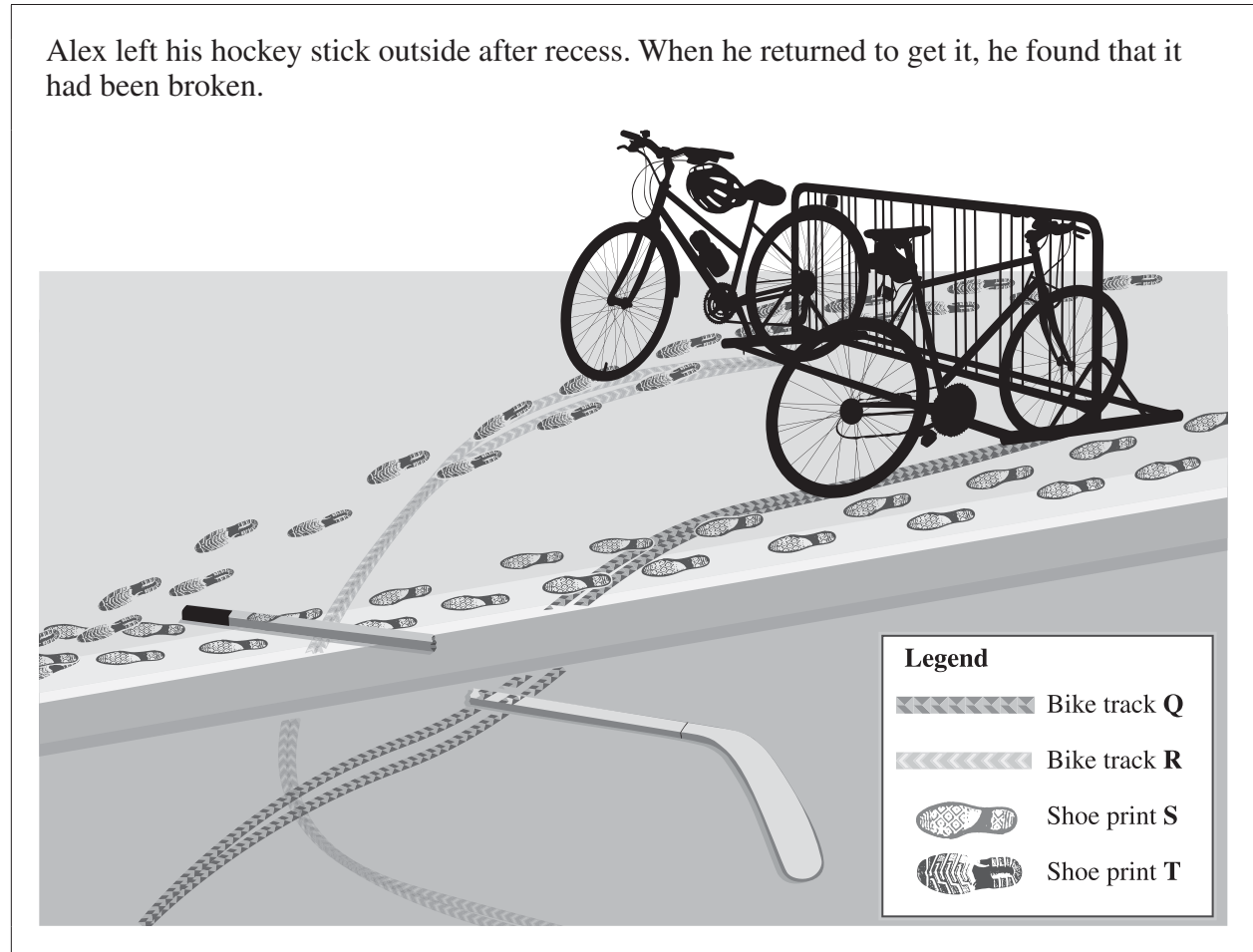
49.9% of the students chose B (correct answer)

8.8% of the students chose C

8.9% of the students chose D

For **multiple-choice question 30**, a Skills item, students had to determine the sequence of events in a given scenario. Approximately 54.6% of students who met the acceptable standard and 75.3% of students who met the standard of excellence answered this item correctly.

Use the following information to answer question 30.



30. Based on the information above, the order in which the bike tracks and the shoe prints were made from first to last was
- A. Shoe print T, Shoe print S, Bike track Q, Bike track R
 - B. Shoe print T, Shoe print S, Bike track R, Bike track Q
 - C. Bike track R, Bike track Q, Shoe print S, Shoe print T
 - D. Bike track R, Bike track Q, Shoe print T, Shoe print S

12.6% of the students chose A
10.6% of the students chose B
58.3% of the students chose C (correct answer)
18.4% of the students chose D

Provincial Achievement Testing Program Support Documents

The Alberta Education website contains several documents that provide valuable information about various aspects of the provincial achievement testing program. To access these documents, go to the [Alberta Education website](#). Click on one of the specific links 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 provincial 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 Provincial Assessment Sector contacts.

Subject Bulletins

At the beginning of each school year, subject bulletins are posted on the Alberta Education website for all provincial achievement test subjects for grades 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 provincial achievement tests in grades 6 and 9 English Language Arts and Français/French Language Arts, writing samples are designed for 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 provincial achievement tests (parts A and B) for Grade 9 semestered students are secured and must be returned to Alberta Education. All May/June provincial achievement tests are secured except Part A of grades 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 [Alberta Provincial Achievement Testing Parent Guide](#) for grades 6 and 9 are posted on the Alberta Education website. Each guide answers frequently asked questions about the provincial achievement testing program and provides descriptions of and sample questions for each provincial achievement test subject.

Involvement of Teachers

Teachers of grades 6 and 9 are encouraged to take part in activities related to the provincial 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 provincial achievement test results to improve student learning.