

**Alberta Provincial
Achievement Testing**

**Assessment
Highlights
2013–2014**

**GRADE
9**

Knowledge and Employability Mathematics

Alberta  Government

This document was written primarily for:

Students	
Teachers	✓ of KE Mathematics
Administrators	
Parents	
General Audience	
Others	

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The 2014 Grade 9 Knowledge and Employability Mathematics Achievement Test

This report provides teachers, school administrators, and the public with an overview of the performance of students who wrote the 2014 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 1 677 students wrote the 2014 Grade 9 Knowledge and Employability Mathematics Achievement Test.

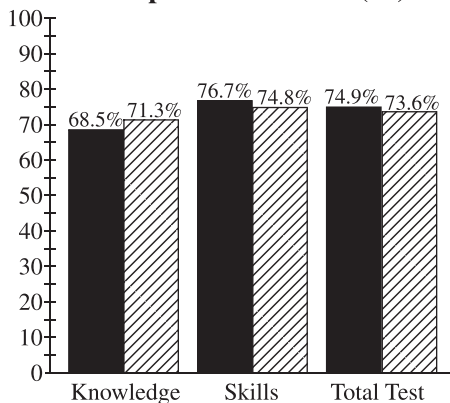
What Was the Test Like?

The 2014 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.

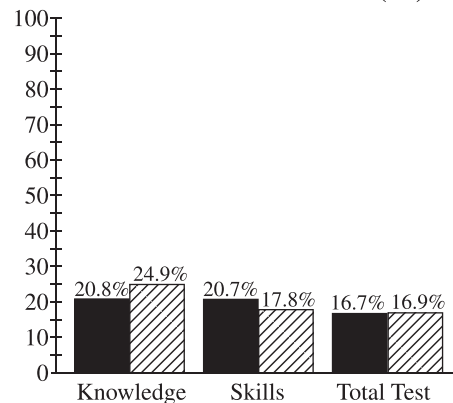
How Well Did Students Do?

The percentages of students meeting the acceptable standard and the standard of excellence in 2014 are similar to 2013, as shown in the graphs below. Out of a possible total score of 50, the provincial average on the test was 31.4 (62.8%).

Percentage of Students Meeting the Acceptable Standard (%)



Percentage of Students Meeting the Standard of Excellence (%)



■ 2013 Achievement Standards: The percentage of students in the province who met the acceptable standard and the standard of excellence on the 2013 Grade 9 Knowledge and Employability Mathematics Achievement Test (based on those who wrote).

▨ 2014 Achievement Standards: The percentage of students in the province who met the acceptable standard and the standard of excellence on the 2014 Grade 9 Knowledge and Employability Mathematics Achievement Test (based on those who wrote).

2014 Test Blueprint and Student Achievement

In 2014, 73.6% of students who wrote the test achieved the acceptable standard on the Grade 9 Knowledge and Employability Mathematics Achievement Test, and 16.9% of students achieved the standard of excellence.

The blueprint below shows the reporting categories and test sections (curricular content areas) by which 2014 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	
Number <ul style="list-style-type: none"> • Number Concepts • Number Operations 			9.7/15 (64.7%)
Patterns and Relations <ul style="list-style-type: none"> • Patterns and Relationships • Variables and Equations 			5.7/9 (63.3%)
Shape and Space <ul style="list-style-type: none"> • Measurement • 3-D Objects and 2-D Shapes • Transformations 			10.0/17 (58.9%)
Statistics and Probability <ul style="list-style-type: none"> • Collecting and Analyzing Information 			6.1/9 (67.8%)
Provincial Student Achievement (Average Raw Score and Percentage)	10.2/17 (60.0%)	21.2/33 (64.2%)	Total Test Raw Score 31.4/50 (62.8%)

Commentary on 2014 Student Achievement

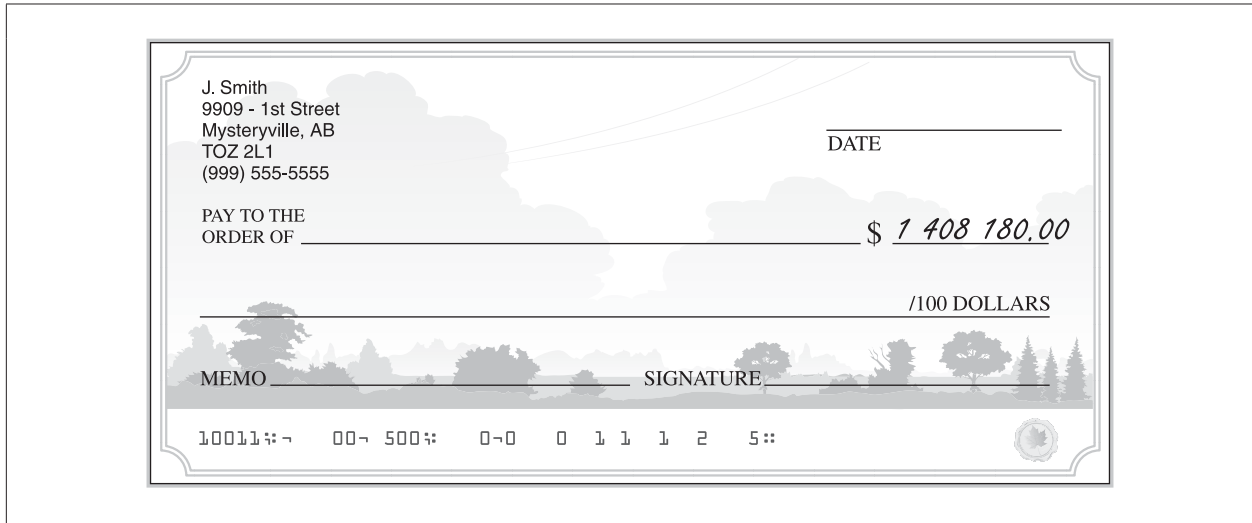
The following is a brief summary of the areas where most students experienced difficulties and demonstrated strengths on the 2014 Grade 9 Knowledge and Employability Mathematics Achievement Test. Four sample questions are also provided to highlight some of these areas. These questions are no longer secured and will not be reused on future achievement tests.

Students demonstrated relative strength by being able to:

- Identify the written-form representation of a number given in standard form
- Interpret information to determine a pattern in order to solve an everyday problem
- Interpret information to identify the Venn diagram that represents given data
- Calculate the length of a side of an irregular polygon when given its perimeter
- Identify the location of an integer on a given number line

For **multiple-choice question 2**, students had to identify the written-form representation of a number given in standard form. Approximately 72.7% of students who met the acceptable standard and 91.3% of students who met the standard of excellence answered this question correctly.

Use the following information to answer question 2.



2. The dollar amount of the cheque above, written in words, is
- A. one million four hundred eight thousand one hundred eighty
 - B. one million four hundred eighty thousand one hundred eighty
 - C. one billion four hundred eight thousand one hundred eighty
 - D. one billion four hundred eighty thousand one hundred eighty

68.9% of the students chose A (correct answer)
10.3% of the students chose B
16.5% of the students chose C
4.2% of the students chose D

For **multiple-choice question 14**, students had to interpret information to determine a pattern in order to solve an everyday problem. Approximately 90.6% of students who met the acceptable standard and 96.9% of students who met the standard of excellence answered this question correctly.

Use the following information to answer question 14.

The following table represents Len’s work schedule over the past 4 weeks.

Len’s Work Schedule

Week	Mon.	Tues.	Wed.	Thurs.	Fri.
1	2 h		2 h		2 h
2		4 h		4 h	
3	2 h		2 h		2 h
4		4 h		4 h	

14. Based on the table above, how many hours in **total** did Len work in the 4 weeks?

- A.** 6 h
- B.** 8 h
- C.** 14 h
- D.** 28 h

2.1% of the students chose A
8.4% of the students chose B
3.6% of the students chose C
85.9% of the students chose D (correct answer)

Students experienced relative difficulty with:

- Applying arithmetic operations to solve a problem using mixed numbers with unlike denominators
- Determining the measure of an unknown angle in a given right triangle
- Analyzing information to identify the coordinate grid that corresponded to a given ordered pair
- Identifying the circumference, radius, and diameter of a circle
- Determining the scientific notation form of a given number

For **multiple-choice question 39**, students had to determine the scientific notation form of a given number. Approximately 48.5% of students who met the acceptable standard and 66.2% of students who met the standard of excellence answered this question correctly.

Use the following information to answer question 39.

The core temperature of the Sun is about 15 000 000 °C.

39. Written in scientific notation, the core temperature of the Sun is

- A.** $1.5 \times 10^{-7} \text{ }^\circ\text{C}$
- B.** $1.5 \times 10^{-8} \text{ }^\circ\text{C}$
- C.** $1.5 \times 10^7 \text{ }^\circ\text{C}$
- D.** $1.5 \times 10^8 \text{ }^\circ\text{C}$

12.1% of the students chose A

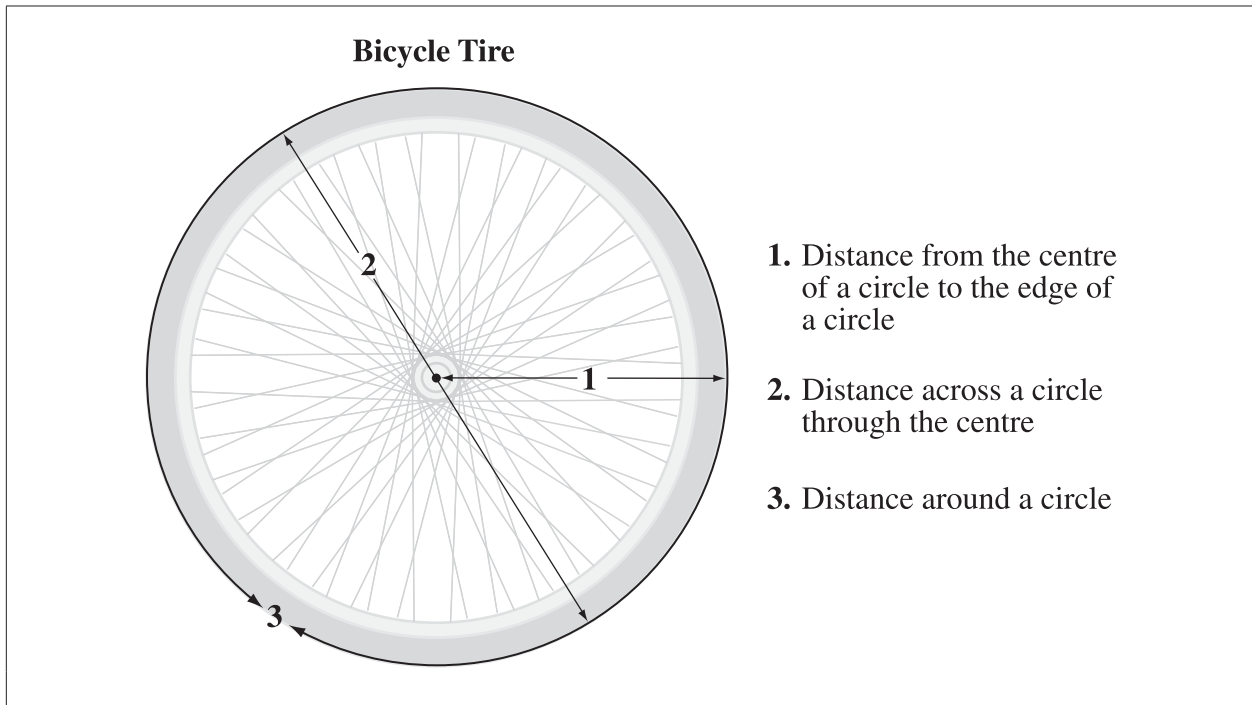
12.5% of the students chose B

46.4% of the students chose C (correct answer)

28.0% of the students chose D

For **numerical-response question 4**, students had to identify the circumference, radius, and diameter of a circle. Approximately 40.5% of students who met the acceptable standard and 75.3% of students who met the standard of excellence answered this question correctly.

Use the following diagram to answer numerical-response question 4.



Numerical Response

4. Match each of the numbers on the bicycle tire above with the measurement it represents, as given below.

Radius _____ (Record in the **first** column)

Circumference _____ (Record in the **second** column)

Diameter _____ (Record in the **third** column)

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

38.4% of the students answered correctly (Answer: 132)

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. From the home page, follow the path *Teachers > Provincial Testing > Provincial Achievement Tests (PAT)*, and then 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 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.