

**Alberta Provincial
Achievement Testing**

**Assessment
Highlights
2012–2013**

**GRADE
9**

Knowledge and Employability Mathematics

Alberta  Government

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

Ken Marcellus, Director, Achievement Testing, at
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.

Copyright 2013, the Crown in Right of Alberta, as represented by the Minister of Education, Alberta Education, Assessment Sector, 44 Capital Boulevard, 10044 108 Street NW, Edmonton, Alberta T5J 5E6, and its licensors. All rights reserved.

Special permission is granted to **Alberta educators only** to reproduce, for educational purposes and on a non-profit basis, parts of this document that do **not** contain excerpted material.

Contents

The 2013 Grade 9 Knowledge and Employability Mathematics Achievement Test	1
2013 Test Blueprint and Student Achievement	2
Commentary on 2013 Student Achievement	3
Achievement Testing Program Support Documents.....	8

The 2013 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 2013 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?

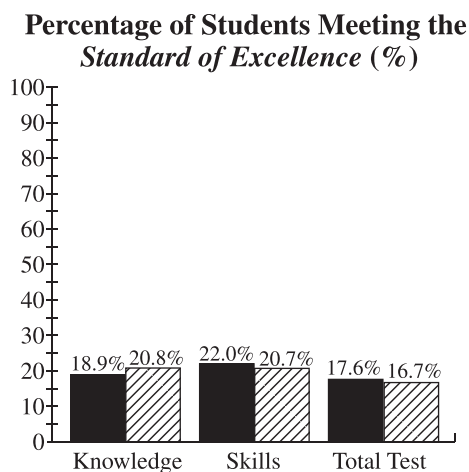
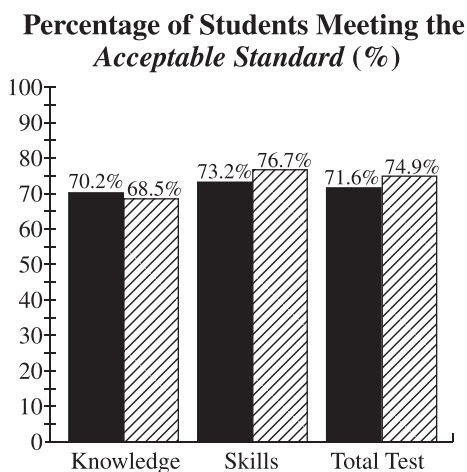
A total of 1 454 students wrote the 2013 Grade 9 Knowledge and Employability Mathematics Achievement Test.


What Was the Test Like?


The 2013 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 2013 are similar to 2012, as shown in the graphs below. Out of a total possible score of 50, the provincial average on the test was 32.1 (64.2%).



 2012 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2012 Grade 9 Knowledge and Employability Mathematics Achievement Test (based on those who wrote).

 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).

2013 Test Blueprint and Student Achievement

In 2013, 74.9% of students who wrote the test achieved the *acceptable standard* on the Grade 9 Knowledge and Employability Mathematics Achievement Test, and 16.7% of students achieved the *standard of excellence*.

The blueprint below shows the reporting categories and test sections (curricular content areas) by which 2013 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 			10.1/16 (63.1%)
Patterns and Relations <ul style="list-style-type: none"> • Patterns and Relationships • Variables and Equations 			4.6/7 (65.7%)
Shape and Space <ul style="list-style-type: none"> • Measurement • 3-D Objects and 2-D Shapes • Transformations 			9.6/16 (60.0%)
Statistics and Probability <ul style="list-style-type: none"> • Collecting and Analyzing Information 			7.7/11 (70.0%)
Provincial Student Achievement (Average Raw Score and Percentage)	10.9/17 (64.1%)	21.2/33 (64.2%)	Total Test Raw Score 32.1 (64.2%)

Commentary on 2013 Student Achievement

The following is a brief summary of the areas where most students experienced difficulties and demonstrated strengths on the 2013 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 value that occurs most frequently in a given set of numbers
- Interpret information represented in a chart to identify the corresponding bar graph that represents the given data
- Identify the likelihood of a random event occurring based on given information
- Exam and interpret information from a design to describe a transformation
- Recognize and identify the number of lines of symmetry in a given regular polygon

For **multiple-choice question 4**, students had to identify the value that occurs most frequently in a given set of numbers. Approximately 85.2% of students who met the *acceptable standard* and 93.1% of students who met the *standard of excellence* answered this question correctly.

Use the following information to answer question 4.

By the end of each volleyball practice, Jen has served the ball 10 times. She records the number of successful serves for each practice in the table below.

Practice	1	2	3	4	5	6	7	8	9
Successful Serves	2	4	6	6	9	8	10	9	9

4. The number of successful serves that occurs **most** frequently is
- A. 6
 - B. 7
 - C. 8
 - D. 9

4.2% of the students chose A
11.8% of the students chose B
1.7% of the students chose C
82.2% of the students chose D (correct answer)

For **multiple-choice question 18**, students had to interpret information represented in a chart to identify the corresponding bar graph that represents the given data. Approximately 93.5% of students who met the *acceptable standard* and about 99.6% of students who met the *standard of excellence* answered this question correctly.

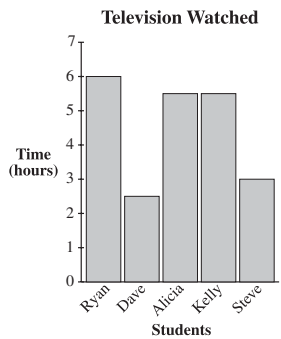
Use the following information to answer question 18.

The amount of time five students spent watching television on Saturday night is shown in the table below.

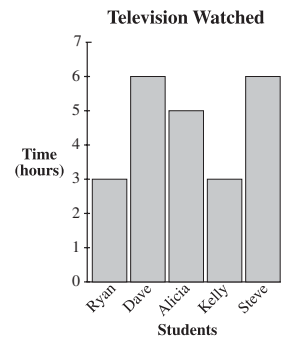
Ryan	2.5 h
Dave	6.0 h
Alicia	4.5 h
Kelly	5.0 h
Steve	3.0 h

18. Which of the following bar graphs represents the information above?

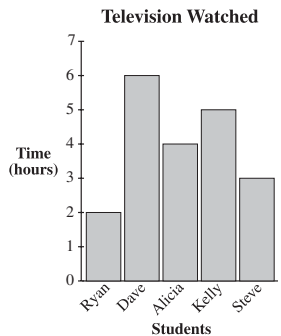
A.



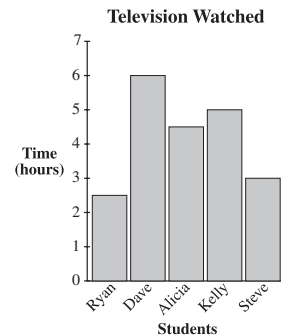
B.



C.



D.



- 1.8% of the students chose A
- 2.6% of the students chose B
- 9.0% of the students chose C
- 86.5% of the students chose D (correct answer)

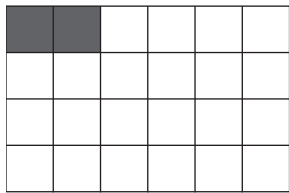
Students demonstrated relative difficulty with:

- Using the given components on a grid to determine the point needed to construct an obtuse angle
- Solving an everyday problem using arithmetic operations to calculate and compare costs
- Calculating and converting using fractions to identify the pictorial that represents the given fraction
- Determining and identifying the representation of a given measure on a pictorial of a protractor
- Determining percentage when given equivalent fractions

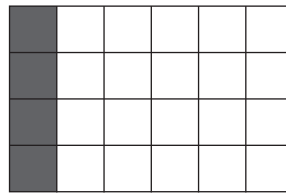
For **multiple-choice question 22**, students had to calculate and convert using fractions to identify the pictorial that represented the given fraction. Approximately 51.2% of students who met the *acceptable standard* and 84.9% of student who met the *standard of excellence* answered this question correctly.

22. Which of the following diagrams represents the fraction $\frac{1}{6}$?

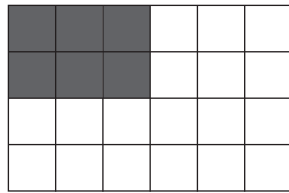
A.



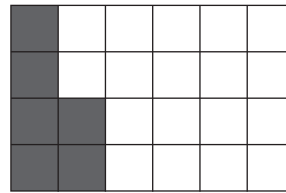
B.



C.



D.



- 5.0% of the students chose A
- 49.2% of the students chose B (correct answer)
- 26.4% of the students chose C
- 19.1% of the students chose D

For **numerical-response question 2**, students had to determine percentage when given equivalent fractions. Approximately 57.7% of students who met the *acceptable standard* and 90.2% of student who met the *standard of excellence* answered this question correctly.

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

Jane's dog catches a ball 12 out of 20 times. She uses equivalent fractions to determine the percentage of the time that the dog catches the ball.

$$\frac{12}{20} = \frac{?}{100}$$

Numerical Response

- 2.** What percentage of the time does the dog catch the ball?

Answer: _____ **percent**

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

54.0% 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 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 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 3, 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 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 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 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 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 as well as descriptions of and sample questions for each achievement test subject.

Involvement of Teachers

Teachers of grades 3, 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.