

**Alberta Provincial  
Achievement Testing**

**Assessment  
Highlights  
2014–2015**

**GRADE  
6**

# Science



*Alberta*  Government

This document contains assessment highlights from the 2015 Grade 6 Science Achievement Test.

This *Assessment Highlights* document provides information about the overall test, the test blueprint, and student performance on the 2015 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 2015 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.

For further information, contact **Matt Dodd, Grades 6 and 9 Science Examiner**, at [Matt.Dodd@gov.ab.ca](mailto:Matt.Dodd@gov.ab.ca), or **Nicole Lamarre, Director, Student Learning Assessments and Provincial Achievement Testing**, at [Nicole.Lamarre@gov.ab.ca](mailto:Nicole.Lamarre@gov.ab.ca) at the Provincial Assessment Sector, or call 780-427-0010. To call toll-free from outside Edmonton, dial 310-0000.

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 2015 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 2015 Grade 6 Science Achievement Test. It complements the detailed school and jurisdiction reports.

### How Many Students Wrote the Test?

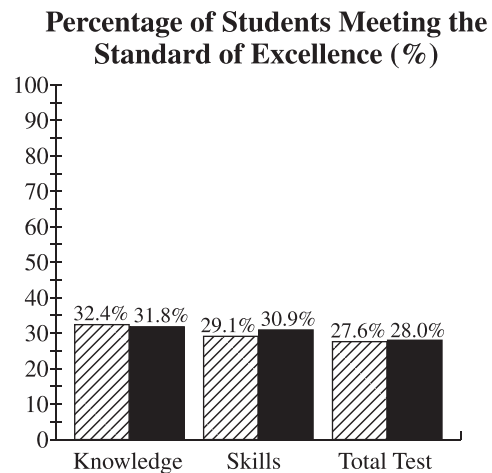
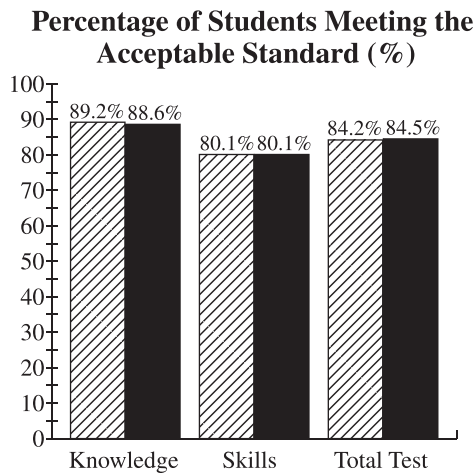
A total of 42 878 students wrote the 2015 Grade 6 Science Achievement Test.



### What Was the Test Like?

The 2015 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 and the standard of excellence in 2015 compared with 2014 are shown in the graphs below. Out of a total possible score of 50, the provincial average was 33.7 (67.5%). The examination statistics that are included in this document represent all writers: both French and English. 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.



-  2014 Achievement Standards: The percentage of students in the province who met the and the standard of excellence on the 2014 Grade 6 Science Achievement Test (based on those who wrote).
-  2015 Achievement Standards: The percentage of students in the province who met the and the standard of excellence on the 2015 Grade 6 Science Achievement Test (based on those who wrote).

## ***2015 Test Blueprint and Student Achievement***

In 2015, 84.5% of students who wrote the Grade 6 Science Achievement Test achieved the acceptable standard, and 28.0% of students who wrote achieved the standard of excellence. These results are consistent with previous administrations of the achievement test.

Student achievement on the 2015 Grade 6 Science Achievement Test averaged 33.7 out of a total score of 50 (67.5%).

The blueprint below shows the categories and topics by which 2015 summary data are reported to schools and school authorities and lists the provincial average of student achievement by both raw score and percentage.

<b>Topics</b>	<b>Reporting Category</b>		<b>Provincial Student Achievement Average (Raw Score and Percentage)</b>
	<b>Knowledge</b>	<b>Skills</b>	
	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>7.1/11 (64.6%)</b>
<b>Air, Aerodynamics, and Flight</b>			<b>9.4/14 (66.8%)</b>
<b>Sky Science</b>			<b>5.4/8 (67.3%)</b>
<b>Evidence and Investigation</b>			<b>5.0/7 (71.0%)</b>
<b>Trees and Forests</b>			<b>6.9/10 (69.4%)</b>
<b>Provincial Student Achievement Average Raw Score and Percentage for Students Who Wrote the Test</b>	<b>15.6/23 (67.9%)</b>	<b>18.1/27 (67.1%)</b>	<b>Total Test 33.7/50 (67.5%)</b>

## Commentary on 2015 Student Achievement

The following is a brief summary of the areas where most students demonstrated strengths and experienced difficulties on the 2015 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:

- use a dichotomous key to classify a type of airplane
- identify characteristics that distinguish coniferous trees from deciduous trees
- compare two burning candles and predict which will burn longer and explain why it burns longer
- analyze a tree cookie and identify the growing conditions of the particular tree

For **multiple-choice question 17**, a Skills item, students had to use a source to identify the type of satellite that would best be used for a specific task. Approximately 80.3% of students who met the acceptable standard and 95.4% of students who met the standard of excellence answered this item correctly.

Different Types of Satellites				
	Space-sensing Satellites	Earth-sensing Satellites	Communication Satellites	Navigation and Mapping Satellites
Purpose	Observe and monitor space environment, monitor solar radiation, and observe comets, asteroids, and other planets	Observe and monitor environmental conditions at different places on Earth	Send radio signals from one place on Earth to another, important for telephone, television, and Internet services	Use radio signals to determine specific locations on Earth and to help guide ships and planes

17. Which of the satellites described above would **most likely** be used to collect information about moons in our solar system?
- A. Earth-sensing satellites
  - B. Space-sensing satellites
  - C. Communication satellites
  - D. Navigation and mapping satellites

8.3% of the students chose A  
80.3% of the students chose B (correct answer)  
6.2% of the students chose C  
5.1% of the students chose D

For **multiple-choice question 49**, a Skills item, students had to identify an ecological event that occurs when towns replace forests with housing developments. Approximately 74.3% of students who met the acceptable standard and 94.9% of students who met the standard of excellence answered this item correctly.

Forested areas surrounding a town are often replaced by housing developments as the town grows.

49. Which of the following impacts would **most likely** occur if housing developments were built in forested areas?
- A. The variety of forest organisms in the area would increase.
  - B. The population of forest organisms would decrease.
  - C. The nutrient content of the soil would increase.
  - D. Air pollution would decrease.

7.3% of the students chose A

74.7% of the students chose B (correct answer)

8.7% of the students chose C

9.2% of the students chose D

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

- identify the type, shape, and margin of a given leaf
- evaluate an experiment to determine the responding variable
- identify the characteristics of a propeller that enable greater lift
- identify the time that it takes Earth to make one complete rotation

For **multiple-choice question 35**, a Skills item, students had to identify the characteristic least helpful in determining a thread's origin based on given information. Approximately 33.9% of students who met the acceptable standard and 58.2% of students who met the standard of excellence answered this item correctly.

A thread found at a crime scene is analyzed. The thread is dark blue, has a coarse texture, is thick, and is coiled. Thread from the clothing of four suspects is also analyzed. The results are recorded below.

**Thread Characteristics**

Suspect	Width	Shape	Colour	Texture
I	Thick	Coiled	Red and dark blue	Smooth
II	Thick	Coiled	Green and dark blue	Coarse
III	Thick	Straight	Black and dark blue	Coarse
IV	Thin	Coiled	White and dark blue	Coarse

35. Which thread characteristic was **least** helpful in identifying the suspect?

- A. Width
- B. Shape
- C. Colour
- D. Texture

22.6% of the students chose A

25.3% of the students chose B

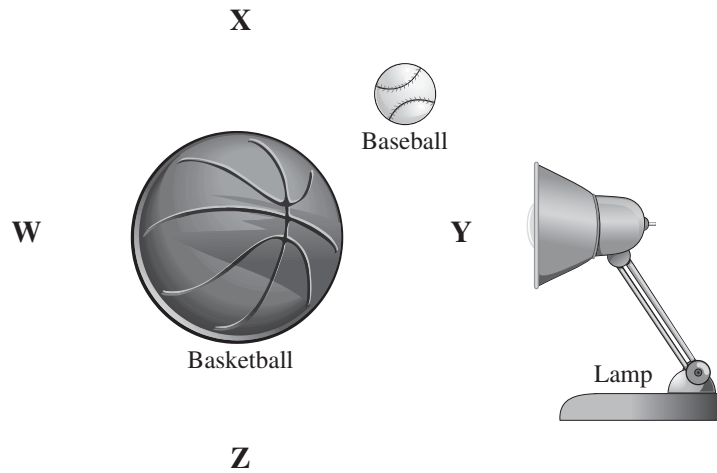
39.4% of the students chose C (correct answer)

12.6% of the students chose D



For **multiple-choice question 22**, a Knowledge item, students had to recognize the position of the Moon relative to Earth and the Sun that would produce specific phases of the Moon. Approximately 46.7% of students who met the acceptable standard and 74.4% of students who met the standard of excellence answered this item correctly.

Eric is asked to model the phases of the Moon. In his model, he uses a basketball to represent Earth, a baseball to represent the Moon, and a lamp to represent the Sun.



22. At which position should Eric place the baseball to model a third-quarter Moon?
- A. Position W
  - B. Position X
  - C. Position Y
  - D. Position Z

14.5% of the students chose A

25.3% of the students chose B

10.7% of the students chose C

49.4% of the students chose D (correct answer)

# *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). 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 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 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 achievement tests in grades 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 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 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 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.