

Grade 9 Released 2019

# Alberta Provincial Achievement Test

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# Mathematics

Part A

This document was written primarily for:

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

Alberta Education, Government of Alberta

2019–2020

*Mathematics 9 Released Alberta Provincial Achievement Test*

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Please note that if you cannot access one of the direct website links referred to in this document, you can find provincial achievement test-related materials on the [Alberta Education website](#).



# Introduction

This document contains a full release of the *2019 Grade 9 Mathematics Provincial Achievement Test Part A*.

A test blueprint and an answer key that includes the difficulty, reporting category, and item description for each question are also included. These materials, along with the [program of studies](#) and [subject bulletin](#), provide information that can be used to inform instructional practice.

*Assessment Highlights* provides information about the overall test, the test blueprint, and student performance on the provincial achievement test that was administered in 2019. Also provided is information on student performance at the acceptable standard and the standard of excellence on selected items from the *2019 Grade 9 Mathematics Provincial Achievement Test*. This information is intended for teachers and is best used in conjunction with multi-year and detailed school reports that are available to schools via the Stakeholder File Exchange (SFX). *Assessment Highlights* for all provincial achievement test subjects and grades are posted on the Alberta Education website every year in the fall.

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The Alberta Education Internet address is [alberta.ca/education.aspx](http://alberta.ca/education.aspx).

# 2019 Grade 9 Mathematics Provincial Achievement Test Part A Blueprint

The following blueprint shows the strand by which questions were classified on the 2019 Grade 9 Mathematics Provincial Achievement Test Part A.

Content Reporting Categories	Question Number	Number (Percentage) of Questions
Rational Numbers	4, 5, 8, 9, 10, 15, 17	7 (35%)
Powers and Exponent Laws	1, 2, 20	3 (15%)
Square Roots of Perfect and Non-perfect Squares	11, 14, 16, 18	4 (20%)
Algebraic Expressions, Equations, and Inequalities	3, 6, 7, 12, 13, 19	6 (30%)
Number (Percentage) of Questions	20 (100%)	20 (100%)

## Additional Information

The table below provides information about each question: the keyed response, the difficulty of the item (the percentage of students who answered the question correctly on the English form of the test), the reporting category, and the item description.

Item	Key	Correct Response %	Reporting Category	Item Description
1	8	64.8	PE	Determine the product of two given powers with integral bases of which one power has an exponent of zero (Gr.9, N.2)
2	9	42.6	PE	Apply the exponent laws to evaluate an expression (Gr.9, N.1)
3	-1	60.7	AE	Solve a linear equation symbolically (Gr.9, PR.3)
4	3	61.7	RN	Solve a problem involving the addition of rational numbers in fraction form (Gr.9, N.3; Gr.7, N.5)
5	2	48.5	RN	Solve a problem involving the multiplication of rational numbers in fraction form (Gr.9, N.3; Gr.8, N.6)
6	4.5	48.2	AE	Solve a linear equation symbolically (Gr.9, PR.3)
7	-3	19.5	AE	Solve a linear equation symbolically that includes fractions (Gr.9, PR.3)
8	7.8	65.2	RN	Solve a problem involving the addition of decimal numbers (Gr.9, N.3; Gr.7, N.2)
9	3.6	20.4	RN	Apply the order of operations to evaluate a given expression with exponents (Gr.9, N.4)
10	2314	31.3	RN	Order given rational numbers involving square roots, fractions, powers, and decimals from the smallest value to the greatest value (Gr.9, N.3)
11	4	56.9	SR	Determine the sum of two perfect squares that are given in fraction form (Gr.9, N.5)

Item	Key	Correct Response %	Reporting Category	Item Description
12	38	41.4	AE	Solve a single variable linear inequality (Gr.9, PR.4)
13	-2.5	35.2	AE	Evaluate a single variable expression when given the value of the variable (Gr.9, PR.3)
14	6	62.4	SR	Determine how many perfect squares there are between two given whole numbers that are not perfect squares (Gr.9, N.5)
15	10	46.1	RN	Solve a problem involving the addition and subtraction of integers (Gr.9, N.3; Gr.7, N.6)
16	5	61.8	SR	Determine the approximate square root of a given rational number that is not a perfect square (Gr.9, N.6)
17	-6	47.1	RN	Apply the order of operations to evaluate a given expression with exponents (Gr.9, N.4)
18	34	40.1	SR	Determine which two whole numbers are nearest in value to a given square root (Gr.9, N.5)
19	-27	47.9	AE	Solve a linear equation symbolically that includes fractions (Gr.9, PR.3)
20	0	53.6	PE	Simplify and evaluate an expression by applying the exponent laws (Gr.9, N.2)



# 2019 Grade 9 Mathematics Provincial Achievement Test Part A

The questions presented in this document are from the previously secured *2019 Grade 9 Mathematics Provincial Achievement Test Part A* and are representative of the questions that form provincial achievement tests. These questions are released by Alberta Education for teacher and student use.

Test items start on the next page.

1. What is the value of  $2^3 \times 2^0$ ?

**Answer:** \_\_\_\_\_

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

\_\_\_\_\_

2. Simplify, and then evaluate  $\frac{(3^2)^4}{3(3)(3^4)}$ .

**Answer:** \_\_\_\_\_

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

\_\_\_\_\_

3. Solve for  $x$  in the following equation.

$$x + 1 = 2x + 2$$

**Answer:**  $x =$  \_\_\_\_\_

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

4. In simplest form, what is the value of  $\frac{1}{6} + \frac{1}{3} + 2\frac{1}{2}$ ?

**Answer:** \_\_\_\_\_

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

\_\_\_\_\_

5. In simplest form, what is the value of  $-\frac{1}{2} \times \left(-\frac{1}{3}\right) \times 12$ ?

**Answer:** \_\_\_\_\_

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

\_\_\_\_\_

6. Solve for  $x$  in the equation  $2(x - 2) = 4x - 13$ . Express your answer to the nearest tenth.

**Answer:**  $x =$  \_\_\_\_\_

(Record your answer as a **decimal** value on the answer sheet.)

7. Solve for  $x$  in the following equation.

$$2x = -4\left(\frac{1}{4} - \frac{3}{4}x\right) + 4$$

**Answer:**  $x =$  \_\_\_\_\_

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

\_\_\_\_\_

8. What is the value of  $13.2 + 0.05 - 5.45$ ?

**Answer:** \_\_\_\_\_

(Record your answer as a **decimal** value on the answer sheet.)

\_\_\_\_\_

9. Evaluate  $\frac{(2 + 2 \times 5)^2}{2(4 \times 5)}$  and express your answer as a decimal.

**Answer:** \_\_\_\_\_

(Record your answer as a **decimal** value on the answer sheet.)

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10. Order the rational numbers listed below from **smallest** value to **greatest** value, using the numbers 1, 2, 3, and 4.

Use the number 1 to represent the **smallest** value.

Use the number 4 to represent the **greatest** value.

**Order:** \_\_\_\_\_  
**Rational** \_\_\_\_\_  
**Number:**  $\sqrt{\frac{9}{25}}$        $\frac{3}{4}$        $(0.7)^2$        $0.\overline{75}$

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

\_\_\_\_\_

11. What is the value of  $\sqrt{\frac{100}{25}} + \sqrt{\frac{36}{9}}$ ?

**Answer:** \_\_\_\_\_

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

Use the following information to answer question 12.

Inequality Symbols			
Symbol 1	Symbol 2	Symbol 3	Symbol 4
$>$	$\geq$	$<$	$\leq$

12. Solve the inequality  $-3x + 7 > -17$ .

Answer:  $x$  \_\_\_\_\_

Symbol number	Value
(Record in the first box)	(Record in the second box)

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

\_\_\_\_\_

13. If  $x = -3$ , evaluate  $\left(\frac{x+8}{10} + x\right)$  to the nearest tenth.

Answer: \_\_\_\_\_

(Record your answer as a **decimal** value on the answer sheet.)

\_\_\_\_\_

14. How many whole numbers between 39 and 160 are perfect squares?

Answer: \_\_\_\_\_

(Record your answer on the answer sheet.)

Use the following information to answer question 15.

$$(-13) + 7 - (-2) + (-6) + \square = 0$$

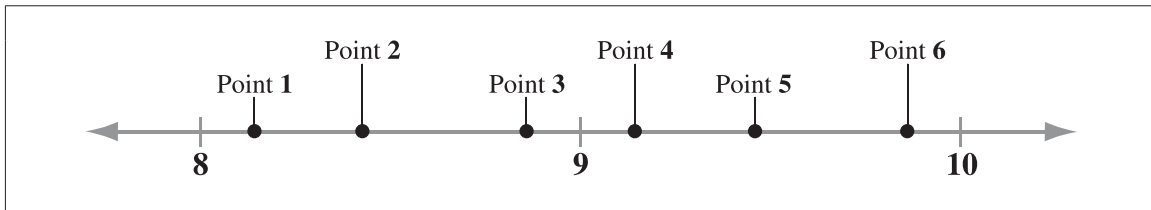
15. What is the value of the missing integer?

**Answer:** \_\_\_\_\_

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

\_\_\_\_\_

Use the following information to answer question 16.



16. Which point on the number line best represents the approximate value of  $\sqrt{90}$ ?

**Answer: Point** \_\_\_\_\_

(Record your answer on the answer sheet.)

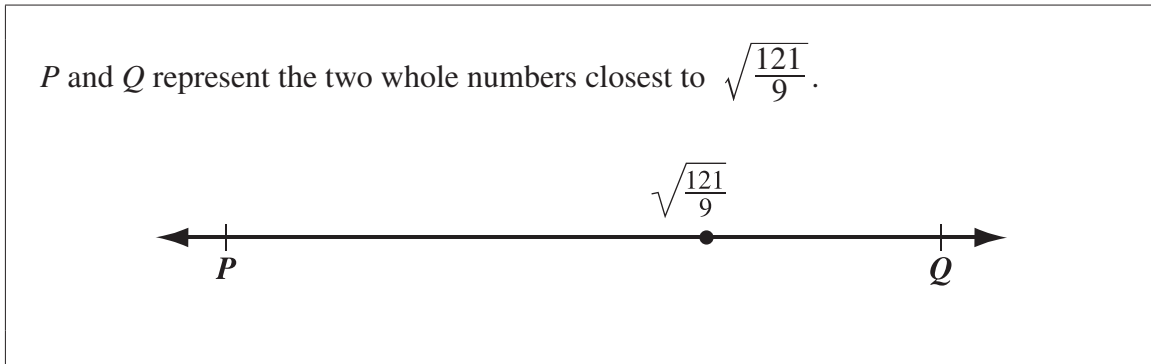
\_\_\_\_\_

17. Evaluate  $6 \div (2 - 3)^3$ .

**Answer:** \_\_\_\_\_

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

Use the following information to answer question 18.



18. Determine the values of  $P$  and  $Q$ .

Answer:            and             
 $P$   $Q$   
(Record in the first box) (Record in the second box)

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

\_\_\_\_\_

19. Solve for  $x$  in the equation  $\frac{x}{3} + 7 = -2$ .

Answer:  $x =$  \_\_\_\_\_

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



20. Simplify, and then evaluate  $(3^4 \times 3^3) - (3^7 \times 3^0)$ .

**Answer:** \_\_\_\_\_

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

*You have now completed the test.  
If you have time, you may wish to check your answers.*