

Grade 6

Assessment Highlights

Science

Alberta Provincial Achievement Testing 2018–2019

This document was written primarily for:

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

Alberta Education, Government of Alberta

2019–2020

Grade 6 Science Assessment Highlights

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You can find [provincial achievement test-related materials](#) on the Alberta Education website.

Additional topics of interest are found in the [General Information Bulletin](#).

This document contains assessment highlights from the *2019 Grade 6 Science Provincial Achievement Test*.

Assessment Highlights provides information about the overall test, the test blueprint, and student performance on the provincial achievement test that was administered in 2019. Also provided is information on student performance at the acceptable standard and the standard of excellence on selected items from the *2019 Grade 6 Science Provincial Achievement Test*. This information is intended for teachers and is best used in conjunction with multi-year and detailed school reports that are available to schools via the Stakeholder File Exchange (SFX). *Assessment Highlights* for all provincial 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 Stakeholder File Exchange (SFX).

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The 2019 Grade 6 Science Provincial Achievement Test

This report provides teachers, school administrators, and the public with an overview of the performance of those students who wrote the *2019 Grade 6 Science Provincial Achievement Test*. It complements the detailed school and jurisdiction reports.

How many students wrote the test?

A total of 49 793 students in Alberta wrote the *2019 Grade 6 Science Provincial Achievement Test*.

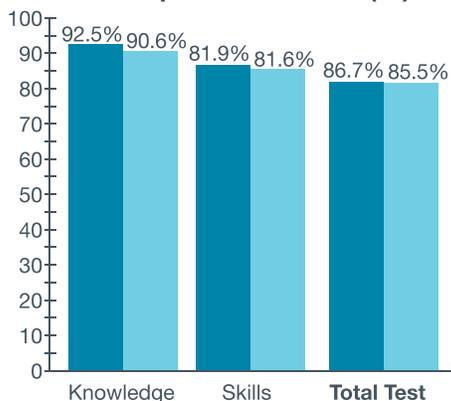
What was the test like?

The *2019 Grade 6 Science Provincial 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.

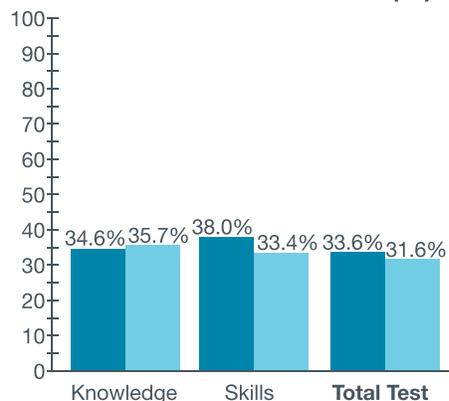
How well did students do?

The percentages of students meeting the acceptable standard and the standard of excellence in 2019 compared with 2018 are shown in the graphs below. Out of a total possible score of 50, the provincial average was 33.6 (67.2%). 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 Stakeholder File Exchange (SFX).

Percentage of Students Meeting the Acceptable Standard (%)



Percentage of Students Meeting the Standard of Excellence (%)



 2018 Achievement Standards: The percentage of students in the province that met the acceptable standard and the standard of excellence on the *2018 Grade 6 Science Provincial Achievement Test* (based on those who wrote)

 2019 Achievement Standards: The percentage of students in the province that met the acceptable standard and the standard of excellence on the *2019 Grade 6 Science Provincial Achievement Test* (based on those who wrote)

2019 Test Blueprint and Student Achievement

In 2019, 85.5% of students who wrote the *Grade 6 Science Provincial Achievement Test* achieved the acceptable standard, and 31.6% of students who wrote achieved the standard of excellence. These results are consistent with previous administrations of the provincial achievement test.

Student achievement on the *2019 Grade 6 Science Provincial Achievement Test* averaged 33.6 out of a total score of 50 (67.2%).

The blueprint below shows the categories and topics by which 2019 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			7.0/11 (63.6%)
Air, Aerodynamics, and Flight			9.8/14 (70.0%)
Sky Science			4.8/8 (60.0%)
Evidence and Investigation			5.0/7 (71.4%)
Trees and Forests			7.0/10 (70.0%)
Provincial Student Achievement Average (Raw Score and Percentage)	13.4/20 (67.0%)	20.2/30 (67.3%)	Total Test 33.6/50 (67.2%)

Commentary on 2019 Student Achievement

The following is a brief summary of the areas where most students demonstrated strengths and experienced difficulties on the *2019 Grade 6 Science Provincial 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 provincial achievement tests.

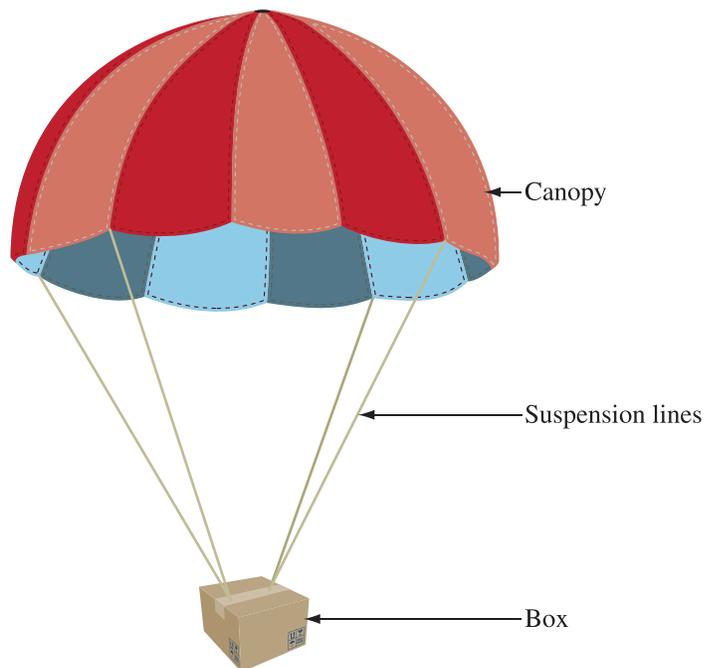
Students demonstrated relative strength by being able to

- evaluate an environmental design that provides for an animal's need for air exchange
- infer the expected result of a fifth shadow stick given four observations
- display a table of fingerprint-pattern data in a graph
- identify the section of a diagram that illustrates the role of trees in the nutrient cycle

For **multiple-choice question 11**, a Skills item, students had to identify two design changes that would be expected to slow a parachute's fall. Approximately 80.2% of students who met the acceptable standard and 94.7% of students who met the standard of excellence answered this item correctly.

Use the following information to answer question 11.

Students were testing models of parachutes in class. The parachute below fell quickly to the ground.



- 11.** Which of the following modifications would be expected to slow the parachute's fall the most?
- A.** Increase canopy size and decrease box size
 - B.** Increase canopy size and remove some suspension lines
 - C.** Decrease canopy size and increase box size
 - D.** Decrease canopy size and add more suspension lines

80.4% of the students chose A (correct answer)
6.0% of the students chose B
6.6% of the students chose C
6.9% of the students chose D

For **multiple-choice question 37**, a Knowledge item, students had to, given an observation chart, identify the most useful characteristic for fabric comparison. Approximately 75.6% of students who met the acceptable standard and 94.0% of students who met the standard of excellence answered this item correctly.

Use the following information to answer question 37.

Observations about four fibres exposed to flame were recorded in the chart below. The characteristics observed included the action of the fibre when it was exposed to flame, the colour of the flame, the substance that remained after the fibre was exposed to flame, and the colour of the smoke released by the fibre.

Some Characteristics				
Fibre	Action	Flame Colour	Remains	Smoke Colour
Wool	Burns	Orange	Black bead of ash, which crushes easily when cold	Black
Silk	Burns	Orange	Grey powder	No colour
Nylon	Melts	Orange	Hard, light-coloured round bead	No colour
Polyester	Melts	Orange	Liquid drops	Black

37. Which of the characteristics on the chart would be the **most useful** in distinguishing the fibres from one another?
- A. Action
 - B. Flame colour
 - C. Remains
 - D. Smoke colour

11.1% of the students chose A
 7.9% of the students chose B
 75.7% of the students chose C (correct answer)
 5.2% of the students chose D

Students demonstrated relative difficulty when asked to

- evaluate a design to test paper airplanes and determine the manipulated variable
- evaluate an experimental design to determine the hypothesis related to that design
- interpret seasonal changes in length of day from the given bar graph
- identify two characteristics of handwriting analysis

For **multiple-choice question 24**, a Skills item, students had to recognize the moon phase that occurred next in the cycle. Approximately 48.7% of students who met the acceptable standard and 76.6% of students who met the standard of excellence answered this item correctly.

Use the following information to answer question 24.

In Alberta, on September 1, 2016, a new moon was observed in the night sky.

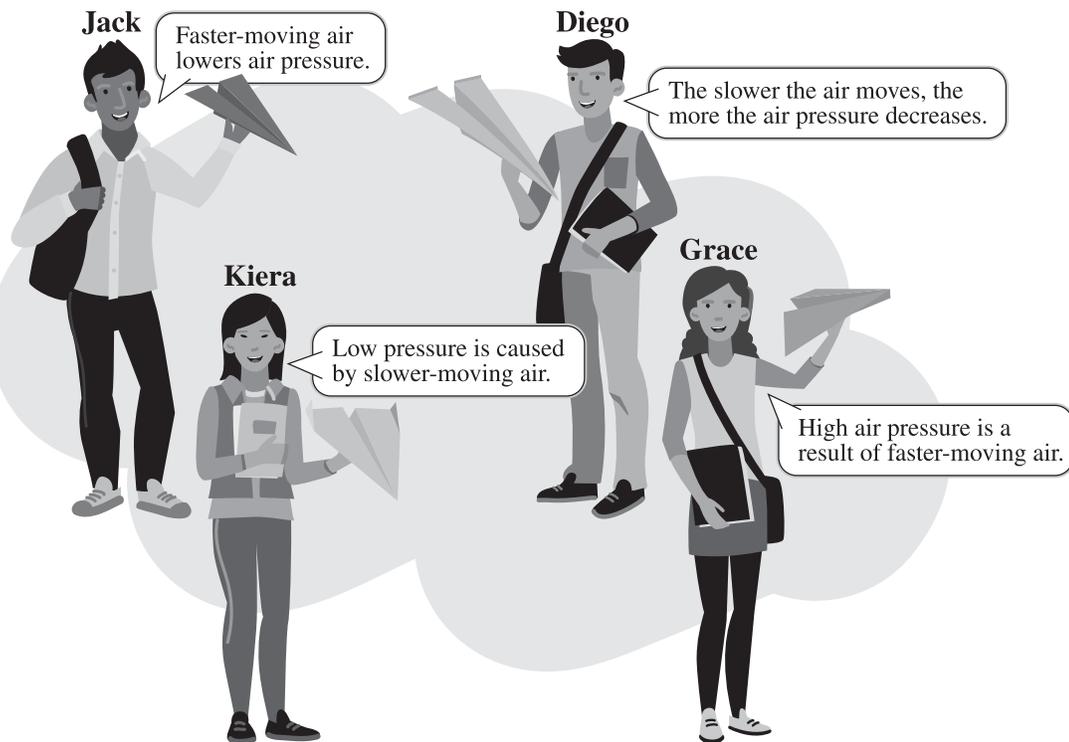
- 24.** Which of the following moon phases would have been observed in Alberta on September 9, 2016?
- A.** Full moon
 - B.** New moon
 - C.** First quarter moon
 - D.** Third quarter moon

12.3% of the students chose A
18.9% of the students chose B
54.2% of the students chose C (correct answer)
14.5% of the students chose D

For **multiple-choice question 7**, a Knowledge item, students had to evaluate a design to test paper airplanes and propose a change to improve the test's fairness and the reliability. Approximately 45.0% of students who met the acceptable standard and 79.7% of students who met the standard of excellence answered this item correctly.

Use the following information to answer question 7.

Four students designed paper airplanes and conducted a test to see which paper airplane would travel the farthest distance. Each student also attempted to describe Bernoulli's principle.



7. Which of the following changes would improve the fairness of the test and the reliability of the results?
- A. A finish line should be marked on the floor.
 - B. All paper airplanes should be thrown only once.
 - C. A different shape should be used for each paper airplane.
 - D. All paper airplanes should be thrown by the same person in the same way.

11.7% of the students chose A
21.4% of the students chose B
13.9% of the students chose C
52.8% of the students chose D (correct answer)

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.

Provincial 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 Test 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. The exemplars documents contain sample responses with scoring rationales that relate student work to the scoring categories and scoring criteria.

Previous provincial 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 Test 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 Test 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.