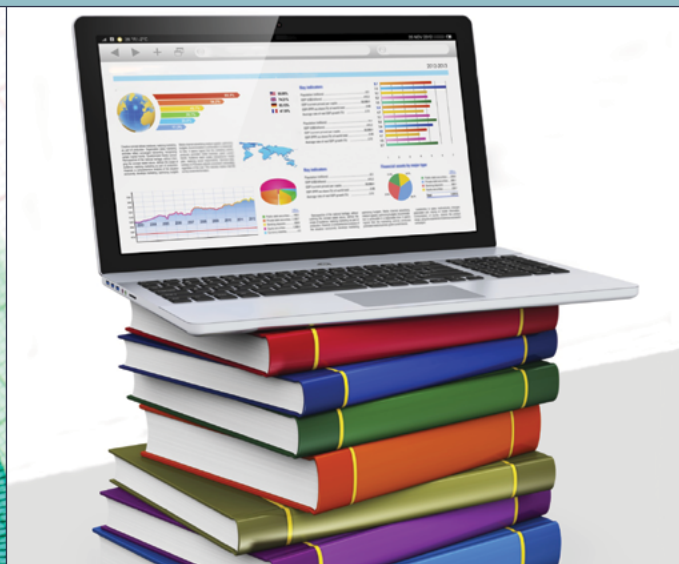
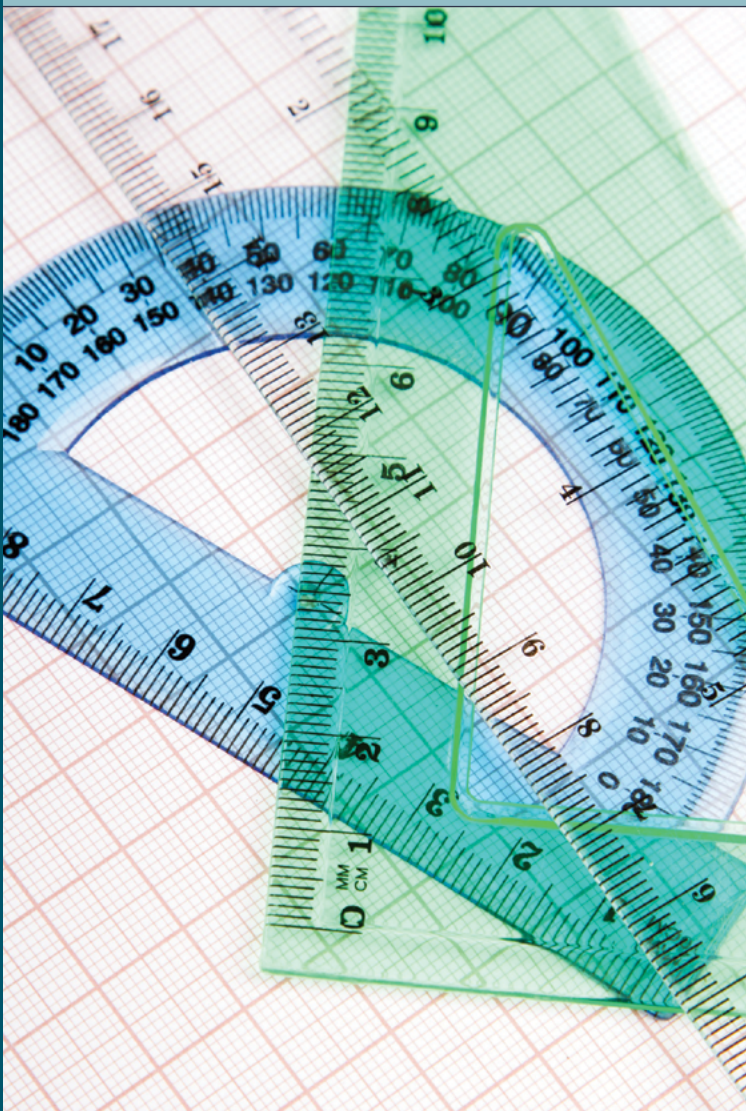


PCAP 2019

Mathematics, Reading, and Science

Highlights



PCAP 2019 HIGHLIGHTS

What is PCAP?

PCAP is a survey of the knowledge and skills of Canadian students in three core learning areas — mathematics, reading, and science. It was developed and is administered by the Council of Ministers of Education, Canada (CMEC).

Why was PCAP developed?

CMEC developed PCAP to ensure the availability of statistically valid, comparable data on student achievement in Canada. PCAP data will be used by education researchers, policy-makers, and government officials to make improvements to provincial and territorial education systems.

Who writes PCAP?

In the spring of 2019, approximately 30,000 students in Grade 8 (Secondary II in Quebec), in close to 1,600 schools from across the country, were tested. Mathematics was the major focus of the assessment. Reading and science were also assessed. Approximately 22,000 students were tested in English and 7,500 in French. Students from all provinces participated in PCAP 2019; students from the territories did not participate in the assessment.

What does PCAP assess?

The assessment is not tied to the curriculum of a particular province or territory but is instead a fair measurement of students' abilities to use their learning skills to solve problems in real-life contexts. It measures how well students are doing; it does not attempt to assess approaches to learning.

PCAP 2019 was the fifth cycle of PCAP to be completed, and it focused on mathematics, defined through four subdomains: *numbers and operations*, *geometry and measurement*, *patterns and relationships*, and *data management and probability*.

The provinces and territories work to ensure that the unique qualities of our country's education systems are taken into account in the assessment. Factors such as linguistic differences, rural and urban school locations, and cultural influences are all considered in both the assessment itself and in related contextual questionnaires. In addition, the common curricular framework for each subject, which guided the development of assessment items, incorporates an agreed-upon perspective for all provinces and territories that is based upon the latest pedagogical research.

Canadian students perform well in mathematics

In reporting levels of performance in mathematics, PCAP provides an overall picture of students' accumulated understanding in this domain by the end of Grade 8/Secondary II. The assessment categorizes results according to four levels of performance. Based on pan-Canadian curriculum expectations in mathematics, the expected level of performance is Level 2.

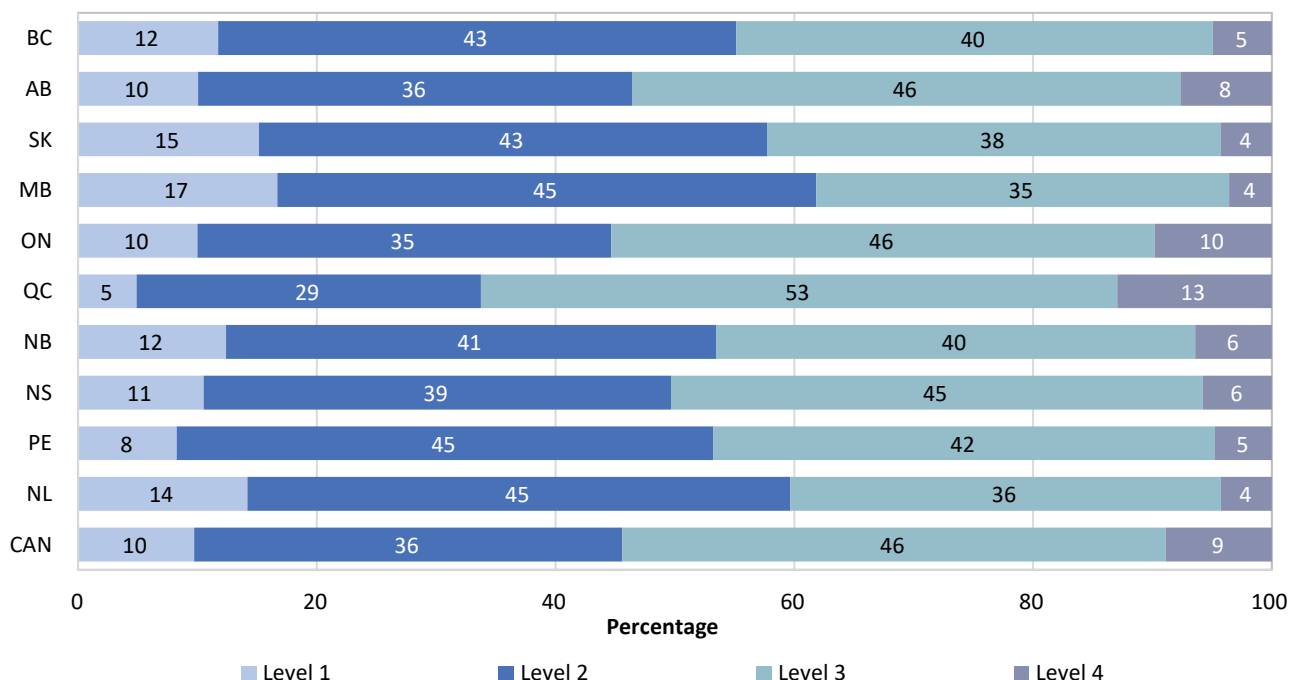
Level 2 is considered “baseline proficiency,” or the level at which students begin to demonstrate the competencies needed to participate effectively in real-life situations related to mathematics.

Description of Level 2 mathematics achievement (scores between 386 and 497)

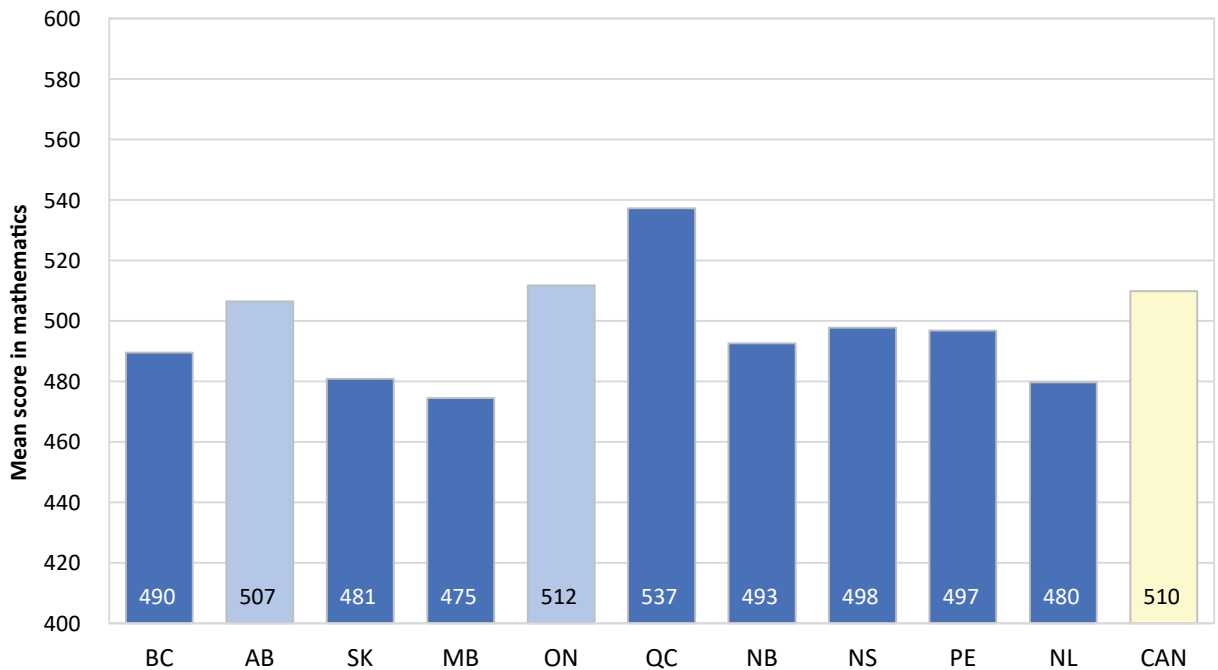
Students at Level 2 were able to:

- recall facts, definitions, or terms (e.g., parallel, perpendicular, range)
- carry out calculations involving one or more operations, including operations of different types
- use provided formulae
- compare and order numbers, including fractional representations
- identify the algebraic expression or equation for a given context
- solve problems involving probability
- solve problems that require proportional reasoning, including ratios
- calculate straightforward perimeter and area in a non-problem-solving context
- evaluate a variable expression
- retrieve information from tables, diagrams, or graphs, and apply it to solve a problem
- solve problems that are clearly defined as to what is required

Overall in Canada, 90 percent of Grade 8/Secondary II students performed at or above Level 2 in mathematics. At the higher end of the PCAP scale, 9 percent of Canadian students performed at Level 4. Across provinces, between 83 and 95 percent of students achieved the expected level (Level 2), while between 4 and 13 percent of students achieved the highest level of performance (Level 4).



Alberta, Ontario, and Quebec students performed at or above the Canadian mean score in mathematics



Note: Darker shade denotes significant difference compared to Canada

Reading and science

Although mathematics was the major domain in PCAP 2019, the assessment also measured performance in reading and science.

Highest average scores were achieved by Ontario students in reading and by Alberta, Ontario, and Prince Edward Island students in science

	Above* the Canadian mean	At the Canadian mean	Below* the Canadian mean
Reading	Ontario	British Columbia, Alberta, Prince Edward Island	Saskatchewan, Manitoba, Quebec, New Brunswick, Nova Scotia, Newfoundland and Labrador
Science	Alberta, Ontario, Prince Edward Island	British Columbia, Saskatchewan, Nova Scotia	Manitoba, Quebec, New Brunswick, Newfoundland and Labrador

* Denotes significant difference

Students enrolled in francophone schools achieved higher results in mathematics than those enrolled in anglophone schools. The opposite pattern is seen for reading and science.

In mathematics, a higher proportion of francophone students achieved at or above Level 2, as well as at the highest level of performance (Level 4), compared to anglophone students. When the results are examined by mean scores, students in francophone schools outperformed their peers in anglophone schools in mathematics in Canada overall and in British Columbia, Saskatchewan, Quebec, and New Brunswick. No difference was found in the remaining provinces that oversampled to obtain results by language group. In reading and science, the achievement gap favoured anglophone schools in Canada overall and in all provinces except Quebec, where no difference was found between the two language groups.

	Anglophone schools performed significantly better than francophone schools	Francophone schools performed significantly better than anglophone schools	No significant difference between school systems
Mathematics		British Columbia, Saskatchewan, Quebec, New Brunswick, Canada	Alberta, Manitoba, Ontario, Nova Scotia
Reading	British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia, Canada		Quebec
Science	British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia, Canada		Quebec

Girls performed better than boys in reading and science; there is no gender gap in mathematics in Canada overall

In 2019, there was no gender difference in Canada overall in the proportion of students at or above the expected level of performance in mathematics, although a higher proportion of boys achieved the highest performance level (Level 4). There was also no gender gap in mean scores in mathematics overall at the pan-Canadian level. Although boys outperformed girls in the *numbers and operations* subdomain, results were similar for girls and boys in the other three subdomains of mathematics at the pan-Canadian level. In both reading and science, a gender difference favouring girls was found in Canada overall.

At the provincial level, girls performed significantly better than boys in reading in all provinces, while the results were more variable for mathematics and science.

	Girls perform significantly better than boys	Boys perform significantly better than girls	No significant difference between girls and boys
Mathematics	New Brunswick, Prince Edward Island, Newfoundland and Labrador	British Columbia, Manitoba	Alberta, Saskatchewan, Ontario, Quebec, Nova Scotia, Canada
Reading	All provinces, Canada		
Science	Saskatchewan, Quebec, New Brunswick, Nova Scotia, Newfoundland and Labrador, Canada	Prince Edward Island	British Columbia, Alberta, Manitoba, Ontario

The fifth administration of PCAP allows for comparisons of achievement over time

Mathematics: In 2019, mathematics achievement increased across Canada and in most provinces over the results in 2010

Mathematics results at the pan-Canadian level in 2019 increased by 10 points over the baseline established in 2010. All provinces showed improvement, with the exception of Saskatchewan and Ontario, where results in 2019 remained the same as those in the baseline year. In most provinces, higher scores than in 2010 were attained by students in both anglophone and francophone school systems. Provincial results show that the achievement of girls and boys either improved or remained stable.

Reading: At the pan-Canadian level, there was an increase in reading achievement in 2019 over 2010

Reading scores in PCAP 2019 improved by 5 points in Canada overall, compared to the adjusted baseline year of 2010. Reading achievement in French-language schools improved in 2019 over 2010, while results remained stable in English-language schools. Girls in Canada as a whole achieved at a higher level than in 2010; for boys, there was no significant change.

Science: In 2019, there was an increase in science achievement over 2013 across Canada and in many provinces

Compared with the baseline established in PCAP 2013, pan-Canadian science achievement increased by 4 points in 2019. Students in English-language schools and girls achieved higher scores in 2019 than in the baseline year, while the results for French-language schools and boys remained stable. Within provinces, science results either remained stable or improved, with the exception of boys in Newfoundland and Labrador, where scores in 2019 were lower than those in 2013.

Coming soon...

Further analysis of the information collected through PCAP will help provide a better understanding of the extent to which important background variables are related to the differences in performance highlighted here. Secondary analysis undertaken as part of the forthcoming report *PCAP 2019: Contextual Report on Student Achievement in Mathematics* will explore how resources and school and classroom conditions, as well as student characteristics and family circumstances, may impact mathematics achievement among Grade 8/Secondary II students. Further analysis will be available in forthcoming issues of *Assessment Matters!*, a series of articles available on the CMEC website.

The next PCAP assessment is planned for 2023, with science as the major domain.

Further results are available in
PCAP 2019: Report on the Pan-Canadian Assessment of Mathematics, Reading, and Science.

This publication is available on the CMEC website: <http://www.cmec.ca>