This document was written primarily for:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Students</td>
<td></td>
</tr>
<tr>
<td>Teachers</td>
<td>✓ of Grade 6 Science</td>
</tr>
<tr>
<td>Administrators</td>
<td>✓</td>
</tr>
<tr>
<td>Parents</td>
<td></td>
</tr>
<tr>
<td>General Audience</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
</tr>
</tbody>
</table>

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Please note that if you cannot access one of the direct website links referred to in this document, you can find achievement test-related materials on the Alberta Education website.

Additional topics of interest are found in the General Information Bulletin.
Grade 6 Science Assessment

*NEW General Description

The Grade 6 Science Provincial Achievement Test consists of 50 multiple-choice questions.

The questions are placed in real-life contexts. Frequently, a number of questions will be clustered around a common context.

Knowledge and skill components are integrated in the test. Knowledge components relate to fundamental understanding of both the concepts and the processes of science. Skill components relate to the application of science processes and the use of higher-level thinking to solve problems.

Questions will have contexts drawn from the following topics:

- inquiry and problem solving
- air, aerodynamics, and flight
- sky science
- evidence and investigation
- trees and forests

The test is developed to be completed in 60 minutes; however, students have up to 120 minutes to complete the test should they need it.

Students record their answers on a tear-out answer sheet.

Students require HB pencils, erasers, and scrap paper. Calculators are not required for successful completion of the assessment but are permitted.

Students may not use a dictionary, a thesaurus, or other reference materials when writing the test.

If a word that warrants a definition is used on a test, it will be defined on the page on which it appears.
The blueprint below shows the reporting categories under which questions are classified. The number of questions in each reporting category is approximate.

<table>
<thead>
<tr>
<th>General Learner Expectations</th>
<th>Question Distribution by Reporting Category</th>
<th>Number (Percentage) of Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Knowledge</td>
<td>Skills</td>
</tr>
<tr>
<td>Inquiry and Problem Solving</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>• Design and carry out an investigation in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>which variables are identified and controlled,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and that provides a fair test of the question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>being investigated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Recognize the importance of accuracy in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>observation and measurement, and apply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>suitable methods to record, compile, interpret,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and evaluate observations and measurements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Design and carry out an investigation of a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>practical problem and develop a possible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>solution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air, Aerodynamics, and Flight</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>• Describe properties of air and the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>interactions of air with objects in flight,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>construct devices that move through air, and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>identify adaptations for controlling flight.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sky Science</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>• Observe, describe, and interpret the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>movement of objects in the sky, and identify</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pattern and order in these movements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evidence and Investigation</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>• Apply observation and inference skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to recognize and interpret patterns, and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>distinguish a specific pattern from among a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>group of similar patterns.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply a knowledge of the properties and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>interactions of materials to the investigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and identification of a material sample.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trees and Forests</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>• Describe characteristics of trees and the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>interaction of trees with other living things</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in the local environment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number (Percentage) of Questions 20 (40%) 30 (60%) 50 (100%)
Description of Science Assessment Standards

The following statements describe what is expected of Grade 6 students at the acceptable standard and the standard of excellence based on outcomes in the program of studies. These statements represent examples of the standards against which student achievement is measured. It is important to remember that one test cannot measure all of the outcomes in the program of studies.

<table>
<thead>
<tr>
<th>Acceptable Standard</th>
<th>Standard of Excellence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students who meet the acceptable standard in Grade 6 Science are able to</td>
<td>Students who meet the standard of excellence in Grade 6 Science are able to</td>
</tr>
<tr>
<td>• design and carry out an investigation in which variables are identified and controlled and which provide a fair test of the question being investigated</td>
<td>• design, carry out, and evaluate an investigation in which variables are identified and controlled</td>
</tr>
<tr>
<td>• recognize the importance of accuracy in observation and measurement, and apply suitable methods to record, compile, interpret, and evaluate observations and measurements. They can also design and carry out an investigation of a practical problem involving the construction or modification of a device that moves through air, and they can develop a possible solution.</td>
<td>• identify new questions to be explored</td>
</tr>
<tr>
<td>• describe the properties of air and the interactions of air with objects in flight</td>
<td>• make observations and measurements accurately</td>
</tr>
<tr>
<td>• construct devices that move through air and identify adaptations for controlling flight</td>
<td>• apply novel methods to record, compile, interpret, and evaluate observations and measurements</td>
</tr>
<tr>
<td>• describe and interpret the movement of objects in the sky and identify pattern and order in these movements</td>
<td>• design, carry out, and evaluate an investigation of a practical problem involving the construction or modification of a device that moves through air and develop a workable solution</td>
</tr>
<tr>
<td>• identify materials and apply knowledge of the properties and interactions of those materials to an investigation</td>
<td>• describe in detail the properties of air and the interactions of air with objects in flight</td>
</tr>
<tr>
<td>• describe the characteristics of trees and the interaction of trees with other living things in the local environment</td>
<td>• construct aerodynamic devices that move through air and identify and make adaptations for controlling flight</td>
</tr>
<tr>
<td>• demonstrate confidence in their personal ability to learn and develop problem-solving skills, perseverance in the search for understanding, and critical thinking in examining evidence and determining what the evidence means</td>
<td>• make detailed descriptions and accurate interpretations about the movements of objects in the sky and identify their specific patterns</td>
</tr>
<tr>
<td></td>
<td>• apply knowledge of the properties and the interaction of materials to both the investigation and identification of a material sample with precision</td>
</tr>
<tr>
<td></td>
<td>• clearly describe the characteristics of trees and the interaction of trees with other living things in the local environment</td>
</tr>
<tr>
<td></td>
<td>• demonstrate confidence in their personal ability to learn and develop problem-solving skills, perseverance in the search for understanding, and critical thinking in examining evidence and determining what the evidence means</td>
</tr>
</tbody>
</table>
Preparing Students for the Science Test

Suggestions for Preparing Students

The best way to prepare students for writing the provincial achievement test is to teach the curriculum well and to ensure that students know what is expected. Many of the skills and attitudes that support test writing are, in fact, good skills and strategies for approaching all kinds of learning tasks.

Note that the questions on the science test are placed in real-life contexts.

Teachers are encouraged to familiarize their students with the types of questions that will appear on the test. Released Materials from previously secured tests are available on the Alberta Education website.

Teachers are also encouraged to share the following information with their students to help them prepare for the Grade 6 Science Provincial Achievement Test.

Special-format Practice Tests

To provide students an opportunity to practise provincial achievement test-style questions and content in Braille, audio, large print, or coloured print versions, Alberta Education is making special-format practice tests available. Tests are offered in all subjects with a corresponding provincial achievement test. Alberta schools with registered Alberta K-12 students may place orders for these tests. Braille tests are available in English and, by request, in French. All tests are provided free of charge, but limits may be placed on order volumes to ensure access for everyone.

For more information or to place an order, contact

Laura LaFramboise
Distribution Coordinator, Examination Administration
780-982-1644 or Laura.LaFramboise@gov.ab.ca
Suggestions for Answering Questions

• Before you begin, find out how much time you have.
• Ask questions if you are unsure of anything.
• Skim through the whole test before beginning. Find out how many questions there are, and plan your time accordingly.
• Answer the easier questions first; then go back to the more difficult ones.
• Do not spend too much time on any one question. Make a mark (*) or ?) beside any questions you have difficulty with, and go back to them if you have time.
• Read each question carefully, underline or highlight key words, and try to determine an answer before looking at the choices.
• Read all the choices and see which one best fits the answer.
• When you are not sure which answer is correct, cross out any choices that are wrong and then select the best of the remaining choices.
• If time permits, recheck your answers.
• Double-check to make sure that you have answered everything before handing in the test.
• Read the information given using the strategy that works best for you. You should either
  – look at all the information and think carefully about it before you try to answer the question or
  – read the questions first and then look at the information, keeping in mind the questions you need to answer
• Make sure that you look at all forms of the information given. Information may be given in words, charts, pictures, graphs, or maps.
• When information is given for more than one question, go back to the information before answering each question.
• Check your work when you calculate an answer, even when your answer is one of the choices.

When answering “best answer” questions, be sure to carefully read all four alternatives (A, B, C, and D) before choosing the answer that you think is best. These questions will always include a boldfaced qualifier such as best, most strongly, or most clearly in their stems. All the alternatives (A, B, C, and D) are, to some degree, correct, but one of the alternatives will be “best” in that it takes more of the information into account or can be supported most strongly by reference to the information.
Opportunities to Participate in Test Development Activities

Field Testing

All Provincial Achievement Testing Program test questions are field tested before use. By “testing” the test questions, students who write field tests have an opportunity for a practice run at writing questions that could be used on future provincial achievement tests. As well, the teachers have an opportunity to comment on the appropriateness and quality of the test questions.

Through the online field test request system, teachers can create and modify field test requests and check the status of these requests. Information regarding the field test process and the request system is available at Provincial Achievement Tests.

Once the completed requests are received by the Provincial Assessment Sector, classes will be selected to ensure that a representative and sufficiently large sample of students from across the province take part in the field test. Every effort will be made to place field tests as requested; however, because field tests are administered to a prescribed number of students, it may not be possible to fill all requests.

For further information about provincial achievement field testing, see the Field Testing section of the General Information Bulletin.
Benefits of Field Testing

How do field tests help teachers and students?

Teachers receive each student’s score promptly, gaining useful, immediate information about their student’s level of expertise and knowledge. Students also benefit from writing a test that duplicates some of the experience of writing a provincial achievement test. Field tests provide students and teachers with good examples of the style and content of questions that may appear on provincial achievement tests. Finally, students, teachers, and parents can be reassured that the questions on the provincial achievement tests have undergone a rigorous process of development, improvement, and validation.

Why are field tests necessary?

Field testing is an essential stage in the development of fair, valid, and reliable provincial achievement tests. Field testing is basically a process of “testing a test” and “testing questions” before they become part of a provincial achievement test. Potential provincial achievement test questions are administered to students in Grade 6 throughout the province to determine their difficulty level and appropriateness. Ideally, each field test requires a large student sample to provide the examination developers with reliable information (i.e., statistical data and written validation comments from teachers and students).

How are field test data used?

The data received from field tests show the reliability of each question. Sometimes, after one field test round, it is clear that certain questions work very well in terms of fairness, validity, and appropriateness to course content. These questions then move into the examination bank to be used at a future date.

Other questions or sets of questions may not perform as well as we require. These questions are subject to revision and review and then retested in a second or third field test with the aim of generating questions that meet our standards. These changes are influenced by the written comments of students and teachers, who provide valuable advice about the appropriateness of the questions, writing time limits, test length, text readability, artwork/graphics clarity and suitability, and question difficulty.
**Working Groups for Test Development**

Teacher involvement in the development of provincial achievement tests and student learning assessments is important because it helps to ensure the validity and appropriateness of the assessments.

Teacher working groups are used throughout the test development process to create raw forms of test questions and to review and revise draft forms of provincial achievement tests. These working groups usually meet for one or two days, two or three times per year. Occasionally, these meetings are held on weekends or in the summer.

To be selected to participate in a working group, a teacher must be nominated by a school administrator or superintendent, and that nomination must be approved by the superintendent. To ensure that selected working-group members have appropriate subject matter training and teaching experience, nominees are asked to provide their information to their school administrator so that it can be forwarded to the Provincial Assessment Sector at Alberta Education through the superintendent.

To be eligible to serve on a test development working group, a teacher should have taught Grade 6 Science within the past three years. Although the call for submissions occurs in early September, teachers are welcome to have their names submitted at any time.

Teachers participating in test development and/or test review working groups are selected from the working-group nominees provided by superintendents of school jurisdictions.
Contacts 2018–2019

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The office is open during the lunch hour.

*NEW