# Framework

## Assessment of Reading, Writing and Mathematics, Primary Division (Grades 1–3)

*December 2007 Edition*

**Education Quality and Accountability Office**

EQAO

# Framework

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# Contents



**December 2007 Edition:**

**What's new in this framework**

See page 2 to learn about changes in the December 2007 edition.

# Introduction

This framework provides a detailed description of the EQAO Assessment of Reading, Writing and Mathematics, Primary Division (Grades 1–3), which is conducted each year in Ontario. It also describes how the primary division assessment aligns with the expectations in *The Ontario Curriculum.*

### Who is this framework for?

This framework has been prepared for

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

### What is in the framework?

In this framework, you will find

**Chapter 1:** a brief introduction to EQAO, large-scale assessments in Ontario and the Assessment of Reading, Writing and Mathematics, Primary Division (Grades 1–3), and information on the differences between large-scale and classroom assessment.

**Chapter 2:** a discussion of the purpose and benefits of the primary division assessment, a description of how results are reported as well as information about how EQAO assessments align with national and international testing.

**Chapter 3**: information on the language component and how it aligns with *The Ontario Curriculum* and with current research.

**Chapter 4:** information on the mathematics component and how it aligns with *The Ontario Curriculum* and current research.

**Chapter 5:** discussions of the assessment process, the content of language and mathematics assessment booklets, accommodations for students with special needs and the meaning of Ontario's achievement levels.

**Chapter 6:** the assessment blueprint and information on how EQAO assessments are aligned with curriculum expectations.

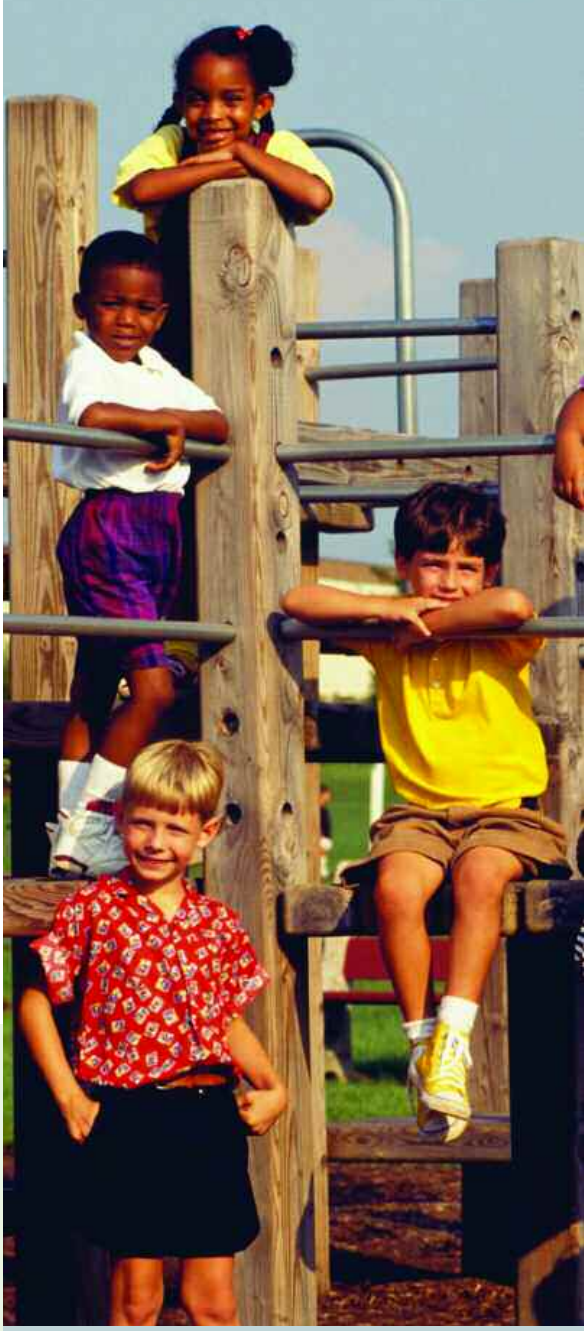
**Chapter 7:** information on how student responses to language and mathematics questions are scored.

**Chapter 8:** a discussion of how EQAO ensures that its assessments are comparable from year to year.

### What's New in the December 2007 Edition

The December 2007 edition of the framework has been reorganized and rewritten to improve clarity and readability. It has also been redesigned to enhance the presentation of information in both text and chart form. This edition carries over a number of changes from the October 2006 edition and makes some new ones, as described below:

- The name of the assessment was changed from the Grade 3 Assessment of Reading, Writing and Mathematics to the Assessment of Reading, Writing and Mathematics, Primary Division (Grades 1–3). This change reflects the important fact that EQAO assessments measure the cumulative knowledge and skills students acquire by the end of key stages of education.
- The assessment blueprint was updated as a result of the release of the revised *Ontario Curriculum, Grades 1–8: Language* (2006).
- The scoring rubrics for writing have been revised for the 2007–2008 assessment administration.



# CHAPTER 1: About EQAO and Provincial Assessments

In This Chapter

- What is EQAO?
- What is assessment?
- What assessments does EQAO conduct?
- What is the Assessment of Reading, Writing and Mathematics, Primary Division?

**Insight:** Differences between large-scale and classroom assessment

## What is EQAO?

The Education Quality and Accountability Office (EQAO) is an arm's-length agency of the provincial government that measures the achievement of students across Ontario in reading, writing and mathematics, and reports the results to parents, educators and government. EQAO assessments are based on the expectations in *The Ontario Curriculum*.

EQAO results are reported at the provincial, school board and school levels. They are used by the Ministry of Education, district school boards and schools to improve learning, teaching and student achievement. An Individual Student Report is also provided by EQAO for each student who writes an EQAO assessment.

## What is assessment?

Assessment is an important part of teaching and learning. For example, teachers use assessment in the classroom to gauge the skills and knowledge of their students. They use this information to plan their teaching and identify individual students who may need additional help. A

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www.eqao.com

traditional test is one kind of assessment, but student progress can be measured in many other ways. Reviewing a portfolio of student work is one example. Large-scale assessments, like those conducted by EQAO, measure student achievement across the province at critical times in students' school careers.

**Insight:**

**Differences between large-scale and classroom assessment**

| EQAO's Large-Scale Assessments | Classroom Assessment |
|---|---|
| The purpose of EQAO's large-scale assessments is to provide comparable year-to-year data to give the public information on student achievement. | The purposes of classroom assessment are to improve student learning (using models such as Ministry exemplars to assess the quality of work), to report regularly on student achievement and to provide timely, constructive feedback for improvement. |
| EQAO's large-scale assessments provide reliable, objective and high-quality data that can inform school boards' improvement planning and target setting. | Classroom assessments encourage students to engage in self-evaluation and personal goal setting. They also provide parents with information on strengths and weaknesses that can be used to encourage improvement. |
| EQAO's large-scale assessment materials are created and scored "at a distance." The assessment scorers do not know the students personally. | Classroom assessment materials are usually created and marked by a teacher who knows the students personally. |
| EQAO's large-scale assessments are summative; they present a snapshot of student achievement or learning at the time the assessment is administered. | Classroom assessments are conducted in an instructional context and include diagnostic, formative and summative assessment. They are administered at regular intervals over time. |
| EQAO's large-scale assessments require students to demonstrate their knowledge and skills independently on standardized tasks and under standardized conditions, although some accommodations are allowed for students with special education needs. | A wide variety of supports (reminders, clarification) are often available to address students' special education needs and abilities. |

| | |
|---|---|
| EQAO's large-scale assessments measure achievement against expectations from the prescribed curriculum and contain tasks and items that sample from and represent the curriculum for the domain assessed. | Classroom assessments measure expectations from the curriculum and contain tasks and items that represent expectations, topics and themes that have been taught. The questions are written in language used regularly in the classroom by the teacher. |
| EQAO's large-scale assessments provide the same (in a given year) or psychometrically comparable items (from year to year) for all students. | Classroom assessments can provide modified items or tasks tailored to the special education needs of individuals or groups of students. |
| In order for students' results on EQAO's large-scale assessments to be comparable across the province, the assessments must be administered, scored and reported on in a consistent and standardized manner. | Results of classroom assessments across the province are not always comparable, because of the variation in administration procedures and time allowed, amount of teacher support, modification of items to suit student needs and teacher autonomy in marking. |
| For EQAO's large-scale assessments, all scorers use the same scoring guides and are trained and monitored to ensure objectivity and consistency. | The marking of classroom assessments is more subjective and is often influenced by contextual information about the students that is available to the teacher. Teachers use the achievement charts in the curriculum policy documents to guide assessment decisions. |

### What assessments does EQAO conduct?

EQAO conducts four provincial assessments each year. These are

- the Assessment of Reading, Writing and Mathematics, Primary Division (Grades 1–3);
- the Assessment of Reading, Writing and Mathematics, Junior Division (Grades 4–6);
- the Grade 9 Assessment of Mathematics and
- the Ontario Secondary School Literacy Test.

### What is the Assessment of Reading, Writing and Mathematics, Primary Division?

The Assessment of Reading, Writing and Mathematics, Primary Division (Grades 1–3), which is the subject of this framework, evaluates the knowledge and skills of students at the end of Grade 3. *The Ontario Curriculum* sets out expectations for the knowledge and skills students are expected to have gained by the end of this grade. The assessment is used to determine how well students are achieving these expectations, and their level of achievement. See Chapter 5 for more information about Ontario's student achievement levels.

# CHAPTER 2: The Primary Division Assessment

In This Chapter

- What is the purpose of the primary division assessment?
- What is reported?
- What are the benefits of the assessment?

**Insight:** Is the assessment consistent with national and international assessments?

## What is the purpose of the primary division assessment?

The purpose of the Assessment of Reading, Writing and Mathematics, Primary Division (Grades 1–3) is to assess the level at which students are meeting curriculum expectations in reading, writing and mathematics at the end of the primary division (up to the end of Grade 3).

The results of this assessment are reported by
- individual student;
- school;
- school board and
- the whole province.

## What is reported?

The Individual Student Report includes
- the student's overall results for reading, writing and mathematics and
- comparative data showing the individual student's results in relation to school, board and provincial results.

School reports include
- overall school-level results for reading, writing and mathematics, with comparisons to board and provincial results;
- results by subgrouping, such as by gender and English-language learner and special needs status;
- contextual data on demographics and participation in the assessment;
- results over time;
- results of the student questionnaire accompanying the assessment;
- a Student Roster report that shows individual student results for each item on the assessment, with overall board and provincial results for comparison and
- profiles of strengths and areas for improvement in reading, writing and mathematics.

Board reports include
- overall board results for reading, writing and mathematics, with comparisons to provincial results;
- contextual data, results over time, reports by subgroup and questionnaire data and
- profiles at the board level of strengths and areas for improvement in reading, writing and mathematics.

Provincial reports include
- overall provincial results for reading, writing and mathematics, including results by board;
- contextual data, results over time, reports by subgroup and questionnaire data;
- instructional strategies for success and
- case studies (school success stories).

Note: In cases where the number of students being reported on for a school or board is small enough that individual students could be identified, EQAO does not release the reports publicly.

What are the benefits of the assessment?

EQAO provides the Ontario school system with valid, reliable and comparable year-to-year data on student achievement. Schools and boards can confidently use this data along with other contextual and assessment information (e.g., on demographics, attendance and pass rates) to determine how well their improvement strategies, such as staff development or new learning resources, are working. Beyond specific reporting, EQAO's primary division assessment

- provides data to assist schools and boards in improvement planning and target setting;
- supports the successful implementation of the curriculum;
- improves understanding of assessment practices among educators across the province through capacity building (for example, by assisting teachers to understand the curriculum and to develop related classroom assessments) and
- improves understanding of assessment practices among the public.

**Insight:**

**Is the assessment consistent with national and international assessments?**

The definitions of reading, writing and mathematics for the primary division assessment are consistent with the definitions of these terms for other national and international assessments in which Ontario students participate.

**The Progress in International Reading Literacy Study (PIRLS), Administered by the International Association for the Evaluation of Educational Achievement (Grade 4)**

> Readers are regarded as actively constructing meaning and as knowing effective reading strategies and how to reflect on reading. . . . Meaning is constructed through the interaction between the reader and text in the context of a particular reading experience (Mullis, Kennedy, Martin and Sainsbury, 2006, pp. 3–4).

The primary division assessment shares this view of readers and how they construct meaning. PIRLS does not assess writing.

PIRLS assesses the reading skills of nine-year-old (Grade 4) students. It is conducted under the auspices of the International Association for the Evaluation of Educational Achievement every five years in over 40 countries around the world.

In Ontario, Grade 4 classes in 200 randomly selected schools participate.

The PIRLS assessments help to determine trends in children's reading literacy achievement and policy and practices related to literacy. Countries that participate collect valuable information about students' performance in reading, as well as home, school and classroom influences on that achievement.

**Trends in International Mathematics and Science Study (TIMSS), Administered by the International Association for the Evaluation of Educational Achievement (Grades 4 and 8)**

The mathematics assessment framework for TIMSS is framed by two organizing dimensions: a content dimension and a cognitive dimension. Each dimension has several domains. The mathematics content domains in

TIMSS are Number, Algebra, Measurement, Geometry and Data, which are aligned with the content strands in *The Ontario Curriculum* and thus with those assessed by EQAO's primary division assessment. The cognitive mathematics domains in TIMSS include knowing facts and procedures, using concepts, solving routine problems and reasoning. These domains are detailed below.

**Cognitive Mathematics Domains**

Knowing Facts and Procedures: Having the factual knowledge (the basic language of mathematics and the essential mathematical facts and properties) and using it to solve routine problems.

Using Concepts: Making connections between mathematical concepts to judge the validity of mathematical statements and to create mathematical representations.

Solving Routine Problems: Solving problems similar to those encountered in mathematics textbooks.

Reasoning: Observing the facts and making conjectures to solve non-routine problems.

The mathematics component of the primary division assessment aligns with the content domains of the TIMSS assessments and considers mathematical processes and the above cognitive domains in its design and development. It also recognizes that several of these domains are present in each problem-solving task and that they cannot easily be separated. The primary division assessment does not assess every aspect of mathematics that is assessed by the Grades 4 and 8 TIMSS assessments, nor does TIMSS assess every aspect of *The Ontario Curriculum*. Notwithstanding, the primary division assessment is well aligned with the TIMSS assessments.

TIMSS assesses the mathematical learning of Grades 4 and 8 students in over 60 countries around the world, and it is conducted under the auspices of the International Association for the Evaluation of Educational Achievement.

In Ontario, over 7000 students in Grades 4 and 8 in randomly selected English- and French-language schools participate.

The TIMSS assessments are dedicated to improving the teaching and learning in mathematics and science for students around the world. TIMSS provides data about trends in mathematics and science achievement over time.

In This Chapter

- What is the definition of language for the primary division assessment?
- Does the definition of language align with *The Ontario Curriculum*?
- What is assessed in reading and writing?

**Insight:** How the definition of language aligns with current research

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# CHAPTER 3: Language Component

### What is the definition of language for the primary 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 primary division assessment, language constitutes the reading and writing skills required to understand reading selections and to communicate through written forms as expected in *The Ontario Curriculum* across all subjects up to the end of Grade 3.

In the reading component, students use reading strategies to interact with a variety of fiction and non-fiction reading selections to construct an understanding of the meaning of the texts. Students are asked to demonstrate their understanding of explicit (directly stated) and implicit (indirectly stated) meanings. They must also connect their understanding of the text to their personal knowledge and experience. The reading selections are representative of the material students are expected to read and understand in all subject areas of *The Ontario Curriculum* up to the end of Grade 3.

In the writing component, students develop, support and organize ideas in order to communicate them clearly and correctly through a variety of written text forms. These forms are representative of those that students are expected to know how to write in all subject areas in *The Ontario Curriculum* up to the end of Grade 3.

### Does the definition of language align with *The Ontario Curriculum*?

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

*The Ontario Curriculum, Grades 1–8: Language* (2006) states the following about reading:

> Reading is a complex process that involves the application of many strategies before, during, and after reading.…During reading, students may use "cueing systems"—that is, clues from context or from their understanding of language structures and/or letter-sound relationships—to help them solve unfamiliar words, and comprehension strategies to help them make meaning of the text. Comprehension strategies include predicting, visualizing, questioning, drawing inferences, identifying main ideas, summarizing, and monitoring and revising comprehension. After reading, students may analyse, synthesize, make connections, evaluate, and use other critical and creative thinking skills to achieve a deeper understanding of the material they have read.

*The Ontario Curriculum, Grades 1–8: Language* (2006) states the following about writing:

> Writing is a complex process that involves a range of skills and tasks. Students need to become disciplined thinkers in order to communicate their ideas clearly and effectively….As they learn to select and organize their ideas, they must also keep in mind the purpose for which they are writing and the audience they are addressing. To communicate clearly and effectively, they need to learn to use standard written forms and language conventions.

What is assessed in reading and writing?

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 3. The primary division assessment focuses on three reading skills:

- understanding explicitly stated information and ideas;
- understanding implicitly stated information and ideas (making inferences) and
- responding to reading by making connections between information and ideas in a reading selection and the reader's personal knowledge and experience (interpreting a reading selection by integrating its information and ideas with personal knowledge and experience).

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 3. The primary division assessment focuses on three writing skills:

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

**Insight:**

**How the definition of language aligns with current research**

Is the definition of language used by EQAO consistent with current research? This question is answered in the following 2004 paper, "Congruence of Language and Literacy as Defined for the Grade 3 Assessment and Research," by Shelley Peterson, Associate Professor (literacy), Department of Curriculum Teaching and Learning, OISE/UT:

Language and literacy are defined broadly in current research and for the Grade 3 assessment as constructing meaning through reading and writing a range of print and visual texts. Language and literacy are viewed as social practices that take place in and are influenced by the social and cultural contexts (including gender, race, class, age and other identities and power relationships) in which students interact with others (Alvermann & Phelps, 2002). As such, reading and writing are complementary—they involve making meaning for particular social purposes, using the available symbolic tools of letters, words, sentence structures and genre formats, as well as perspectives and understandings (Bainbridge & Malicky, 2004).

There is reciprocity between reading and writing (Clay, 1998). Students who read widely have a broad repertoire

of symbolic tools and meanings that they can use to compose their own texts. Students who write frequently for a variety of purposes and audiences using a variety of genres have ample opportunities to experiment with and consolidate what they learn through reading. They draw on the words, sentence structures, genre formats, writing styles, ideas and perspectives encountered in their reading to create and communicate their own ideas to others. Additionally, through writing, students come to understand how texts are constructed and learn how ideas are presented within texts. This knowledge helps students to understand ideas and information and make inferences and predictions when they are reading.

The reading component of the Grade 3 assessment is based on the widely accepted view in research that reading comprehension is the goal of reading (Pearson & Johnson, 1978; Pressley, 2000). Comprehension is influenced by factors inside and outside the reader. Internal factors include the reader's experience; social and cultural identities; what the reader knows about language, about print and about the world; as well as the reader's interest, motivation, strategies, purpose, perspectives and repertoire of reading skills. External factors include the reading task; the text organization and format; the vocabulary and topic of the text; and the social and physical environment.

Evidence of students' reading comprehension is reflected in the scoring guides of the Grade 3 assessment reading component: (1) analyzing textually explicit information and ideas that are directly stated in one part of the text; (2) synthesizing textually explicit information and ideas that are found in more than one place in the text; (3) inferring or predicting textually implicit ideas using background knowledge and experience together with information in the text; and (4) providing scriptally implicit ideas and information by making personal connections with background knowledge and experience (Pearson & Johnson, 1978; Raphael, 1986).

The writing component of the Grade 3 assessment is framed by a widely accepted understanding of writing as communicating meaning using the conventions of print and texts for various purposes and audiences within various social contexts (Chapman, 1997). Writers draw on their background knowledge about print, text structures and communicative possibilities of various genres, as well as their experiences and knowledge about the world in general, to compose texts.

A cognitive processing model (Flower & Hayes, 1981) is used to understand how students compose the texts required in the Grade 3 assessment's writing component. Writers' writing processes are viewed as non-linear and dynamic, varying from writer to writer and according to the purpose, audience and social context for the writing. Generally, writing involves some form of planning (e.g., generating and organizing ideas and determining goals), composing and drafting, and monitoring and revising of the growing text. Editing of conventions occurs at any point in writers' writing processes.

Evidence of students' writing development (Moffett, 1968) is reflected in the scoring guides of the primary division assessment's writing component:

(1) Students' writing is more highly valued as it develops from the vague, where they address a distant, unknown audience, to the concrete, where they address a known audience. This dimension is demonstrated when writers become aware of the need to provide information for readers who may or may not share their perspectives and experiences. They also recognize that clarity of communication requires the use of conventional punctuation, spelling and grammar.

(2) Students' writing is more highly valued as it develops from a confusing presentation of ideas and information to a more clear and coherent presentation. This dimension is demonstrated when writers move away from written work containing hackneyed information and ideas and from the use of vague, colloquial language and limited syntactic choices to composing more effective texts that organize ideas and information clearly and use language and sentence structures with some effectiveness.

# CHAPTER 4: Mathematics Component

In This Chapter

- What is the definition of mathematics for the primary division assessment?
- Does the definition of mathematics align with *The Ontario Curriculum*?
- What is assessed in mathematics?

**Insight:** What does current research tell us about learning and assessing mathematical knowledge?

## What is the definition of mathematics for the primary division assessment?

A number of sources have been used to construct the following definitions of mathematics.

> Mathematical literacy is an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgements and to use and engage with mathematics in ways that meet the needs of that individual's life as a constructive, concerned and reflective citizen (Organisation for Economic Co-operation and Development, 2003, p. 24).

> Achievement in mathematics goes beyond knowing mathematical facts and procedures; it also means being able to reason mathematically and to have the ability to interpret and solve mathematical problems (Artelt, Baumert, Julius-McElvany & Peschar, 2003).

### Content Strands

Mathematics spans several content strands or domains. The mathematics content strands for the assessment align with Ontario's elementary strands:

- Number Sense and Numeration
- Measurement
- Geometry and Spatial Sense
- Patterning and Algebra
- Data Management and Probability

### Mathematical Processes

Mathematics involves many different processes. It is often defined as having the following five components:

- *Conceptual understanding*—comprehension of mathematical concepts, operations and relations
- *Procedural fluency*—skill in carrying out procedures flexibly, accurately, efficiently and appropriately
- *Strategic competence*—ability to formulate, represent and solve mathematical problems
- *Adaptive reasoning*—capacity for logical thought, reflection, explanation and justification
- *Productive disposition*—habitual inclination to see mathematics as sensible, useful and worthwhile, coupled with a belief in diligence and one's own efficacy

(Kilpatrick, Swafford & Findell, 2001)

These components are different aspects of a complex whole. They are interwoven and interdependent and cannot be easily separated.

## Does the definition of mathematics align with *The Ontario Curriculum*?

EQAO's primary division assessment is a curriculum-based, standards-referenced large-scale assessment. It is developed in relation to the *Ontario Curriculum* expectations and standards (levels of achievement) for student performance. The descriptors of mathematical content and processes below are found on pages 53–54 of *The Ontario Curriculum, Grades 1–8: Mathematics* (2005).

**Mathematical Content Descriptors**

The following are highlights of student learning in Grade 3 from *The Ontario Curriculum*. They are provided to give teachers and parents a quick overview of the mathematical knowledge and skills that students are expected to acquire in each strand in this grade. The expectations on the pages that follow outline the required knowledge and skills in detail and provide information about the ways in which students are expected to demonstrate their learning, how deeply they will explore concepts and at what level of complexity they will perform procedures, and the mathematical processes they will learn and apply throughout the grade.

*Number Sense and Numeration:* representing and ordering numbers to 1000; representing money amounts to $10; decomposing and composing three-digit numbers; investigating fractions of a set; counting by 1's, 2's, 5's, 10's, 25's, and 100's; adding and subtracting three-digit numbers in a variety of ways; relating one-digit multiplication, and division by one-digit divisors, to real-life situations

*Measurement:* measuring distance using kilometres; telling time to the nearest 5 minutes; identifying temperature benchmarks; measuring perimeter using standard units; measuring mass in kilograms and capacity in litres; measuring area using grid paper; comparing the length, mass, and capacity of objects using standard units; relating minutes to hours, hours to days, days to weeks, and weeks to years

*Geometry and Spatial Sense:* using a reference tool to identify right angles and to compare angles with a right angle; classifying two-dimensional shapes by geometric properties (number of sides and angles); classifying three-dimensional figures by geometric properties (number of faces, edges, and vertices); relating different types of quadrilaterals; naming prisms and pyramids; identifying congruent shapes; describing movement on a grid map; recognizing transformations

*Patterning and Algebra:* creating and extending growing and shrinking patterns; representing geometric patterns with a number sequence, a number line, and a bar graph; determining the missing numbers in

equations involving addition and subtraction of one- and two-digit numbers; investigating the properties of zero and one in multiplication

*Data Management and Probability:* organizing objects into categories using two or more attributes; collecting and organizing categorical and discrete data; reading and displaying data using vertical and horizontal bar graphs; understanding mode; predicting the frequency of an outcome; relating fair games to equally likely events

**Mathematical Processes Descriptors**

These mathematical process expectations from *The Ontario Curriculum* are to be integrated into student learning associated with all the strands:

Throughout Grade 3, students will

*Problem Solving:* apply developing problem-solving strategies as they pose and solve problems and conduct investigations, to help deepen their mathematical understanding.

*Reasoning and Proving:* apply developing reasoning skills (e.g., pattern recognition, classification) to make and investigate conjectures (e.g., through discussion with others).

*Reflecting:* demonstrate that they are reflecting on and monitoring their thinking to help clarify their understanding as they complete an investigation or solve a problem (e.g., by explaining to others why they think their solution is correct).

*Selecting Tools and Computational Strategies:* select and use a variety of concrete, visual, and electronic learning tools and appropriate computational strategies to investigate mathematical ideas and to solve problems.

*Connecting:* make connections among simple mathematical concepts and procedures, and relate mathematical ideas to situations drawn from everyday contexts.

*Representing:* create basic representations of simple mathematical ideas (e.g., using concrete materials; physical actions, such as hopping or clapping; pictures; numbers; diagrams; invented symbols), make

connections among them, and apply them to solve problems.

*Communicating:* communicate mathematical thinking orally, visually, and in writing, using everyday language, a developing mathematical vocabulary, and a variety of representations

What is assessed in mathematics?

The mathematics component of the primary division assessment assesses key aspects of mathematics across the five strands in the mathematics curriculum:

- Number Sense and Numeration
- Measurement
- Geometry and Spatial Sense
- Patterning and Algebra
- Data Management and Probability

The assessment allows students to demonstrate that they can

- understand concepts;
- apply procedures;
- apply and adapt a variety of appropriate strategies to solve problems;
- use concrete materials to model mathematical ideas;
- make and investigate mathematical conjectures;
- select and use a variety of types of reasoning;
- communicate their mathematical thinking coherently;
- analyze the mathematical thinking of others;
- use appropriate mathematical language and conventions;
- connect mathematical ideas;
- recognize and apply mathematics in a variety of contexts;
- create and use representations to organize, record and communicate mathematically and
- use representations to model mathematical thinking.

(National Council of Teachers of Mathematics, 2000)

**Insight:**

**What does current research tell us about learning and assessing mathematical knowledge?**

The mathematics component of the EQAO primary division assessment is aligned with much of the current research in mathematics education. There is a strong match with curriculum content strands across most jurisdictions, and the mathematics component of the assessment includes mathematical processes and actions. The EQAO assessment is aligned with *The Ontario Curriculum*, and this alignment is well substantiated. Honouring the focus on problem solving in both the curriculum and this assessment component cannot be emphasized enough. Current research in mathematics teaching and learning recognizes that children learn more mathematics when instruction is based on their ways of thinking and engages them in problem solving (Yackel, 1997; Yackel & Cobbs, 1996; Zack & Graves, 2001). Children also appear to benefit from teachers assisting them in seeing the connections among various mathematical ideas (Boaler, 2002). Hence, mathematical concepts are not just transmitted but are the result of questioning, probing, making mistakes, reflecting and reworking. This is an active process in which the student plays a central role in trying to make sense of his or her experiences. These processes of constructing new learning can happen more easily and effectively if the students are working in a rich learning environment. In 1991, the National Council of Teachers of Mathematics (NCTM) presented a new vision of a mathematics class that is just as relevant today:

• Toward the classroom as a mathematics community and away from the classroom as simply a collection of individuals

• Toward logic and mathematical evidence as verification and away from the teacher as the sole authority for right answers

• Toward mathematical reasoning and away from mere memorizing procedures

• Toward conjecturing, inventing and problem solving and away from an emphasis on the mechanistic finding of answers

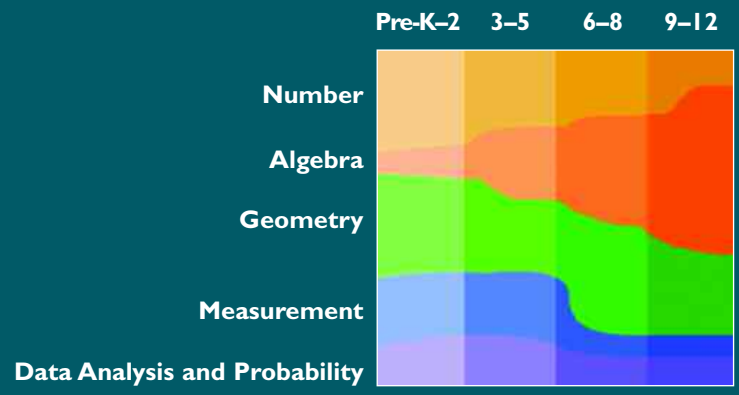
• Toward connecting mathematics, its ideas and its applications and away from treating mathematics as a body of isolated concepts and procedures

(Van de Walle, 2004)

Figure 1 shows the NCTM's suggestions for the emphasis on content strands across the grades.

As seen in this graphic, the balance of content strands is different at various grade levels. For instance, at Grade 3 there should be a stronger emphasis on Number Sense and Geometry than on Data Analysis and Probability. This agrees with research that suggests that children's ability to grapple with probability is highly limited and therefore should receive little attention (Fischbein & Gazit, 1984). Given the NCTM suggestions for the distribution of mathematics topics, the balance among the strands in the primary division assessment reflects the curriculum and the important mathematics that students should know.

**Figure 1: Varying emphasis of content strands across the grades (NCTM, 2000).**




The content standards should receive different emphases across the grade bands.

In This Chapter

- What does the primary division assessment consist of?
- What is in the language booklets?
- What is in the mathematics booklet?
- How does EQAO ensure that English-language learners and students with special education needs can participate fairly?

**Insight:** Understanding Ontario's student achievement levels

# CHAPTER 5: The Assessment Process

## What does the primary division assessment consist of?

The primary division assessment consists of three booklets: two language and one mathematics. Each booklet contains two sessions.

*Administering the Assessments of Reading, Writing and Mathematics, Primary Division (Grades 1–3) and Junior Division (Grades 4–6)* gives a suggested administration time for each session. These one-hour session lengths are general guidelines appropriate for most students. However, in acknowledgement of normal classroom practice, the assessments are designed to be untimed. Additional time should be provided to any student unable to complete a session in one hour. The amount of additional time per session will normally range from five to 20 minutes; however, students may take the time they need to complete the session as long as it is in one continuous sitting on the day on which the session is assigned.

## What is in the language booklets?

There are two language booklets, each with reading and writing tasks. The language booklets contain both operational and field-test items.

The operational portion of the reading component contains one long reading selection (450–500 words) followed by 10 multiple-choice questions and two open-response questions. The reading component also contains four short reading selections (200–250 words), each followed by four multiple-choice questions and two open-response questions.

The operational portion of the writing component requires students to write one one-page and two half-page responses and to answer eight multiple-choice questions.

The language booklets contain embedded field-test items in the reading and writing components, which comprise fewer than 20% of the items.

**Reading Component**

Primary Division Assessment Reading Component: Approximate Number of Items by Type

| | Multiple-Choice Items | Open-Response Items | Total Items |
|---|---|---|---|
| Operational | 26 | 10 | 36 |
| Field Test | 10 (or 4) | 2 | 12 (or 6) |
| Total Reading Items for Each Student | 36 (or 30) | 12 | 48 (or 42) |

| Primary Division Assessment Reading Component: Approximate Number of Raw Score Points and Percentage of Total Raw Score Points by Item Type | | |
|---|---|---|
| **Operational Item Type** | Number of Raw Score Points | Percentage of Total Raw Score Points |
| Multiple-Choice | 26 | 39% |
| Open-Response | 40 | 61% |
| Totals | 66 | 100% |

Note: Only students' responses to the operational items are used to determine their achievement on each component of the assessment.

## Writing Component

| Primary Division Assessment Writing Component: Approximate Number of Items by Type | | | |
|---|---|---|---|
| | Multiple-Choice Items | Writing Prompts | Total Items |
| Operational | 8 | 3 | 11 |
| Field Test | 1 | 0 (or 1) | 1 (or 2) |
| Total Writing Items for Each Student | 9 | 3 (or 4) | 12 (or 13) |

| Primary Division Assessment Writing Component: Approximate Number of Raw Score Points and Percentage of Total Raw Score Points by Item Type | | |
|---|---|---|
| **Operational Item Type** | Number of Raw Score Points | Percentage of Total Raw Score Points |
| Multiple-Choice | 8 | 28% |
| Writing Prompts | 21 | 72% |
| Totals | 29 | 100% |

Note: Only students' responses to the operational items are used to determine their achievement on each component of the assessment.

### What is in the mathematics booklet?

The operational portion of the mathematics booklet contains 28 multiple-choice and eight open-response questions. The eight open-response questions are distributed across the five strands (Number Sense and Numeration; Measurement; Geometry and Spatial Sense; Patterning and Algebra; and Data Management and Probability). The mathematics booklet also contains an embedded field-test component (about 20% of allotted time).

## Mathematics Component

**Primary Division Assessment Mathematics Component: Number of Items by Type**

| | Multiple-Choice Items | Open-Response Items | Total Items |
|---|---|---|---|
| Operational | 28 | 8 | 36 |
| Field Test | 4 | 1 | 5 |
| Total Mathematics Items for Each Student | 32 | 9 | 41 |

**Primary Division Assessment Mathematics Component: Number of Raw Score Points and Percentage of Total Raw Score Points by Item Type**

| **Operational Item Type** | Number of Raw Score Points | Percentage of Total Raw Score Points |
|---|---|---|
| Multiple-Choice | 28 | 47% |
| Open-Response | 32 | 53% |
| Totals | 60 | 100% |

Note: Only students' responses to the operational items are used to determine their achievement on each component of the assessment.

### How does EQAO ensure that English-language learners and students with special education needs can participate fairly?

English-language learners are provided with special provisions and students with special education needs are allowed accommodations to ensure that these students can participate in the Assessment of Reading, Writing and Mathematics, Primary Division (Grades 1–3) and can demonstrate the full extent of their skills. In cases where special provisions or accommodations will not address a student's needs, exemption from participation in the assessment is allowed. Each year, EQAO reviews and updates these provisions and accommodations to

ensure that they reflect new developments in supports for students. A separate document for students with special education needs and English-language learners outlines the policies and procedures for granting special provisions, accommodations and exemptions, ensuring the integrity of the assessment.

**Insight:**

**Understanding Ontario's student achievement levels**

EQAO uses the definitions for the Ontario Ministry of Education levels of achievement for the levels used on its assessments:

**Level 1** identifies achievement that falls much below the provincial standard, while still reflecting a passing grade.

**Level 2** identifies achievement that approaches the standard.

**Level 3** represents the provincial standard of achievement.

**Level 4** identifies achievement that surpasses the standard.

The characteristics given for Level 3 in the achievement charts in *The Ontario Curriculum* correspond to the provincial standard for achievement of the curriculum expectations. Parents of students achieving at Level 3 can be confident that their children will be prepared for work in the next grade.

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. It indicates that the student has achieved all or almost all of the expectations for that grade, and that he or she demonstrates the ability to use the knowledge and skills specified for that grade in more sophisticated ways than a student achieving at Level 3 (Ministry of Education, 2005, p. 19; Ministry of Education, 2006, p. 16).

After all items in a student's performance are scored, the data from the operational items are used to determine the student's level of performance. The Individual Student Report shows both the level and the range within the level at which the student performed. This enables parents and teachers to plan for improvement.

# CHAPTER 6: Curriculum Connections and the Blueprint

In This Chapter

- How are curriculum expectations reflected in the primary division assessment?

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### How are curriculum expectations reflected in the primary division assessment?

The primary division assessment blueprint in this chapter presents the expectations in clusters and gives the number and types of items on the assessment.

The blueprint also identifies which Grade 3 Ontario language and mathematics curriculum expectations are assessed and which are not assessed by the Assessment of Reading, Writing and Mathematics, Primary Division (Grades 1–3).

Some expectations cannot be appropriately assessed within the limits of a large-scale pencil-and-paper assessment. For instance, it is difficult to measure mathematics expectations that require students to use concrete materials on a large-scale assessment. This kind of skill is best assessed by the teacher in the classroom, where it is possible to see whether the students are actually using the concrete materials. Students should still be encouraged to use concrete materials as support throughout the mathematics component of the assessment. (For a comparison of large-scale and classroom assessment, see the chart in Chapter 1.)

In the blueprint, on the following pages, the expectations or parts thereof that cannot be measured appropriately by a large-scale assessment appear in italics.

Although the main focus of the Assessment of Reading, Writing and Mathematics, Primary Division (Grades 1–3) is the Grade 3 Ontario language and mathematics curriculum expectations, some parts of the assessment relate to Grades 1 and 2 curriculum expectations.

## Blueprint for the Primary Division Assessment

### Reading Component

| # | Grade 3 Reading Expectations | Question Type by Reading Text: Long Narrative Texts (450–500 words) | Short Narrative Texts (200–250 words) | Poems (up to 200 words) | Non-Narrative Informational Texts (200–250 words) | Graphic Texts (up to 200 words) | Reading Raw Score Points |
|---|---|---|---|---|---|---|---|
| 3R1.0 | read and demonstrate an understanding of a variety of literary, graphic, and informational texts, using a range of strategies to construct meaning | | | | | | |
| 3R1.1 | read a variety of literary texts, graphic texts, and informational texts | | | | | | |
| 3R1.2 | identify a variety of purposes for reading and *choose reading materials appropriate for those purposes* | | | | | | |
| 3R1.3 | *identify a variety of reading comprehension strategies and use them appropriately before, during, and after reading to understand texts* | | | | | | |
| 3R1.4 | demonstrate understanding of a variety of texts by identifying important ideas and some supporting details | 4 MC | 1 MC | 1 MC | 1 MC | 2 MC | 9 x 1 + 7 x 4 = 37 score points or 56% of reading score |
| 3R1.5 | make inferences about texts using stated and implied ideas from the texts as evidence | 1 OR | 2 OR | 1 OR | 2 OR | 1 OR | |
| 3R1.6 | extend understanding of texts by connecting the ideas in them to their own knowledge and experience, to other familiar texts, and to the world around them | | | | | | |
| 3R1.7 | identify specific elements of texts and explain how they contribute to the meaning of the texts | | | | | | |
| 3R1.8 | express personal opinions about ideas presented in texts | | | | | | |
| 3R1.9 | identify the point of view presented in a text and suggest some possible alternative perspectives | | | | | | |

MC multiple-choice item  OR open-response item

| # | Grade 3 Reading Expectations | Question Type by Reading Text | | | | | Reading Raw Score Points |
|---|---|---|---|---|---|---|---|
| | | Long Narrative Texts (450–500 words) | Short Narrative Texts (200–250 words) | Poems (up to 200 words) | Non-Narrative Informational Texts (200–250 words) | Graphic Texts (up to 200 words) | |
| 3R2.0 | recognize a variety of text forms, text features, and stylistic elements and demonstrate understanding of how they help communicate meaning | 3 MC<br>1 OR | 1 MC | 1 MC<br>1 OR | 1 MC | 1 MC<br>1 OR | 7 x 1 +<br>3 x 4 =<br>19 score points or 29% of reading score |
| 3R2.1 | identify and describe the characteristics of a variety of text forms, with a focus on literary texts such as a fable or adventure story, graphic texts such as a comic book, and informational texts such as a nature magazine | | | | | | |
| 3R2.2 | recognize a few organizational patterns in texts of different types, and explain how the patterns help readers understand the texts | | | | | | |
| 3R2.3 | identify a variety of text features and explain how they help readers understand texts | | | | | | |
| 3R2.4 | identify some elements of style, including voice, word choice, and different types of sentences, and explain how they help readers understand texts | | | | | | |
| 3R3.0 | use knowledge of words and cueing systems to read fluently | 3 MC | 2 MC | 2 MC | 2 MC | 1 MC | 10 x 1 =<br>10 score points or 15% of reading score |
| 3R3.1 | automatically read and understand most high-frequency words, many regularly used words, and words of personal interest or significance, in a variety of reading contexts | | | | | | |
| 3R3.2 | 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 | | | | | | |
| 3R3.3 | *read appropriate texts at a sufficient rate and with sufficient expression to convey the sense of text readily to the reader and an audience* | | | | | | |
| 3R4.0 | *reflect on and identify their strengths as readers, areas for improvement, and the strategies they found most helpful before, during, and after reading* | | | | | | |
| 3R4.1 | *identify, initially with some support and direction, what strategies they found most helpful before, during, and after reading and how they can use these and other strategies to improve as readers* | | | | | | |
| 3R4.2 | *explain, initially with some support and direction, how their skills in listening, speaking, writing, viewing, and representing help them make sense of what they read* | | | | | | |
| | MC multiple-choice item OR open-response item | 10 MC<br>2 OR | 4 MC<br>2 OR | 4 MC<br>2 OR | 4 MC<br>2 OR | 4 MC<br>2 OR | **Total reading raw score points = 66 or 100% of total score** |

## Writing Component

| # | Grade 3 Writing Expectations | Item Types | Writing Raw Score Points |
|---|---|---|---|
| 3W1.0 | generate, gather, and organize ideas and information to write for an intended purpose and audience | | |
| 3W1.1 | *identify the topic, purpose, audience and form for writing* | | |
| 3W1.2 | generate ideas about a potential topic, using a variety of strategies and resources | | |
| 3W1.3 | *gather information to support ideas for writing in a variety of ways and/or from a variety of sources* | | |
| 3W1.4 | sort ideas and information for their writing in a variety of ways | | |
| 3W1.5 | **identify and order main ideas and supporting details into units that could be used to develop a short, simple paragraph, using graphic organizers and organizational patterns** | | |
| 3W1.6 | determine whether the ideas and information they have gathered are relevant and adequate for the purpose, and *gather new material if necessary* | 1 LWP<br>Long Writing Genres<br>• letter<br>• story (real or imagined) | LWP<br>1 x 7 = 7 score points or 24% of writing score |
| 3W2.0 | draft and revise their writing, using a variety of informational, literary, and graphic forms and stylistic elements appropriate for the purpose and audience | | |
| 3W2.1 | write short texts using a variety of forms | | |
| 3W2.2 | *establish a personal voice in their writing, with a focus on using concrete words and images to convey their attitude or feeling towards the subject or audience* | | |
| 3W2.3 | **use words and phrases that will help convey their meaning as specifically as possible** | | |
| 3W2.4 | **vary sentence structures and maintain continuity by using joining words to combine simple sentences and using words that indicate time and sequence to link sentences** | 2 SWP<br>Short Writing Genres<br>• description<br>• sequence of events<br>• paragraph about a trip<br>• personal or factual recount<br>• procedure/directions (recipe)<br>• simple how-to report<br>• explanatory paragraph<br>• advertisement | SWP<br>2 x 7 = 14 score points or 48% of writing score |
| 3W2.5 | identify their point of view and other possible points of view on the topic, and determine if their information supports their own view | | |
| 3W2.6 | *identify elements of their writing that need improvement, using feedback from the teacher and peers, with a focus on specific features* | | |
| 3W2.7 | **make revisions to improve the content, clarity, and interest of their written work, using several types of strategies** | | |
| 3W2.8 | *produce revised draft pieces of writing to meet identified criteria based on the expectations related to content, organization, style, and use of conventions* | | |
| 3W3.0 | use editing, proofreading, and publishing skills and strategies, and knowledge of language conventions, to correct errors, refine expression, and present their work effectively | | |
| 3W3.1 | **spell familiar words correctly** | | |
| 3W3.2 | **spell unfamiliar words using a variety of strategies that involve understanding sound-symbol relationships, word structures, word meanings, and generalizations about spelling** | 8 MC<br>**(expectations in bold face)** | MC<br>8 x 1 = 8 score points or 28% of writing score |
| 3W3.3 | *confirm spellings and word meanings or word choice using several different types of resources* | | |
| 3W3.4 | **use punctuation to help communicate their intended meaning, with a focus on the use of: quotation marks to indicate direct speech; commas to mark grammatical boundaries within sentences; capital letters and final punctuation to mark the beginning and end of sentences** | | |
| 3W3.5 | **use parts of speech appropriately to communicate their meaning clearly with a focus on the use of: proper nouns for titles, the possessive pronouns my, mine, your, yours, his, her, hers, its; action verbs in the present and simple past tenses; adjectives and adverbs; question words** | | |
| 3W3.6 | *proofread and correct their writing using guidelines developed with peers and the teacher* | | |
| 3W3.7 | *use some appropriate elements of effective presentation in the finished product, including print, script, different fonts, graphics, and layout* | | |
| 3W3.8 | *produce pieces of published work to meet identified criteria based on the expectations related to content, organization, style, use of conventions, and use of presentation strategies* | | |
| 3W4.0 | *reflect on and identify their strengths as writers, areas for improvement, and the strategies they found most helpful at different stages of the writing process* | | |
| 3W4.1 | *identify what strategies they found most helpful before, during, and after writing and what steps they can take to improve as writers* | | |
| 3W4.2 | *describe, with prompting by the teacher, how some of their skills in listening, speaking, reading, viewing, and representing help in their development as writers* | | |
| 3W4.3 | *select pieces of writing that they think show their best work and explain the reasons for their selection* | | |
| | | 8 MC<br>1 LWP<br>2 SWP | **Total writing raw score points = 29 or 100% of total score** |

MC multiple-choice item  LWP long writing prompt (one page)  SWP short writing prompt (1/2 page)

| # | Grade 3 Mathematics Expectations | | |
|---|---|---|---|
| | **Mathematical Process Expectations**<br>Although the primary division assessment does not measure the process expectations, students are required to apply the mathematical processes in order to demonstrate success on the assessment. | | |
| 3m1 | **Problem Solving**<br>apply developing problem-solving strategies as they pose and solve problems and conduct investigations, to help deepen their mathematical understanding | | |
| 3m2 | **Reasoning and Proving**<br>apply developing reasoning skills (e.g., pattern recognition, classification) to make and investigate conjectures (e.g., through discussion with others) | | |
| 3m3 | **Reflecting**<br>demonstrate that they are reflecting on and monitoring their thinking to help clarify their understanding as they complete an investigation or solve a problem (e.g., by explaining to others why they think their solution is correct) | | |
| 3m4 | **Selecting Tools and Computational Strategies**<br>select and use a variety of concrete, visual, and electronic learning tools and appropriate computational strategies to investigate mathematical ideas and to solve problems | | |
| 3m5 | **Connecting**<br>make connections among simple mathematical concepts and procedures, and relate mathematical ideas to situations drawn from everyday contexts | | |
| 3m6 | **Representing**<br>create basic representations of simple mathematical ideas (e.g., using concrete materials; physical actions, such as hopping or clapping; pictures; numbers; diagrams; invented symbols), make connections among them, and apply them to solve problems | | |
| 3m7 | **Communicating**<br>communicate mathematical thinking orally, visually, and in writing, using everyday language, a developing mathematical vocabulary, and a variety of representations. | | |

| # | Grade 3 Mathematics Expectations | Item Types<br>MC Total = 28<br>OR Total = 8 | Mathematics Raw Score Points |
|---|---|---|---|
| | **Number Sense and Numeration** | | |
| 3m8 | **Number Sense and Numeration, Overall Expectation 1**<br>read, represent, compare, and order whole numbers to 1000, and *use concrete materials* to represent fractions and money amounts to $10 | | |
| | **Number Sense and Numeration, Specific Expectations for Overall 1: Quantity Relationships** | | |
| 3m11 | represent, compare, and order whole numbers to 1000, using a variety of tools (e.g., base ten materials or drawings of them, number lines with increments of 100 or other appropriate amounts) | | |
| 3m12 | read and print in words whole numbers to one hundred, using meaningful contexts (e.g., books, speed limit signs) | | |
| 3m13 | identify and represent the value of a digit in a number according to its position in the number (e.g., use base ten materials to show that the 3 in 324 represents 3 hundreds) | | |
| 3m14 | compose and decompose three-digit numbers into hundreds, tens, and ones *in a variety of ways, using concrete materials* (e.g., use base ten materials to decompose 327 into 3 hundreds, 2 tens, and 7 ones, or into 2 hundreds, 12 tens, and 7 ones) | 3 MC | 3 x 1 + 1 x 4 = 7 score points or 12% of mathematics score |
| 3m15 | round two-digit numbers to the nearest ten, in problems arising from real-life situations | | |
| 3m16 | represent and explain, *using concrete materials*, the relationship among the numbers 1, 10, 100, and 1000 (e.g., use base ten materials to represent the relationship between a decade and a century, or a century and a millennium) | 1 OR | |
| 3m17 | divide whole objects and sets of objects into equal parts, and identify the parts using fractional names (e.g., one half; three thirds; two fourths or two quarters), without using numbers in standard fractional notation | | |
| 3m18 | represent and describe the relationships between coins and bills up to $10 (e.g., "There are eight quarters in a toonie and ten dimes in a loonie.") | | |
| 3m19 | estimate, count, and represent (using the $ symbol) the value of a collection of coins and bills with a maximum value of $10 | | |
| 3m20 | solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 1000 (*Sample problem:* Do you know anyone who has lived for close to 1000 days? Explain your reasoning.) | | |
| 3m9 | **Number Sense and Numeration, Overall Expectation 2**<br>demonstrate an understanding of magnitude by counting forward and backwards by various numbers and from various starting points | | |
| | **Number Sense and Numeration, Specific Expectations for Overall 2: Counting** | | |
| 3m21 | count forward by 1's, 2's, 5's, 10's, and 100's to 1000 from various starting points, and by 25's to 1000 starting from multiples of 25, *using a variety of tools and strategies* (e.g., skip count with and without the aid of a calculator; skip count by 10's using dimes) | | |
| 3m22 | count backwards by 2's, 5's, and 10's from 100 using multiples of 2, 5, and 10 as starting points, and count backwards by 100's from 1000 and any number less than 1000, *using a variety of tools* (e.g., number lines, calculators, coins) *and strategies* | | |
| 3m10 | **Number Sense and Numeration, Overall Expectation 3**<br>solve problems involving the addition and subtraction of single and multi-digit whole numbers, *using a variety of strategies*, and demonstrate an understanding of multiplication and division | | |
| | **Number Sense and Numeration, Specific Expectations for Overall 3: Operational Sense** | | |
| 3m23 | solve problems involving the addition and subtraction of two-digit numbers, *using a variety of mental strategies* (e.g., to add 37 + 26, add the tens, add the ones, then combine the tens and ones, like this: 30 + 20 = 50, 7 + 6 = 13, 50 + 13 = 63) | 4 MC | 4 x 1 + 1 x 4 = 8 score points or 13% of mathematics score |
| 3m24 | add and subtract three-digit numbers, *using concrete materials*, student-generated algorithms, and standard algorithms | | |
| 3m25 | use estimation when solving problems involving addition and subtraction, to help judge the reasonableness of a solution | 1 OR | |
| 3m26 | add and subtract money amounts, *using a variety of tools* (e.g., currency manipulatives, drawings), to make simulated purchases and change for amounts up to $10 (*Sample problem:* You spent 5 dollars and 75 cents on one item and 10 cents on another item. How much did you spend in total?) | | |
| 3m27 | relate multiplication of one-digit numbers and division by one-digit divisors to real-life situations, *using a variety of tools and strategies* (e.g., place objects in equal groups, use arrays, write repeated addition or subtraction sentences) (*Sample problem:* Give a real-life example of when you might need to know that 3 groups of 2 is 3 x 2.) | | |
| 3m28 | multiply to 7 x 7 and divide to 49 ÷ 7, *using a variety of mental strategies* (e.g., doubles, doubles plus another set, skip counting) | | |

| # | Grade 3 Mathematics Expectations | Item Types<br>MC Total = 28<br>OR Total = 8 | Mathematics Raw Score Points |
|---|---|---|---|
| | **Measurement** | | |
| 3m29 | **Measurement, Overall Expectation 1**<br>estimate, measure, and record length, perimeter, area, mass, capacity, time, and temperature, using standard units | | |
| | **Measurement, Specific Expectations for Overall 1: Attributes, Units, and Measurement Sense** | | |
| 3m31 | estimate, measure, and record length, height, and distance, using standard units (i.e., centimetre, metre, kilometre) (*Sample problem:* While walking with your class, stop when you think you have travelled one kilometre.) | | |
| 3m32 | draw items using a ruler, given specific lengths in centimetres (*Sample problem:* Draw a pencil that is 5 cm long) | | |
| 3m33 | read time using analogue clocks, to the nearest five minutes, and using digital clocks (e.g., 1:23 means twenty-three minutes after one o'clock), and represent time in 12-hour notation | | |
| 3m34 | estimate, read (i.e., using a thermometer), and record positive temperatures to the nearest degree Celsius (i.e., using a number line; using appropriate notation) (*Sample problem:* Record the temperature outside each day using a thermometer, and compare your measurements with those reported in the daily news.) | | |
| 3m35 | identify benchmarks for freezing, cold, cool, warm, hot, and boiling temperatures as they relate to water and for cold, cool, warm, and hot temperatures as they relate to air (e.g., water freezes at 0°C; the air temperature on a warm day is about 20°C, but water at 20°C feels cool) | | |
| 3m36 | estimate, measure, and record the perimeter of two-dimensional shapes, *through investigation* using standard units (*Sample problem:* Estimate, measure, and record the perimeter of your notebook.) | | |
| 3m37 | estimate, measure (i.e., using centimetre grid paper, arrays), and record area (e.g., if a row of 10 connecting cubes is approximately the width of a book, skip counting down the cover of the book with the row of cubes [i.e., counting 10, 20, 30, ...] is one way to determine the area of the book cover) | 8 MC | 8 x 1 + 1 x 4 = 12 score points or 20% of mathematics score |
| 3m38 | choose benchmarks for a kilogram and a litre to help them perform measurement tasks | 1 OR | |
| 3m39 | estimate, measure, and record the mass of objects (e.g., can of apple juice, bag of oranges, bag of sand), using the standard unit of the kilogram or parts of a kilogram (e.g., half, quarter) | | |
| 3m40 | estimate, measure, and record the capacity of containers (e.g., juice can, milk bag), using the standard unit of the litre or parts of a litre (e.g., half, quarter) | | |
| 3m30 | **Measurement, Overall Expectation 2**<br>compare, describe, and order objects, using attributes measured in standard units | | |
| | **Measurement, Specific Expectations for Overall 2: Measurement Relationships** | | |
| 3m41 | compare standard units of length (i.e., centimetre, metre, kilometre) (e.g., centimetres are smaller than metres), and select and justify the most appropriate standard unit to measure length | | |
| 3m42 | compare and order objects on the basis of linear measurements in centimetres and/or metres (e.g., compare a 3 cm object with a 5 cm object; compare a 50 cm object with a 1 m object) in problem-solving contexts | | |
| 3m43 | compare and order various shapes by area, using congruent shapes (e.g., from a set of pattern blocks or Power Polygons) and grid paper for measuring (*Sample problem:* Does the order of the shapes change when you change the size of the pattern blocks you measure with?) | | |
| 3m44 | describe, *through investigation* using grid paper, the relationship between the size of a unit of area and the number of units needed to cover a surface (*Sample problem:* What is the difference between the numbers of squares needed to cover the front of a book, using centimetre grid paper and using two-centimetre grid paper?) | | |
| 3m45 | compare and order a collection of objects, using standard units of mass (i.e., kilogram) and/or capacity (i.e., litre) | | |
| 3m46 | solve problems involving the relationships between minutes and hours, hours and days, days and weeks, and weeks and years, *using a variety of tools* (e.g., clocks, calendars, calculators) | | |

MC multiple-choice item  OR open-response item

| # | Grade 3 Mathematics Expectations | Item Types<br>MC Total = 28<br>OR Total = 8 | Mathematics Raw Score Points |
|---|---|---|---|
| | **Geometry and Spatial Sense** | | |
| 3m47 | **Geometry and Spatial Sense, Overall Expectation 1**<br>compare two-dimensional shapes and three-dimensional figures and sort them by their geometric properties | | |
| | **Geometry and Spatial Sense, Specific Expectations for Overall 1: Geometric Properties** | | |
| 3m50 | use a reference tool (e.g., paper corner, pattern block, carpenter's square) to identify right angles and to describe angles as greater than, equal to, or less than a right angle (*Sample problem:* Which pattern blocks have angles bigger than a right angle?) | | |
| 3m51 | identify and compare various polygons (i.e., triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons) and sort them by their geometric properties (i.e., number of sides; side lengths; number of interior angles; number of right angles) | | |
| 3m52 | compare various angles, *using concrete materials* and pictorial representations, and describe angles as bigger than, smaller than, or about the same as other angles (e.g., "Two of the angles on the red pattern block are bigger than all the angles on the green pattern block.") | | |
| 3m53 | compare and sort prisms and pyramids by geometric properties (i.e., number and shape of faces, number of edges, number of vertices), *using concrete materials* | 3 MC | 3 x 1 +<br>1 x 4 =<br>7 score points<br>or 12% of<br>mathematics<br>score |
| 3m54 | *construct rectangular prisms* (e.g., using given paper nets; using Polydrons), and describe geometric properties (i.e., number and shape of faces, number of edges, number of vertices) of the prisms | 1 OR | |
| 3m48 | **Geometry and Spatial Sense, Overall Expectation 2**<br>describe relationships between two-dimensional shapes, and between two-dimensional shapes and three-dimensional figures | | |
| | **Geometry and Spatial Sense, Specific Expectations for Overall 2: Geometric Relationships** | | |
| 3m55 | solve problems requiring the greatest or least number of two-dimensional shapes (e.g., pattern blocks) needed to compose a larger shape in a variety of ways (e.g., to cover an outline puzzle) (*Sample problem:* Compose a hexagon using different numbers of smaller shapes.) | | |
| 3m56 | explain the relationships between different types of quadrilaterals (e.g., a square is a rectangle because a square has four sides and four right angles; a rhombus is a parallelogram because opposite sides of a rhombus are parallel) | | |
| 3m57 | identify and describe the two-dimensional shapes that can be found in a three-dimensional figure (*Sample problem:* Build a structure from blocks, toothpicks, or other concrete materials, and describe it using geometric terms, so that your partner will be able to build your structure without seeing it.) | | |
| 2m58 | describe and name prisms and pyramids by the shape of their base (e.g., rectangular prism, square-based pyramid) | | |
| 3m59 | identify congruent two-dimensional shapes *by manipulating and matching concrete materials* (e.g., by translating, reflecting, or rotating pattern blocks) | | |
| 3m49 | **Geometry and Spatial Sense, Overall Expectation 3**<br>identify and describe the locations and movements of shapes and objects | | |
| | **Geometry and Spatial Sense, Specific Expectations for Overall 3: Location and Movement** | | |
| 3m60 | describe movement from one location to another using a grid map (e.g., to get from the swings to the sandbox, move three squares to the right and two squares down) | 1 MC | 1 x 1 +<br>1 x 4 =<br>5 score points<br>or 8% of<br>mathematics<br>score |
| 3m61 | identify flips, slides, and turns, *through investigation using concrete materials and physical motion*, and name flips, slides, and turns as reflections, translations, and rotations (e.g., a slide to the right is a translation; a turn is a rotation) | 1 OR | |
| 3m62 | complete and describe designs and pictures of images that have a vertical, horizontal, or diagonal line of symmetry (*Sample problem:* Draw the missing portion of the given butterfly on grid paper.) | | |

MC multiple-choice item  OR open-response item

| # | Grade 3 Mathematics Expectations | Item Types<br>MC Total = 28<br>OR Total = 8 | Mathematics Raw Score Points |
|---|---|---|---|
| | **Patterning and Algebra** | | |
| 3m63 | **Patterning and Algebra, Overall Expectation 1**<br>describe, extend, and create a variety of numeric patterns and geometric patterns | | |
| | **Patterning and Algebra, Specific Expectations for Overall 1: Patterns and Relationships** | | |
| 3m65 | identify, extend, and create a repeating pattern involving two attributes (e.g., size, colour, orientation, number), *using a variety of tools* (e.g., pattern blocks, attribute blocks, drawings) (*Sample problem:* Create a repeating pattern using three colours and two shapes.) | | |
| 3m66 | identify and describe, *through investigation*, number patterns involving addition, subtraction, and multiplication, represented on a number line, on a calendar, and on a hundreds chart (e.g., the multiples of 9 appear diagonally in a hundreds chart) | | |
| 3m67 | extend repeating, growing, and shrinking number patterns (*Sample problem:* Write the next three terms in the pattern 4, 8, 12, 16, ….) | | |
| 3m68 | create a number pattern involving addition or subtraction, given a pattern represented on a number line or a pattern rule expressed in words (*Sample problem:* Make a number pattern that starts at 0 and grows by adding 7 each time.) | | |
| 3m69 | represent simple geometric patterns using a number sequence, a number line, or a bar graph (e.g., the given growing pattern of toothpick squares can be represented numerically by the sequence 4, 7, 10, …, which represents the number of toothpicks used to make each figure)<br>**Figure 1** **Figure 2** **Figure 3** | 6 MC<br>1 OR | 6 x 1 + 1 x 4 = 10 score points or 17% of mathematics score |
| 3m70 | demonstrate, *through investigation*, an understanding that a pattern results from repeating an action (e.g., clapping, taking a step forward every second), repeating an operation (e.g., addition, subtraction), using a transformation (e.g., slide, flip, turn), or making some other repeated change to an attribute (e.g., colour, orientation) | | |
| 3m64 | **Patterning and Algebra, Overall Expectation 2**<br>demonstrate an understanding of equality between pairs of expressions, using addition and subtraction of one- and two-digit numbers | | |
| | **Patterning and Algebra, Specific Expectations for Overall 2: Expressions and Equality** | | |
| 3m71 | determine, *through investigation*, the inverse relationship between addition and subtraction (e.g., since 4 + 5 = 9, then 9 − 5 = 4; since 16 − 9 = 7, then 7 + 9 = 16) | | |
| 3m72 | determine, the missing number in equations involving addition and subtraction of one- and two-digit numbers, *using a variety of tools and strategies* (e.g., modelling with concrete materials, using guess and check with and without the aid of a calculator) (*Sample problem:* What is the missing number in the equation 25 − 4 = 15 + ☐ ?) | | |
| 3m73 | identify, *through investigation*, the properties of zero and one in multiplication (i.e., any number multiplied by zero equals zero; any number multiplied by 1 equals the original number) (*Sample problem:* Use tiles to create arrays that represent 3 x 3, 3 x 2, 3 x 1, and 3 x 0. Explain what you think will happen when you multiply any number by 1, and when you multiply any number by 0.) | | |
| 3m74 | identify, *through investigation*, and use the associative property of addition to facilitate computation with whole numbers (e.g., "I know that 17 + 16 equals 17 + 3 + 13. This is easier to add in my head because I get 20 + 13 = 33.") | | |

MC multiple-choice item OR open-response item

| # | Grade 3 Mathematics Expectations | Item Types<br>MC Total = 28<br>OR Total = 8 | Mathematics Raw Score Points |
|---|---|---|---|
| | **Data Management and Probability** | | |
| 3m75 | **Data Management and Probability, Overall Expectation 1**<br>collect and organize categorical or discrete primary data and display the data using charts and graphs, including vertical and horizontal bar graphs, with labels ordered appropriately along horizontal axes, as needed | | |
| | **Data Management and Probability, Specific Expectations for Overall 1: Collection and Organization of Data** | | |
| 3m78 | demonstrate an ability to organize objects into categories, by sorting and classifying objects using two or more attributes simultaneously (*Sample problem:* Sort a collection of buttons by size, colour, and number of holes.) | | |
| 3m79 | *collect data by conducting a simple survey about themselves, their environment, issues in their school or community, or content from another subject* | | |
| 3m80 | collect and organize categorical or discrete primary data and display the data in charts, tables, and graphs (including vertical and horizontal bar graphs), with appropriate titles and labels and with labels ordered appropriately along horizontal axes, as needed, using many-to-one correspondence (e.g., in a pictograph, one car sticker represents 3 cars; on a bar graph, one square represents 2 students) (*Sample problem:* Graph data related to the eye colour of students in the class, using a vertical bar graph. Why does the scale on the vertical axis include values that are not in the set of data?) | | |
| 3m76 | **Data Management and Probability, Overall Expectation 2**<br>read, describe, and interpret primary data presented in charts and graphs, including vertical and horizontal bar graphs | 3 MC | 3 x 1 + 2 x 4 = 11 score points or 18% of mathematics score |
| | **Data Management and Probability, Specific Expectations for Overall 2: Data Relationships** | 2 OR | |
| 3m81 | read primary data presented in charts, tables, and graphs (including vertical and horizontal bar graphs), then describe the data using comparative language, and describe the shape of the data (e.g., "Most of the data are at the high end."; "All of the data values are different.") | | |
| 3m82 | interpret and draw conclusions from data presented in charts, tables, and graphs | | |
| 3m83 | demonstrate an understanding of mode (e.g., "The mode is the value that shows up most often on a graph."), and identify the mode in a set of data | | |
| 3m77 | **Data Management and Probability, Overall Expectation 3**<br>predict *and investigate* the frequency of a specific outcome in a simple probability experiment | | |
| | **Data Management and Probability, Specific Expectations for Overall 3: Probability** | | |
| 3m84 | predict the frequency of an outcome in a simple probability experiment or game (e.g., "I predict that an even number will come up 5 times and an odd number will come up 5 times when I roll a number cube 10 times."), *then perform the experiment,* and compare the results with the predictions, using mathematical language | | |
| 3m85 | demonstrate, *through investigation*, an understanding of fairness in a game and relate this to the occurrence of equally likely outcomes | | |
| | MC multiple-choice item OR open-response item | 28 MC<br>8 OR | **Total mathematics raw score points = 60 or 100% of total score** |

In This Chapter

- How is the primary division assessment scored?

# CHAPTER 7: How the Assessment Is Scored

## How is the primary division assessment scored?

Each open-response item 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. Multiple-choice items are scored by machine.

### Reading: Open-Response Questions

| EQAO Generic Primary Division Assessment Rubric for Open-Response Reading Questions | |
|---|---|
| **Code** | **Descriptor** |
| **Blank** | • blank: nothing written or drawn in the space provided |
| **Illegible/ Off topic** | • illegible: cannot be read; completely crossed out/erased; not written in English<br>• irrelevant content: does not attempt assigned question (e.g., comment on the task, drawings, "?", "!", "I don't know")<br>• off topic: no relationship of written work to the question |
| **Code 10** | • response is developed with irrelevant or inaccurate ideas and information from the reading selection<br>• response is developed with personal knowledge and experience rather than with reference to the reading selection |
| **Code 20** | • response addresses only part of the question<br>• response is developed with limited support; ideas and information from the reading selection are minimal or vague |
| **Code 30** | • response addresses the complete question<br>• 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 |
| **Code 40** | • response addresses the complete question<br>• response is developed with accurate, specific and relevant ideas and information from the reading selection |

## Writing: Writing Tasks

| EQAO Generic Primary Division Assessment Rubric for Topic Development in Writing Tasks | |
|---|---|
| **Code** | **Descriptor** |
| **Blank** | Blank: nothing written or drawn in the space provided |
| **Illegible/ Off topic** | Illegible: cannot be read; completely crossed out/erased; not written in English<br>**OR**<br>Irrelevant content: does not attempt assigned prompt (e.g., comment on the task, drawings, "?", "!", "I don't know")<br>**OR**<br>Off topic: no relationship of written work to assigned prompt<br>**OR**<br>Errors in conventions prevent communication |
| **Code 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. |
| **Code 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. |
| **Code 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. |
| **Code 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. |

## Writing: Writing Tasks

| EQAO Generic Primary Division Assessment Rubric for Use of Conventions in Writing Tasks | |
|---|---|
| **Code** | **Descriptor** |
| **Blank** | Blank: nothing written or drawn in the space provided |
| **Illegible/ Off topic** | Illegible: cannot be read; completely crossed out/erased; not written in English<br>**OR**<br>Errors in conventions prevent communication |
| **Code 10** | Errors in conventions interfere with communication<br>**OR**<br>Insufficient evidence to assess the use of conventions |
| **Code 20** | Errors in conventions do not interfere with communication |
| **Code 30** | Conventions are used appropriately to communicate |

## Mathematics: Open-Response Questions

| EQAO Generic Primary Division Assessment Rubric for Open-Response Mathematics Questions | |
|---|---|
| **Code** | **Descriptor** |
| **Blank** | • blank: nothing written or drawn in response to the question |
| **Illegible/ Off topic** | • illegible: cannot be read; completely crossed out/erased; not written in English<br>• irrelevant content: does not attempt assigned question (e.g., comment on the task, drawings, "?", "!", "I don't know")<br>• off topic: no relationship of written work to the question |
| **Code10** | • demonstration of limited understanding of concepts and/or procedures<br>• application of knowledge and skills shows limited effectiveness due to<br>  • misunderstanding of concepts<br>  • incorrect selection or misuse of procedures<br>• problem-solving process shows limited effectiveness due to<br>  • minimal evidence of a solution process<br>  • limited identification of important elements of the problem<br>  • too much emphasis on unimportant elements of the problem<br>  • no conclusions presented<br>  • conclusion presented without supporting evidence |
| **Code 20** | • demonstration of some understanding of concepts and/or procedures<br>• application of knowledge and skills shows some effectiveness due to<br>  • partial understanding of the concepts<br>  • errors and/or omissions in the application of the procedures<br>• problem-solving process shows some effectiveness due to<br>  • an incomplete solution process<br>  • identification of some of the important elements of the problem<br>  • some understanding of the relationships between important elements of the problem<br>  • simple conclusions with little supporting evidence |
| **Code 30** | • demonstration of considerable understanding of concepts and/or procedures<br>• application of knowledge and skills shows considerable effectiveness due to<br>  • an understanding of most of the concepts<br>  • minor errors and/or omissions in the application of the procedures<br>• problem-solving process shows considerable effectiveness due to<br>  • a solution process that is nearly complete<br>  • identification of most of the important elements of the problem<br>  • a considerable understanding of the relationships between important elements of the problem<br>  • appropriate conclusions with supporting evidence |
| **Code 40** | • demonstration of thorough understanding of concepts and/or procedures<br>• application of knowledge and skills shows a high degree of effectiveness due to<br>  • a thorough understanding of the concepts<br>  • an accurate application of the procedures (any minor errors and/or omissions do not detract from the demonstration of a thorough understanding)<br>• problem-solving process shows a high degree of effectiveness due to<br>  • a complete solution process<br>  • identification of all important elements of the problem<br>  • evidence of a thorough understanding of the relationships between all of the important elements of the problem<br>  • appropriate conclusions with thorough and insightful supporting evidence |

# CHAPTER 8: Maintaining Comparability

In This Chapter

- How is the comparability of the assessment maintained from year to year?
- How is the assessment blueprint used?
- How are the assessments equated year to year?
- Why and how are items field tested?

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### How is the comparability of the assessment maintained from year to year?

It is critically important that EQAO assessments be comparable from year to year. A number of measures are taken to ensure year-to-year consistency, including

- use of an assessment blueprint;
- equating assessments from year to year and
- use of field-test items.

### How is the assessment blueprint used?

EQAO has developed a blueprint so that the assessment has the same characteristics each year. The blueprint presents the expectations from *The Ontario Curriculum* in clusters. It gives the number of multiple-choice and open-response questions on the assessment that measure each cluster of expectations.

Although questions on the primary division assessment are allocated to clusters of expectations as indicated in Chapter 6, they are developed to address a specific expectation in the cluster. From year to year, different specific expectations are addressed. Chapter 6 identifies expectations that cannot be assessed appropriately on large-scale assessments and consequently will never have questions mapped to them.

### How are the assessments equated year to year?

Data on field tested items are used in the construction of each new version of the assessment, so that each year's assessment has the same level of difficulty as previous assessments. Equating is used to ensure that data at the school, board and provincial levels can be validly compared from year to year.

### Why and how are items field tested?

Embedded field-test materials are used to try out new assessment items before they become operational to ensure they are fair for all students and to equate the assessment with those of previous years, so that results can be compared from one year to the next.

Field-test materials look like the operational part of the booklet. However, scores on field-test materials are not used in determining student, school, board or provincial results.

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