This document was written primarily for:

- Students
- Teachers
- Administrators
- Parents
- General Audience
- Others

Alberta Education, Government of Alberta

2019–2020

*Mathematics 6 Subject Bulletin*

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You can find provincial achievement test-related materials on the Alberta Education website.

Additional topics of interest are found in the General Information Bulletin.

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Grade 6 Mathematics Provincial Achievement Test

General description

The Grade 6 Mathematics Provincial Achievement Test consists of two parts:

- **Part A** consists of 15 numerical-response questions. There are 7 addition/subtraction questions and 8 multiplication/division questions. The format of the questions is numerical-response, which requires students to generate a response without the use of calculators (in symbolic form) to a particular problem, rather than selecting a response from a list of four options. Each response will consist of a maximum of 4 digits or, if a decimal point occurs in the answer, 3 digits. Examples of these questions are provided in Appendix 2.

- **Part B** consists of 40 multiple-choice questions that provide students with four response options, of which only one is correct. Examples of these questions are provided in Appendix 3.

Questions are categorized according to three levels of complexity: low, moderate, and high. (See Appendix 1 for a more detailed explanation of each complexity level.)

A dictionary, a thesaurus, or other reference materials are not permitted when writing the test.

Test administration

Students can take a break between the writing of parts A and B. Students may also write the parts in any order and on separate days according to the schedule set by the school authority.

**Part A** is designed to be completed in 20 minutes; however, each student may have up to 40 minutes to complete this part, should they need it.

**Part B** is designed to be completed in 70 minutes; however, each student may have up to 140 minutes to complete this part, should they need it.
Description of Grade 6 Mathematics provincial assessment standards

The following statements describe what is expected of Grade 6 students at the acceptable standard and the standard of excellence, based on outcomes in the [Grade 6 Mathematics 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 Grade 6 Mathematics Program of Studies.

<table>
<thead>
<tr>
<th>Acceptable standard</th>
<th>Standard of excellence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students who meet the acceptable standard in Grade 6 Mathematics are typically able to</td>
<td>Students who meet the standard of excellence in Grade 6 Mathematics are typically able to</td>
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<tr>
<td>• recall and apply a moderate number of mathematical properties to solve routine problems</td>
<td>• recall and apply a variety of mathematical properties to solve novel problems</td>
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<tr>
<td>• use familiar problem-solving strategies to solve routine problems</td>
<td>• use a variety of problem-solving strategies to solve novel problems</td>
</tr>
<tr>
<td>• connect and apply personal experiences and problem-solving strategies to solve routine problems</td>
<td>• connect and apply personal experiences and strategies to check and verify solutions to novel problems</td>
</tr>
<tr>
<td>• recall and apply mathematical concepts and operational terms to solve routine problems</td>
<td>• apply abstract-thinking skills to reframe mathematical concepts to solve novel problems</td>
</tr>
<tr>
<td>• apply computation skills and formal mathematics vocabularies to solve routine problems</td>
<td>• generate linguistic and non-linguistic representations of knowledge to solve novel problems</td>
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<tr>
<td>• recognize and describe numerical and non-numerical patterns</td>
<td>• demonstrate fluency in working with patterns represented concretely, pictorially, or symbolically</td>
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<tr>
<td>• use semantic knowledge to construct correct mental representations of word problems</td>
<td>• use semantic knowledge to construct and reframe correct mental representations of word problems</td>
</tr>
<tr>
<td>• use logical processes to analyze and solve routine problems</td>
<td>• use logical processes to analyze complex problems, reach conclusions, and justify or defend conclusions</td>
</tr>
<tr>
<td>• recognize and use mathematical patterns to make predictions when solving routine problems</td>
<td>• recognize, extend, create, and use mathematical patterns to make and justify predictions when solving novel problems</td>
</tr>
<tr>
<td>• test generalizations from patterns to reach conclusions</td>
<td>• make generalizations from patterns to reach conclusions</td>
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</table>
Use of calculators and manipulatives

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

Part B: Manipulatives and a calculator may be used; however, a scientific or graphing calculator is not permitted. In addition to the four standard mathematical functions of addition (+), subtraction (−), multiplication (×), and division (÷), a calculator is also permitted to have the following functions:

- percentage (%)
- square root (√)
- sign change (+/−)
- simple memory (M+, M−, MC, MR)

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 protractor, 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.

Scoring and reporting

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.
## Blueprints

<table>
<thead>
<tr>
<th>Test Component</th>
<th>Number of Questions</th>
<th>Question Format</th>
<th>Weighting on Total Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Part A</em></td>
<td>15</td>
<td>Numerical Response</td>
<td>10%</td>
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<tr>
<td><em>Part B</em></td>
<td>40</td>
<td>Multiple Choice</td>
<td>90%</td>
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</table>

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<thead>
<tr>
<th>Content Domain of Test (Strand)</th>
<th><em>Part A</em>: Percentage of Questions</th>
<th><em>Part B</em>: Percentage of Questions</th>
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<tbody>
<tr>
<td>Number</td>
<td>100%</td>
<td>25–35%</td>
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<tr>
<td>Patterns and Relations</td>
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<td>20–30%</td>
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<tr>
<td>Shape and Space</td>
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<td>20–30%</td>
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<tr>
<td>Statistics and Probability</td>
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<td>10–20%</td>
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<tr>
<th>Cognitive Domain of Test (Complexity Level)</th>
<th><em>Part A</em>: Percentage of Questions</th>
<th><em>Part B</em>: Percentage of Questions</th>
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<tbody>
<tr>
<td>Low</td>
<td>100%</td>
<td>30–40%</td>
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<tr>
<td>Moderate</td>
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<td>40–50%</td>
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<tr>
<td>High</td>
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<td>15–25%</td>
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</tbody>
</table>
Preparing Students for the
*Grade 6 Mathematics Provincial Achievement Test*

**Suggestions for preparing students**

The best way to prepare students for writing the provincial achievement test is to teach the Mathematics Program of Studies 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 materials](#) 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 6 Mathematics Provincial Achievement Test*.

**Special-format practice tests**

To give students an opportunity to practise provincial achievement test-style questions and content in Braille, audio, large print, or coloured print versions, Alberta Education produces special-format practice tests for all subjects that have a provincial achievement test. Alberta schools with registered Alberta K–12 students may place orders for these tests. Braille versions 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 all students.

For the greatest benefit, special-format practice tests should be written under conditions similar to those of the corresponding provincial achievement test. The same rules regarding the use of resources and devices should be followed.

Braille versions must be returned to Alberta Education after use.

**For more information or to place an order, contact**

Laura LaFramboise  
Distribution Coordinator, Examination Administration  
780-641-9116 or Laura.LaFramboise@gov.ab.ca
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 questions 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 boldfaced 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.
Opportunities to Participate in Test-development Activities

Field testing

All provincial achievement 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 answering questions that could be used on future provincial 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.

*NEW 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.

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.

To be eligible to serve on a test-development working group, a teacher must currently be teaching the course in question or must have taught the course within the past three years.

Teachers participating in working groups are selected from the working-group nominees approved by superintendents of school jurisdictions. The call for nominations usually occurs in September. However, we will accept further nominations throughout the year. In some subjects, more teachers may be nominated for working groups than are needed. When teachers are selected, there must be a balance of first-time and experienced working-group members and regional representation by zone, school authority, and school. Unfortunately, not everyone whose name is submitted will be selected.
## Appendix 1

### Levels of Item Complexity

<table>
<thead>
<tr>
<th>Low Complexity</th>
<th>Moderate Complexity</th>
<th>High Complexity</th>
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<tbody>
<tr>
<td>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 list on the following page illustrates some of the demands that items of low complexity may make of students.</td>
<td>Items in this category involve more flexibility of thinking and choice among alternatives than those in the low-complexity category. Moderate-complexity items 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 skills and knowledge from various domains. The list on the following page illustrates some of the demands that items of moderate complexity may make of students.</td>
<td>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 list on the following page illustrates some of the demands that items of high complexity may make of students.</td>
</tr>
</tbody>
</table>
Levels of Item Complexity

<table>
<thead>
<tr>
<th>Low Complexity</th>
<th>Moderate Complexity</th>
<th>High Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Recall or recognize a fact, term, or property.</td>
<td>• Solve a word problem requiring multiple steps.</td>
<td>• Perform a procedure having multiple steps and multiple decision points.</td>
</tr>
<tr>
<td>• Recognize an example of a concept.</td>
<td>• Compare figures or statements.</td>
<td>• Analyze similarities and differences between procedures and concepts.</td>
</tr>
<tr>
<td>• Perform a specified procedure.</td>
<td>• Provide a justification for steps in a solution process.</td>
<td>• Formulate an original problem, given a situation.</td>
</tr>
<tr>
<td>• Evaluate an expression in an equation or a formula for a single variable.</td>
<td>• Interpret a visual representation.</td>
<td>• Solve a problem in more than one way.</td>
</tr>
<tr>
<td>• Solve a one-step word problem.</td>
<td>• Retrieve information from a graph, table, or figure and use it to solve a problem requiring multiple steps.</td>
<td>• Explain and justify a solution to a problem.</td>
</tr>
<tr>
<td>• Draw or measure simple 2-D shapes or 3-D objects.</td>
<td>• Interpret a simple argument.</td>
<td>• Describe, compare, and contrast solution methods.</td>
</tr>
<tr>
<td>• Retrieve information from a graph, table, or figure.</td>
<td>• Generalize a pattern.</td>
<td>• Formulate a mathematical model for a complex situation.</td>
</tr>
</tbody>
</table>

Appendix 2

Part A: Instructions pages

To the Teacher:
Read these instructions to your students.

Description
• There are 15 numerical-response questions on this test.

Time: 20 minutes. You have up to 40 minutes to complete this test should you need it.

Instructions
• Turn to the last page of the test booklet. Carefully fold and tear out the machine-scored answer sheet along the perforation.
• Use only an HB pencil to mark your answer.
• You may use manipulatives; however, use of a calculator is not permitted.

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

2020
Example 1

Answer: 4

Record 4 on the answer sheet

Example 2

Answer: 9.2

Record 9.2 on the answer sheet

Example 3

Answer: 0.3

Record 0.3 on the answer sheet

Example 4

Answer: 22.5

Record 22.5 on the answer sheet
Part A: Sample questions

1. What is 32.5 + 18.6?
   Answer: __________

2. What is 4.69 + 0.85?
   Answer: __________

3. What is 35.2 – 18.5?
   Answer: __________

4. What is 18 × 40?
   Answer: __________

5. What is 344 ÷ 4?
   Answer: __________

6. What is 3 + 0.6 + 4.75?
   Answer: __________

7. What is 5307 – 2299?
   Answer: __________

8. What is 25.7 × 3?
   Answer: __________
9. In the equation above, which digit could be placed in the box to make the equation correct?

   Answer: 120 \[.5

10. What is 18.9 ÷ 3?
    
    Answer: 

11. What is 32.4 ÷ 8?
    
    Answer: 

12. What is 8.2 – 4.05?
    
    Answer: 

13. What is 3 – 1.68?
    
    Answer: 

14. What is 6.05 ÷ 5?
    
    Answer: 

15. What is 32 × 19?
    
    Answer: 

Use the following information to answer question 9.

\[240.7 \times 5 = 120 \square .5\]
### IMPORTANT INSTRUCTIONS FOR MARKING ANSWERS

**Part A**

**MATHEMATICS**

**GRADE 6**

**PROVINCIAL ACHIEVEMENT TEST**

**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**

Alberta is a ________.

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

Answer: C. province

**EXAMPLE**

What is 5.4 - 5.1?

Answer: 0.3

**EXAMPLE**


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**GENERAL INFORMATION BULLETIN**

**ACCOMMODATIONS USED**

For more information, see Accommodations in the General Information Bulletin.

**APPLICATION**

- HOME EDUCATED
- COMPLETED THE COURSE IN A YEAR OTHER THAN THE YEAR OF TESTING
- TO BE COMPLETED BY/FOR ALL STUDENTS

**APPLICATION**

- To be completed by/for students without labels.

**APPLICATION**

- To be completed by/for all students.

**APPLICATION**

Apply label with student’s name.
### Mathematics 6 | Alberta Education, Provincial Assessment Sector

#### GRADE 6 MATHEMATICS

<table>
<thead>
<tr>
<th>Part A</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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Fold and tear along perforation.
Part A: Sample answer sheet—key
Appendix 3

Part B: Instructions page

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Grade 6 Provincial Achievement Test

Mathematics

Part B

To the Teacher:

• Read these instructions to your students.

Description

• There are 40 multiple-choice questions on this test.

Time: 70 minutes. You have up to 140 minutes to complete this test should you need it.

Instructions

• Turn to the last page of the test booklet. Carefully fold and tear out the machine-scored answer sheet along the perforation.
• Use only an HB pencil to mark your answer.
• Manipulatives (e.g., a protractor, a ruler, tracing paper) and a calculator are recommended; however, a scientific or graphing calculator is not permitted.
• You may not use a dictionary, a thesaurus, or other reference materials.
• Read each question carefully and choose the correct or best answer.

Example

If \( x = 3 \), what is the value of \( x + 8 \)?

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

Answer: 11

Answer Sheet

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

2020
Part B: Sample questions

Low complexity

Use the following information to answer question 1.

A new school is being built in a community. Each month the local newspaper reports on the progress of the new school’s construction. A Grade 6 class graphs this information.

1. During how many months did construction progress by more than 10%?
   
   A. 3
   B. 4
   C. 5
   D. 6
Moderate complexity

Use the following information to answer question 2.

Candace earns $5.75 an hour for babysitting and $6.40 an hour for doing yardwork. Candace saves the money she earns from 8 hours of babysitting and 3 hours of yardwork.

2. How much more money does Candace need to save to buy a camera that costs $119.80?
   A. $51.35
   B. $54.60
   C. $65.20
   D. $68.45
Use the following information to answer question 3.

A total of 10 packages are arranged in the back of a cargo truck as shown in the diagram below. One large package has the same mass as two medium packages. One medium package has the same mass as three small packages.

3. How many small packages need to be loaded onto the right side of the truck to balance the load?
   
   A. 8
   B. 9
   C. 12
   D. 13
**Part B: Sample answer sheet—blank**

- **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**
  - Alberta is a ______
    - A. territory
    - B. county
    - C. province
    - D. territory
  - Alberta is a ________
    - A. territory
    - B. county
    - C. province
    - D. territory

- **APPLICATION WITH STATEMENT**
  - Alberta is a province.

- **APPLICATION IN THE GENERAL INFORMATION BULLETIN**
  - To be completed by/or for all students.
  - Apply label with student's name.

- **APPLICATION IN THE GENERAL INFORMATION BULLETIN**
  - School name
  - School code
  - Alberta student number
  - Birth date (year/month/day)
  - School code
  - Alberta student number
  - School name

- **APPLICATION IN THE GENERAL INFORMATION BULLETIN**
  - To be completed only for students without labels.
  - First name
  - Last name (choose from: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10)

- **APPLICATION IN THE GENERAL INFORMATION BULLETIN**
  - Accreditations used
  - Test supervisor initials
  - The year of testing
  - Accommodations in the
  - General information bulletin
  - See accommodations in the
  - General information bulletin

- **APPLICATION IN THE GENERAL INFORMATION BULLETIN**
  - Part B: Mathematics
  - Provincial achievement test
  - Grade 6
GRADE 6 MATHEMATICS Part B

1 2 3 4 5 6 7 8 9 10
A B C D

11 12 13 14 15 16 17 18 19 20
A B C D

21 22 23 24 25 26 27 28 29 30
A B C D

31 32 33 34 35 36 37 38 39 40
A B C D

Day
○ January
○ May
○ June

Time Taken:
A B C D
Part B: Sample answer sheet—key
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Inquiries about special cases, provincial achievement test accommodations, and special-format materials can be sent by email to  
special.cases@gov.ab.ca

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

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education.alberta.ca

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Toll-free within Alberta: 310-0000  
Email:  
WFDhelpdesk@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.