

**Alberta Provincial  
Achievement Testing**

**Assessment  
Highlights  
2010-2011**

**GRADE  
9**

**Knowledge and Employability Mathematics**



**Government  
of Alberta ■**

*Alberta* ■

Freedom To Create. Spirit To Achieve.

This document was written primarily for:

Students	
Teachers	✓ of KE Mathematics
Administrators	
Parents	
General Audience	
Others	

For further information, contact

**Ray Shapka, Assessment Standards Team Leader**, at  
[Ray.Shapka@gov.ab.ca](mailto:Ray.Shapka@gov.ab.ca)

Ken Marcellus, Director, Achievement Testing, at  
[Ken.Marcellus@gov.ab.ca](mailto:Ken.Marcellus@gov.ab.ca), or

Assessment Sector: (780) 427-0010  
Toll-free within Alberta: 310-0000.

The [Alberta Education website](http://education.alberta.ca) is found at education.alberta.ca.

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## The 2011 Grade 9 Knowledge and Employability Mathematics Achievement Test

This report provides teachers, school administrators, and the public with an overview of the performance of those students who wrote the 2011 Grade 9 Knowledge and Employability Mathematics Achievement Test. 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. This report complements the detailed school and jurisdiction reports.

### How Many Students Wrote the Test?

A total of 1 680 students wrote the 2011 Grade 9 Knowledge and Employability Mathematics Achievement Test.

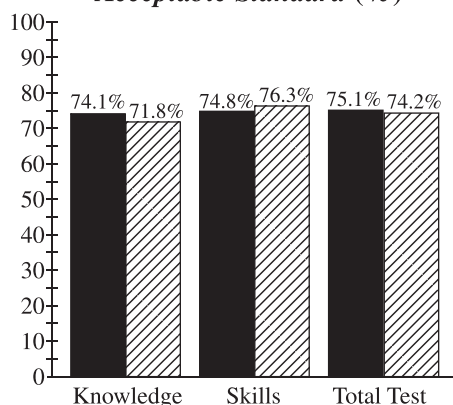
### What Was the Test Like?

The 2011 Grade 9 Knowledge and Employability Mathematics Achievement Test consisted of 46 multiple-choice and 4 numerical-response items based on four strands: Number; Patterns and Relations; Shape and Space; and Statistics and Probability.

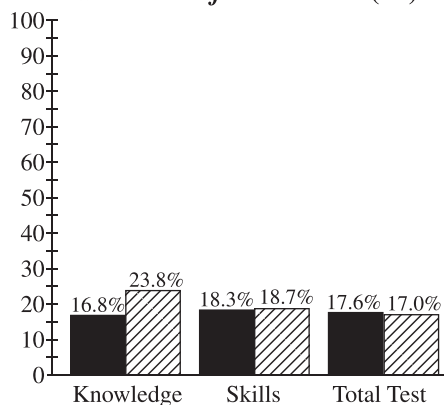
### How Well Did Students Do?

The percentages of students meeting the *acceptable standard* and the *standard of excellence* in 2011 are similar to 2010, as shown in the graphs below. Out of a total possible score of 50, the provincial average on the test was 32.5 (65.0%).

Percentage of Students Meeting the *Acceptable Standard* (%)



Percentage of Students Meeting the *Standard of Excellence* (%)



■ 2010 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2008 Grade 9 Knowledge and Employability Mathematics Achievement Test (based on those who wrote).

▨ 2011 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2011 Grade 9 Knowledge and Employability Mathematics Achievement Test (based on those who wrote).

## *2011 Test Blueprint and Student Achievement*

In 2011, 74.2% of students who wrote the test achieved the *acceptable standard* on the Grade 9 Knowledge and Employability Mathematics Achievement Test, and 17.0% of students achieved the *standard of excellence*.

The blueprint below shows the reporting categories and test sections (curricular content areas) by which 2011 summary data are reported to schools and school authorities, and the provincial average of student achievement by both raw score and percentage.

Test Sections	Reporting Category		Provincial Student Achievement (Average Raw Score and Percentage)
	Knowledge	Skills	
<b>Number</b> <ul style="list-style-type: none"> <li>• Number Concepts</li> <li>• Number Operations</li> </ul>			<b>12.2/18</b> <b>(67.8%)</b>
<b>Patterns and Relations</b> <ul style="list-style-type: none"> <li>• Patterns and Relationships</li> <li>• Variables and Equations</li> </ul>			<b>4.5/7</b> <b>(64.3%)</b>
<b>Shape and Space</b> <ul style="list-style-type: none"> <li>• Measurement</li> <li>• 3-D Objects and 2-D Shapes</li> <li>• Transformations</li> </ul>			<b>9.7/16</b> <b>(60.6%)</b>
<b>Statistics and Probability</b> <ul style="list-style-type: none"> <li>• Collecting and Analyzing Information</li> </ul>			<b>6.1/9</b> <b>(67.8%)</b>
<b>Provincial Student Achievement (Average Raw Score and Percentage)</b>	<b>12.1/17</b> <b>(71.2%)</b>	<b>20.4/33</b> <b>(61.8%)</b>	<b>Total Test Raw Score</b> <b>32.5</b> <b>(65.0%)</b>

## ***Commentary on 2011 Student Achievement***

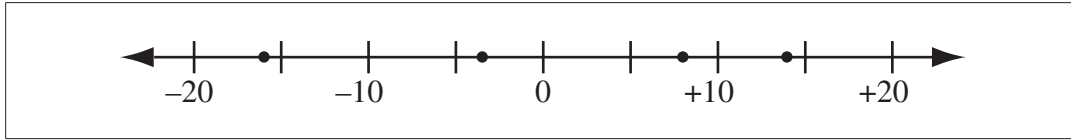
The following is a brief summary of the areas where most students experienced difficulties and demonstrated strengths on the 2011 Grade 9 Knowledge and Employability Mathematics Achievement Test. Four sample questions are also provided to highlight some of these areas. These questions are no longer secured and will not be reused on future achievement tests.

### **Students demonstrated relative strength by being able to:**

- Determine the likelihood of a random event occurring based on the occurrence of previous events
- Identify a given set of integers positioned on a number line
- Identify the value that occurs most frequently in a given set of numbers
- Determine the ratio expressed in given information
- Calculate total cost using information presented in a chart
- Identify an algebraic equation that represents given information

For **multiple-choice question 3**, students had to identify a given set of integers positioned on a number line. Approximately 92.0% of students who met the *acceptable standard* and 98.3% of students who met the *standard of excellence* answered this question correctly.

*Use the following information to answer question 3.*



3. Which of the following sets of integers is represented by the number line above?
- A.  $-16, -4, +8, +14$
  - B.  $-23, -8, +4, +16$
  - C.  $-32, -8, +13, +48$
  - D.  $-48, -13, +8, +32$

85.5% of the students chose A (correct answer)

8.6% of the students chose B

4.2% of the students chose C

1.3% of the students chose D

For **multiple-choice question 29**, students had to identify an algebraic equation that represents given information. Approximately 81.2% of students who met the *acceptable standard* and about 95.8% of students who met the *standard of excellence* answered this question correctly.

*Use the following information to answer question 29.*

A cellphone company charges 3 cents per call made plus 5 cents per minute of airtime.

- 29.** Which of the following expressions represents how much the cellphone company charges per call when  $c$  represents the number of calls and  $m$  represents the number of airtime minutes?
- A.**  $3c + 5m$
  - B.**  $5c + 3m$
  - C.**  $15c + 5m$
  - D.**  $15c + 3m$

75.1% of the students chose A (correct answer)

9.6% of the students chose B

10.7% of the students chose C

4.2% of the students chose D

**Students demonstrated relative difficulty with:**

- Solving an addition problem using pictorial representations of fractions
- Calculating the perimeter of a given shape
- Analyzing a given pattern to extend and complete a pattern
- Converting from one unit of metric measurement to another unit
- Calculating average speed using a given formula, distance, and time

For **multiple-choice question 41**, students had to convert from one unit of metric measurement to another unit. Approximately 52.3% of students who met the *acceptable standard* and 83.0% of student who met the *standard of excellence* answered this question correctly.

**41.** How many kilometres is 10 200 m?

- A.** 1.02 km
- B.** 10.2 km
- C.** 102 km
- D.** 1 020 km

9.0% of the students chose A  
51.0% of the students chose B (correct answer)  
20.2% of the students chose C  
19.3% of the students chose D

For **numerical-response question 2**, students had to calculate average speed using a given formula, distance, and time. Approximately 51.4% of students who met the *acceptable standard* and 87.5% of student who met the *standard of excellence* answered this question correctly.

*Use the following information to answer numerical-response question 2.*

The Davis family is planning to go on a trip from Edmonton to Winnipeg. The driving distance between the two cities is approximately 1 200 km.

**Distance Formula**

$$d = r \times t$$

$d$  = distance (km)

$r$  = rate (km/h)

$t$  = time (h)

**Numerical Response**

2. What is the average rate at which the Davis family must travel so that they arrive in Winnipeg in 15 hours?

**Answer:** \_\_\_\_\_ **km/h**

(Record your answer in the numerical-response section on the answer sheet.)

48.0% of the students answered correctly

## ***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](http://education.alberta.ca) website at education.alberta.ca. From the home page, follow this path: *Teachers > Provincial Testing > 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 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 3, 6, and 9. Each bulletin provides descriptions of assessment standards, test design and blueprinting, and scoring guides 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, and grades 6 and 9 Mathematics, 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 writing samples documents contain sample responses with scoring rationales that relate student work to the scoring categories and scoring 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 versions of released items and/or tests that are posted on the Alberta Education website.

### **Parent Guides**

Each school year, versions of the [Parent Guide to Provincial Achievement Testing](#) for grades 3, 6, and 9 are 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.