Alberta Provincial Achievement Testing

Subject Bulletin
2017–2018

GRADE 9

Mathematics

Alberta Government

This document was written primarily for

Students	
Teachers	✓ Grade 9 Mathematics
Administrators	✓
Parents	
General Audience	
Others	

Contents

You can find [achievement test-related materials](#) on the Alberta Education website.

Additional topics of interest are found in the *[General Information Bulletin](#)*.

Grade 9 Mathematics Assessment

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

*NEW General Description

The Grade 9 Mathematics Achievement Test consists of two parts:

- Part A contains 20 numerical-response questions and was designed to be completed in 20 minutes. Part A will assess students' foundational skills and fluency in mental math, estimation, computation, and algebra, without the use of calculators.

- Part B contains 32 multiple-choice questions and 8 numerical-response questions. Part B was designed to be completed in 70 minutes. Students may use manipulatives and calculators to complete Part B.

The test was designed to be completed in 90 minutes; however, students may have up to 180 minutes to complete this test, plus an additional 30 minutes if needed. Teachers have the flexibility to allocate the extra 30 minutes between Part A and Part B as they see fit.

The following bullets briefly describe the two item formats:

- Multiple-choice items that provide students with four response options, of which only one is correct.

- Numerical-response items that require students to generate a response (in symbolic form) to a particular problem, rather than selecting a response from a list of four options.

Test items are also categorized in terms of three levels of item complexity: low, moderate, and high. Low-complexity items require responses involving the simple recall and recognition of previously learned concepts and principles. Moderate-complexity items require responses that go beyond the habitual and may require more-informal methods of reasoning and problem solving. High-complexity items require responses that are based on more-abstract reasoning, planning, analysis, judgment, and creative thought. (See *Appendix 1* for a more detailed explanation of each complexity level.)

*NEW *Test Administration Time*

The Grade 9 Mathematics Achievement Test is designed to be administered in 90 minutes; however, students have 180 minutes to complete the test plus an additional 30 minutes if needed.

Part A is designed to be administered in 20 minutes; however, each student may have up to 40 minutes plus any portion of the additional 30 minutes. Part B is designed to be administered in 70 minutes; however, each student may have up to 140 minutes plus any remaining portion of the additional 30 minutes. The allocation of the additional 30 minutes is at the discretion of the teacher/supervisor. For example, a teacher could provide an additional 10 or 15 minutes or more for Part A to individual students or the class as a whole. The remainder of the additional time can be used for Part B, if needed.

*NEW

Use of Calculators and Manipulatives

Part A: Manipulatives may be used, but use of a calculator is not permitted.

Part B: Students may use calculators and manipulatives; however, use of graphing calculators is not permitted.

An acceptable manipulative is any mathematical tool that can be used by a student to help convert abstract ideas into concrete representations for the purpose of solving a problem (e.g., a ruler, tracing paper, pattern blocks, tiles and cubes, geoboards, tangrams, counters, spinners, number lines). The manipulative cannot perform the mental conversion or provide the solution to a problem. A multiplication table is not an acceptable manipulative for use in completing Part A (except as an accommodation) or Part B.

To go back after using an internal link, simultaneously press and hold Alt ← (in some browsers).

Part A and Part B

Marking keys will be provided to teachers for marking purposes. Teachers are expected to record and report the raw scores achieved on the test by their students to parents. Raw scores achieved by students on Part A and Part B are to be reported separately to parents and are not to be combined into a total test score.

*NEW   *Grade 9 Mathematics Achievement Test Blueprint*

Test Component	Number of Questions	Question Format	Weighting on Total Test Score
Part A	20	Numerical Response	20%
Part B	32 8	Multiple Choice Numerical Response	80%

Content Domain of Test (Strand)	Part A: Percentage of Questions	Part B: Percentage of Questions
Number	70 – 80%	25 – 35%
Patterns and Relations	20 – 30%	35 – 45%
Shape and Space		20 – 30%
Statistics and Probability		5 – 10%

Cognitive Domain of Test (Complexity Level)	Part A: Percentage of Questions	Part B: Percentage of Questions
Low	80 – 90%	30 – 40%
Moderate	10 – 20%	45 – 55%
High		10 – 20%

Description of Mathematics Assessment Standards

The following statements describe what is expected of Grade 9 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 the outcomes in the program of studies.

Acceptable Standard	*Standard of Excellence*
Students who meet the acceptable standard in Grade 9 Mathematics are typically able to:	Students who meet the standard of excellence in Grade 9 Mathematics are typically able to:
• recall and apply a moderate number of mathematical properties to solve routine problems	• recall and apply a variety of mathematical properties to solve novel problems
• utilize familiar problem-solving strategies to solve routine problems	• utilize a variety of problem-solving strategies to solve novel problems
• connect and apply personal experiences and problem-solving strategies to solve routine problems	• connect and apply personal experiences and strategies to check and verify solutions to novel problems
• recall and apply mathematical concepts and operational terms to solve routine problems	• apply abstract thinking skills to reframe mathematical concepts to solve novel problems
• apply computation skills and formal mathematics vocabularies to solve routine problems	• generate linguistic and nonlinguistic representations of knowledge to solve novel problems
• recognize and describe numerical and non-numerical patterns	• demonstrate fluency in working with patterns represented concretely, pictorially, or symbolically
• utilize semantic knowledge to construct correct mental representations of word problems	• utilize semantic knowledge to construct and reframe correct mental representations of word problems
• use logical processes to analyze and solve routine problems	• use logical processes to analyze complex problems, reach conclusions, and justify or defend conclusions
• recognize and use mathematical patterns to make predictions when solving routine problems	• recognize, extend, create, and use mathematical patterns to make and justify predictions when solving novel problems
• test generalizations from patterns to reach conclusions	• make generalizations from patterns to reach conclusions

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Preparing Students for the Mathematics Test

Suggestions for Preparing Students

The best way to prepare students for writing the 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 most of the questions on the mathematics 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 items 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 9 Mathematics Achievement Test.

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 question(s) 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 bold-faced 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.

To go back after using an internal link, simultaneously press and hold Alt ← (in some browsers).

Opportunities to Participate in Test Development Activities

Field Testing

All 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 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 achievement field testing, see the Field Testing section of the *General Information Bulletin*.

Working Groups

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

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.

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Test Development

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 eligible to serve on a test development working group, a teacher must currently be teaching Grade 9 Mathematics and must have a minimum of two years' experience teaching the course.

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

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Appendix 1

Part A: Sample Questions

1. What is $(-2) \times (-1) \times (-3)$?

    Answer: _____

    (Record your answer as an **integer** value on the answer sheet.)

2. What is 30% of 42?

    Answer: _____

    (Record your answer on the answer sheet.)

3. What is the value
of $\dfrac{(-4)^2 \times (-4)^3 \times (-4)^4}{(-4)^6}$?

    Answer: _____

    (Record your answer as an **integer** value on the answer sheet.)

4. What is the value
of $\dfrac{1}{5} + 0.2 \times \dfrac{2}{3}$ expressed
as a fraction in simplest form?

    Answer: ☐ (Record in the **first** column)

             ☐ (Record in the **second** column)

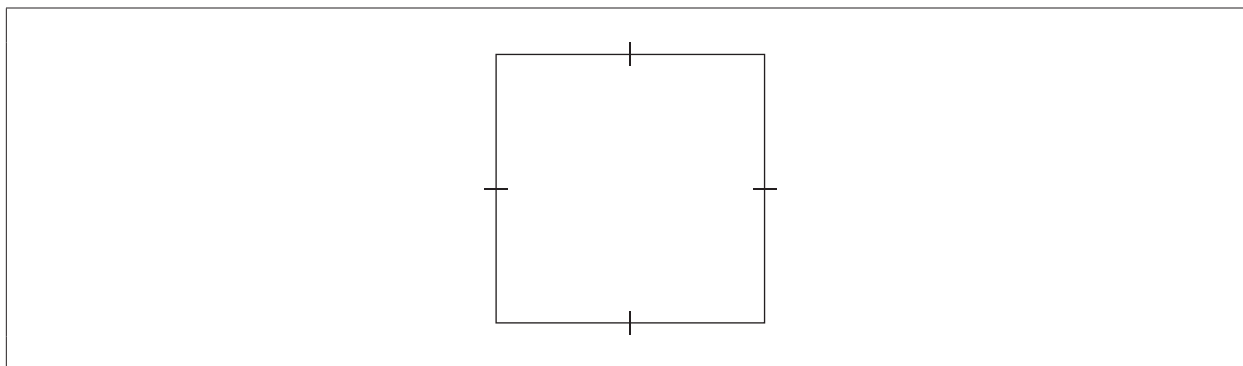   (Record the **numerator** in the **first** column
and the **denominator** in the **second** columns
on the answer sheet.)

5. What is the value of $[-(-3^0)^2 - (2^2)^1]^2$?

    Answer: _____

    (Record your answer as an **integer** value on the answer sheet.)

6. What is $4^3 - 3^4$?

    Answer: _____

    (Record your answer as an **integer** value on the answer sheet.)

7. In simplest form, what is the value of
$\left(3.25 + \dfrac{3}{4}\right) \div 0.25$?

    Answer: _____

    (Record your answer as an **integer** value on the answer sheet.)

8. Evaluate 17^2.

    Answer: _____

    (Record your answer as an **integer** value on the answer sheet.)

9. Solve for x in the following equation.

$2.6 + x = 4x + 1.4$

Answer: $x =$ _____

(Record your answer on the answer sheet.)

10. Solve for x in the following equation.

$0.4(20 - 10x) = 14x - 28$

Answer: $x =$ _____

(Record your answer as an **integer** value on the answer sheet.)

11. What is the value of $0.25 + 0.5 + \frac{2}{3}$ expressed as a fraction in simplest form?

Answer: ☐☐ (Record in the **first** and **second** columns)

☐☐ (Record in the **third** and **fourth** columns)

(Record the **numerator** in the **first** and **second** columns and the **denominator** in the **third** and **fourth** columns on the answer sheet.)

12. What is the approximate square root of $\sqrt{\frac{145}{4}}$ to the nearest whole number?

Answer: _____

(Record your answer on the answer sheet.)

To go back after using an internal link, simultaneously press and hold Alt ← (in some browsers).

13. If the area of the square shown above is 135 cm², what is the approximate side length to the nearest centimetre?

Answer: _____

(Record your answer on the answer sheet.)

14. Order the following rational numbers from **smallest** value to **greatest** value, using the numbers **1**, **2**, **3**, and **4**.

Use the number **1** to represent the **smallest** value
and the number **4** to represent the **greatest** value.

Answer: _____, _____, _____ _____

$\sqrt{\dfrac{4}{9}}$ $\qquad$ $-1.\overline{5}$ $\qquad$ -1.75 $\qquad$ $-\dfrac{8}{5}$

(Record all **four digits** of your answer on the answer sheet.)

15. What is the value of $0.4 \div 2 - \sqrt{\dfrac{9}{36}} \times 1\dfrac{1}{5}$?

Answer: _____

(Record your answer on the answer sheet.)

$$\sqrt{51} \quad \sqrt{55} \quad \sqrt{61} \quad \sqrt{66}$$
$$\sqrt{71} \quad \sqrt{77} \quad \sqrt{81} \quad \sqrt{88}$$
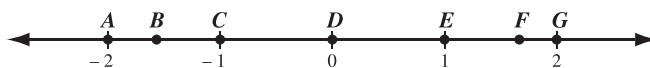
16. How many of the square roots shown above have a value that is between 8 and 9?

Answer: _____

(Record your answer on the answer sheet.)

Use the following information to answer question 17.

Consider the inequality $3x - 4 \leq 2x - 5$.

17. How many of the points labelled with a letter on the number line above satisfy the inequality?

Answer: _____ **points**

(Record your answer on the answer sheet.)

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Appendix 2

Levels of Item Complexity

Low Complexity	**Moderate Complexity**	**High Complexity**
Items in this category require students to rely heavily on recalling and recognizing previously learned concepts and principles. Items typically specify what students are to do, which is often to carry out some procedure that can be performed mechanically. Students would not be expected to come up with original methods for finding a particular solution. The following list illustrates some of the demands that items of low complexity may require of students:	Items in this category involve more flexibility of thinking and choice among alternatives than do those in the low-complexity category. They require a response that goes beyond the habitual, is not specified, and may require more than a single step. The student is expected to decide what to do, using informal methods of reasoning and problem-solving strategies, and to bring together skill and knowledge from various domains. The following list illustrates some of the demands that items of moderate complexity may require of students:	Items in this category make heavy demands on students by requiring them to engage in more-abstract reasoning, planning, analysis, judgment, and creative thought. The following list illustrates some of the demands that items of high complexity may require of students:

- Recall or recognize a fact, term, or property
- Recognize an example of a concept
- Perform a specified procedure
- Evaluate an expression in an equation or formula for a single variable
- Solve a one-step word problem
- Draw or measure simple 2-D shapes or 3-D objects
- Retrieve information from a graph, table, or figure

- Solve a word problem requiring multiple steps
- Compare figures or statements
- Provide a justification for steps in a solution process
- Interpret a visual representation
- Retrieve information from a graph, table, or figure and use it to solve a problem requiring multiple steps
- Interpret a simple argument
- Generalize a pattern

- Perform a procedure having multiple steps and multiple decision points
- Analyze similarities and differences between procedures and concepts
- Formulate an original problem, given a situation
- Solve a problem in more than one way
- Explain and justify a solution to a problem
- Describe, compare, and contrast solution methods
- Formulate a mathematical model for a complex situation
- Analyze the assumptions made in a mathematical model
- Analyze or produce a deductive argument
- Provide a mathematical justification

Adapted from Norman L. Webb, Wisconsin Center for Educational Research, "Depth-of-Knowledge Levels for Four Content Areas," March 28, 2002.

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Appendix 3

Grade 9 Mathematics Formula Sheet
The following information may be useful in writing this test.

Area (A)

Circle $\qquad A = \pi r^2$

Rectangle $\qquad A = lw$

Triangle $\qquad A = \dfrac{bh}{2}$

Volume (V)

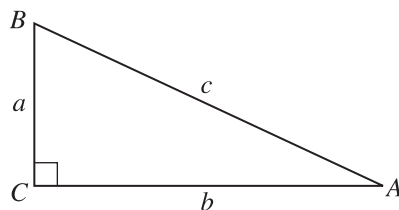Right Cylinder $\qquad V = \pi r^2 h$

Prism $\qquad V = (\text{Base Area})(h)$

Circumference (C)

Circle $\qquad C = \pi d$ or $2\pi r$

Pythagorean Theorem

$c^2 = a^2 + b^2$ where c is the hypotenuse

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Part A Answer Sheet

Name

Apply Label With Student's Name

To be completed by/for ALL students.

LAST NAME (please print)   FIRST NAME

To be completed ONLY for students without labels.

ALBERTA STUDENT NUMBER

SCHOOL NAME   SCHOOL CODE

BIRTH DATE (Year/Month/Day)

ACCOMMODATIONS USED
(mark all applicable)

1   6
2   7
3   8
4   9
5   10

SEE ACCOMMODATIONS IN THE
GENERAL INFORMATION BULLETIN
FOR MORE INFORMATION.

HOME EDUCATED
FOR THIS SUBJECT ○

COMPLETED THE
COURSE IN A YEAR
OTHER THAN THE
YEAR OF TESTING ○

○ January
○ May
○ June

Day

**GRADE 9
ACHIEVEMENT TEST
MATHEMATICS
Part A**

**IMPORTANT INSTRUCTIONS FOR
MARKING ANSWERS**

1. USE HB PENCIL ONLY.
2. MAKE HEAVY BLACK MARKS TO FILL
   CIRCLE COMPLETELY.
3. TO CHANGE AN ANSWER, ERASE THE OLD MARK
   CLEANLY BEFORE FILLING IN THE NEW CIRCLE.
4. DO NOT MAKE ANY STRAY MARKS ON
   THIS PAPER.

EXAMPLE

What is
1.5 – 2.0?

Answer:
–0.5

RIGHT

| – | 0 | . | 5 |

EXAMPLE

Alberta is a

A. territory
B. county
C. province
D. state

RIGHT

1 Ⓐ Ⓑ ● Ⓓ
2 Ⓐ Ⓑ ⊘ Ⓓ   WRONG
3 Ⓐ Ⓑ ● Ⓓ   WRONG
4 Ⓐ Ⓑ ⊗ Ⓓ   WRONG

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Education

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GRADE 9 MATHEMATICS ACHIEVEMENT TEST
PART A

A numeric-response answer grid with boxes numbered 1 through 20 and S1. Each question (1–20) has four answer boxes above a column of bubbles including −, ., 0–9. The S1 grid has two columns of bubbles 0–9 and is labeled (min).

Part B Answer Sheet

Name

Apply Label With Student's Name

To be completed by/for ALL students.

LAST NAME (please print)

FIRST NAME

To be completed ONLY for students without labels.

ALBERTA STUDENT NUMBER

SCHOOL NAME

SCHOOL CODE

BIRTH DATE (Year/Month/Day)

ACCOMMODATIONS USED
(mark all applicable)

1	6
2	7
3	8
4	9
5	10

SEE ACCOMMODATIONS IN THE
GENERAL INFORMATION BULLETIN
FOR MORE INFORMATION.

HOME EDUCATED FOR
THIS SUBJECT ○

COMPLETED THE COURSE
IN A YEAR OTHER THAN
THE YEAR OF TESTING ○

GRADE 9
ACHIEVEMENT TEST
MATHEMATICS
Part B

IMPORTANT INSTRUCTIONS FOR
MARKING ANSWERS

1. USE HB PENCIL ONLY.

2. MAKE HEAVY BLACK MARKS TO FILL
CIRCLE COMPLETELY.

3. TO CHANGE AN ANSWER, ERASE THE OLD MARK
CLEANLY BEFORE FILLING IN THE NEW CIRCLE.

4. DO NOT MAKE ANY STRAY MARKS ON
THIS PAPER.

EXAMPLE

What is
5.4 − 5.1?

Answer:
0.3

RIGHT

EXAMPLE

Alberta is a

A. territory
B. county
C. province
D. state

RIGHT

1 ● ⒷⒸⒹ
WRONG
2 Ⓐ ● ⒸⒹ
WRONG
3 ⒶⒷ ● Ⓓ
WRONG
4 ⒶⒷ Ⓧ Ⓓ

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GRADE 9 MATHEMATICS ACHIEVEMENT TEST
PART B

MULTIPLE CHOICE

#						#				
1	Ⓐ Ⓑ Ⓒ Ⓓ					12	Ⓐ Ⓑ Ⓒ Ⓓ			
2	Ⓐ Ⓑ Ⓒ Ⓓ					13	Ⓐ Ⓑ Ⓒ Ⓓ			
3	Ⓐ Ⓑ Ⓒ Ⓓ					14	Ⓐ Ⓑ Ⓒ Ⓓ			
4	Ⓐ Ⓑ Ⓒ Ⓓ					15	Ⓐ Ⓑ Ⓒ Ⓓ			
5	Ⓐ Ⓑ Ⓒ Ⓓ					16	Ⓐ Ⓑ Ⓒ Ⓓ			
6	Ⓐ Ⓑ Ⓒ Ⓓ					17	Ⓐ Ⓑ Ⓒ Ⓓ			
7	Ⓐ Ⓑ Ⓒ Ⓓ					18	Ⓐ Ⓑ Ⓒ Ⓓ			
8	Ⓐ Ⓑ Ⓒ Ⓓ					19	Ⓐ Ⓑ Ⓒ Ⓓ			
9	Ⓐ Ⓑ Ⓒ Ⓓ					20	Ⓐ Ⓑ Ⓒ Ⓓ			
10	Ⓐ Ⓑ Ⓒ Ⓓ					21	Ⓐ Ⓑ Ⓒ Ⓓ			
11	Ⓐ Ⓑ Ⓒ Ⓓ					22	Ⓐ Ⓑ Ⓒ Ⓓ			
23	Ⓐ Ⓑ Ⓒ Ⓓ									
24	Ⓐ Ⓑ Ⓒ Ⓓ									
25	Ⓐ Ⓑ Ⓒ Ⓓ									
26	Ⓐ Ⓑ Ⓒ Ⓓ									
27	Ⓐ Ⓑ Ⓒ Ⓓ									
28	Ⓐ Ⓑ Ⓒ Ⓓ									
29	Ⓐ Ⓑ Ⓒ Ⓓ									
30	Ⓐ Ⓑ Ⓒ Ⓓ									
31	Ⓐ Ⓑ Ⓒ Ⓓ									
32	Ⓐ Ⓑ Ⓒ Ⓓ									

NUMERICAL RESPONSE

1 2 3 4

5 6 7 8

Day

Time Taken: Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ

○ January
○ May
○ June

Appendix 5

Part A Instructions Pages

Grade 9 Achievement Test

Mathematics
Part A

Numerical Response

Description

The Grade 9 Mathematics Achievement Test consists of two parts:

- Part A contains 20 numerical-response questions and was designed to be completed in 20 minutes.

- Part B contains 32 multiple-choice questions and 8 numerical-response questions. Part B was designed to be completed in 70 minutes.

Time: 90 minutes. You have up to 180 minutes to complete this test plus an additional 30 minutes should you need it. The extra time can be shared between Part A and Part B, as decided by your teacher.

A formula sheet is included in this booklet.

Instructions

- Use **only** an **HB** pencil to mark your answer.

- You may use manipulatives; however, use of a calculator is **not** permitted.

- Try to answer every question.

- If you change an answer, **erase** your first mark or marks **completely**.

You may write in this booklet if you find it helpful. Make sure that your answers to the numerical-response questions are placed on the answer sheet.

2018

Numerical Response

- Record your answer on the answer sheet provided by writing it in the boxes.

- **Enter your answer, with one digit per box, beginning in the left-hand box. A decimal point, if needed, goes in its own box. A negative sign (–), if needed, goes in its own box. Do not include a plus sign (+) if the answer is positive. Leave any unused boxes blank.**

- You may fill in the bubbles below each of your answers **after** you have completed this test.

Example 1

What is $1 - 5$?

Answer: -4

Record –4 on the answer sheet ⟶

Fill in the corresponding circles

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Example 2

If $x = 4.6,$ then what does $2x$ equal?

Answer: 9.2

Record 9.2 on the answer sheet →

| 9 | . | 2 | |

Fill in the corresponding circles

Example 3

What is 5.4 – 5.1?

Answer: 0.3

Record 0.3 on the answer sheet →

| 0 | . | 3 | |

Fill in the corresponding circles

Example 4

What is 7.5 × 3?

Answer: 22.5

Record 22.5 on the answer sheet →

| 2 | 2 | . | 5 |

Fill in the corresponding circles

Example 5

What is the value of $\frac{1}{4} + \frac{1}{2}$ expressed as a fraction?

Answer: $\frac{3}{4}$ (Record in the **first** box) (Record in the **second** box)

Record 34 on the answer sheet →

| 3 | 4 | | |

Fill in the corresponding circles

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Example 6

78.5 – 24.2 = 5_.3

In the equation above, which digit could be placed in the blank space to make the equation correct?

(Record **only the missing digit** on the answer sheet.)

Answer: 5**4**.3

Record 4 on the answer sheet ⟶

Fill in the corresponding circles

Example 7

786.5 – 244.2 = 5__ __.3

In the equation above, which two digits could be placed in the blank spaces to make the equation correct?

Answer: 5__ __.3

(Record **only the two missing digits, in order,** on the answer sheet.)

Answer: 5**4 2**.3

Record 42 on the answer sheet ⟶

Fill in the corresponding circles

Part B Instructions Pages

Grade 9 Achievement Test

Mathematics
Part B

Multiple Choice and Numerical Response

Description

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Time: 90 minutes. You have up to 180 minutes to complete this test plus an additional 30 minutes should you need it. The extra time can be shared between Part A and Part B, as decided by your teacher.

A formula sheet is included in this booklet.

You may write in this booklet if you find it helpful. Make sure that your answers to the multiple-choice and numerical-response questions are placed on the answer sheet.

2018

Instructions

- Use **only** an **HB** pencil to mark your answer.

- You may use a ruler, manipulatives, and a calculator; however, a graphing calculator is **not** permitted. Use of a protractor is also **not** permitted.

- Read each question carefully and choose the **correct** or **best** answer.

- Try to answer every question.

- If you change an answer, **erase** your first mark **completely**.

- Now read the detailed instructions for answering multiple-choice and numerical-response questions.

To go back after using an internal link, simultaneously press and hold Alt ← (in some browsers).

Multiple Choice

- Each question has four possible answers from which you are to choose the **correct** or **best** answer.

- Locate the question number on the separate answer sheet provided and fill in the circle that corresponds to your choice.

Example

If $x = 3$, what is the value of $x + 8$?

A. 10
B. 11
C. 12
D. 13

Answer: 11

Answer Sheet

Ⓐ ● Ⓒ Ⓓ

Numerical Response

- Record your answer on the answer sheet provided by writing it in the boxes and then by filling in the corresponding circles.

- **Enter your answer, one digit per box, beginning in the left-hand box. A decimal point, if needed, goes in its own box. Leave any unused boxes blank.**

Calculation Question and Solution

Example 1

What is $5 - 1$?

Answer: 4

Record 4 on the answer sheet ⟶

Example 2

If $x = 4.6$, then what does $2x$ equal?

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

Answer: 9.2

Record 9.2 on the answer sheet ⟶

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Example 3

What is 5.4 – 5.1?

Answer: 0.3

Record 0.3 on the answer sheet → `0 . 3`

Fill in the corresponding circles

Example 4

What is 7.5 × 3?

Answer: 22.5

Record 22.5 on the answer sheet → `2 2 . 5`

Fill in the corresponding circles

Matching Question and Solution

Example

The following pictures are of 2-D shapes.

| 1 | 2 | 3 | 4 |
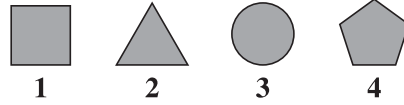
Match each shape, as numbered above, with its name, as given below.

_____ _____ _____ _____
Triangle   Pentagon   Circle   Quadrilateral

(Record all **four digits** of your answer in the numerical-response section on the answer sheet.)

Answer: 2431

Record 2431 on the answer sheet → `2 4 3 1`

Fill in the corresponding circles

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Contacts 2017–2018

Provincial Assessment Sector

*NEW

Dan Karas, Executive Director
Provincial Assessment Sector
780-422-4848
Dan.Karas@gov.ab.ca

Grade 3, 6, and 9 Provincial Assessment

Nicole Lamarre, Director
Student Learning Assessments and
Provincial Achievement Testing
780-427-6204
Nicole.Lamarre@gov.ab.ca

*NEW

Gilbert Guimont, Director
French Assessment
780-422-3535
Gilbert.Guimont@gov.ab.ca

Senior Managers

Julia Lee-Schuppli
Gr. 3 English Language/Literacy
780-422-3338
Julia.LeeSchuppli@gov.ab.ca

Renate Taylor Majeau
Gr. 3 Numeracy (English and French)
780-422-2656
Renate.TaylorMajeau@gov.ab.ca

Peggy Lee Peters
Gr. 3 Francophone and
French Immersion Literacy
780-422-5464
PeggyLee.Peters@gov.ab.ca

Robyn Pederson
Gr. 6 English Language Arts and Social Studies
780-415-2023
Robyn.Pederson@gov.ab.ca

Denis Dinel
Gr. 6 and 9 Français/French Language Arts
780-422-9424
Denis.Dinel@gov.ab.ca

Kelly Rota
Gr. 6 and 9 Mathematics
780-422-4365
Kelly.Rota@gov.ab.ca

Kelty Findlay
Gr. 6 and 9 Science
780-415-6120
Kelty.Findlay@gov.ab.ca

Harvey Stables
Gr. 9 English Language Arts and Social Studies
780-422-2913
Harvey.Stables@gov.ab.ca

Ray Shapka
Knowledge & Employability (K&E)
780-422-2786
Ray.Shapka@gov.ab.ca

Exam Administration

Joanne Neal, Director   *NEW
Exam Administration
780-492-1495
Joanne.Neal@gov.ab.ca

Pascal Couture, Senior Manager   *NEW
Exam Administration and Production
780-492-1462
Pascal.Couture@gov.ab.ca

Pamela Klebanov, Senior Manager
Business Operations and Special Cases
780-492-1443
Pamela.Klebanov@gov.ab.ca

Steven Diachuk, Coordinator
Field Testing, Special Cases, and GED
780-492-1453
Steven.Diachuk@gov.ab.ca

Special Cases Team
Exam Administration
special.cases@gov.ab.ca

Inquiries about field testing
can be sent by email to
field.test@gov.ab.ca

**Provincial Assessment Sector
Mailing Address**

Provincial Assessment Sector, Alberta Education
44 Capital Boulevard
10044 108 Street NW
Edmonton AB T5J 5E6

Telephone: 780-427-0010
Toll-free within Alberta: 310-0000
Fax: 780-422-4200
Alberta Education website:
education.alberta.ca

Client Services Help Desk: *NEW
Telephone: 780-427-5318
Toll-free within Alberta: 310-0000
Email: cshelpdesk@gov.ab.ca
Office Hours:
Monday through Friday, 8:15 a.m. to 4:30 p.m.
The office is open during the lunch hour.

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