

Questionnaire *Arrimage*  
*primaire-secondaire* :  
*concepts et processus*  
*mathématiques*  
(Transition From  
Elementary to Secondary  
School: Mathematical  
Concepts and Processes)

Presentation of Results



# Transition From Elementary to Secondary School

Mathematical concepts and processes



February 2020

Direction de la formation générale des jeunes  
Ministère de l'Éducation et de l'Enseignement supérieur

Québec 

## Information Document

Mathematics curriculum team  
Direction de la formation générale des jeunes

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## Purpose of this presentation of results

This document presents the complete results of the questionnaire on the transition from elementary to secondary school in mathematics. The results are presented separately for each section of the questionnaire. They are based solely on an analysis of the responses to the questionnaire and represent the views and opinions of the respondents. The findings presented in this document do not indicate the competency development of all Québec students, but are meant to encourage further analysis that will give rise to various discussions and ideas.

### Goal of the questionnaire<sup>1</sup>

This questionnaire is intended for teachers with experience in Elementary Cycle Three or Secondary Cycle One, as well as for education consultants in mathematics.

The team in charge of the Mathematics curriculum at the Direction de la formation générale des jeunes is asking for your collaboration in order to identify the mathematical concepts and processes that students find the most difficult at the end of Elementary Cycle Three. The results of this questionnaire will be used to determine the focus of the upcoming training sessions in order to support teachers in their professional practices so they can help students transition from elementary to secondary school mathematics. We would like you to share your observations concerning the concepts and processes that are studied for competency development purposes, but that do not seem to be quite as well understood by students upon entering secondary school. The questionnaire focuses on different concepts and processes taught in Elementary Cycle Three and divides this information up by branch of mathematics.

Please indicate the extent to which students understand the concepts and processes at the end of Elementary Cycle Three or at the beginning of Secondary Cycle One. In light of your overall observations, you must indicate whether students' understanding of each concept and process is 'very poor,' 'poor,' 'good' or 'very good.' If you cannot provide an answer for a certain concept or process, please select 'not observed.'

All the data collected will be anonymous. We simply ask that you identify your school board so that we can ensure that the entire Québec school system is represented.

To go over the mathematical concepts and processes taught in elementary or secondary school, please consult the *Progression of Learning – Mathematics* documents:

[Progression of Learning in Elementary School – Mathematics](#)

[Progression of Learning in Secondary School – Mathematics](#)

Thank you for your commitment to the education of tomorrow's students.

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<sup>1</sup> The passage under this heading was taken from the introduction to the questionnaire. [Free translation]

## About the questionnaire

The questionnaire was developed using various parts of the *Progression of Learning* documents for elementary and secondary school and was divided into eight sections. The first section presented sociodemographic data, indicating at which level of education and in which the type of school (school board or private school) the respondents work. Sections two to seven focused on the different branches of mathematics. Respondents were able to provide comments at the end of each of these six sections. The final section focused on the vocabulary related to the various mathematical concepts and processes. A Likert-type scale<sup>2</sup> was used for the statements in each section, meaning that respondents were asked to indicate students' level of understanding on a scale from 1 to 4 (1 – Very poor understanding; 2 – Poor understanding; 3 – Good understanding; 4 – Very good understanding). Respondents were also able to indicate when they had not made any observations regarding a specific concept or process. At the very end of the questionnaire, respondents were able to provide general comments.

## Respondents

Teachers and educational consultants in Elementary Cycle Three or Secondary Cycle One were invited to complete the questionnaire between September and November 2019. Of the 375 respondents who completed the questionnaire, 224 work at the elementary level, 94 at the secondary level and 12 at both levels, and the remaining 45 respondents did not indicate at which level of education they work. These 375 respondents are from 47 school boards as well as the private school system.

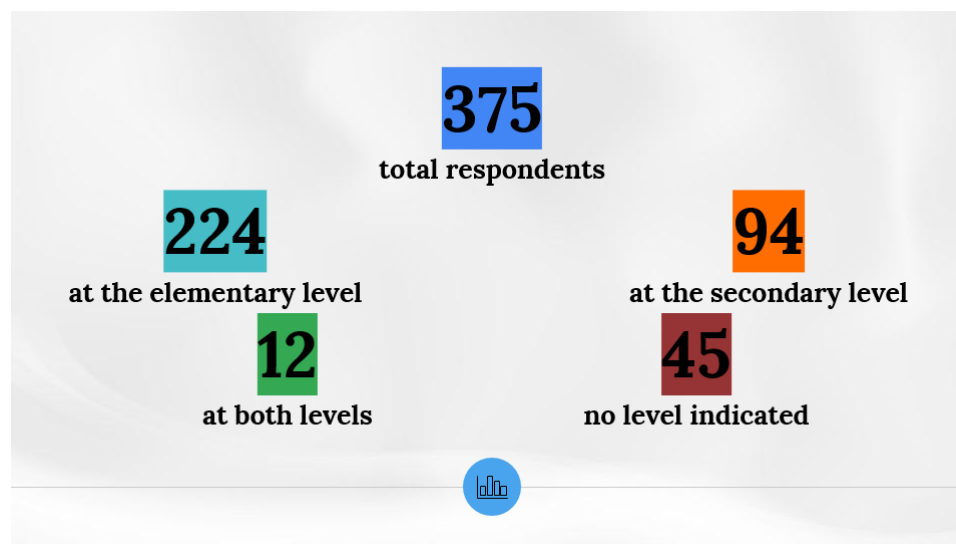


Figure 1: Breakdown of the respondents to the questionnaire

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<sup>2</sup> A Likert-type scale is an attitude scale consisting of a series of declarative statements for which respondents express an opinion (Fortin & Gagnon, 2016).

## Presentation of results

The tables on the following pages have been colour-coded in the same manner. The overall results of the questionnaire, taking into account all respondents, are found in the first column for each concept or process and are highlighted in yellow. The second column for each concept or process, highlighted in blue, indicates the results provided by elementary-level respondents. The third column for each concept or process, highlighted in orange, indicates the results provided by secondary-level respondents.

# Arithmetic

The Arithmetic section is divided into three parts:

- [Understanding real numbers](#)
- [Understanding operations involving real numbers](#)
- [Operations involving real numbers](#)

## Arithmetic: Understanding real numbers

Responses	Represents a fraction and verifies whether two fractions are equivalent			Represents, reads, writes, approximates and compares decimals			Represents, reads, writes and compares integers		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	7.2	8.9	4.3	13.3	13.4	13.8	53.3	60.7	42.6
Good understanding (%)	48.5	55.8	37.2	56.8	61.2	47.9	34.4	32.6	31.9
Poor understanding (%)	39.2	31.3	53.2	25.6	21.4	33.0	10.4	5.4	22.3
Very poor understanding (%)	3.2	1.8	3.2	2.1	1.8	3.2	1.3	0.9	2.1
Not observed (%)	1.9	2.2	2.1	2.1	2.2	2.1	0.5	0.4	1.1
VG + G understanding (%)	56.8	66.2	42.4	71.7	76.3	63.0	88.2	93.7	75.3
P + VP understanding (%)	43.2	33.8	57.6	28.3	23.7	37.0	11.8	6.3	24.7

## Arithmetic: Understanding operations involving real numbers

Responses	Determines the operation(s) to perform in a given situation			Determines numerical equivalencies using relationships between operations (the commutative, associative and distributive properties)			Translates a situation using a sequence of operations in accordance with the order of operations		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	6.7	6.7	7.4	2.7	3.6	1.1	8.8	10.7	3.2
Good understanding (%)	64.8	65.6	62.8	24.3	24.6	21.3	35.5	38.8	27.7
Poor understanding (%)	26.9	26.8	28.7	57.1	58.5	59.6	44.5	41.1	55.3
Very poor understanding (%)	1.6	0.9	1.1	14.1	12.1	16.0	9.1	6.7	11.7
Not observed (%)	0.0	0.0	0.0	1.9	1.3	2.1	2.1	2.7	2.1
VG + G understanding (%)	71.5	72.3	70.2	27.4	28.5	22.8	45.2	50.9	31.5
P + VP understanding (%)	28.5	27.7	29.8	72.6	71.5	77.2	54.8	49.1	68.5

## Arithmetic: Operations involving real numbers

Responses	Approximates the result of an operation			Determines in writing the sum of two natural numbers of up to 4 digits			Determines in writing the difference between two natural numbers of up to 4 digits whose result is greater than 0		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	6.9	8.9	2.1	62.9	69.2	47.9	52.3	58.5	39.4
Good understanding (%)	44.8	48.7	37.2	30.7	26.3	41.5	39.7	37.1	45.7
Poor understanding (%)	42.4	37.1	54.3	2.9	3.1	4.3	4.3	3.1	7.4
Very poor understanding (%)	3.7	3.6	5.3	0.3	0.0	1.1	0.8	0.4	2.1
Not observed (%)	2.1	1.8	1.1	3.2	1.3	5.3	2.9	0.9	5.3
VG + G understanding (%)	52.9	58.6	39.8	96.7	96.8	94.4	94.8	96.4	89.9
P + VP understanding (%)	47.1	41.4	60.2	3.3	3.2	5.6	5.2	3.6	10.1



Responses	Determines in writing the product of a three-digit natural number by a two-digit natural number			Determines in writing the quotient of a four-digit natural number and a two-digit natural number and expresses the remainder of a division as a decimal that does not go beyond the second decimal place			Determines in writing the result of a sequence of operations in accordance with the order of operations		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	31.5	31.7	28.7	9.9	11.6	6.4	12.0	12.1	8.5
Good understanding (%)	54.1	54.9	53.2	46.1	49.6	37.2	53.3	55.4	50.0
Poor understanding (%)	11.2	12.5	10.6	36.5	33.9	43.6	27.2	26.8	29.8
Very poor understanding (%)	0.3	0.0	1.1	2.9	1.8	6.4	4.0	1.8	9.6
Not observed (%)	2.9	0.9	6.4	4.5	3.1	6.4	3.5	4.0	2.1
VG + G understanding (%)	88.2	87.4	87.5	58.7	63.1	46.6	67.7	70.2	59.8
P + VP understanding (%)	11.8	12.6	12.5	41.3	36.9	53.4	32.3	29.8	40.2

Responses	Reduces a fraction to its simplest form			Adds and subtracts fractions when the denominator of one fraction is a multiple of the denominator of the other fraction			Multiplies a natural number by a fraction and a fraction by a natural number			Performs mentally and in writing operations with decimals (up to two places)		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	11.2	11.6	11.7	7.2	6.7	7.4	7.2	8.0	5.3	4.8	5.8	4.3
Good understanding (%)	52.5	53.1	50.0	48.3	51.8	40.4	39.7	44.2	29.8	37.6	40.6	31.9
Poor understanding (%)	29.6	27.7	33.0	35.5	34.8	37.2	40.5	37.1	43.6	44.5	42.4	43.6
Very poor understanding (%)	4.0	4.5	2.1	4.8	1.8	10.6	7.5	4.9	14.9	8.5	7.6	11.7
Not observed (%)	2.7	3.1	3.2	4.3	4.9	4.3	5.1	5.8	6.4	4.5	3.6	8.5
VG + G understanding (%)	65.5	66.8	63.7	57.9	61.5	50.0	49.4	55.5	37.5	44.4	48.1	39.5
P + VP understanding (%)	34.5	33.2	36.3	42.1	38.5	50.0	50.6	44.5	62.5	55.6	51.9	60.5

Responses	Determines the divisibility of a number by 2, 3, 4, 5, 6, 8, 9 and 10			Switches, as needed, from one way of writing numbers to another: from fractional to percentage or decimal notation, and vice versa			Calculates the power of a natural number			Decomposes a natural number into prime factors		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	6.1	5.4	9.6	5.1	6.7	2.1	12.3	14.3	7.4	17.6	17.4	25.5
Good understanding (%)	38.1	38.8	31.9	38.4	46.4	26.6	58.4	58.5	55.3	50.7	53.1	42.6
Poor understanding (%)	46.1	46.9	45.7	45.9	39.3	53.2	26.7	23.7	37.2	26.1	25.4	23.4
Very poor understanding (%)	8.8	8.5	10.6	7.5	4.0	13.8	1.6	2.2	0.0	2.1	2.7	2.1
Not observed (%)	0.8	0.4	2.1	3.2	3.6	4.3	1.1	1.3	0.0	3.5	1.3	6.4
VG + G understanding (%)	44.6	44.4	42.4	44.9	55.1	30.0	71.4	73.8	62.8	70.7	71.5	72.7
P + VP understanding (%)	55.4	55.6	57.6	55.1	44.9	70.0	28.6	26.2	37.2	29.3	28.5	27.3

## Comments for the Arithmetic section

As part of the comments provided for this section, five elementary-level respondents indicated that the learning related to arithmetic is focused on carrying out mathematical procedures without sufficient emphasis on understanding the concepts involved. In this regard, two elementary-level and three secondary-level respondents mentioned that the meaning of fractions is not understood by students.

Five other respondents indicated that students find it especially difficult to understand number facts (multiplication tables). Of these five respondents, two work at the elementary-level, two at the secondary-level and one at both levels.

# Algebra

Responses	Describes series of numbers, using mathematical language			Adds new terms to a series when the first three terms or more are given			Determines the missing term in an equation		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	9.3	12.5	5.3	16.8	17.9	18.1	5.6	6.7	4.3
Good understanding (%)	52.8	59.8	35.1	60.5	62.5	50.0	36.5	39.3	29.8
Poor understanding (%)	23.2	19.6	27.7	13.6	14.7	12.8	46.1	45.5	46.8
Very poor understanding (%)	3.2	1.3	8.5	0.8	0.9	1.1	6.9	5.4	8.5
Not observed (%)	11.5	6.7	23.4	8.3	4.0	18.1	4.8	3.1	10.6
VG + G understanding (%)	70.2	77.5	52.8	84.3	83.7	83.1	44.3	47.5	38.1
P + VP understanding (%)	29.8	22.5	47.2	15.7	16.3	16.9	55.7	52.5	61.9

## Comments for the Algebra section

As part of the comments provided for this section, two respondents indicated that arithmetic sequences were challenging for students, while two others mentioned that students found unknown terms difficult to understand. In both cases, one respondent works at the elementary level and one at the secondary level.

## Geometry: Spatial sense and analyzing situations involving geometric figures

Responses	Describes and classifies triangles			Describes circles: radius, diameter, circumference, central angle			Tests Euler's relation on convex polyhedrons			Identifies congruent figures in frieze patterns and tessellations		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	24.5	25.9	23.4	18.1	22.8	8.5	6.4	10.3	0.0	19.2	25.4	4.3
Good understanding (%)	57.1	57.1	53.2	46.4	51.8	31.9	29.9	35.3	13.8	48.3	53.1	34.0
Poor understanding (%)	14.9	14.7	16.0	19.2	18.3	19.1	33.9	37.1	27.7	12.3	13.8	9.6
Very poor understanding (%)	0.5	0.0	2.1	4.0	0.9	11.7	7.5	7.1	7.4	1.1	0.4	3.2
Not observed (%)	2.9	2.2	5.3	12.3	6.3	28.7	22.4	10.3	51.1	19.2	7.1	48.9
VG + G understanding (%)	84.1	84.9	80.9	73.6	79.5	56.7	46.7	50.7	28.3	83.5	84.6	75.0
P + VP understanding (%)	15.9	15.1	19.1	26.4	20.5	43.3	53.3	49.3	71.7	16.5	15.4	25.0

## Measurement: Analyzing situations involving measurement

Responses	Establishes relationships between units of time: second, minute, hour, day			Estimates and determines the degree measure of angles			Establishes relationships between units of length: millimetre, centimetre, decimetre, metre and kilometre			Estimates and measures surface areas using conventional units: square centimetre, square decimetre, square metre		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	5.9	7.1	3.2	17.6	21.9	10.6	12.3	13.8	12.8	6.7	9.4	2.1
Good understanding (%)	42.9	46.4	34.0	55.2	56.3	48.9	58.1	59.8	52.1	46.7	50.0	35.1
Poor understanding (%)	41.9	41.1	45.7	22.1	18.8	30.9	26.1	23.7	30.9	36.3	37.1	37.2
Very poor understanding (%)	7.7	3.6	14.9	1.1	0.4	2.1	1.9	1.3	1.1	4.5	1.3	10.6
Not observed (%)	1.6	1.8	2.1	4.0	2.7	7.4	1.6	1.3	3.2	5.9	2.2	14.9
VG + G understanding (%)	49.6	54.5	38.0	75.8	80.3	64.4	71.5	74.7	67.0	56.7	60.7	43.8
P + VP understanding (%)	50.4	45.5	62.0	24.2	19.7	35.6	28.5	25.3	33.0	43.3	39.3	56.3

### Comments for the Geometry and Measurement section

As part of the comments provided for this section, five elementary-level respondents mentioned that learning related to geometry and measurement is focused on carrying out mathematical procedures without sufficient emphasis on understanding the concepts involved.

The measurement of time was also identified as a difficulty by two elementary-level and three secondary-level respondents.

In addition, according to four respondents (one working at the elementary level, two at the secondary level and one at both levels), students struggle with the relationships between units of length and the conversion of units of length.

## Analytic Geometry: Analyzing situations using analytic geometry

Responses	Locates objects/numbers on an axis, based on the types of numbers studied			Locates points in a Cartesian plane, based on the types of numbers studied (x- and y-coordinates of a point)		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	25.6	29.0	21.3	40.0	48.7	23.4
Good understanding (%)	48.3	49.1	45.7	46.9	45.1	48.9
Poor understanding (%)	18.1	13.8	21.3	7.7	2.7	16.0
Very poor understanding (%)	1.1	0.4	3.2	0.3	0.0	1.1
Not observed (%)	6.9	7.6	8.5	5.1	3.6	10.6
<b>VG + G understanding (%)</b>	<b>79.4</b>	<b>84.5</b>	<b>73.3</b>	<b>91.6</b>	<b>97.2</b>	<b>81.0</b>
<b>P + VP understanding (%)</b>	<b>20.6</b>	<b>15.5</b>	<b>26.7</b>	<b>8.4</b>	<b>2.8</b>	<b>19.0</b>

### Comments for the Analytic Geometry section

While respondents did provide comments for this section, none of them overlapped. We have thus decided not to present any comments from this section.

# Probability

Responses	Enumerates the possible outcomes of a random experiment			Uses tables or graphs to collect and display the outcomes of an experiment			Uses fractions, decimals or percentages to quantify a probability		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	9.9	13.8	3.2	15.2	22.8	3.2	3.7	4.5	3.2
Good understanding (%)	45.9	52.2	29.8	53.6	52.7	48.9	34.7	37.9	29.8
Poor understanding (%)	33.3	28.1	45.7	22.1	19.2	30.9	47.5	46.9	45.7
Very poor understanding (%)	3.2	1.3	6.4	3.2	2.2	4.3	6.4	5.8	5.3
Not observed (%)	7.7	4.5	14.9	5.9	3.1	12.8	7.7	4.9	16.0
VG + G understanding (%)	60.4	69.2	38.8	73.1	77.9	59.8	41.6	44.6	39.2
P + VP understanding (%)	39.6	30.8	61.3	26.9	22.1	40.2	58.4	55.4	60.8

## Comments for the Probability section

While respondents did provide comments for this section, none of them overlapped. We have thus decided not to present any comments from this section.

# Statistics

Responses	Interprets data presented in a table or a graph			Presents data using a table or graph			Understands and calculates the arithmetic mean		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	33.6	38.4	23.4	24.8	29.9	11.7	22.7	23.2	21.3
Good understanding (%)	53.9	54.0	53.2	57.6	58.0	55.3	57.6	54.0	64.9
Poor understanding (%)	8.8	6.3	13.8	13.6	9.8	24.5	13.3	14.7	9.6
Very poor understanding (%)	1.3	0.4	3.2	1.1	1.3	1.1	2.4	2.7	2.1
Not observed (%)	2.4	0.9	6.4	2.9	0.9	7.4	4.0	5.4	2.1
VG + G understanding (%)	89.6	93.2	81.8	84.9	88.7	72.4	83.6	81.6	88.0
P + VP understanding (%)	10.4	6.8	18.2	15.1	11.3	27.6	16.4	18.4	12.0

## Comments for the Statistics section

As part of the comments provided for this section, eight respondents mentioned that students were capable of calculating the mean of a distribution, but did not understand the concept of the mean itself. Two other respondents indicated that students had difficulty determining a missing data value in a distribution, given the mean of that distribution.

In addition, one respondent mentioned that students found it challenging to graduate the axes when drawing a bar graph or broken-line graph, while another stated that broken-line graphs represented a difficulty for elementary students. A third respondent indicated that their students struggled with interpreting circle graphs.



# Vocabulary

Responses	Natural number: place value (unit, tens place, hundreds place, . . ., million) even and odd numbers			Comparison: is equal to, is not equal to, is greater than, is bigger than, is less than, is smaller than			Exponentiation: exponent, power, squared, cubed		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	50.9	55.8	45.7	40.3	44.2	29.8	5.3	5.8	5.3
Good understanding (%)	44.3	39.3	50.0	50.9	49.6	56.4	39.2	42.4	33.0
Poor understanding (%)	4.5	4.9	4.3	8.5	6.3	12.8	50.9	47.3	56.4
Very poor understanding (%)	0.0	0.0	0.0	0.3	0.0	1.1	4.0	4.0	4.3
Not observed (%)	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.4	1.1
VG + G understanding (%)	95.5	95.1	95.7	91.2	93.8	86.2	44.8	48.4	38.7
P + VP understanding (%)	4.5	4.9	4.3	8.8	6.3	13.8	55.2	51.6	61.3

Responses	Fraction: numerator, denominator, equivalent fraction, irreducible fraction, whole, half and third			Decimal: tenths, hundredths and thousandths			Operation: sum, difference, quotient, product, divisor, dividend, inverse operation, multiple, product and factor			Series: pattern		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	17.6	21.0	13.8	22.1	25.4	19.1	10.1	11.6	8.5	18.7	25.4	8.5
Good understanding (%)	55.7	54.9	55.3	56.3	55.8	50.0	46.1	46.4	43.6	50.7	54.9	36.2
Poor understanding (%)	23.7	21.4	26.6	17.6	15.2	24.5	40.3	38.4	44.7	19.7	17.9	24.5
Very poor understanding (%)	1.1	0.4	2.1	1.6	0.9	3.2	2.9	2.7	3.2	2.1	1.3	4.3
Not observed (%)	1.9	2.2	2.1	2.4	2.7	3.2	0.5	0.9	0.0	8.8	0.4	26.6
VG + G understanding (%)	74.7	77.6	70.7	80.3	83.5	71.4	56.6	58.6	52.1	76.0	80.7	60.9
P + VP understanding (%)	25.3	22.4	29.3	19.7	16.5	28.6	43.4	41.4	47.9	24.0	19.3	39.1

Responses	Angle: right, acute and obtuse			Triangle: equilateral, isosceles, right and scalene			Quadrilateral: square, rhombus, parallelogram, rectangle and trapezoid			Geometric transformation: translation, translation arrow, reflection and line of reflection		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	50.4	58.0	37.2	30.1	27.7	36.2	26.4	27.2	22.3	10.1	10.3	8.5
Good understanding (%)	42.9	37.9	48.9	51.7	54.5	44.7	55.5	54.0	56.4	47.2	51.3	41.5
Poor understanding (%)	2.7	2.2	4.3	14.7	15.2	13.8	13.3	14.7	13.8	28.0	29.9	20.2
Very poor understanding (%)	0.5	0.0	2.1	0.3	0.0	1.1	0.8	0.9	1.1	2.4	0.9	5.3
Not observed (%)	3.5	1.8	7.4	3.2	2.7	4.3	4.0	3.1	6.4	12.3	7.6	24.5
VG + G understanding (%)	96.7	97.7	93.1	84.6	84.4	84.4	85.3	83.9	84.1	65.3	66.7	66.2
P + VP understanding (%)	3.3	2.3	6.9	15.4	15.6	15.6	14.7	16.1	15.9	34.7	33.3	33.8

Responses	Length: perimeter, height, kilometre, metre, decimetre, centimetre and millimetre			Surface area: area, square metre, square decimetre, square centimetre			Capacity: litre and millilitre			Mass: kilogram and gram		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	28.3	31.3	21.3	13.1	17.0	9.6	13.1	16.1	5.3	14.4	18.3	6.4
Good understanding (%)	55.2	53.1	56.4	50.9	53.6	40.4	47.7	55.8	31.9	47.2	53.6	36.2
Poor understanding (%)	13.3	12.5	17.0	29.3	25.0	37.2	26.9	20.1	37.2	26.7	20.5	33.0
Very poor understanding (%)	0.3	0.0	1.1	1.9	1.3	2.1	3.5	3.1	5.3	3.5	3.1	5.3
Not observed (%)	2.9	3.1	4.3	4.8	3.1	10.6	8.8	4.9	20.2	8.3	4.5	19.1
VG + G understanding (%)	86.0	87.1	81.1	67.2	72.8	56.0	66.7	75.6	46.7	67.2	75.2	52.6
P + VP understanding (%)	14.0	12.9	18.9	32.8	27.2	44.0	33.3	24.4	53.3	32.8	24.8	47.4

Responses	Time: day, minute, hour, second, daily, weekly and yearly			Graph: bar graph, broken-line graph and circle graph			Probability: chance, random experiment, enumeration and event		
	Overall	Elem.	Sec.	Overall	Elem.	Sec.	Overall	Elem.	Sec.
Very good understanding (%)	10.7	14.3	6.4	32.8	37.9	20.2	8.0	11.6	2.1
Good understanding (%)	48.0	49.1	42.6	55.5	53.6	58.5	40.0	44.6	26.6
Poor understanding (%)	34.4	31.7	40.4	7.7	5.8	13.8	39.2	37.1	42.6
Very poor understanding (%)	5.1	2.2	9.6	0.8	0.9	0.0	4.5	1.8	10.6
Not observed (%)	1.9	2.7	1.1	3.2	1.8	7.4	8.3	4.9	18.1
VG + G understanding (%)	59.8	65.1	49.5	91.2	93.2	85.1	52.3	59.2	35.1
P + VP understanding (%)	40.2	34.9	50.5	8.8	6.8	14.9	47.7	40.8	64.9

## Comments for the Vocabulary section

While respondents did provide comments for this section, none of them overlapped. We have thus decided not to present any comments from this section.

## Where to go from here

The Mathematics curriculum team would like to end this presentation of results with a few questions that can guide our efforts going forward:

- How can these results be used?
- How can the results help me develop my professional practices?
- How can teachers and students be supported based on these results?

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