

Alberta Provincial  
Achievement Testing

Assessment  
Highlights  
2009

GRADE

3

# Mathematics

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This document contains assessment highlights from the 2009 Grade 3 English form of the Mathematics Achievement Test.

Assessment highlights provide information about the overall test, test blueprints, and student performance on the achievement test that was administered in 2009. Also provided is commentary on student performance on the 2009 Mathematics 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 (except grades 3, 6, and 9 Français/French Language Arts and grade 9 Knowledge and Employability courses) will be **posted on the Alberta Education website every year** in the fall.

**Every second year**, as of the fall of 2007, **a complete test** for all achievement testing subjects and grades (except grades 6 and 9 Social Studies; grades 3, 6, and 9 Français/French Language Arts; and Grade 9 Knowledge and Employability courses) will be **mailed** to school administrators in conjunction with the assessment highlights report for that year. In this way, teachers will receive complete forms of achievement tests for classroom use. The parts of those tests that are released in print form for which electronic copyright permission is received will subsequently be posted on the Alberta Education website. A test blueprint and an answer key that includes the difficulty, reporting category, test section and item description for each test item will also be included. These materials, along with the Program of Studies and subject bulletin, provide information that can be used to inform instructional practice.

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The Alberta Education Internet address is [education.alberta.ca](http://education.alberta.ca).

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## *The 2009 Grade 3 Mathematics Achievement Test*

This report provides teachers, school administrators, and the public with an overview of the performance of those students who wrote the 2009 Grade 3 Mathematics Achievement Test. It complements the detailed school and jurisdiction reports.

### **How Many Students Wrote the Test?**

A total of 34 558 students wrote the 2009 Grade 3 Mathematics Achievement Test.

### **What Was the Test Like?**

The 2009 Grade 3 Mathematics Achievement Test consisted of 40 multiple-choice questions based on four strands: Number, Patterns and Relations, Shape and Space, Statistics and Probability, and a Timed Number Fact test, which accounts for 3 marks.

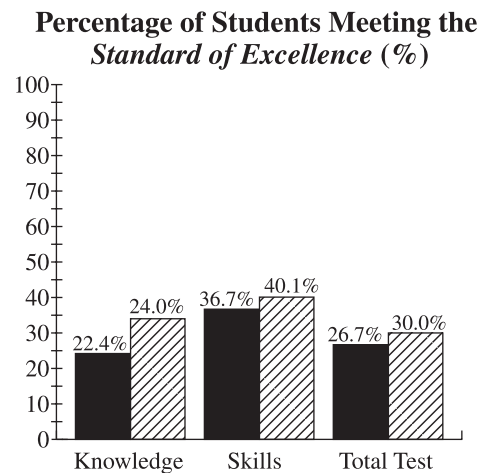
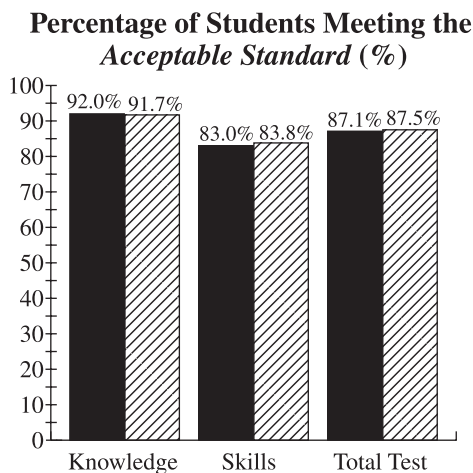
The strands were interspersed throughout the 40 questions. For example, questions on Number do not constitute the first section; rather, they were mixed with questions from the strands related to Patterns and Relations, Shape and Space, and Statistics and Probability. The knowledge and skills components were also integrated throughout the test.

### **How Well Did Students Do?**

The percentages of students meeting the *acceptable standard* and the *standard of excellence* in 2009 compared with 2008 are shown in the graphs below. Out of a total score of 43 on the test, the provincial average was 31.5/43 (73.2%). The results presented in this report are based on scores achieved by all students who wrote the test except those in French Immersion and Francophone programs; results for these students are reported separately. Detailed provincial assessment results are provided in school and jurisdiction reports.

<b>Grade 3—Acceptable</b>			
	Knowledge	Skills	Total
2008	92.0	83.0	87.1
2009	91.7	83.8	87.5

<b>Grade 3—Excellence</b>			
	Knowledge	Skills	Total
2008	22.4	36.7	26.7
2009	24.0	40.1	30.0



- 2008 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2008 Grade 3 Mathematics Achievement Test (based on those who wrote).
- ▨ 2009 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2009 Grade 3 Mathematics Achievement Test (based on those who wrote).

## **2009 Test Blueprint and Student Achievement**

In 2009, 87.5% of students who wrote the test achieved the *acceptable standard* on the Grade 3 Mathematics Achievement Test, and 30.0% of students who wrote achieved the *standard of excellence*. These results are slightly higher at the *acceptable standard* and almost 4% higher than the *standard of excellence* on the previous administration of the achievement test.

Student achievement on the 2009 Grade 3 Mathematics Achievement Test averaged 31.5 out of a total score of 43 (73.2%).

The blueprint below shows the general outcomes that the questions address as well as the reporting categories under which questions are classified. The number of questions in each category is approximate.

<b>General Outcomes</b>	<b>Reporting Category</b>		<b>Provincial Student Achievement Average Raw Score and Percentage</b>
	<b>Knowledge</b>	<b>Skills</b>	
<b>Number</b> <ul style="list-style-type: none"> <li>• Develop a number sense for whole numbers 0 to 1 000, and explore fractions (fifths and tenths)</li> <li>• Apply an arithmetic operation (addition, subtraction, multiplication, or division) on whole numbers, and illustrate its use in creating and solving problems</li> <li>• Use and justify an appropriate calculation strategy or technology to solve problems</li> </ul>			12.3/17 (72.3%)
<b>Patterns and Relations</b> <ul style="list-style-type: none"> <li>• Investigate, establish, and communicate rules for numerical and non-numerical patterns, including those found in the home, and use these rules to make predictions</li> </ul>			4.6/6 (76.6%)
<b>Shape and Space</b> <ul style="list-style-type: none"> <li>• Estimate, measure, and compare by using whole numbers and primarily standard units of measure</li> <li>• Describe, classify, construct, and relate 3-D objects and 2-D shapes</li> <li>• Use numbers and direction words to describe the relative positions of objects in one dimension using everyday contexts</li> </ul>			8.6/12 (71.6%)
<b>Statistics and Probability</b> <ul style="list-style-type: none"> <li>• Collect first- and second-hand data, display the results in more than one way, and interpret the data to make predictions</li> <li>• Use simple probability experiments designed by others in order to explain outcomes</li> </ul>			6.0/8 (75%)
<b>Provincial Student Achievement Average Raw Score and Percentage</b>	12.4/17 (72.9%)	19.1/26 (73.4%)	<b>Total Test Raw Score =43 (100%)</b>

## *Commentary on 2009 Student Achievement*

The following is a discussion of specific areas of strength and weakness demonstrated by students who wrote the 2009 Grade 3 Mathematics Achievement Test.

### *Reporting Categories of Questions*

#### **Number**

In the reporting category **Number**, students should be able to accomplish the following: develop a number sense for whole numbers 0 to 1 000, and explore fractions (fifths and tenths); apply an arithmetic operation (addition, subtraction, multiplication, or division) on whole numbers, and illustrate its use in creating and solving problems; and use and justify an appropriate calculation strategy or technology to solve problems.

Students were able to answer an average of 12.3/17 (72.3%) of these types of questions correctly. This is a slight decrease (0.6%) from the previous year.

#### **Patterns and Relations**

In the reporting category **Patterns and Relations**, students should be able to investigate, establish, and communicate rules for numerical and non-numerical patterns, including those found in the home, and use these rules to make predictions.

An average of 4.6/6 (76.6%) of patterns and relations types of questions were answered correctly. This number reflects an increase of 6.6% from the previous year.

#### **Shape and Space**

In the reporting category **Shape and Space**, students should be able to estimate, measure, and compare by using whole numbers and primarily standard units of measure; describe, classify, construct, and relate 3-D objects and 2-D shapes; use numbers and direction words to describe the relative positions of objects in one dimension using everyday contexts.

Students were able to answer an average of 8.6/12 (71.6%) of these types of questions accurately. This is an increase of 0.8% from the previous year's test.

#### **Statistics and Probability**

In the reporting category **Statistics and Probability**, students should be able to collect first-and second-hand data, display the results in more than one way, and interpret the data to make predictions; they should use simple probability experiments designed by others in order to explain outcomes.

When addressing questions that addressed outcomes in the statistics and probability strand, students were able to answer an average of 6.0/8 (75%) questions correctly. This average is the same as the average from the previous year.

## ***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). On the home page, click on the tab *Teachers*, then click on the link *Provincial Testing*. Next click on the link *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 Learner Assessment 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 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 print versions of released items that have been mailed to schools and/or the tests that are posted on the Alberta Education website.

### **Parent Guides**

Each school year, print versions of the *Parent Guide to Provincial Achievement Testing* for grades 3, 6, and 9 are mailed to schools and posted on the Alberta Education website. Each guide presents answers to frequently asked questions about the achievement testing program; descriptions of and sample questions for each achievement test 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.