Assessment of Reading, Writing and Mathematics, Junior Division (Grades 4–6)

This framework provides a detailed description of the EQAO junior-division Assessment of Reading, Writing and Mathematics, which is conducted once a year in Ontario. The framework also describes how the assessment aligns with the expectations in *The Ontario Curriculum.*

Who Is This Framework For?

This framework has been prepared for

- educators;
- parents, guardians; and
- members of the general public.

Contents

Assessment of Reading, Writing and Mathematics, Junior Division (Grades 4–6)

LANGUAGE COMPONENT

WHAT IS ASSESSED?

What Is Assessed in the Reading and Writing Components of the Junior-Division Assessment?

Since language is the basis for learning, the concept of "success for all" in education means that all students must attain at least a minimum level of language knowledge and skill as part of their education. For the purpose of the junior-division assessments, language constitutes the reading and writing skills required to understand reading selections and to communicate through written forms as expected in *The Ontario Curriculum, Grades 1–8: Language* (2006) up to the end of Grade 6.

EQAO's junior-division assessment is a standards-referenced large-scale assessments based on *Ontario Curriculum* expectations and standards (levels of achievement) for student performance.

Reading

Reading is defined as the process of actively making meaning across a variety of fiction and non-fiction written texts that students are expected to understand according to the expectations in *The Ontario Curriculum* across all subjects up to the end of Grade 6. The junior-division assessments focus on three reading skills:

1. understanding explicitly stated information and ideas;
2. understanding implicitly stated information and ideas (making inferences); and
3. responding to a reading selection by making connections and integrating the reader's personal knowledge and experience with the information and ideas in a text.

Writing

Writing is defined as the constructive process of communicating in the written forms in which students are expected to write according to the expectations in *The Ontario Curriculum* across all subjects up to the end of Grade 6. The junior-division assessments focus on three writing skills:

1. developing a main idea with sufficient supporting details;
2. organizing information and ideas in a coherent manner; and
3. using conventions (spelling, grammar, punctuation) in a manner that does not distract from clear communication.

THE ASSESSMENT PROCESS AND DESIGN

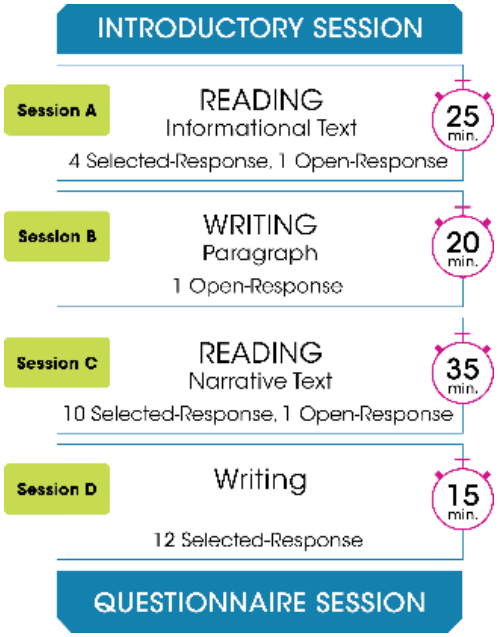
What Is in the Language Component of the Junior-Division Assessment?

The language component of the junior-division assessment is computer-based and consists of four sessions (Sessions A, B, C and D) containing a total of 29 questions: 26 selected-response questions (e.g., single-select, multiple-select, drag and drop, drop-down menu, checklist) and three constructed open-response questions.

Introductory session: Students will have the opportunity to participate in an introductory session that will familiarize them with the junior-division assessment. During this introductory session, students will have access to a sample test for both the language and mathematics components. The sample test for the language component will consist of two sessions, which include the various types of questions that will be on the assessment. Students will also be able to try out the tools (e.g., text-to-speech, zoom in and zoom out, highlighter) available in the assessment during the sample test. The sample test is also available on the EQAO public website.

Assessment: The language component of the junior-division assessment contains a total of four sessions. Each session is designed to be completed within 15 to 35 minutes, depending on the session, and students must complete each session in one sitting. The sessions can be completed back to back with breaks in between or on different dates and times.

Questionnaire: Students will also be presented with a questionnaire that asks them about their attitudes and perceptions with respect to reading and writing. EQAO will use this data to provide schools, boards, teachers and parents/guardians with information on how student attitudes and perceptions are related to students' reading and writing achievement.



The language component of the assessment contains 29 questions that are operational: they count toward the student's score. The following table provides information on the number of questions by type:

The Junior-Division Assessment Language Component: Number of Questions by Type

	Selected-Response Questions	Open-Response Questions	Total Questions
Reading	14	2	16
Writing	12	1	13
Total	**26**	**3**	**29**

The following table provides information on the number of raw score points and the percentage of total raw score points by question type:

Reading: Number of Raw Score Points and Percentage of Total Raw Score Points by Question Type

Question Type	Number of Raw Score Points	Percentage of Total Raw Score Points
Selected-Response	19	70%
Open-Response	8	30%
Total	27	**100%**

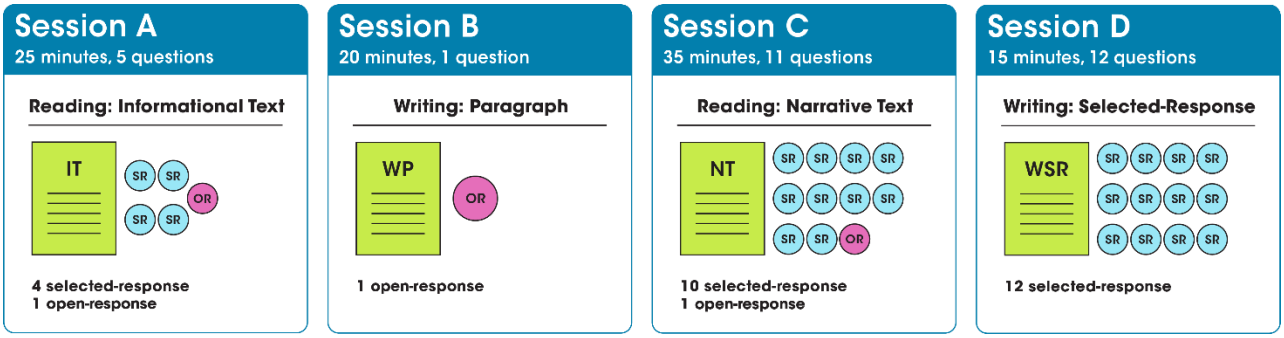
Writing: Number of Raw Score Points and Percentage of Total Raw Score Points by Question Type		
Question Type	**Number of Raw Score Points**	**Percentage of Total Raw Score Points**
Selected-Response	13	65%
Open-Response	7	35%
Total	20	**100%**

What Is the Design of the Language Component of the Junior-Division Assessment?

The language component of the junior-division assessment uses a testlet-based linear on-the-fly (tLOFT) design. In this method, test forms are generated through the selection of pre-constructed and pre-equated groups of questions and, where applicable, the associated reading texts. All test forms taken by students meet the same content and statistical criteria.

The four sessions are presented to students with the following types of questions:

- **Informational Text (IT):** a reading text, four selected-response reading questions and one open-response question
- **Writing (WP):** one open-response question based on a prompt
- **Narrative Text (NT):** a reading text, 10 selected-response reading questions and one open-response question
- **Writing Selected-Response (WSR):** 12 selected-response writing questions



INSIGHT:

Understanding Ontario's Student Achievement Levels

After all the questions in a student's assessment are scored, the data from the questions are used to determine the student's level of achievement. The Individual Student Report shows both the level and the range within the level at which the student performed. This may provide information for parents/guardians and teachers to use in planning for improvement.

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It should be noted that achievement at Level 4 does not mean that the student has achieved expectations beyond those specified for a particular grade. Level 4 represents that the student has achieved all or almost all of the expectations for that grade, and that the student demonstrates the ability to use the knowledge and skills specified for that grade in more sophisticated ways than a student achieving at Level 3 (*The Ontario Curriculum, Grades 1–8: Language* [2006], p. 16).

THE BLUEPRINT FOR THE JUNIOR-DIVISION ASSESSMENT

How Are Curriculum Expectations Reflected in the Language Component of the Junior-Division Assessment?

The assessment blueprint presents the expectations in clusters and gives the number and types of questions on the assessment.

Some expectations cannot be appropriately assessed within the limits of a large-scale assessment. For instance, on a large-scale assessment, it is difficult to measure writing expectations that require students to identify elements of their writing that need improvement, using feedback from the teacher and peers, with a focus on specific features.

Although the junior-division assessment focuses on the Grade 6 curriculum expectations, there may be questions from Grades 4 and 5.

In the blueprint, the expectations and parts of expectations that cannot be measured appropriately by a large-scale assessment appear in italics.

Reading Component			
Reading		**Question Type by Reading Text**	
Number	**Grade 6 Reading Expectations**	**Narrative Texts (650–700 words)**	**Non-Narrative Informational Texts (300–350 words)**
6R1.0	read and demonstrate an understanding of a variety of literary, graphic, and informational texts, *using a range of strategies to construct meaning*	1 open-response question 6 selected-response questions	1 open-response question 2 selected-response questions
6R1.1	read a wide variety of texts from diverse cultures, including literary texts, graphic texts, and informational texts		
6R1.2	identify a variety of purposes for reading and *choose reading materials appropriate for those purposes*		
6R1.3	*identify a variety of reading comprehension strategies and use them appropriately before, during, and after reading to understand increasingly complex texts*		
6R1.4	demonstrate understanding of increasingly complex texts by summarizing and explaining important ideas and citing relevant supporting details		
6R1.5	develop interpretations about texts using stated and implied ideas to support their interpretations		
6R1.6	extend understanding of texts by connecting, comparing, and contrasting the ideas in them to their own knowledge, experience, and insights, to other familiar texts, and to the world around them		
6R1.7	analyse increasingly complex texts and explain how the different elements in them contribute to meaning		
6R1.8	make judgements and draw conclusions about ideas in texts and cite stated or implied evidence from the text to support their views		
6R1.9	identify the point of view presented in texts; determine whether they can agree with the view, in whole or in part; and suggest some other possible perspectives		

Reading Component (continued)			
		Question Type by Reading Text	
Number	**Grade 6 Reading Expectations**	**Narrative Texts (650–700 words)**	**Non-Narrative Informational Texts (300–350 words)**
6R2.0	recognize a variety of text forms, text features, and stylistic elements and demonstrate understanding of how they help communicate meaning	2 selected-response questions	1 selected-response question
6R2.1	analyse a variety of text forms and explain how their particular characteristics help communicate meaning, with a focus on literary texts such as a myth, graphic texts such as an advertisement, and informational texts such as an editorial		
6R2.2	identify a variety of organizational patterns in a range of texts and explain how they help readers understand the texts		
6R2.3	identify a variety of text features and explain how they help readers understand texts		
6R2.4	identify various elements of style—including voice, word choice, and the use of hyperbole, strong verbs, dialogue and complex sentences—and explain how they communicate meaning		

Reading Component (continued)			
		Question Type by Reading Text	
Number	**Grade 6 Reading Expectations**	**Narrative Texts (650–700 words)**	**Non-Narrative Informational Texts (300–350 words)**
6R3.0	use knowledge of words and cueing systems to read fluently	2 selected-response questions	1 selected-response question
6R3.1	automatically read and understand most words in a range of reading contexts		
6R3.2	predict the meaning of and rapidly solve unfamiliar words using different types of cues, including semantic (meaning) cues, syntactic (language structure) cues, and graphophonic (phonological and graphic) cues		
6R3.3	*read appropriate texts with expression and confidence, adjusting reading rate to match the form and purpose*		
6R4.0	*reflect on and identify their strengths as readers, areas for improvement, and the strategies they found most helpful before, during, and after reading*		
6R4.1	*identify the strategies they found most helpful before, during, and after reading and explain, in conversation with the teacher and/or peers, or in a reader's notebook, how they can use these and other strategies to improve as readers*		
6R4.2	*explain, in conversations with the teacher and/or peers or in a reader's notebook, how their skills in listening, speaking, writing, viewing, and representing help them make sense of what they read*		
	Total	10 selected-response questions 1 open-response question	4 selected-response questions 1 open-response question

Writing Component		
Number	**Grade 6 Writing Expectations**	**Question Types**
6W1.0	generate, gather, and organize ideas and information to write for an intended purpose and audience	1 writing prompt (250 words) Writing Genres: □ personal or factual recount □ friendly or formal letter □ procedures, instructions, directions □ informative, explanatory or descriptive report □ script □ advertisement 12 selected-response questions **(Expectations are in boldface.)**
6W1.1	*identify the topic, purpose, and audience for a variety of writing forms*	
6W1.2	generate ideas about a potential topic and identify those most appropriate for the purpose	
6W1.3	*gather information to support ideas for writing, using a variety of strategies and a range of print and electronic resources*	
6W1.4	sort and classify information for their writing in a variety of ways that allow them to view information from different perspectives and make connections between ideas	
6W1.5	**identify and order main ideas and supporting details and group them into units that could be used to develop a structured, multi-paragraph piece of writing, using a variety of strategies and organizational patterns**	
6W1.6	determine whether the ideas and information they have gathered are relevant, appropriate and adequate for the purpose, and *do more research if necessary*	
6W2.0	draft and revise their writing, using a variety of informational, literary, and graphic forms and stylistic elements appropriate for the purpose and audience	
6W2.1	write longer and more complex texts using a wide range of forms	
6W2.2	*establish a distinctive voice in their writing appropriate to the subject and audience*	
6W2.3	use some vivid and/or figurative language and innovative expressions to enhance interest	
6W2.4	**create complex sentences by combining phrases, clauses, and/or simple sentences**	
6W2.5	identify their point of view and other possible points of view; determine, when appropriate, if their own view is balanced and supported by the evidence; and adjust their thinking and expression if appropriate	
6W2.6	*identify elements in their writing that need improvement, selectively using feedback from the teacher and peers, with a focus on supporting details and precise language*	
6W2.7	**make revisions to improve the content, clarity, and interest of their written work, using a variety of strategies**	
6W2.8	*produce revised draft pieces of writing to meet identified criteria based on the expectations*	

Writing Component (continued)		
Number	**Grade 6 Writing Expectations**	**Question Types**
6W3.0	use editing, proofreading and publishing skills and strategies, and knowledge of language conventions, to correct errors, refine expression, and present their work effectively	
6W3.1	**spell familiar words correctly**	
6W3.2	**spell unfamiliar words using a variety of strategies that involve understanding sound-symbol relationships, word structures, word meanings, and generalizations about spelling**	
6W3.3	*confirm spellings and word meanings or word choice using a variety of resources appropriate for the purpose*	
6W3.4	**use punctuation appropriately to communicate their intended meaning in longer and more complex sentences, with a focus on the use of: commas to separate words in a list or after an introductory word or phrase; quotation marks in dialogue; and some uses of the colon, semi-colon, and brackets**	
6W3.5	**use parts of speech correctly to communicate their meaning clearly, with a focus on the use of: personal subject and object pronouns (e.g., I, me); indefinite pronouns (e.g., someone, nobody); conjunctions; subordinate clauses, adverb phrases; and present, past, and future verb tenses**	
6W3.6	*proofread and correct their writing using guidelines developed with peers and the teacher*	
6W3.7	*use a range of appropriate elements of effective presentation in the finished product, including print, script, different fonts, graphics, and layout*	
6W3.8	*produce pieces of published work to meet identified criteria based on the expectations*	
6W4.0	*reflect on and identify their strengths as writers, areas for improvement, and the strategies they found most helpful at different stages in the writing process*	
6W4.1	*identify a variety of strategies they used before, during, and after writing, explain which ones were most helpful, and suggest further steps they can take to improve as writers*	
6W4.2	*describe how their skills in listening, speaking, reading, viewing, and representing help in their development as writers*	
6W4.3	*select pieces of writing that they think reflect their growth and competence as writers and explain the reasons for their choices*	
	Total	12 selected-response questions 1 writing prompt (250 words)

Specific Expectations

Please note that the conventions (spelling, grammar, punctuation) of writing are assessed in both selected-response and open-response answers. This enables EQAO to ensure that students are applying the conventions properly.

HOW THE ASSESSMENT IS SCORED

How Are the Questions in the Language Component of the Junior-Division Assessment Scored?

The selected-response questions are scored automatically (computer-scored), while open-response questions are scored by qualified educators who are trained to follow the principles of clear and consistent rubrics. Each open-response question on the assessment is scored according to a guide called an "item-specific rubric." The following are the general (or "generic") rubrics from which the item-specific rubrics are developed.

How Is a Student's Overall Level of Achievement Determined?

The Individual Student Report provides a level for reading and writing for each student. This information enables students, parents/guardians and teachers to plan for improvement. A student's outcome is assigned using a statistical procedure that takes into account the student's responses to the questions on the assessment *and* the characteristics of each question, such as difficulty. This procedure, known as Item Response Theory, assumes a continuum of reading and writing ability (as reflected by the achievement levels 1 to 4), and locates the student's outcome along that continuum.

Generic EQAO Scoring Rubrics for the Junior-Division Assessment

Generic Junior Reading Rubric—Open-Response

Code	Descriptor
B	• blank: nothing written, drawn (paper version only) or typed in the space provided
I	• illegible: cannot be read; completely crossed out/erased (paper version only); not written in English, OR • irrelevant content: does not attempt assigned question (e.g., comment on the task, drawings, "?", "!", "I don't know"), OR • off topic: no relationship of written work to the question
10	• response does not refer to ideas and information from the reading selection • response indicates a significant misunderstanding of the reading selection; ideas and information from the reading selection are inaccurate
20	• response addresses only part of the question • response is developed with limited support; ideas and information from the reading selection are minimal, vague and/or irrelevant
30	• response addresses the complete question • response is developed with some accurate, specific and relevant ideas and information from the reading selection; some ideas and information are inaccurate, vague and/or irrelevant
40	• response addresses the complete question • response is developed with accurate, specific and relevant ideas and information from the reading selection

Generic Junior Writing Rubric—Topic Development

Code	Descriptor
B	• blank: nothing written, drawn (paper version only) or typed in the space provided
I	• Illegible: cannot be read; completely crossed out/erased (paper version only); not written in English OR • Irrelevant content: does not attempt assigned prompt (e.g., comment on the task, drawings, "?", "!", "I don't know") OR • Off topic: no relationship of written work to assigned prompt OR • Errors in conventions prevent communication
10	• Response is not developed; ideas and information are limited and unclear. Organization is random with no links between ideas. Response has a limited relationship to the assigned task.**
20	• Response is minimally developed with few ideas and little information. Organization* is minimal with weak links between ideas. Response is partly related to the assigned task.**
30	• Response has a clear focus, adequately developed with ideas and supporting details. Organization* is simple or mechanical with adequate links between ideas. Response is clearly related to the assigned task.**
40	• Response has a clear focus, well-developed with sufficient specific and relevant ideas and supporting details. Organization* is logical and coherent with effective links between ideas. Response has a thorough relationship to the assigned task.**

* **Organization** refers to the sequencing of information and events. The links may be explicit (e.g., signalled with transition words) or implicit (e.g., the right information at the right time).

** **Task** refers to form, purpose and audience.

Generic Junior Writing Rubric—Conventions*

Code	Descriptor
B	• blank: nothing written, drawn (paper version only) or typed in the space provided • nothing is typed in the text box
I	• Illegible: cannot be read; completely crossed out/erased (paper version only); not written in English, OR • Insufficient evidence to assess the use of conventions, OR • Errors in conventions prevent communication
10	• Errors in conventions interfere with communication
20	• Errors in conventions do not interfere with communication
30	• Conventions are used appropriately to communicate

* **Conventions** refers to grammar, usage, spelling and punctuation.

Assessment of Reading, Writing and Mathematics, Junior Division (Grades 4–6)

MATHEMATICS COMPONENT

WHAT IS ASSESSED?

What Is Assessed in the Mathematics Component of the Junior-Division Assessment?

Students in Grade 6 learn the knowledge and skills that are defined in the expectations found in *The Ontario Curriculum, Grades 1–8: Mathematics* (2020). The mathematics curriculum includes a new focus on coding, financial literacy and mathematical modelling. The curriculum also emphasizes fundamental mathematics concepts and skills, and making connections between related math concepts and between mathematics and everyday life. Mathematics spans several content strands or domains. The strands in the elementary mathematics curriculum are the following:

A. Social-Emotional Learning (SEL) Skills in Mathematics and the Mathematical Processes
B. Number
C. Algebra
D. Data
E. Spatial Sense
F. Financial Literacy

EQAO's junior-division assessment is a curriculum-based, standards-referenced, large-scale assessment. The mathematics component is developed in relation to *Ontario Curriculum* expectations and standards for student proficiency. The assessment will consist of questions that cover students' knowledge and skills in the following strands: Number, Algebra, Data, Spatial Sense, and Financial Literacy. Although the assessment does not measure the content in the Social-Emotional Learning (SEL) Skills in Mathematics and the Mathematical Processes strand, students may be required to apply mathematical processes while completing the assessment.

Mathematics Content Descriptors: Grade 6

The following are highlights of student learning in Grade 6 from *The Ontario Curriculum,* listed by strand.

Number

- Number Sense
    - Rational Numbers
    - Fractions, Decimals, and Percents

- Operations
    - Properties and Relationships
    - Math Facts
    - Mental Math
    - Addition and Subtraction
    - Multiplication and Division

Algebra

- Patterns and Relationships
    - Patterns
- Equations and Inequalities
    - Variables and Expressions
    - Equalities and Inequalities
- Coding
    - Coding Skills
- Mathematical Modelling

Data

- Data Literacy
    - Data Collection and Organization
    - Data Visualization
    - Data Analysis
- Probability
    - Probability

Spatial Sense

- Geometric and Spatial Reasoning
    - Geometric Reasoning
    - Location and Movement
- Measurement
    - The Metric System
    - Angles
    - Area and Surface Area

Financial Literacy

- Money and Finances
    - Money Concepts
    - Financial Management
    - Consumer and Civic Awareness

THE ASSESSMENT PROCESS AND DESIGN

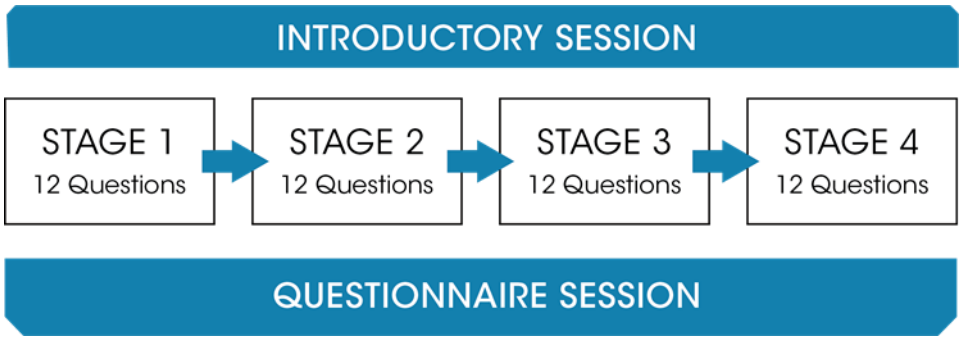
What Is in the Mathematics Component of the Junior-Division Assessment?

The mathematics component of the junior-division assessment is computer-based and consists of four stages (Stages 1, 2, 3 and 4). During the assessment, students will complete a total of 48 questions that include both operational questions that count toward a student's final result and field-test questions.

Introductory session: Students will have the opportunity to participate in an introductory session that will familiarize them with the junior-division assessment. During this introductory session, students will have access to a sample test for both the language and mathematics components. The sample test for the mathematics component will consist of two stages (12 questions per stage), which include the various types of questions that will be on the assessment. Students will also be able to try out the tools (e.g., text-to-speech, zoom in and zoom out, calculator) available in the assessment during the sample test. The sample test is also available on the EQAO public website.

Assessment: The mathematics component of the junior-division assessment contains a total of four stages. Each stage is designed to be completed in approximately 30 minutes, and students must complete each stage in one sitting. The stages can be completed back to back with breaks in between or on different dates and times.

Questionnaire: Students will also be presented with a questionnaire that asks them about their attitudes and perceptions with respect to mathematics. EQAO will use this data to provide schools, boards, teachers and parents/guardians with indications of how student attitudes and perceptions are related to their math achievement.



The mathematics component of the assessment contains 44 questions that are from all of the content strands (Number, Algebra, Data, Spatial Sense, and Financial Literacy). The mathematics component also contains four embedded field-test questions, which are fewer than 10% of the total number of questions that are completed by students.

The Junior-Division Assessment Mathematics Component: Number of Questions

	Total Number of Questions
Operational	44
Field Test	4
Total Number of Mathematics Questions for Each Student	48

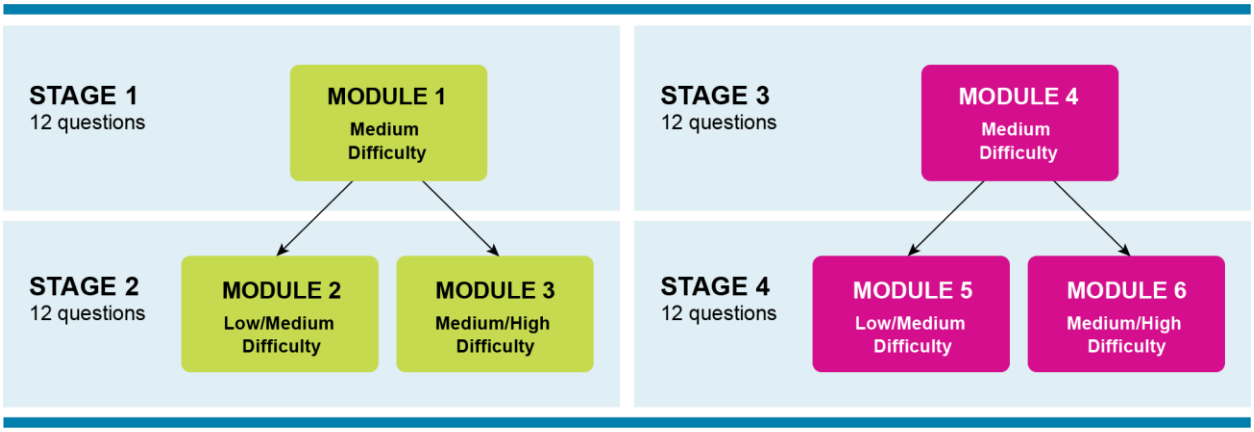
The assessment will consist of various selected-response questions, such as drag and drop, ordering, and single- and multiple-select questions.

What Is the Design of the Mathematics Component of the Junior-Division Assessment?

The mathematics component of the junior-division assessment uses a multi-stage computer adaptive testing model that adapts to the individual student's performance as the student progresses through the stages.

Each stage is made up of modules that contain questions of a specific overall level of difficulty (medium, low/medium, or medium/high). The module that is presented to students in Stage 2 and Stage 4 is based on their achievement in the previous stage.

Each student begins with Stage 1 and completes a set of questions with a medium overall level of difficulty contained in the module. Based on the student's achievement on questions in this first module, the student will either be presented with a module in Stage 2 of low/medium (Module 2) or medium/high (Module 3) difficulty. The same process repeats for Stage 3 and Stage 4. With this approach, students are presented with questions that are tailored to their proficiency level. Some studies suggest that this may help improve student engagement on the assessment. For more information, refer to the literature review: Leveraging Multi-Stage Computer Adaptive Testing for Large-Scale Assessments—EQAO.



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It should be noted that achievement at Level 4 does not mean that the student has achieved expectations beyond those specified for a particular grade.

THE BLUEPRINT FOR THE JUNIOR-DIVISION ASSESSMENT

How Are Curriculum Expectations Reflected in the Mathematics Component of the Junior-Division Assessment?

The blueprint for the mathematics component of the junior-division assessment includes the overall and specific expectations from Strands B to F in *The Ontario Curriculum, Grades 1–8: Mathematics* (2020). The blueprint also provides the number of questions on the assessment from each strand.

Although the junior-division assessment focuses on the Grade 6 curriculum expectations, there may be questions that involve the curriculum from Grades 4 and 5.

Mathematics Component
Mathematical Processes Although the junior-division assessment does not measure the mathematical processes, these are the processes through which students apply mathematical knowledge, concepts and skills.
Problem Solving
Reasoning and Proving
Reflecting
Connecting
Communicating
Representing
Selecting Tools and Strategies

Mathematics Component (continued)			
Number	**Grade 6 Mathematics Expectations**	**Number of Questions**	**Percentage of Total Questions on the Assessment**
B. Number		14	$\frac{14}{44} = 32\%$ of the questions on the assessment
B1	**Number Sense**		
	demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life		
	Specific Expectations for Overall B1		
	Rational Numbers		
B1.1	read and represent whole numbers up to and including one million, using appropriate tools and strategies, and describe various ways they are used in everyday life		
B1.2	read and represent integers, using a variety of tools and strategies, including horizontal and vertical number lines		
B1.3	compare and order integers, decimal numbers, and fractions, separately and in combination, in various contexts		
	Fractions, Decimals, and Percents		
B1.4	read, represent, compare, and order decimal numbers up to thousandths, in various contexts		
B1.5	round decimal numbers, both terminating and repeating, to the nearest tenth, hundredth, or whole number, as applicable, in various contexts		
B1.6	describe relationships and show equivalences among fractions and decimals up to thousandths, using appropriate tools and drawings, in various contexts		
B2	**Operations**		
	use knowledge of numbers and operations to solve mathematical problems encountered in everyday life		
	Specific Expectations for Overall B2		
	Properties and Relationships		
B2.1	use the properties of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and whole number percents, including those requiring multiple steps or multiple operations		
	Math Facts		
B2.2	understand the divisibility rules and use them to determine whether numbers are divisible by 2, 3, 4, 5, 6, 8, 9, and 10		
	Mental Math		
B2.3	use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies used		
	Addition and Subtraction		
B2.4	represent and solve problems involving the addition and subtraction of whole numbers and decimal numbers, using estimation and algorithms		
B2.5	add and subtract fractions with like and unlike denominators, using appropriate tools, in various contexts		
	Multiplication and Division		
B2.6	represent composite numbers as a product of their prime factors, including through the use of factor trees		

B2.7	represent and solve problems involving multiplication of three-digit whole numbers by decimal tenths, using algorithms		
B2.8	represent and solve problems involving the division of three-digit whole numbers by decimal tenths, using appropriate tools, strategies, and algorithms, and expressing remainders as appropriate		
B2.9	multiply whole numbers by proper fractions, using appropriate tools and strategies		
B2.10	divide whole numbers by proper fractions, using appropriate tools and strategies		
B2.11	represent and solve problems involving the division of decimal numbers up to thousandths by whole numbers up to 10, using appropriate tools and strategies		
B2.12	solve problems involving ratios, including percents and rates, using appropriate tools and strategies		

Algebra	Grade 6 Mathematics Expectations	Number of Questions	Percentage of Total Questions on the Assessment
C. Algebra		9	$\frac{9}{44}$ = 20% of the questions on the assessment
C1	**Patterns and Relationships**		
	identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts		
	Specific Expectations for Overall C1		
	Patterns		
C1.1	identify and describe repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and specify which growing patterns are linear		
C1.2	create and translate repeating, growing, and shrinking patterns using various representations, including tables of values, graphs, and, for linear growing patterns, algebraic expressions and equations		
C1.3	determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns		
C1.4	create and describe patterns to illustrate relationships among whole numbers and decimal numbers		
C2	**Equations and Inequalities**		
	demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts.		
	Specific Expectations for Overall C2		
	Variables and Expressions		
C2.1	add monomials with a degree of 1 that involve whole numbers, using tools		
C2.2	evaluate algebraic expressions that involve whole numbers and decimal tenths		
	Equalities and Inequalities		
C2.3	solve equations that involve multiple terms and whole numbers in various contexts, and verify solutions		
C2.4	solve inequalities that involve two operations and whole numbers up to 100, and verify and graph the solutions		
C3	**Coding**		
	solve problems and create computational representations of mathematical situations using coding concepts and skills		
	Specific Expectations for Overall C3		
	Coding Skills		
C3.1	solve problems and create computational representations of mathematical situations by writing and executing efficient code, including code that involves conditional statements and other control structures		
C3.2	read and alter existing code, including code that involves conditional statements and other control structures, and describe how changes to the code affect the outcomes and the efficiency of the code		

C4	**Mathematical Modelling**		
	apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations		
	There are no specific expectations for Overall C4		

Data	Grade 6 Mathematics Expectations	Number of Questions	Percentage of Total Questions on the Assessment
D. Data		8	$\frac{8}{44}$ = 18% of the questions on the assessment
D1	**Data Literacy**		
	manage, analyse, and use data to make convincing arguments and informed decisions, in various contexts drawn from real life		
	Specific Expectations for Overall D1		
	Data Collection and Organization		
D1.1	describe the difference between discrete and continuous data, and provide examples of each		
D1.2	collect qualitative data and discrete and continuous quantitative data to answer questions of interest about a population, and organize the sets of data as appropriate, including using intervals		
	Data Visualization		
D1.3	select from among a variety of graphs, including histograms and broken-line graphs, the type of graph best suited to represent various sets of data; display the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graphs		
D1.4	create an infographic about a data set, representing the data in appropriate ways, including in tables, histograms, and broken-line graphs, and incorporating any other relevant information that helps to tell a story about the data		
	Data Analysis		
D1.5	determine the range as a measure of spread and the measures of central tendency for various data sets, and use this information to compare two or more data sets		
D1.6	analyse different sets of data presented in various ways, including in histograms and broken-line graphs and in misleading graphs, by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions.		
D2	**Probability**		
	describe the likelihood that events will happen, and use that information to make predictions		
	Specific Expectations for Overall D2		
	Probability		
D2.1	use fractions, decimals, and percents to express the probability of events happening, represent this probability on a probability line, and use it to make predictions and informed decisions		
D2.2	determine and compare the theoretical and experimental probabilities of two independent events happening		

Spatial Sense	Grade 6 Mathematics Expectations	Number of Questions	Percentage of Total Questions on the Assessment
E. Spatial Sense		9	$\frac{9}{44}$ = 20% of the questions on the assessment
E1	**Geometry and Spatial Reasoning**		
	describe and represent shape, location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them		
	Specific Expectations for Overall E1		
	Geometric Reasoning		
E1.1	create lists of the geometric properties of various types of quadrilaterals, including the properties of the diagonals, rotational symmetry, and line symmetry		
E1.2	construct three-dimensional objects when given their top, front, and side views		
	Locomotion and Movement		
E1.3	plot and read coordinates in all four quadrants of a Cartesian plane, and describe the translations that move a point from one coordinate to another		
E1.4	describe and perform combinations of translations, reflections, and rotations up to 360 degrees on a grid, and predict the results of these transformations		
E2	**Measurement**		
	compare, estimate, and determine measurements in various contexts		
	Specific Expectations for Overall E2		
	The Metric System		
E2.1	measure length, area, mass, and capacity using the appropriate metric units, and solve problems that require converting smaller units to larger ones and vice versa		
	Angles		
E2.2	use a protractor to measure and construct angles up to 360 degrees, and state the relationship between angles that are measured clockwise and those that are measured counterclockwise		
E2.3	use the properties of supplementary angles, complementary angles, opposite angles, and interior and exterior angles to solve for unknown angle measures		
	Area and Surface Area		
E2.4	determine the areas of trapezoids, rhombuses, kites, and composite polygons by decomposing them into shapes with known areas		
E2.5	create and use nets to demonstrate the relationship between the faces of prisms and pyramids and their surface areas		
E2.6	determine the surface areas of prisms and pyramids by calculating the areas of their two-dimensional faces and adding them together		

Financial Literacy	Grade 6 Mathematics Expectations	Number of Questions	Percentage of Total Questions on the Assessment
F. Financial Literacy		4	$\frac{4}{44}$ = 9% of the questions on the assessment
F1	demonstrate the knowledge and skills needed to make informed financial decisions		
	Specific Expectations for Overall F1		
	Money Concepts		
F1.1	describe the advantages and disadvantages of various methods of payment that can be used to purchase goods and services		
	Financial Management		
F1.2	identify different types of financial goals, including earning and saving goals, and outline some key steps in achieving them		
F1.3	identify and describe various factors that may help or interfere with reaching financial goals		
	Consumer and Civic Awareness		
F1.4	explain the concept of interest rates, and identify types of interest rates and fees associated with different accounts and loans offered by various banks and other financial institutions		
F1.5	describe trading, lending, borrowing, and donating as different ways to distribute financial and other resources among individuals and organizations		

HOW THE ASSESSMENT IS SCORED

How Are the Questions in the Mathematics Component of the Junior-Division Assessment Scored?

All the questions in the mathematics component are scored automatically (computer-scored).

How Is a Student's Overall Level of Achievement Determined?

The Individual Student Report provides a level for each student. This information enables students, parents/guardians and teachers to plan for improvement. A student's outcome is assigned using a statistical procedure that takes into account the student's responses to the questions on the assessment *and* the difficulty of each question. This procedure, known as Item Response Theory, assumes a continuum of ability in mathematics knowledge and skills (as reflected by the achievement levels 1 to 4), and locates the student's outcome along that continuum.

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