ADDISON WESLEY

QUÉBEC EDITION

Math Makes Sense

Elementary

Cycle 1
Year 2

Québec Teacher Companion

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ADDISON WESLEY

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Math Makes Sense

Québec Teacher Companion

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Following the legal requirements of Québec, the Student Book has been modified to ensure that no brand names appear on student book pages; your Teacher Guide may show brand names where they have been removed from the student resource.

Technology tools that are recommended for use with the Student Book are the TI-108 calculator, *Appleworks* software, and *Graphers* drawing software.

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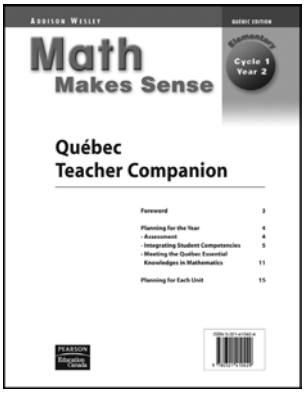
Foreword

Addison Wesley Mathematics Makes Sense is a comprehensive program designed to support teachers in delivering core mathematics instruction in a way that makes key mathematical concepts accessible to all students – letting you teach for conceptual understanding, and helping students make sense of the mathematics they learn.

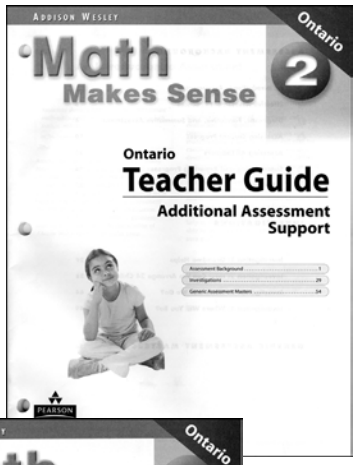
Your Teacher Guide was developed for a national text, and can be adapted for use in English-language schools in Québec for support of the Québec Education Program (QEP).

This **Québec Teacher Companion** provides additional support so that you can tailor the ***Math Makes Sense*** program to your specific needs. In particular, this module provides support to demonstrate how ***Math Makes Sense*** will help you nurture the development of the core competencies identified for the Québec Education Program, released by le Ministère de l'Education, du Loisir et de Sport du Québec, and provides tools to help you assess those competencies. Teaching notes highlight how specific Performance Tasks might be expanded to more fully address the broad areas of learning, and help you create situational problems for work with your students.



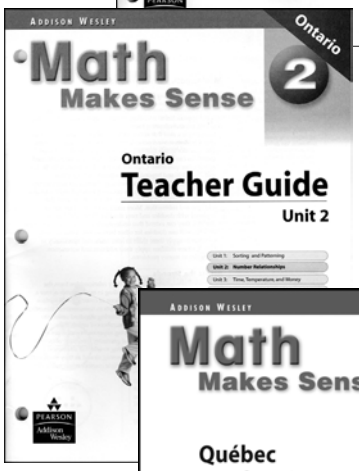
Planning for the Year

Assessment

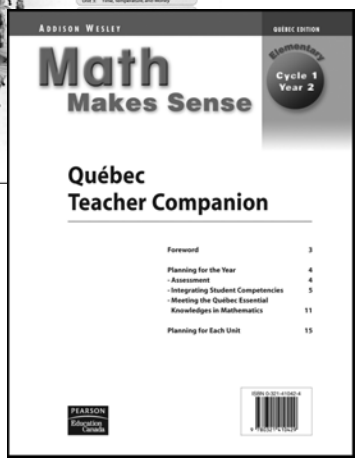


Your Teacher Guide includes a module entitled ***Additional Assessment Support***.

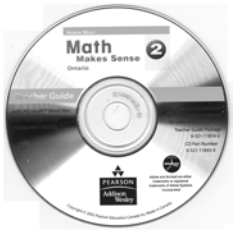
This module includes a variety of general-use rubrics, checklists, and other assessment tools. Go to this module for these assessment tools, as well as teaching notes and assessment support for the **Investigations**.



Each individual ***Unit module*** in your Teacher Guide includes a **Planning for Assessment** chart, and a variety of assessment tools that are written for specific assessment of the content of the unit, in reproducible master format.



Your ***Québec Teacher Companion*** includes additional assessment tools to support the QEP program and the core competencies, with reproducible assessment tools for each unit.



The CD-ROM that accompanies your Teacher Guide provides assessment tools from the original Teacher Guide. Assessment tools from this Québec Teacher Companion are available in digital form as well, on the Pearson website. All are available in editable files that let you tailor these tools to the needs of your classroom.

Integrating Student Competencies

The Québec Education Program (QEP) emphasizes a competency-based approach to teaching and learning. At Cycle One, there are nine identified cross-curricular competencies, and three subject-specific competencies.

The following tables demonstrate how the core competencies of the QEP are integrated throughout ***Addison Wesley Mathematics Makes Sense***, through a variety of key features that arise in every lesson, in every unit.

For detailed support that guides you in focusing on one competency in a particular unit, see the section in this module entitled **Planning for Each Unit**, starting on page 15.

Correlation of *Math Makes Sense* to QEP Cross-Curricular Competencies

QEP Competency	*Math Makes Sense* Cycle 1
Intellectual competencies • to use information	• **Explore** activities and **Activity Banks** are opportunities for children to use given information to solve meaningful problems. Children frequently have the freedom to select the materials that best suit their needs for solving the problem, which enhances their creative thinking. • Children read for information before engaging in problem-solving opportunities that arise: in every lesson in **Explore** and **Practice** activities, in **Activity Banks** and **Mathematics Centres**; in every unit when approaching **Strategies Tool Kits,** or **Show What You Know** questions.
Intellectual competencies • to solve problems	• The Teacher Guide module **Building a Math Community** provides practical suggestions for developing confident problem solvers in a positive, respectful, classroom environment. • Problem-solving opportunities arise in every lesson in **Explore** and **Practice** activities, in **Activity Banks** and **Mathematics Centres**. For more comprehensive problem-solving opportunities, **Strategies Tool Kits**, **Show What You Knows** and **Investigations** regularly promote children's critical and creative thinking as they approach a new problem. • Self-Assessment opportunities, provided in the Teacher Guide, include such topics as **I Am a Problem Solver**. • The use of technology enriches children's learning experiences and allows them to extend critical thinking and problem-solving skills.
Intellectual competencies • to exercise critical judgment	• Overall, the program promotes excellence, originality, and integrity in one's work, and supports appreciation for these qualities in the work of others. This comes through in the clarity of language, the accurate presentation of concepts, and the range of contexts and problems. • Self-Assessment opportunities, provided in the Teacher Guide in the form of reproducible masters, promote children's critical judgment. • The use of technology enriches children's learning experiences and allows them to extend critical thinking and problem-solving skills.

QEP Competency	*Math Makes Sense* Cycle 1
Intellectual competencies • to use creativity	• The Teacher Guide module **Building a Mathematics Community** provides practical suggestions for developing confident learners who know they can bring their own understanding, their own strategies, and their own ideas to new problem situations. • **My Journal** in the Student Book invites children to use pictures, words, or numbers to show their learning. • Overall, the program promotes excellence, originality, and integrity in one's own work, and supports an appreciation for these qualities in the work of others. This comes through in the clarity of language, the clear, accurate presentation of mathematical concepts, and the range of contexts and problems provided across every unit. • In **Explore** activities, **Activity Banks**, **Mathematics Centres**, and **Investigations**, children frequently have the freedom to select the materials that best suit their needs for solving the problem, which enhances their creative thinking.
Methodological competencies • to adopt effective work methods	• The **Explore** in each lesson engages children in working together productively, harmoniously, and responsibly. • In each lesson, the **Show and Share** prompts regularly allow children to discuss how they worked in an **Explore** activity, whether they think they had an effective approach and why, and how they organized their work in ways that helped them to keep track of their results. • Each lesson reinforces the importance of clear communication and organized work by modelling mathematical concepts in a clear and readable presentation, following the conventions of mathematics. • For each lesson, the Teacher Guide includes Extra Support ideas for children who require additional reinforcement. • **Reproducible Line Masters** provide greater structure for children and help to build children's developing work habits.
Methodological competencies • to use information and communications technologies (ICT)	• When appropriate, individual activities within the Student Book highlight opportunities for learning new mathematical concepts, or reinforce new concepts just developed, through the use of **Technology**, such as calculators or computers. • The **Numbers Every Day** feature in every lesson regularly includes suggestions related to calculator skills, to ensure children develop an understanding of how to use technology as a meaningful tool. • ***Addison Wesley Mathematics e-Tools*** software provides virtual manipulatives that help children develop mathematical concepts in the following ways: simultaneously connects the concrete with the symbolic; creates an interactive environment that is both open-ended and child-centred; and empowers children to build and observe dynamic mathematical representations and solutions; ***e-Tools*** is not required for success with the ***Math Makes Sense*** program, but it can help to enhance student achievement.

QEP Competency	*Math Makes Sense* Cycle 1
Personal and social competencies • to construct his/her identity	• The **Connect and Reflect** in each lesson gives children an opportunity for individual reflection, and encourages children to examine their personal understanding, values, and abilities. • **My Journal** in the Student Book invites children to use pictures, words, or numbers to show their learning. • Contextual problems throughout the program showcase a variety of positive options for children's leisure and fitness pursuits – reading, hiking, swimming, healthy eating, and so on. • Pictures of children in the Student Book and **Big Math Book** are representative of many cultures, and allow for a variety of activities suited to any gender, ethnicity, appearance, or ability. Children experience the positive effect of "seeing themselves" reflected in the pages of their ***Math Makes Sense*** Student Book and Big Math Book. • The Teacher Guide module **Building a Math Community** provides practical suggestions for creating a respectful classroom environment in which children can be comfortable working within their own range of abilities, learning preferences, and strengths.
Personal and social competencies • to cooperate with others	• **Explore** and **Practice** activities, **Activity Banks**, **Mathematics Centres**, and **Investigations** provide for a range of cooperative grouping arrangements. Not only do children have multiple opportunities to cooperate with others, they also have regular opportunities to work in their preferred mode, while still being exposed to other grouping options to develop their cooperative learning skills. • The Teacher Guide module **Building a Math Community** provides practical suggestions for grouping children, and offers support for teachers as they incorporate cooperative learning in the classroom.
Communication-related competency • to communicate appropriately	• The development of children's mathematical vocabulary is supported by the **Math Word Wall** listed at the beginning of most lessons in the Teacher Guide. • In each **Explore**, the **Show and Share** discussion questions prompt children to listen and become dynamic learners, receptive to communication from other children. • Each **Reflect and Connect** reinforces the correct use of mathematical language, codes, and conventions. • Opportunities for children to communicate their self-analysis and evaluation occur in each lesson, in **My Journal** in the Student Book, as well as in Self-Assessment opportunities suggested in the Teacher Guide. • As content allows, lessons feature the use of numbers and numeration in the media, arts, and the world of work. Technology features are included where appropriate for the children's level and the content at hand. This early exposure to media, arts, and technology helps prepare children for future life in our increasingly complex world and the multi-media communication channels that it presents.

Correlation of *Math Makes Sense* to QEP Mathematics Competencies

QEP Competency	*Math Makes Sense* Cycle 1
Competency 1: to solve a situational problem • to model the situational problem	• Concrete materials are referenced regularly in **Explore** and **Practice** activities, in **Activity Banks** and **Mathematics Centres**, where modelling of mathematical ideas is central to the conceptual development. • **Strategies Tool Kit** lessons provide explicit instruction in a variety of problem-solving strategies, by posing a problem that children investigate and solve, then reinforcing a strategy with additional activities. • Problems that arise in **Show What You Knows** and **Investigations** lend themselves well to a variety of modelling opportunities.
Competency 1: to solve a situational problem • to apply different strategies to work out a solution	• **Show and Share** in each lesson allows children to hear the possible solutions of other children. • Each lesson has a consistent **Get Started/Explore/Connect and Reflect/Practice** structure, to provide situational problems for children that are relevant to content and concepts. • **Strategies Tool Kit** lessons provide instruction in a variety of problem-solving strategies, and present a selection of problems that can be solved in a variety of ways.
Competency 1: to solve a situational problem • to validate the solution	• **Show and Share,** in each lesson, gives children an opportunity to voice their mathematical explanations, validate their solutions, and listen to the possible solutions of others. • Children have regular opportunities to create and share problems with a friend, then validate work – in the **Show and Share** suggestions; in the **Practice** activities; in **Connect and Reflect** prompts; and in the **My Journal** feature in the Student Book.
Competency 1: to solve a situational problem • to share information related to the solution	• The **Explore** activity introduces new concepts by presenting a situational problem to solve. Explore activities include whole group, partner, and independent problem-solving activities. • **Show and Share** occurs as part of the **Explore** in each lesson, to give children an opportunity to voice their mathematical explanations, validate their solutions, and listen to the possible solutions of others. • Children have regular opportunities to create and solve problems, and to share problems with a friend – in the **Show and Share** suggestions; in the **Practice** activities; in **Connect and Reflect** prompts; and in the **My Journal** feature in the Student Book.
Competency 1: to solve a situational problem • to decode the elements of the situational problem	• Children working collaboratively in **Explore** or **Practice** activities will naturally decode problems as they work together to discuss their understanding. • For each lesson, the Teacher Guide includes ideas for Extra Support for children who require additional reinforcement.

QEP Competency	*Math Makes Sense* Cycle 1
Competency 2: to reason using mathematical concepts and processes • to define the elements of the mathematical situation	• In each **Explore**, children apply mathematical reasoning as they define the elements of a problem to solve. • For each lesson, the Teacher Guide includes Extra Support ideas for children who require additional reinforcement. • **Connect and Reflect** sections reinforce the mathematical reasoning involved in defining the elements of a situation, whether it be a real-world application or a mathematical context. • **Show What You Knows** and **Investigations** provide rich opportunities for children to bring all of their reasoning abilities to bear on a specific open-ended problem.
Competency 2: to reason using mathematical concepts and processes • to justify actions or statements by referring to mathematical concepts and processes	• In each **Explore** activity, children must select a suitable strategy to solve the problem, and then follow the **Show and Share** discussion prompts to justify their actions, exchange information, and arrive at conclusions. • Each **My Journal** in the Student Book gives children an opportunity to justify their ideas or explain their thinking. • **Connect and Reflect** sections model the reasoning that underlies new concept development: relating mathematical concepts and processes to create a chain of thought that leads children to new insights. By exemplifying sound mathematical reasoning without solving the original problem in the **Explore**, the **Connect and Reflect** reinforces children's reasoning abilities without detracting from the ideas that children themselves have brought to the problem.
Competency 2: to reason using mathematical concepts and processes • to mobilize mathematical concepts and processes appropriate to the given situation	• In each **Explore** activity, children apply their mathematical reasoning as they define the elements of a problem, select a suitable strategy to solve the problem, make decisions about ways to model the problem and to record their work, and then arrive at their own solutions. • **Practice** activities, **Activity Banks, Mathematics Centres,** and **Investigations** draw out student reasoning through thought-provoking problems that encourage children to model concepts, examine special cases, compare results, consider consequences, and explain their thinking. • **Show What You Knows** and **Investigations** provide rich opportunities for children to bring all of their mathematical understanding, and their reasoning abilities, to bear on a specific open-ended problem.
Competency 2: to reason using mathematical concepts and processes • to apply mathematical processes appropriate to the given situation	• In each **Explore** activity, children apply their mathematical reasoning to select a suitable strategy to solve the problem, make decisions about ways to model the problem and to record their work, and then arrive at their own solutions. • A range of meaningful **Practice** activities draws out student reasoning with thought-provoking problems in which children apply mathematical concepts and processes developed during the **Explore** and consolidated in the **Connect and Reflect** section.

QEP Competency	*Math Makes Sense* Cycle 1
Competency 3: to communicate by using mathematical language • to become familiar with mathematical vocabulary	• The development of children's mathematical vocabulary is supported by the **Math Word Wall** listed at the beginning of most lessons in the Teacher Guide. • Mathematical concepts are regularly connected to real-world situations drawn from Canadian culture, Canadian geography, and Aboriginal culture, in core lessons and also in **Activity Banks,** the **Big Math Book, Take-Home Stories**, **Show What You Knows**, and **Investigations**. Children have an opportunity to observe how this language promotes understanding of the world.
Competency 3: to communicate by using mathematical language • to interpret or produce mathematical messages	• The Teacher Guide provides background regarding mathematical terms and concepts, so that teachers can model appropriate mathematical language. • Children's oral language is emphasized in **Explore** activities and in **Show and Share** prompts. These communication opportunities encourage children's use of everyday language to communicate their understanding. • Children's written language is emphasized in **My Journal** and in **Connect and Reflect** opportunities. • In addition to prompting children to explain their thinking in pictures, numbers, or words, in each lesson, each **Show What You Know** prompts children to think about and communicate their mathematical learning for the whole unit.
Competency 3: to communicate by using mathematical language • to make connections between mathematical language and everyday language	• In **Explore** activities there are communication opportunities that typically encourage children's use of everyday language to communicate their understanding. • Mathematical concepts are regularly connected to real-world situations drawn from Canadian culture, Canadian geography, and Aboriginal culture, in core lessons and also in **Take-Home Stories**, the **Big Math Book**, **Show What You Know** lessons, and **Investigations**. Children have an opportunity to observe how this language promotes understanding of the world. • **Cross-Curricular Connection** features in the Teacher Guide highlight connections between mathematics concepts and other disciplines. • Literacy Links in the Teacher Guide highlight resources and materials that support mathematical concepts while connecting the math to other subject areas. • **Activity Banks** provide up to four additional activity ideas related to the core content of the lesson. Teachers can select Activity Banks based on their students' needs. Each activity is keyed to learning style and grouping requirements.

Meeting the Québec Essential Knowledges in Mathematics

Arithmetic: Understanding and Writing Numbers

Québec Essential Knowledges	*Math Makes Sense* Cycle 1, Year 2 Correlations	*Math Makes Sense* Cycle 1, Year 2 Optional Pages
Natural numbers • natural numbers less than 1000 (units, tens, hundreds): reading, writing, digit, number, counting, one-to-one correspondence, representation, comparison, classification, order, equivalent expressions, writing numbers in expanded form, patterns, properties (even numbers, odd numbers), number line	Unit 1, Lessons 2–4 Unit 2, Lessons 1–3, 8–10 Unit 7, Lesson 1	
• approximation	Unit 2, Lesson 2	
Fractions • fractions related to the child's everyday life		Unit 10, Lessons 5, 6 (extension)

Arithmetic: Meaning of Operations Involving Numbers

Québec Essential Knowledge	*Math Makes Sense* Cycle 1, Year 2 Correlation	*Math Makes Sense* Cycle 1, Year 2 Optional Pages
Natural numbers • operation, operation sense: addition (adding, uniting, comparing), sum, subtraction (taking away, complement, comparing), difference, term, missing term, number line, multiplication (repeated addition, Cartesian product) and division (repeated subtraction, sharing, number of times *x* goes into *y*)	Unit 2, Lessons 3–7 Unit 4, Lessons 1–7 Unit 7, Lessons 1–5 Unit 10, Lessons 1, 2, 3, 4, 7	Unit 3, Lessons 6, 7 (extension) Unit 7, Lesson 6 (extension)
• choice of operation: addition, subtraction	Unit 2, Lesson 5 Unit 4, Lesson 7	
• meaning of an equality relation (equation), meaning of an equivalence relation	Unit 2, Lesson 5	
• relationships between the operations	Unit 2, Lesson 5	
• property of operations: commutative law	Unit 2, Lesson 5	

Arithmetic: Operations Involving Numbers

Québec Essential Knowledge	*Math Makes Sense* Cycle 1, Year 2 Correlation	*Math Makes Sense* Cycle 1, Year 2 Optional Pages
Natural numbers • approximating the result of an operation: addition, subtraction	Unit 7, Lesson 2	
• own processes for mental computation: addition, subtraction	Unit 2, Lessons 6, 7 Unit 4, Lessons 2–7 Unit 7, Lesson 3	
• operations to be memorized: additions (0 + 0 to 10 + 10) related to the corresponding subtractions	Unit 2, Lessons 4, 6	
• own processes for written computation: addition, subtraction	Unit 4, Lessons 2, 4, 5, 7	
• patterns: series of numbers, family of operations	Unit 1, Lessons 2–4 Unit 2, Lessons 6, 9	

Geometry: Geometric Figures and Spatial Sense

Québec Essential Knowledge	*Math Makes Sense* Cycle 1, Year 2 Correlation	*Math Makes Sense* Cycle 1, Year 2 Optional Pages
Space • locating objects and getting one's bearings in space, spatial relationships (e.g. in front, on, to the left)	Unit 9, Lesson 7	
• locating objects on an axis		
• locating objects in a plane		
Solids • comparing and constructing prisms, pyramids, spheres, cylinders, cones	Unit 6, Lessons 1–6	
• comparing objects in the environment with solids	Unit 6, Lessons 1, 2	
• attributes (number of faces, base): prisms, pyramids	Unit 6, Lessons 1, 2	
Plane figures • comparing and constructing figures made with closed curved lines or closed straight lines	Unit 9, Lessons 2, 3	
• identifying a square, rectangle, triangle, circle and rhombus		Unit 9, Lessons 1, 3 (extension)
• describing a square, rectangle, triangle and rhombus		Unit 9, Lessons 1 (extension)
Frieze patterns and tessellations • congruent figures	Unit 9, Lessons 2, 4	Unit 9, Lessons 5, 6 (extension)

Measurement

Québec Essential Knowledge	*Math Makes Sense* Cycle 1, Year 2 Correlation	*Math Makes Sense* Cycle 1, Year 2 Optional Pages
Lengths: estimating and measuring • dimensions of an object	Unit 8, Lessons 1–5	Unit 8, Lessons 6, 7 (extension)
• unconventional units: comparison, construction of rulers	Unit 8, Lesson 1	
• conventional units (m, dm, cm)	Unit 8, Lessons 2–4	Unit 11 (extension)
Time: estimating and measuring • conventional units, duration (day, hour, minute, second, daily cycle, weekly cycle, yearly cycle)	Unit 3, Lessons 1–4	Unit 3, Lesson 5 (extension)

Statistics

Québec Essential Knowledge	*Math Makes Sense* Cycle 1, Year 2 Correlation	*Math Makes Sense* Cycle 1, Year 2 Optional Pages
• formulating questions for a survey	Unit 5, Lesson 4	
• collecting, describing and organizing data using tables	Unit 1, Lesson 1 Unit 5, Lesson 4	
• interpreting data using a bar graph, a pictograph and a data table	Unit 5, Lessons 3, 5	
• displaying data using a bar graph, a pictograph and a data table	Unit 5, Lesson 3	

Probability

Québec Essential Knowledge	*Math Makes Sense* Cycle 1, Year 2 Correlation	*Math Makes Sense* Cycle 1, Year 2 Optional Pages
• experimentation with activities involving chance	Unit 5, Lessons 1, 2	
• predicting the likelihood of an event (certainty, possibility, or impossibility)	Unit 5, Lessons 1, 2	
• enumerating the possible outcomes of a simple random experiment	Unit 5, Lessons 1, 2	

Planning for Each Unit

Unit 1: Sorting and Patterning

Materials
Master Q1.1:
Unit Rubric: Sorting and Patterning
Master Q1.2:
Performance Task Rubric
Master Q1.3:
Peer and Self-Assessment: Show What You Know (Unit 1)

Supporting Cross-Curricular Competencies

Unit Focus: to use creativity

The Sorting and Patterning unit encourages children to bring their own understanding, their own strategies, and their own ideas to new problem situations. Make use of these Teacher Guide features to promote creative thinking:

- The **Activity Banks** and **Mathematics Centres** provide children with opportunities to use different resources, strategies, and techniques to explore mathematical concepts.
- Many of the **Explore** activities allow children to select materials that best suit their needs for solving each problem; ensure a variety of materials are available for children to use to encourage creative solutions.
- **Show and Share** gives children the opportunity to show originality in their thinking; in addition to children using words, pictures, and numbers to explain their thinking, encourage them to reflect on their learning in other ways (such as making a model or writing a song).
- Encourage children to solve the problem in the **Strategies Tool Kit** lesson (Lesson 4) using a different strategy than the one highlighted (such as drawing a picture).

Use Master Q1.1: Unit Rubric, to support your ongoing assessment during the unit, with a focus on the cross-curricular competency highlighted here.

Addressing Broad Areas of Learning:
Health and Well-Being

Educational Aim: to ensure that students adopt a self-monitoring procedure concerning the development of good living habits related to health and well-being

Show What You Know can be opened up mathematically, and extended.

Review with children that people often use placemats at mealtimes. In groups, have children brainstorm what they know about healthy-eating choices. Have groups share their ideas with the class. Then ask:

- How could we make placemats that would help us think about healthy eating choices when we eat?

Have children work independently or with a partner to make "Healthy Reminder Placemats." Encourage children to think about symbols and pictures (e.g., make a pattern with vegetables), and words (e.g., write an important idea about healthy-eating choices in the middle.) If possible, laminate the placemats and have children use them at lunch or snack time at school, or take them home to share with their families.

Use Master Q1.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q1.1

Unit Rubric: Sorting and Patterning

This assessment tool is designed to record overall student performance as you accumulate evidence by reviewing portfolios, observation records, unit assessment activities, and other work. It can be used to guide feedback and help prepare for reporting. It should not be used for just one specific activity.

To create a profile of a child's achievement, use a highlighter to identify behaviours you have observed.

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding that: - objects have many attributes that can be used in sorting and creating patterns - patterns result from changing an attribute (e.g., position, colour)	may be unable to demonstrate, explain, or represent basic sorting and patterning concepts	partially able to demonstrate, explain, or represent basic sorting and patterning concepts	able to demonstrate, explain, or represent basic sorting and patterning concepts	in various contexts, able to demonstrate, explain, or represent sorting and patterning concepts with increasing complexity
Processes • accurately: - sorts and classifies objects by one or two variables - identifies attributes and sorting rules	limited accuracy; often makes major errors or omissions in: - sorting and classifying - identifying attributes and sorting rules	partially accurate; makes frequent minor errors or omissions in: - sorting and classifying - identifying attributes and sorting rules	generally accurate; makes few errors or omissions in: - sorting and classifying - identifying attributes and sorting rules	accurate; rarely makes errors or omissions in: - sorting and classifying - identifying attributes and sorting rules
Solves situational problems				
• uses appropriate strategies to design a simple repeating pattern for a given space	needs one-to-one assistance to design and represent a simple repeating pattern	with limited assistance, uses appropriate strategies to design a simple repeating pattern; may need help to get started	chooses appropriate strategies to design a simple repeating pattern	uses effective strategies to design a pattern; shows some complexity or innovation
Communicates using mathematical language				
• interprets and produces messages about sorting and patterning, using simple, mathematical language and at least one of the following representations: objects, drawings, symbols, and/or words	has difficulty interpreting and producing mathematical messages about sorting and patterning	partially able to interpret and produce mathematical messages about sorting and patterning	interprets and produces mathematical messages about sorting and patterning	interprets and produces mathematical messages about sorting and patterning with precision
Cross-curricular competency: to use creativity				
• shows flexibility by considering and exploring various ways of creating a pattern	little flexibility; unable to suggest or explore ways of creating a pattern	with prompting, may explore more than one way of creating a pattern	when asked, explores at least two ways of using the same materials to create a pattern	independently explores various ways of using the same materials to create a pattern; may offer several possibilities

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Master Q1.2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of applying patterning concepts and explaining how attributes in the pattern change	does not show understanding of patterning appropriately; may be incomplete or indicate misconceptions	shows partial understanding of patterning; may indicate some misconceptions	shows understanding of patterning; explanations may show minor flaws in reasoning	shows in-depth understanding of patterning; explains how attributes in the pattern change, with precision
Processes • reproduces a pattern accurately	limited accuracy; makes major errors or omissions in reproducing a pattern	somewhat accurate; some minor errors or omissions in reproducing a pattern	generally accurate; few minor errors or omissions in reproducing a pattern	accurate and precise; few, if any, errors in reproducing a pattern
Solves situational problems				
• uses appropriate strategies to create and represent a border pattern	uses few appropriate strategies; does not adequately create and represent a border pattern	uses some appropriate strategies, with partial success, to create and represent a border pattern	uses appropriate and successful strategies to create and represent a border pattern	uses innovative and effective strategies to create and represent a border pattern
Communicates using mathematical language				
• uses simple mathematical language correctly	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents and describes the pattern clearly	does not represent and describe the pattern clearly	represents and describes the pattern with some clarity; may be hard to follow in places	represents and describes the pattern clearly	represents and describes the pattern clearly and precisely

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Master Q1.3

Peer and Self-Assessment:
Show What You Know (Unit 1)

Names: _____

1. Tell what you would like a classmate to notice about your work.

When you look at my pattern, I would like you to notice how I …

_____

_____

2. Show your pattern to a classmate.
   Ask him or her to fill in the box.

Tell something you liked about my pattern.

_____

_____

Ask me a question about my pattern.

_____

_____

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Planning for Each Unit

Unit 2: Number Relationships

Materials
Master Q2.1:
Unit Rubric: umber Relationshi s
Master Q2.2:
Performance Task Rubric
Master Q2.3:
Peer and Self-Assessment: Show What You Know (Unit)

Supporting Cross-Curricular Competencies

Unit Focus: to adopt effective work methods

Number Relationships is a fitting topic for emphasizing the importance of working effectively. Use these Teacher Guide features to support children in their development of effective work and management habits:

- **Explore** activities give children hands-on experiences to explore mathematical concepts; observe how children organize their materials, use their class time, and follow the instructions for the task.
- The **Show and Share** section in each lesson prompts children to discuss how they worked in the **Explore** activity; encourage children to talk about the strategy they used to complete the **Explore** activity and to describe how they organized their work.
- Each **Get Started** section prepares children for the **Explore** activity; invite volunteers to explain the instructions related to the activity in their own words.
- The **Practice** section in each lesson provides reinforcement pages; use these reproducible Student pages to provide greater structure to children who need it, and to help foster effective solution methods.

Use Master Q2.1: Unit Rubric, to support your ongoing assessment during the unit, with a focus on the cross-curricular competency highlighted here.

Addressing Broad Areas of Learning:
Citizenship and Community Life

Educational Aim: to ensure that students take part in the democratic life of the classroom or the school and develop a spirit of openness to the world and respect for diversity

Show What You Know can be opened up mathematically, and extended.

Review with children that dragon boat races started long ago in China. Today, people all over the world enjoy participating in dragon boat racing and festivals. Ask children to think of other sports, activities, or festivals that people in one country or place started, then shared with others. Choose one of the sports, festivals, or activities, and develop a group inquiry to explore questions, such as:

- Where did the sport/festival/activity start?
- Where do people play/celebrate it today?
- How did it spread from one place to another?

Consider developing a collaborative mural, picture book, or poster to summarize what you find out. Engage children in reflecting on how sports, festivals, and activities from different countries contribute to our communities.

Use Master Q2.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q2.1

Unit Rubric: Number Relationships

This assessment tool is designed to record overall student performance as you accumulate evidence by reviewing portfolios, observation records, unit assessment activities, and other work. It can be used to guide feedback and help prepare for reporting. It should not be used for just one specific activity.

To create a profile of a child's achievement, use a highlighter to identify behaviours you have observed.

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of number concepts by: - representing and describing numbers to 100 in various ways (including 10s and 1s) - identifying and describing number patterns - making reasonable estimates of objects in a set; counting to compare - demonstrating or describing processes of addition and subtraction	shows very limited understanding; may be unable to: - represent and describe numbers (various ways) - identify and describe number patterns - make reasonable estimates and count to compare - demonstrate and describe processes of addition and subtraction	some understanding; partially able to do many of the following: - represent and describe numbers (various ways) - identify and describe number patterns - make reasonable estimates and count to compare - demonstrate and describe processes of addition and subtraction	basic understanding; able to do most of the following: - represent and describe numbers (various ways) - identify and describe number patterns - make reasonable estimates and count to compare - demonstrate and describe processes of addition and subtraction	in-depth understanding; consistently able to: - represent and describe numbers (various ways) - identify and describe number patterns - make reasonable estimates and count to compare - demonstrate and describe processes of addition and subtraction
Processes • accurately: - compares and orders numbers - counts beyond 100 (by 1s, 2s, 5s, 10s) - reads and writes numerals to 100; number words to 10 - recalls addition and subtraction facts to 10	limited accuracy; often makes major errors or omissions in: - comparing and ordering numbers - counting - reading and writing numerals and number words - recalling addition and subtraction facts	partially accurate; makes frequent minor errors or omissions in: - comparing and ordering numbers - counting - reading and writing numerals and number words - recalling addition and subtraction facts	generally accurate; makes few errors or omissions in: - comparing and ordering numbers - counting - reading and writing numerals and number words - recalling addition and subtraction facts	accurate; rarely makes errors or omissions in: - comparing and ordering numbers - counting - reading and writing numerals and number words - recalling addition and subtraction facts
Solves situational problems				
• uses appropriate strategies to solve and create number problems	needs one-to-one assistance to solve or create simple number problems	with limited assistance, uses appropriate strategies to solve and create simple number problems	chooses appropriate strategies to solve and create simple number problems	uses effective strategies to solve and create number problems; often shows complexity or innovation
Communicates using mathematical language				
• interprets and produces messages about number relationships, using simple, mathematical language and objects, drawings, symbols, and/or words	has difficulty interpreting and producing mathematical messages about number relationships	partially able to interpret and produce mathematical messages about number relationships	interprets and produces mathematical messages about number relationships	interprets and produces mathematical messages about number relationships with precision
Cross-curricular competency: to adopt effective work methods				
• chooses appropriate materials and tools; manages time to complete tasks	does not make appropriate use of materials or time; frequently does not complete tasks	some appropriate use of materials and time; may need prompting to stay on task and complete tasks	uses materials and time appropriately; completes most tasks	uses materials and time efficiently and effectively; completes all tasks

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Master Q2.2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of number concepts by: - making reasonable estimates and explaining his/her thinking - counting and representing numbers in more than one way	shows very limited understanding of number concepts; needs one-to-one assistance to: - make reasonable estimates - count and represent numbers in more than one way	shows partial understanding of number concepts; with prompting and support, able to: - make reasonable estimates (may have difficulty explaining his/her thinking) - count and represent numbers in at least two simple ways (e.g., 1s and 2s)	shows basic understanding of number concepts; able to: - make reasonable estimates and explain his/her thinking - count and represent numbers in more than one way	shows in-depth understanding of number concepts; independently able to: - make reasonable estimates and explain his/her thinking; may have an innovative strategy - count and represent numbers in more than one way; may introduce some complexity into the task (e.g., count in a way that has not been modelled)
Processes • accurately: - counts - writes numerals and number sentences - compares numbers	needs one-to-one help; makes major errors or omissions in: - counting - writing numerals and number sentences - comparing numbers	somewhat accurate; some minor errors or omissions in: - counting - writing numerals and number sentences - comparing numbers	generally accurate; few minor errors or omissions in: - counting - writing numerals and number sentences - comparing numbers	accurate and precise; few, if any, errors in: - counting - writing numerals and number sentences - comparing numbers
Solves situational problems				
• uses appropriate strategies to create addition and subtraction stories	uses few appropriate strategies; does not create adequate addition and subtraction stories	uses some appropriate strategies, with partial success, to create addition and subtraction stories	uses appropriate and successful strategies to create addition and subtraction stories	uses innovative and effective strategies to create addition and subtraction stories
Communicates using mathematical language				
• uses simple mathematical language correctly	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents and describes his/her solutions and stories clearly	does not represent his/her solutions and stories clearly	represents his/her solutions and stories with some clarity; may be hard to follow in places	represents his/her solutions and stories clearly	represents his/her solutions and stories clearly and precisely

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Master Q2.3

Peer and Self-Assessment:
Show What You Know (Unit 2)

My Name: _____ My Partner's Name: _____

1. Tell what you would like a classmate to notice about your dragon boat stories.

When you look at my stories, I would like you to notice how I . . .

_____

_____

2. Ask a classmate to fill in the box.

Tell one way our stories are the same.

_____

_____

Tell one way our stories are different.

_____

_____

Tell something you liked about my stories.

_____

_____

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Planning for Each Unit

Unit 3: Time, Temperature, and Money

Materials
Master Q3.1:
Unit Rubric: Time, Temperature, and Money
Master Q3.2:
Performance Task Rubric
Master Q3.3:
Peer and Self-Assessment: Show What You Know (Unit 3)

Supporting Cross-Curricular Competencies

Unit Focus: to communicate appropriately

The Time, Temperature, and Money unit is suitable for highlighting correct terminology and appropriate communication in the mathematics classroom. Employ these Teacher Guide and Student Book features to support children's developing vocabularies:

- Use the **Math Word Wall** words listed in the Teacher Guide at the beginning of each lesson (Lessons 1 to 6) to create a word wall to reinforce mathematical vocabulary.
- Encourage children to create their own glossaries of key words – both new words and those learned in previous grades – by recording, in pictures, numbers, and/or words, mathematical words they encounter in the unit, and referring to the **Math Word Wall** if they need support.
- The **My Journal** feature in the Student Book (page 74) asks children to show their thinking related to concepts learned in the unit.
- In each **Explore**, the **Show and Share** discussion questions prompt children to listen and become dynamic learners, receptive to communication from other children.

Use Master Q3.1: Unit Rubric, to support your ongoing assessment during the unit, with a focus on the cross-curricular competency highlighted here.

Addressing Broad Areas of Learning:
Citizenship and Community Life

Educational Aim: to ensure that students take part in the democratic life of the classroom or the school and develop a spirit of openness to the world and respect for diversity

Show What You Know can be opened up mathematically, and extended.

Invite children to brainstorm jobs in the community where people have to work with money. After brainstorming an initial list, have children ask family members for more suggestions. Invite children to share any new ideas, and add them to the list. You can add to the list by using resources that record community businesses and services (e.g., yellow pages, newspaper advertisements). Have children choose one job from the list that is interesting to them, and represent it in a labelled drawing. Provide opportunities for children to share and describe their pictures in small groups. Consider creating a class chart summarizing what children have learned about how important money is in many jobs.

Use Master Q3.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q3.1

Unit Rubric: Time, Temperature, and Money

This assessment tool is designed to record overall student performance as you accumulate evidence by reviewing portfolios, observation records, unit assessment activities, and other work. It can be used to guide feedback and help prepare for reporting. It should not be used for just one specific activity.

To create a profile of a child's achievement, use a highlighter to identify behaviours you have observed.

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of measurement concepts by: - estimating the passage of time in minutes and hours - choosing the most appropriate standard unit to measure time - relating units of time - estimating the value of coin collections	shows very limited understanding; may be unable to: - estimate the passage of time - choose the most appropriate standard unit to measure time - relate units of time - estimate the value of coin collections	some understanding; partially able to: - estimate the passage of time - choose the most appropriate standard unit to measure time - relate units of time - estimate the value of coin collections	basic understanding; generally able to: - estimate the passage of time - choose the most appropriate standard unit to measure time - relate units of time - estimate the value of coin collections	in-depth understanding; in various contexts, consistently able to: - estimate the passage of time - choose the most appropriate standard unit to measure time - relate units of time - estimate the value of coin collections
Processes • accurately: - uses ordinal numbers (to 31) - names months in order - reads date on calendar - measures passage of time - counts and records money amounts to $1, using cent sign	limited accuracy; often makes major errors or omissions in: - using ordinal numbers - naming months in order and reading calendar date - measuring time in minutes and hours - counting and recording money amounts	partially accurate; makes frequent minor errors or omissions in: - using ordinal numbers - naming months in order and reading calendar date - measuring time in minutes and hours - counting and recording money amounts	generally accurate; makes few errors or omissions in: - using ordinal numbers - naming months in order and reading calendar date - measuring time in minutes and hours - counting and recording money amounts	accurate; rarely makes errors or omissions in: - using ordinal numbers - naming months in order and reading calendar date - measuring time in minutes and hours - counting and recording money amounts
Solves situational problems				
• uses appropriate strategies to solve and create problems involving time and money	needs one-to-one assistance to solve or create simple problems involving time and money	with limited assistance, solves and creates simple problems involving time and money	chooses appropriate strategies to solve and create simple problems involving time and money	uses effective strategies to solve and create problems involving time and money
Communicates using mathematical language				
• interprets and produces messages about time and money, using simple, mathematical language, and objects, drawings, tables, and/or symbols	has difficulty interpreting and producing mathematical messages about time and money	partially able to interpret and produce mathematical messages about time and money	interprets and produces mathematical messages about time and money	interprets and produces mathematical messages about time and money with precision
Cross-curricular competency: to communicate appropriately				
• reacts appropriately when others are speaking; listens attentively and offers appropriate feedback (e.g., nods, asks questions, confirms)	shows little interest in others' messages; frequently reacts inappropriately when others are speaking	shows some interest in others' messages; with support, listens attentively and reacts appropriately	shows interest in others' messages; listens attentively and reacts appropriately; may need occasional reminders	shows increasing interest in others' messages; reacts appropriately and may encourage speaker without prompting

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Master Q3.2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of number concepts, in the context of money, by creating equivalent sets of coins	shows very limited understanding; needs one-to-one assistance to create equivalent sets of coins	shows partial understanding; with prompting and support, able to create equivalent sets of coins	shows basic understanding; able to create equivalent sets of coins	shows in-depth understanding; independently able to create equivalent sets of coins
Processes • accurately: - counts coins - records time on digital and analog clocks	needs one-to-one help; makes major errors or omissions in: - counting coins - recording time	somewhat accurate; some minor errors or omissions in: - counting coins - recording time	generally accurate; few minor errors or omissions in: - counting coins - recording time	accurate and precise; few, if any, errors in: - counting coins - recording time
Solves situational problems				
• uses appropriate strategies (e.g., use objects, draw a picture, guess and check, act it out) to find a way for 3 children to share 50 cents in coins	uses few appropriate strategies; needs one-to-one, step-by-step assistance to solve the problem (sharing money)	uses some appropriate strategies; needs help to choose a strategy; able to solve the problem (sharing money) with some assistance	uses appropriate and successful strategies to solve the problem (sharing money)	uses innovative and effective strategies to solve the problem (sharing money); may provide more than one solution
Communicates using mathematical language				
• uses simple mathematical language correctly	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents and describes his/her solutions and stories clearly, using objects, drawings, tables, symbols, or words	does not represent his/her solutions and stories clearly	represents his/her solutions and stories with some clarity; may be hard to follow in places	represents his/her solutions and stories clearly	represents his/her solutions and stories clearly and precisely

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Master Q3.3

Peer and Self-Assessment:
Show What You Know (Unit 3)

My Name: _____ My Partner's Name: _____

1. Tell what you would like a classmate to notice about how you shared the money (Student page 71).

When you look at my work, I would like you to notice . . .

_____

_____

2. Ask a classmate to fill in the box.

Tell one way my work is the same as yours.

_____

_____

Tell one way my work is different from yours.

_____

_____

Ask me a question about how I solved the problem.

_____

_____

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Planning for Each Unit

Unit 4: Exploring Addition and Subtraction

Materials
Master Q4.1:
Unit Rubric: loring Addition and Subtraction
Master Q .2:
Performance Task Rubric
Master Q .3:
Peer and Self-Assessment: Show What You Know
(Unit)

Supporting Cross-Curricular Competencies

Unit Focus: to use creativity

The Exploring Addition and Subtraction unit encourages children to bring their own understanding, their own strategies, and their own ideas to new problem situations. Make use of these Teacher Guide features to promote creative thinking:

- The **Activity Banks** and **Mathematics Centres** provide children with opportunities to use different resources, strategies, and techniques to explore mathematical concepts.
- Many of the **Explore** activities allow children to select materials that best suit their needs for solving each problem; ensure a variety of materials are available for children to use to encourage creative solutions.
- **Show and Share** gives children the opportunity to show originality in their thinking; in addition to children using words, pictures, and numbers to explain their thinking, encourage them to reflect on their learning in other ways (such as making a model or writing a song).
- Children solve the problem in the **Strategies Tool Kit** lesson (Lesson 7) using different strategies; invite children to share their strategies with the class.

Use Master Q4.1: Unit Rubric, to support your ongoing assessment during the unit, with a focus on the cross-curricular competency highlighted here.

Addressing Broad Areas of Learning:
Personal and Career Planning

Educational Aim: to enable students to undertake and complete projects that develop their potential and help them integrate into society

Show What You Know can be opened up mathematically, and extended.
Review with children that there were many different ways to solve the problem, The Answer is 53. Invite children to share their strategies. Remind children that each person has different talents, strengths, and interests. Ask:

- What kinds of talents or strengths do you need to be good at solving problems?

Provide prompts and scaffolding to help children articulate some of the qualities of effective and creative problem-solvers (e.g., try something else if your first idea doesn't work; don't worry if it takes you two or three tries). Encourage children to see that these qualities are not specific to mathematics. Ask:

- Do you think everyone likes to solve problems that don't tell you exactly what to do?
- How did *you* feel when you first saw the problem, The Answer is 53?
- What advice could we give people who don't know how to start to solve a problem?

Have children write a personal reflection about the kinds of challenges they like, and the kinds they don't like. Ask them to conclude their reflection by setting a goal. Revisit the goals later in the year.
Use Master Q4.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q .1

Unit Rubric: Exploring Addition and Subtraction

This assessment tool is designed to record overall student performance as you accumulate evidence by reviewing portfolios, observation records, unit assessment activities, and other work. It can be used to guide feedback and help prepare for reporting. It should not be used for just one specific activity.

To create a profile of a child's achievement, use a highlighter to identify behaviours you have observed.

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • uses concrete objects, drawings, symbols, or words to demonstrate and describe: - own processes for addition and subtraction - how to approximate the result of addition and subtraction	shows very limited understanding; may be unable to: - demonstrate or describe own processes for addition and subtraction - approximate results of addition and subtraction	some understanding; partially able to: - demonstrate or describe own processes for addition and subtraction - approximate results of addition and subtraction	basic understanding; able to: - demonstrate or describe own processes for addition and subtraction - approximate results of addition and subtraction	in-depth understanding; consistently able to: - demonstrate or describe own processes for addition and subtraction - approximate results of addition and subtraction
Processes • accurately: - recalls addition and subtraction facts to 10 - determines sums and differences of two-digit numbers, with and without regrouping, using own processes	limited accuracy; often makes major errors or omissions in: - recalling addition and subtraction facts to 10 - determining sums and differences of 2-digit numbers	partially accurate; makes frequent minor errors or omissions in: - recalling addition and subtraction facts to 10 - determining sums and differences of 2-digit numbers	generally accurate; makes few errors or omissions in: - recalling addition and subtraction facts to 10 - determining sums and differences of 2-digit numbers	accurate; rarely makes errors or omissions in: - recalling addition and subtraction facts to 10 - determining sums and differences of 2-digit numbers
Solves situational problems				
• uses appropriate strategies (e.g., estimation, mental mathematics, concrete objects, pictures) to solve and create problems involving adding and subtracting	needs one-to-one assistance to solve or create simple addition or subtraction problems	with limited assistance, uses appropriate strategies to solve and create simple addition or subtraction problems	chooses appropriate strategies to solve and create simple addition or subtraction problems	uses effective strategies to solve and create addition or subtraction problems; often shows complexity or innovation
Communicates using mathematical language				
• interprets and produces messages about addition and subtraction, using simple, mathematical language, and objects, drawings, tables, symbols, and/or words	has difficulty interpreting and producing mathematical messages about addition and subtraction	partially able to interpret and produce mathematical messages about addition and subtraction	interprets and produces mathematical messages about addition and subtraction	interprets and produces mathematical messages about addition and subtraction with precision
Cross-curricular competency: to use creativity				
• accepts risks and perseveres in exploring various approaches or strategies to reach an objective	unable or unwilling to accept risks by engaging and persevering in open-ended activities; quickly gives up if initial attempt is not immediately successful	with support and scaffolding, accepts some risks to engage in open-ended activities and perseveres to make a second attempt if needed	willing to accept the risks involved in exploring open-ended activities and perseveres to reach a solution	appears to enjoy risks involved in exploring open-ended activities; perseveres to reach a solution and may voluntarily make new attempts using different methods

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Master Q .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of the processes of addition and subtraction by applying them appropriately to create addition and subtraction stories	shows very limited understanding of processes of addition and subtraction; needs one-to-one assistance to create very simple number stories	shows partial understanding of processes of addition and subtraction; with prompting and support, able to create appropriate number stories (may have more difficulty with subtraction)	shows basic understanding of processes of addition and subtraction; able to create appropriate number stories	shows in-depth understanding of processes of addition and subtraction; independently able to create multiple number stories
Processes • accurately: - determines sums and differences of 2-digit numbers (using concrete materials, pictures, or numbers) - adds and subtracts 1-digit and 2-digit numbers mentally (depending on the problems created)	needs one-to-one help; makes major errors or omissions in: - determining the sums and differences of 2-digit numbers (using concrete materials, pictures, or numbers) - adding and subtracting 1-digit and 2-digit numbers mentally (depending on the problems created)	somewhat accurate; some minor errors or omissions in: - determining the sums and differences of 2-digit numbers (using concrete materials, pictures, or numbers) - adding and subtracting 1-digit and 2-digit numbers mentally (depending on the problems created)	generally accurate; few minor errors or omissions in: - determining the sums and differences of 2-digit numbers (using concrete materials, pictures, or numbers) - adding and subtracting 1-digit and 2-digit numbers mentally (depending on the problems created)	accurate and precise; few, if any, errors or omissions in: - determining the sums and differences of 2-digit numbers (using concrete materials, pictures, or numbers) - adding and subtracting 1-digit and 2-digit numbers mentally (depending on the problems created)
Solves situational problems				
• uses appropriate strategies (e.g., use objects, draw a picture, mental mathematics, grouping/regrouping) to create and solve addition and subtraction problems	needs one-to-one, step-by-step assistance to create and solve number problems where the answer is given (may be more successful with addition stories than subtraction stories)	needs help to choose strategies; able to create and solve addition and subtraction problems with some assistance (may be more successful with addition stories than subtraction stories)	chooses and uses appropriate strategies to create and solve addition and subtraction problems (may need limited prompting to find a second subtraction problem with the same answer)	chooses and uses effective strategies to create and solve addition and subtraction problems; may introduce additional complexity (e.g., create a two-step problem)
Communicates using mathematical language				
• uses simple mathematical language correctly	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents and describes his/her thinking and stories clearly	does not represent his/her thinking and stories clearly	represents his/her thinking and stories with some clarity; may be hard to follow in places	represents his/her thinking and stories clearly	represents his/her thinking and stories clearly and precisely

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Master Q .3

Peer and Self-Assessment:
Show What You Know (Unit 4)

My Name: _____ My Partner's Name: _____

1. Tell what you would like a classmate to notice about your subtraction story.

When you look at my work, I would like you to notice how I . . .

_____

_____

2. Ask a classmate to fill in the box.

Tell one way my subtraction stories are like your stories.

_____

_____

Tell one way our subtraction stories are different.

_____

_____

Tell something you liked about my stories.

_____

_____

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Planning for Each Unit

Unit 5: Data Management and Probability

Materials
Master Q5.1:
Unit Rubric: Data Management and Probability
Master Q5.2:
Performance Task Rubric
Master Q5.3:
Peer and Self-Assessment: Show What You Know (Unit 5)

Supporting Cross-Curricular Competencies

Unit Focus: to exercise critical judgment

The Data Management and Probability unit supports the use of critical judgement by encouraging children to show logic and intuition, while taking different contexts into account. Highlighted below are some of the Teacher Guide features that support children's development of well-thought-out opinions:

- The **Explore** activities present children with a range of contexts and problems that aim to extend critical thinking and problem-solving skills; encourage children to formulate questions and make connections between the information presented and their existing knowledge.
- Each **Connect and Reflect** section models language that is clear, logical, and organized; discuss new concepts, encouraging children to express their judgments.
- In the **Additional Assessment Support** module in the Teacher Guide, there are various tools that promote Self-Assessment (for example, GAM 4: What I Learned); utilize these tools to help develop children's critical judgment skills.

Use Master Q5.1: Unit Rubric, to support your ongoing assessment during the unit, with a focus on the cross-curricular competency highlighted here.

Addressing Broad Areas of Learning:
Health and Well-Being

Educational Aim: to ensure that students adopt a self-monitoring procedure concerning the development of good living habits related to health and well-being

Show What You Know can be opened up mathematically, and extended.
Remind children that they have been playing a mathematical game. Invite children to brainstorm other kinds of game. Make a collaborative list of games they enjoy at home and at school. Prompt children to include both games that involve physical activity (e.g., tennis, soccer) and those that involve primarily mental activity (e.g., board games, video games.) In groups, have children experiment with various ways of classifying the games.
Prompt a discussion of the importance of games, with questions, such as:

- Why do people play games?
- How can games help keep your body healthy?
- How can they help to keep your brain and your feelings healthy?
- What makes a game good for a healthy body? For a healthy mind and feelings?
- When can games be a problem?

Emphasize that a "healthy" game can become "unhealthy" if someone plays it too much, or in the wrong way (e.g., violently, too competitively). Have children reflect on games using these prompts: A game can be good for you when . . .. A game can be bad for you when . . ..
Use Master Q5.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q5.1

Unit Rubric: Data Management and Probability

This assessment tool is designed to record overall student performance as you accumulate evidence by reviewing portfolios, observation records, unit assessment activities, and other work. It can be used to guide feedback and help prepare for reporting. It should not be used for just one specific activity.

To create a profile of a child's achievement, use a highlighter to identify behaviours you have observed.

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of probability concepts by: - offering and justifying reasonable predictions about the likelihood that an event will occur - interpreting results of simple experiments • shows understanding of data collection, display, and interpretation by offering ideas and questions during discussions and in work	shows little or no understanding that: • some events are more likely than others • results of probability experiments can be used to predict future events • some questions can be answered by collecting and organizing data • graphs and tables can be used to make predictions	shows partial understanding that: • some events are more likely than others • results of probability experiments can be used to predict future events • some questions can be answered by collecting and organizing data • graphs and tables can be used to make predictions	shows basic understanding that: • some events are more likely than others • results of probability experiments can be used to predict future events • some questions can be answered by collecting and organizing data • graphs and tables can be used to make predictions	shows in-depth understanding that: • some events are more likely than others • results of probability experiments can be used to predict future events • some questions can be answered by collecting and organizing data • graphs and tables can be used to make predictions
Processes • accurately: - records first-hand data (e.g., from simple experiments, surveys) - constructs and interprets simple data tables, bar graphs, and pictographs	limited accuracy; often makes major errors or omissions in: - recording data - organizing data using tables - constructing graphs - interpreting graphs	partially accurate; makes frequent minor errors or omissions in: - recording data - organizing data using tables - constructing graphs - interpreting graphs	generally accurate; makes few errors or omissions in: - recording data - organizing data using tables - constructing graphs - interpreting graphs	accurate; rarely makes errors or omissions in: - recording data - organizing data using tables - constructing graphs - interpreting graphs
Solves situational problems				
• uses appropriate strategies to solve problems involving statistics and probability	needs one-to-one assistance to solve problems by conducting experiments or surveys	with limited assistance, uses appropriate strategies to solve problems by conducting experiments and surveys	chooses appropriate strategies to solve problems by conducting experiments or surveys	uses effective strategies to solve problems by conducting experiments or surveys
Communicates using mathematical language				
• interprets and produces messages about statistics and probability, using simple, mathematical language, tables, and graphs	has difficulty interpreting and producing mathematical messages about statistics and probability	partially able to interpret and produce mathematical messages about statistics and probability	interprets and produces mathematical messages about statistics and probability	interprets and produces mathematical messages about statistics and probability with precision
Cross-curricular competency: to exercise critical judgment				
• gives logical reasons to support predictions about the likelihood of an event, or interpretations of graphs or tables	does not make reasoned predictions or interpretations; responses are often guesses or "wishes" (e.g., "I like green")	with scaffolding, in familiar contexts, supports direct and obvious predictions and interpretations with a logical reason	in familiar contexts, supports predictions and interpretations with at least one logical reason	in various contexts, consistently supports predictions and interpretations with convincing logical reasons

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Master Q5.2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of chance, graphs, and data by offering ideas, comparisons, and questions during discussions	shows very limited understanding; may be unable to give any explanation of their predictions or of information on theirs and their classmates' graphs	shows partial understanding; with some support, gives a partial explanation of their predictions, and of basic information on theirs and their classmates' graphs	shows basic understanding; explains their predictions and basic information on theirs and their classmates' graphs; may offer questions and generalizations if prompted	shows in-depth understanding; thoroughly explains their predictions and information shown on their and theirs classmates' graphs; offers questions and generalizations based on the results
Processes • accurately: - transfers data from tally chart to graph - constructs graph	needs one-to-one help; makes several major errors or omissions in: - transferring data from tally chart to graph - constructing graphs (including labels and titles)	somewhat accurate; makes some minor errors or omissions in: - transferring data from tally chart to graph - constructing graphs (including labels and titles)	generally accurate; makes few errors or omissions in: - transferring data from tally chart to graph - constructing graphs (including labels and titles)	accurate and precise; makes very few or no errors or omissions in: - transferring data from tally chart to graph - constructing graphs (including labels and titles)
Solves situational problems				
• uses previous experiences and current results to make predictions	needs one-to-one guidance to use appropriate strategies to make a prediction	with limited prompting, makes reasonable predictions about results of future experiments; may have difficulty drawing on previous experience to make a prediction about the current experiment	makes reasonable predictions about results of current and future experiments	uses appropriate, often innovative strategies to make predictions about results of current and future experiments
Communicates using mathematical language				
• uses simple mathematical language correctly	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents his/her thinking and results clearly using drawings, graphs, tables, and words	does not represent his/her thinking and results clearly	represents his/her thinking and results with some clarity; may be hard to follow in places	represents his/her thinking and results clearly	represents his/her thinking and results clearly and precisely

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Master Q5.3

Peer and Self-Assessment:
Show What You Know (Unit 5)

Partners: _____ and _____

1. Tell what you would like your classmates to know about how you worked together.

This is what we would like to tell you about how we worked together to solve the problem.

_____

_____

2. Share your results with another pair. Ask them to fill in the box.

When we looked at your work we **noticed** . . .

_____

_____

We **liked** the way you . . .

_____

_____

Here is a **question** we would like to ask you about your work.

_____

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Planning for Each Unit

Unit 6: 3-D Geometry

Materials
Master Q6.1:
Unit Rubric: - eometr
Master Q6.2:
Performance Task Rubric
Master Q6.3:
Peer and Self-Assessment: Show What You Know (Unit)

Supporting Cross-Curricular Competencies

Unit Focus: to cooperate with others

The 3-D Geometry unit provides children with many opportunities to engage in group activities. Here are some Teacher Guide features that promote teamwork:

- The **Explore** section in each lesson encourages children to work collaboratively to complete each activity (for example, in Lessons 1 and 2); different groupings are recommended.
- The **Activity Banks** allow children to engage in cooperative learning activities; observe how children communicate their ideas to their group members or partner.
- The **Show and Share** section in each lesson gives children a chance to share what they learned in the **Explore** activity; use these opportunities to allow children to support each other in developing new concepts.
- **Mathematics Centres** allow children to work collaboratively, while providing reinforcement throughout the unit; encourage children to work together to discuss their understanding of new concepts.

Use Master Q6.1: Unit Rubric, to support your ongoing assessment during the unit, with a focus on the cross-curricular competency highlighted here.

Addressing Broad Areas of Learning:
Environmental Awareness and Consumer Rights and Responsibilities

Educational Aim: to encourage students to develop an active relationship with their environment while maintaining a critical attitude towards exploitation of the environment, technological development and consumer goods

Show What You Know can be opened up mathematically, and extended.
Use the spaceship activity to initiate a discussion of *wants* and *needs*. Establish that *wants* are things we would like to have; *needs* are things we depend on to survive.
Have children work in small groups to review the supplies the astronauts are packing for their trip (Student page 150). Have them make a chart showing:

- which items are *wants* and which items are *needs*
- what other *needs* the astronauts will have
- what other *wants* the astronauts might have

Prompt children to consider the difference between *wants* and *needs* by asking questions, such as:

- How do astronauts decide what to pack and what to leave behind?
- What would *you* pack for a space journey? Which items are *needs* and which are *wants?*
- What happens if the astronauts do not get their *needs?*
- What happens if the astronauts do not get their *wants?*
- What happens if *everyone* tries to get *all* their *wants?* How might that affect the environment?

Use Master Q6.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q .1

Unit Rubric: 3-D Geometry

This assessment tool is designed to record overall student performance as you accumulate evidence by reviewing portfolios, observation records, unit assessment activities, and other work. It can be used to guide feedback and help prepare for reporting. It should not be used for just one specific activity.

To create a profile of a child's achievement, use a highlighter to identify behaviours you have observed.

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • compares 3-D solids and their attributes • describes attributes (faces, vertices, edges, base) and relates them to function	shows very limited understanding; may be unable to: - compare 3-D solids and their attributes - describe attributes and relate them to function	some understanding; partially able to: - compare 3-D solids and their attributes - describe attributes and relate them to function	basic understanding; generally able to: - compare 3-D solids and their attributes - describe attributes and relate them to function	in-depth understanding; in various contexts, consistently able to: - compare 3-D solids and their attributes - describe attributes and relate them to function
Processes • accurately: - sorts 3-D solids - identifies and names 3-D solids (prisms, pyramids, spheres, cones, cylinders,) and their attributes - identifies attributes (faces, vertices, edges)	limited accuracy; often makes major errors or omissions in: - sorting 3-D solids - identifying and naming solids - identifying attributes	partially accurate; makes frequent minor errors or omissions in: - sorting 3-D solids - identifying and naming solids - identifying attributes	generally accurate; makes few errors or omissions in: - sorting 3-D solids - identifying and naming solids - identifying attributes	accurate; rarely makes errors or omissions in: - sorting 3-D solids - identifying and naming solids - identifying attributes
Solves situational problems				
• uses appropriate strategies to: - solve and create problems involving 3-D solids and their attributes - construct 3-D solids	needs one-to-one assistance to: - solve or create simple problems involving 3-D solids and their attributes - construct 3-D solids	with limited assistance, uses appropriate strategies to: - solve or create simple problems involving 3-D solids and their attributes - construct 3-D solids	chooses appropriate strategies to: - solve or create simple problems involving 3-D solids and their attributes - construct 3-D solids	uses effective strategies, often showing complexity or innovation, to: - solve or create simple problems involving 3-D solids and their attributes - construct 3-D solids
Communicates using mathematical language				
• interprets and produces messages about 3-D solids, using simple, mathematical language and objects, drawings, tables, or words	has difficulty interpreting and producing mathematical messages about 3-D solids	partially able to interpret and produce mathematical messages about 3-D solids	interprets and produces mathematical messages about 3-D solids	interprets and produces mathematical messages about 3-D solids with precision
Cross-curricular competency: to cooperate with others				
• participates actively and cooperatively in classroom and group activities	often does not participate actively and cooperatively	sometimes participates actively and cooperatively; inconsistent; often needs reminding when working in groups	usually participates actively and cooperatively; may need occasional reminders when working in groups	almost always participates actively and cooperatively in a variety of contexts

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Master Q .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • chooses and justifies attribute for sorting • explains process of construction	shows very limited understanding; needs one-to-one assistance to: - justify choice of attribute - explain constructions	shows partial understanding; with prompting and support, able to: - justify choice of attribute - explain constructions	shows basic understanding: able to: - justify choice of attribute - explain constructions	shows in-depth understanding; independently able to: - justify choice of attribute - explain constructions
Processes • accurately: - sorts by 1 geometric attribute - identifies solids used in spaceship and own structure	needs one-to-one help; makes major errors or omissions in: - sorting by 1 geometric attribute - identifying solids	somewhat accurate; some minor errors or omissions in: - sorting by 1 geometric attribute - identifying solids	generally accurate; few minor errors or omissions in: - sorting by 1 geometric attribute - identifying solids	accurate and precise; few, if any, errors in: - sorting by 1 geometric attribute - identifying solids
Solves situational problems				
• uses appropriate strategies to choose a reasonable sorting rule, make a model from an illustration, and build a structure of their own choice	uses few appropriate strategies; needs one-to-one, step-by-step assistance to: - choose an appropriate sorting rule - make a model from an illustration - build a structure	uses some appropriate strategies; needs help to: - choose an appropriate sorting rule - make a model from an illustration - build a structure	uses appropriate and successful strategies to: - choose an appropriate sorting rule - make a model from an illustration - build a structure	uses innovative and effective strategies to: - choose an appropriate sorting rule - make a model from an illustration - build a structure
Communicates using mathematical language				
• uses simple mathematical language correctly	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents and describes his/her thinking and solutions clearly using objects, drawings, tables, symbols, or words	does not represent his/her thinking and solutions clearly	represents his/her thinking and solutions with some clarity; may be hard to follow in places	represents his/her thinking and solutions clearly	represents his/her thinking and solutions clearly and precisely

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Master Q .3

Peer and Self-Assessment:
Show What You Know (Unit 6)

My Name: _____ My Partner's Name: _____

1. Tell what you would like a classmate to notice about how you built your spaceship.

When you look at my spaceship, I would like you to notice . . .

_____

_____

2. Show your spaceship to a classmate.
   Ask him or her to fill in the box.

Tell one way my spaceship is the same as yours.

_____

_____

Tell one way my spaceship is different from yours.

_____

_____

Tell something special you noticed about my spaceship.

_____

_____

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Planning for Each Unit

Unit 7: Addition and Subtraction to 100

Materials
Master Q7.1:
Unit Rubric: Addition and Subtraction to 1
Master Q7.2:
Performance Task Rubric
Master Q7.3:
Peer and Self-Assessment: Show What You Know (Unit)

Supporting Cross-Curricular Competencies

Unit Focus: to use information and communication technologies

The Addition and Subtraction to 100 unit provides children with opportunities to use information in meaningful contexts. The following Teacher Guide features support children as they learn how to compare, group, organize, display, and question information:

- The **Mathematics Centres** (for example, Stamp It!) gives children an opportunity to use a draw-and-stamp program to represent a 2-digit number.
- The **Explore** and **Practice** activities, the **Strategies Tool Kit** lesson, and the **Investigations** give children a chance to use given information to solve relevant problems; support children in selecting materials that best suit their needs for solving each problem.
- The **Connect and Reflect** section in each lesson allows for children to make connections between what they already know and new information; encourage children to share any connections they make with the class.
- The **Numbers Every Day** feature and **Activity Banks** (for example, Calculator Check in Lesson 3) sometimes includes suggestions related to calculator skills, to ensure children develop an understanding of how to use technology as a meaningful tool.

Use Master Q7.1: Unit Rubric, to support your ongoing assessment during the unit, with a focus on the cross-curricular competency highlighted here.

Addressing Broad Areas of Learning:
Personal and Career Planning

Educational Aim: to enable students to undertake and complete projects that develop their potential and help them integrate into society

Show What You Know can be opened up mathematically, and extended.

Refer children to Student page 174. Ask them to identify the kinds of books in the picture. In pairs, have children talk about which kind of book they like best and why. Bring children together to share their ideas. Create a data table to summarize children's preferences. Initiate a discussion about *interests* with questions, such as:

- Why doesn't everyone like the same kind of book, even though you are in the same class?
- Is it okay if everyone doesn't like the same kind of book?
- What makes some kinds of books more or less interesting to you?
- How are the kinds of books you like now different from the ones you liked last year?
- How are your interests in books related to other interests you have?

Have children work in groups to conduct a simple survey of reading preferences within the class or in other classrooms. Have them present their findings to the class.
Use Master Q7.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q .1

Unit Rubric: Addition and Subtraction to 100

This assessment tool is designed to record overall student performance as you accumulate evidence by reviewing portfolios, observation records, unit assessment activities, and other work. It can be used to guide feedback and help prepare for reporting. It should not be used for just one specific activity.

To create a profile of a child's achievement, use a highlighter to identify behaviours you have observed.

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding by demonstrating and describing (in words): - place-value concepts, using objects and pictures - processes of addition and subtraction, with re-grouping (to 100) using concrete objects, pictures, and symbols	shows very limited understanding; may be unable to demonstrate and describe: - place-value concepts - the processes of addition and subtraction with regrouping	some understanding; partially able to demonstrate and describe: - place-value concepts - the processes of addition and subtraction with regrouping	basic understanding; generally able to demonstrate and describe: - place-value concepts - the processes of addition and subtraction with regrouping	in-depth understanding; consistently able to demonstrate and describe: - place-value concepts - the processes of addition and subtraction with regrouping
Processes • accurately: - recalls addition and subtraction facts to 10 - represents 2-digit numbers as 10s and 1s - determines sums and differences of 2-digit numbers, with and without regrouping	limited accuracy; often makes major errors or omissions in: - recalling addition and subtraction facts - representing 2-digit numbers as 10s and 1s - determining sums and differences of 2-digit numbers	partially accurate; makes frequent minor errors or omissions in: - recalling addition and subtraction facts - representing 2-digit numbers as 10s and 1s - determining sums and differences of 2-digit numbers	generally accurate; makes few errors or omissions in: - recalling addition and subtraction facts - representing 2-digit numbers as 10s and 1s - determining sums and differences of 2-digit numbers	accurate; rarely makes errors or omissions in: - recalling addition and subtraction facts - representing 2-digit numbers as 10s and 1s - determining sums and differences of 2-digit numbers
Solves situational problems				
• chooses appropriate operations and strategies (including regrouping, concrete materials, pictures and estimation) to solve and create problems involving addition and subtraction to 100	needs one-to-one assistance to solve or create simple problems involving addition and subtraction to 100	with limited assistance, uses appropriate strategies to solve and create simple problems involving addition and subtraction to 100	chooses appropriate strategies to solve and create simple problems involving addition and subtraction to 100	uses effective strategies to solve and create problems involving addition and subtraction to 100; often shows complexity or innovation
Communicates using mathematical language				
• interprets and produces messages about addition and subtraction using simple, mathematical language, and objects, drawings, tables, symbols, or words	has difficulty interpreting and producing mathematical messages about addition and subtraction	partially able to interpret and produce mathematical messages about addition and subtraction	interprets and produces mathematical messages about addition and subtraction	interprets and produces mathematical messages about addition and subtraction with precision
Cross-curricular competency: to use information and communications technologies				
• uses simple technology (e.g., calculators, draw-and-stamp software) to represent and explore addition and subtraction	unable to use technology to explore and represent addition and subtraction	with step-by-step support, can use technology to explore and represent addition and subtraction	uses technology to explore and represent addition and subtraction	uses technology effectively to explore and represent addition and subtraction in a variety of ways

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Master Q .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of the processes of addition and subtraction, including concepts of place value (10s and 1s) and regrouping (“trading”)	shows very limited understanding; needs one-to-one assistance to create and solve very simple number stories	shows partial understanding; with prompting and support, able to create and solve number stories (may show stronger understanding of addition than subtraction)	shows basic understanding; able to create and solve simple number stories	shows in-depth understanding; independently able to create and solve multiple number stories
Processes • accurately: - represents 2-digit numbers as 10s and 1s (e.g., on place-value mat) - determines sums and differences to solve the story problems	needs one-to-one help; makes major errors or omissions in: - representing 2-digit numbers as 10s and 1s - finding sums - finding differences	somewhat accurate; some minor errors or omissions in: - representing 2-digit numbers as 10s and 1s - finding sums - finding differences	generally accurate; few minor errors or omissions in: - representing 2-digit numbers as 10s and 1s - finding sums - finding differences	accurate and precise; few, if any, errors in: - representing 2-digit numbers as 10s and 1s - finding sums - finding differences
Solves situational problems				
• selects, uses, and explains appropriate strategies to create and solve addition and subtraction problems (e.g.,, estimation, concrete objects, place-value mats, calculators, 100 chart)	uses few appropriate strategies; needs one-to-one, step-by-step assistance to solve the problems (may be more successful with addition stories than subtraction stories)	uses some appropriate strategies; needs help to choose strategies; able to solve the problems with some assistance (may be more successful with addition stories than subtraction stories)	uses appropriate and successful strategies to solve the problems	uses innovative and effective strategies to solve the problems; may voluntarily introduce some complexity (e.g., create a two-step problem)
Communicates using mathematical language				
• uses simple mathematical language correctly	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents and describes his/her thinking and solutions clearly, using objects, drawings, symbols, or words	does not represent his/her thinking and solutions clearly	represents his/her thinking and solutions with some clarity; may be hard to follow in places	represents his/her thinking and solutions clearly	represents his/her thinking and solutions clearly and precisely

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Master Q .3

Peer and Self-Assessment:
Show What You Know (Unit 7)

My Name: _____ My Partner's Name: _____

1. Tell about your work.

What could other children learn about adding and subtracting by looking at your work?

_____

_____

_____

2. Ask a classmate to fill in the box.

Look at my subtraction story (Student page 175).
How does it show what I've learned about subtracting?

_____

_____

How is my subtraction story like yours?

_____

_____

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Planning for Each Unit

Unit 8: Linear Measurement, Area, and Perimeter

Materials
Master Q8.1:
Unit Rubric: inear easurement Area and Perimeter
Master Q8.2:
Performance Task Rubric
Master Q8.3:
Peer and Self-Assessment: Show What You Know (Unit)

Supporting Cross-Curricular Competencies

Unit Focus: to solve problems

In the Linear Measurement, Area, and Perimeter unit, children solve problems in various contexts. Utilize these Teacher Guide features to support children's development of effective problem-solving skills:

- In all of the **Explore** and **Practice** activities, problem-solving opportunities are presented in relevant contexts; encourage children to share their problem-solving strategies with the class.
- In the **Strategies Tool Kit** lesson (Lesson 8), children approach new problems involving critical and creative thinking; review the given list of strategies and encourage children to solve the problem using more than one strategy.
- In the Teacher Guide module **Additional Assessment Support**, GAM 1 (I Am a Problem Solver) promotes individual reflection about the problem-solving process; use this assessment tool with any problem throughout the unit.

Use Master Q8.1: Unit Rubric, to support your ongoing assessment during the unit, with a focus on the cross-curricular competency highlighted here.

Addressing Broad Areas of Learning:
Health and Well-Being

Educational Aim: to ensure that students adopt a self-monitoring procedure concerning the development of good living habits related to health and well-being

Show What You Know can be opened up mathematically, and extended.

Review with children any experiences they have had with obstacle courses. Invite children to talk about why people might enjoy making and challenging themselves with obstacle courses. Point out that obstacle courses can be good for your body; however, it is also important to make sure they are safe for your body.
In small groups, have children make a 2-column table. On the left side, they write how obstacle courses can be good for your body, and on the right side, they write how to make sure an obstacle course is safe for your body. Bring children together to share and discuss their lists. Emphasize that a good obstacle course poses challenges, but is not so difficult that it discourages, disappoints, or injures people. Consider reviewing general safety guidelines for playground activities and equipment. Children can create a Big Book of playground safety for younger children.

Use Master Q8.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q .1

Unit Rubric: Linear Measurement, Area, and Perimeter

This assessment tool is designed to record overall student performance as you accumulate evidence by reviewing portfolios, observation records, unit assessment activities, and other work. It can be used to guide feedback and help prepare for reporting. It should not be used for just one specific activity.

To create a profile of a child's achievement, use a highlighter to identify behaviours you have observed.

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of measurement concepts by: - using estimation strategies - comparing dimensions of objects - explaining and demonstrating measurement as repeated use of a unit to describe attributes of an object or figure - constructing items of specific lengths - choosing appropriate measurement units	shows very limited understanding; may be unable to: - estimate dimensions of an object - compare dimensions - explain and demonstrate measurement as repeated use of a unit to describe attributes - construct items of specific lengths - choose appropriate units	some understanding; partially able to: - estimate dimensions of an object - compare dimensions - explain and demonstrate measurement as repeated use of a unit to describe attributes - construct items of specific lengths - choose appropriate units	basic understanding; generally able to: - estimate dimensions of an object - compare dimensions - explain and demonstrate measurement as repeated use of a unit to describe attributes - construct items of specific lengths - choose appropriate units	in-depth understanding; consistently able to: - estimate dimensions of an object - compare dimensions - explain and demonstrate measurement as repeated use of a unit to describe attributes - construct items of specific lengths - choose appropriate units
Processes • accurately: - measures and records linear dimensions in conventional (cm, dm, m) and unconventional units	limited accuracy; often makes major errors or omissions in measuring and recording dimensions in conventional and unconventional units	partially accurate; makes frequent minor errors or omissions in measuring and recording dimensions in conventional and unconventional units	generally accurate; makes few errors or omissions in measuring and recording dimensions in conventional and unconventional units	accurate; rarely makes errors or omissions in measuring and recording dimensions in conventional and unconventional units
Solves situational problems				
• uses a range of strategies (e.g., estimation, concrete objects, pictures, conventional units) to solve and create measurement problems	needs one-to-one assistance to solve or create simple problems involving measurement	with limited assistance, uses appropriate strategies to solve and create simple problems involving measurement	chooses appropriate strategies to solve and create simple problems involving measurement	uses effective strategies to solve and create problems involving measurement; often shows complexity or innovation
Communicates using mathematical language				
• interprets and produces messages about measurement, using simple, mathematical language, and objects, drawings, tables, symbols, graphs, or words	has difficulty interpreting and producing mathematical messages about measurement	partially able to interpret and produce mathematical messages about measurement	interprets and produces mathematical messages about measurement	interprets and produces precise mathematical messages about measurement
Cross-curricular competency: to solve problems				
• identifies key elements of a simple situational problem	unable to determine key elements of a simple problem	with scaffolding, identifies most key elements of a simple problem	identifies key elements of a simple problem if it is similar to those recently solved	identifies key elements of a range of simple problems

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Master Q .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of measurement by making reasonable estimates, choosing appropriate tools, units, and methods, and explaining their choices	shows very limited understanding; needs one-to-one assistance to: - make reasonable estimates - choose appropriate tools, units, and methods - explain their choices	shows partial understanding; with prompting and support able to: - make reasonable estimates - choose appropriate tools, units, and methods - explain their choices	shows basic understanding; able to: - make reasonable estimates - choose appropriate tools, units, and methods - explain their choices	shows in-depth understanding; independently able to: - make reasonable estimates - choose appropriate tools, units, and methods - explain their choices
Processes • accurately: - measures distance around, total length, and distance to first obstacle - uses standard measures (cm, m) to construct the course as directed - determines tallest part correctly	needs one-to-one help; makes major errors or omissions in determining: - distance around (two ways) - total length - distance to first obstacle - height - width	somewhat accurate; some minor errors or omissions in determining: - distance around (two ways) - total length - distance to first obstacle - height - width	generally accurate; few minor errors or omissions in determining: - distance around (two ways) - total length - distance to first obstacle - height - width	accurate and precise; few, if any, errors in determining: - distance around (two ways) - total length - distance to first obstacle - height - width
Solves situational problems				
• uses appropriate strategies (e.g., estimate, use objects, draw a picture, guess and check, measure) to design an obstacle course that meets the given criteria	uses few appropriate strategies; needs one-to-one, step-by-step assistance to design an obstacle course according to the given criteria	uses some appropriate strategies; needs help to choose a strategy; able to design an obstacle course according to the given criteria with some assistance	uses appropriate and successful strategies to design an obstacle course according to the given criteria	uses innovative and effective strategies to design an obstacle course according to the given criteria; may provide more than one solution
Communicates using mathematical language				
• uses simple mathematical language correctly	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents and describes his/her thinking and solutions clearly, using objects, drawings, tables, symbols, or words	does not represent his/her thinking and solutions clearly	represents his/her thinking and solutions with some clarity; may be hard to follow in places	represents his/her thinking and solutions clearly	represents his/her thinking and solutions clearly and precisely

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Master Q .3

Peer and Self-Assessment:
Show What You Know (Unit 8)

Names: _____

How did your group decide how to make the obstacle course?

_____

_____

_____

What was the hardest part about making your obstacle course? How did you figure it out?

_____

_____

_____

What advice would you give other children who want to make this obstacle course?

_____

_____

_____

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Planning for Each Unit

Unit 9: 2-D Geometry

Materials
Master Q9.1:
Unit Rubric: - eometr
Master Q9.2:
Performance Task Rubric
Master Q9.3:
Peer and Self-Assessment: Show What You Know (Unit)

Supporting Cross-Curricular Competencies

Unit Focus: to construct his/her identity

The 2-D Geometry unit provides children with many opportunities to make decisions, express their thoughts and feelings, and take responsibility for their actions. Employ these Teacher Guide features to support children as they develop their own identities:

- In each lesson, **Connect and Reflect** allows for individual reflection; encourage children to examine their personal understanding, thoughts, and opinions, and to share them with others in the class.
- The **Explore** and **Practice** activities include contextual problems that promote responsibility to one's self, peers, and community; highlight these positive options for children (such as, healthy eating, being a good friend, active living).
- The Teacher Guide module **Building a Math Community** provides practical suggestions for creating a respectful classroom environment; revisit these ideas throughout the year.

Use Master Q9.1: Unit Rubric, to support your ongoing assessment during the unit, with a focus on the cross-curricular competency highlighted here.

Addressing Broad Areas of Learning:
Citizenship and Community Life

Educational Aim: to ensure that students take part in the democratic life of the classroom or the school and develop a spirit of openness to the world and respect for diversity

Show What You Know can be opened up mathematically, and extended.

Tell children that quilts are often made by groups of people who work together. Explain that long ago, people had *quilting bees* where they could spend time with their friends, while creating something useful that made their homes more comfortable. Sometimes, they sold their quilts to raise money for their communities.

As a class, brainstorm ideas for a collaborative project where children could work together to create something for their classroom community. Some example include:

- a quilt to hang on the wall
- a mural
- a class book
- seasonal decorations

Emphasize to children that they are working together for their community. Discuss other ways groups work together to benefit a community (e.g., at school, in community organizations or groups.) Have children ask family members for other examples. Invite children to share their findings with the class.

Use Master Q9.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q .1

Unit Rubric: 2-D Geometry

This assessment tool is designed to record overall student performance as you accumulate evidence by reviewing portfolios, observation records, unit assessment activities, and other work. It can be used to guide feedback and help prepare for reporting. It should not be used for just one specific activity.

To create a profile of a child's achievement, use a highlighter to identify behaviours you have observed.

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • describes and compares 2-D figures • explains and demonstrates ways of constructing symmetrical 2-D shapes	shows very limited understanding; may be unable to: - describe and compare 2-D figures - explain and demonstrate ways of constructing symmetrical 2-D shapes	some understanding; partially able to: - describe and compare 2-D figures - explain and demonstrate ways of constructing symmetrical 2-D shapes	basic understanding; generally able to: - describe and compare 2-D figures - explain and demonstrate ways of constructing symmetrical 2-D shapes	in-depth understanding; consistently able to: - describe and compare 2-D figures - explain and demonstrate ways of constructing symmetrical 2-D shapes
Processes • accurately: - identifies 2-D figures (square, rectangle, triangle, circle, rhombus) and their attributes - matches congruent 2-D shapes - describes and locates objects using words, pictures, or symbols	limited accuracy; often makes major errors or omissions in: - identifying 2-D figures and their attributes - matching congruent 2-D shapes - describing and locating objects using words or pictures	partially accurate; makes frequent minor errors or omissions in: - identifying 2-D figures and their attributes - matching congruent 2-D shapes - describing and locating objects using words or pictures	generally accurate; makes few errors or omissions in: - identifying 2-D figures and their attributes - matching congruent 2-D shapes - describing and locating objects using words or pictures	accurate; rarely makes errors or omissions in: - identifying 2-D figures and their attributes - matching congruent 2-D shapes - describing and locating objects using words or pictures
Solves situational problems				
• uses appropriate strategies to solve and create problems involving: - plane figures and their attributes - locating objects	needs one-to-one assistance to solve or create simple problems involving: - plane figures and their attributes - locating objects	with limited assistance, uses appropriate strategies to solve and create problems involving: - plane figures and their attributes - locating objects	chooses appropriate strategies to solve and create problems involving: - plane figures and their attributes - locating objects	uses effective strategies, often showing complexity or innovation, to solve and create problems involving: - plane figures and their attributes - locating objects
Communicates using mathematical language				
• interprets and produces messages about location and plane figures, using simple, mathematical language, and objects, drawings, tables, or words	has difficulty interpreting and producing mathematical messages about location and plane figures	partially able to interpret and produce mathematical messages about location and plane figures	interprets and produces mathematical messages about location and plane figures	interprets and produces mathematical messages about location and plane figures
Cross-curricular competency: to construct his/her identity				
• identifies preferences and makes choices with growing self-awareness and confidence	has difficulty making choices; rarely voices preferences	with support, able to identify preferences and make choices, in familiar situations, with emerging self-awareness and confidence	in familiar situations, able to identify preferences and make choices with growing self-awareness and confidence	in a variety of situations, able to identify preferences and make choices with growing self-awareness and confidence

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Master Q .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of 2-D figures and location by: - describing the design that results from drawing triangles on each edge of a pentagon - explaining how they used figures to create their own design	shows very limited understanding; needs one-to-one assistance to: - describe the design - explain how they used figures to create a design	shows partial understanding; with prompting and support, able to: - describe the design - explain how they used figures to create a design	shows basic understanding; able to: - describe the design - explain how they used figures to create a design	shows in-depth understanding; independently able to: - describe the design - explain how they used figures to create a design
Processes • accurately: - counts the vertices in a block - identifies identical designs - follows spatial instructions	needs one-to-one help; makes major errors or omissions in: - counting the vertices in a block - identifying identical designs - following spatial instructions	somewhat accurate; some minor errors or omissions in: - counting the vertices in a block - identifying identical designs - following spatial instructions	generally accurate; few minor errors or omissions in: - counting the vertices in a block - identifying identical designs - following spatial instructions	accurate and precise; few, if any, errors in: - counting the vertices in a block - identifying identical designs - following spatial instructions
Solves situational problems				
• uses geometric figures to create and change designs	uses few appropriate strategies; needs one-to-one, step-by-step help to use geometric figures to create and change designs	uses some appropriate strategies; needs help to use geometric figures to create and change designs	uses appropriate and successful strategies to use geometric figures to create and change designs	uses innovative and effective strategies to use geometric figures to create and change designs
Communicates using mathematical language				
• uses simple mathematical language correctly	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents and describes his/her thinking and solutions clearly, using objects, drawings, tables, symbols, or words	does not represent his/her thinking and solutions clearly	represents his/her thinking and solutions with some clarity; may be hard to follow in places	represents his/her thinking and solutions clearly	represents his/her thinking and solutions clearly and precisely

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Master Q .3

Peer and Self-Assessment:
Show What You Know (Unit 9)

My Name: _____ My Partner's Name: _____

1. Think about your design for the quilt.

Tell about a good idea you had when you were making your design.

_____

_____

_____

Tell about something that was hard to figure out or to do.

_____

_____

_____

2. Show your quilt to a partner. Ask him or her to write about your work in the box.

Tell about something special you noticed in quilt design.

_____

_____

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Planning for Each Unit

Unit 10: Multiplication, Division, and Fractions

Materials
Master Q10.1:
Unit Rubric: ulti lication i ision and ractions
Master Q10.2:
Performance Task Rubric
Master Q10.3:
Peer and Self-Assessment: Show What You Know (Unit 1)

Supporting Cross-Curricular Competencies

Unit Focus: to solve problems

In the Multiplication, Division, and Fractions unit, children solve problems in various contexts. Utilize these Teacher Guide features to support children's development of effective problem solving skills:

- In all of the **Explore** and **Practice** activities, problem-solving opportunities are presented in relevant contexts; encourage children to share their problem-solving strategies with the class.
- In the **Strategies Tool Kit** lesson (Lesson 7), children approach new problems involving critical and creative thinking; review the given list of strategies and encourage children to solve the problem using more than one strategy.
- In the Teacher Guide module **Additional Assessment Support**, GAM 1 (I Am a Problem Solver) promotes individual reflection about the problem-solving process; use this assessment tool with any problem throughout the unit.

Use Master Q10.1: Unit Rubric, to support your ongoing assessment during the unit, with a focus on the cross-curricular competency highlighted here.

Addressing Broad Areas of Learning:
Citizenship and Community Life

Educational Aim: to ensure that students take part in the democratic life of the classroom or the school and develop a spirit of openness to the world and respect for diversity

Show What You Know can be opened up mathematically, and extended.

Review with children that the participants in the Musical Ride are police officers in the Royal Canadian Mounted Police who have very important responsibilities. In groups, have children make a list of other responsibilities police officers have. Encourage them to think about "everyday" responsibilities of police officers, and "special jobs" like performing in the musical ride or visiting schools. Invite children to share their list of jobs with the class. Initiate a discussion about how police officers contribute to community life (e.g., make sure people obey rules and laws; catch people who are dangerous.) Ask questions, such as:

- Where do rules and laws come from?
- Do all communities and countries have the same laws?
- Why are rules and laws important?
- How would our lives be different if there were no rules or laws?
- What rules and laws are most important for keeping our community safe?

Use Master Q10.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q1 .1

Unit Rubric: Multiplication, Division, and Fractions

This assessment tool is designed to record overall student performance as you accumulate evidence by reviewing portfolios, observation records, unit assessment activities, and other work. It can be used to guide feedback and help prepare for reporting. It should not be used for just one specific activity.

To create a profile of a child's achievement, use a highlighter to identify behaviours you have observed.

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding by: - illustrating and explaining halves, thirds, and fourths, as part of a region or set - demonstrating the processes of multiplication (as repeated addition) and division (as repeated subtraction or sharing), using manipulatives and diagrams	shows very limited understanding; may be unable to demonstrate or explain: - halves, thirds, and fourths as part of a region or set - the processes of multiplication and division	some understanding; partially able to demonstrate or explain: - halves, thirds, and fourths as part of a region or set - the processes of multiplication and division	basic understanding; generally able to demonstrate or explain: - halves, thirds, and fourths as part of a region or set - the processes of multiplication and division	in-depth understanding; consistently able to demonstrate or explain: - halves, thirds, and fourths as part of a region or set - the processes of multiplication and division
Processes • accurately: - recalls number facts to 10 - determines sums (to 100) - skip counts (2s, 5s, 10s) - builds and counts equal sets of objects - names fractional parts - identifies which of two fractional parts is larger/smaller	limited accuracy; often makes major errors or omissions in: - recalling number facts - determining sums - skip counting - building and counting equal sets - naming and comparing fractional parts	partially accurate; makes frequent minor errors or omissions in: - recalling number facts - determining sums - skip counting - building and counting equal sets - naming and comparing fractional parts	generally accurate; makes few errors or omissions in: - recalling number facts - determining sums - skip counting - building and counting equal sets - naming and comparing fractional parts	accurate; rarely makes errors or omissions in: - recalling number facts - determining sums - skip counting - building and counting equal sets - naming and comparing fractional parts
Solves situational problems				
• chooses and uses appropriate strategies to solve and create problems involving concepts of multiplication, division, and fractions	needs one-to-one assistance to solve or create simple problems	with limited assistance, uses appropriate strategies to solve and create simple problems	chooses appropriate strategies to solve and create simple problems	uses effective strategies to solve and create problems; often shows complexity or innovation
Communicates using mathematical language				
• interprets and produces messages about fractions and number operations, using simple, mathematical language, and objects, drawings, tables, symbols, or words	has difficulty interpreting and producing mathematical messages	partially able to interpret and produce mathematical messages	interprets and produces mathematical messages	interprets and produces mathematical messages with precision
Cross-curricular competency: to solve problems				
• recognizes similarities with recent problem-solving experiences (makes connections and draws on prior knowledge)	does not recognize similarities with recently solved problems	with prompting, recognizes when a problem is very similar to other recently solved problems	recognizes when a problem is similar to other recently solved problems, and recalls some strategies and procedures used	draws on their own problem-solving experiences; can describe similarities and differences with previous problems

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Master Q1 .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • representations and explanations show understanding of: - equal groups (concepts of multiplication, division, and fractions) - fractional parts of a whole (in everyday objects)	shows very limited understanding; needs one-to-one assistance to represent and explain: - equal groups or sets (concepts of multiplication and division; fractions) - fractional parts of a whole	shows partial understanding; with prompting and support, able to represent and explain: - equal groups or sets (concepts of multiplication and division; fractions) - fractional parts of a whole	shows basic understanding; able to represent and explain: - equal groups or sets (concepts of multiplication and division; fractions) - fractional parts of a whole	shows in-depth understanding; independently able to represent and explain: - equal groups or sets (concepts of multiplication and division; fractions) - fractional parts of a whole
Processes • accurately: - skip counts and adds (repeated addition) - builds and counts equal sets of objects - names fractional parts	needs one-to-one help; makes major errors or omissions in: - repeated addition - building and counting equal sets - naming fractional parts	somewhat accurate; some minor errors or omissions in: - repeated addition - building and counting equal sets - naming fractional parts	generally accurate; few minor errors or omissions in: - repeated addition - building and counting equal sets - naming fractional parts	accurate and precise; few, if any, errors in: - repeated addition - building and counting equal sets - naming fractional parts
Solves situational problems				
• uses appropriate strategies (e.g., concrete objects, pictures, make a model) to create and solve number problems involving equal groups/regions	uses few appropriate strategies; needs one-to-one, step-by-step assistance to solve number problems involving equal groups	uses some appropriate strategies; needs help to choose a strategy; able to solve number problems involving equal groups with some assistance	uses appropriate and successful strategies to solve number problems involving equal groups	uses innovative and effective strategies to solve number problems involving equal groups; may provide more than one solution
Communicates using mathematical language				
• uses simple mathematical language correctly	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents and describes his/her thinking and solutions clearly, using objects, drawings, tables, symbols, or words	does not represent his/her thinking and solutions clearly	represents his/her thinking and solutions with some clarity; may be hard to follow in places	represents his/her thinking and solutions clearly	represents his/her thinking and solutions clearly and precisely

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Master Q1 .3

Peer and Self-Assessment:
Show What You Know (Unit 10)

My Name: _____ My Partner's Name: _____

1. Look how you made groups of horses (Student page 250).

How did you get the idea for your groups?

_____

_____

What could other children learn about equal groups from your work?

_____

_____

2. Ask a classmate to fill in the box.

Tell something you like about my work.

_____

_____

Ask me a question about my work.

_____

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Planning for Each Unit

Unit 11: Mass and Capacity (*ti al*)

Materials
Master Q11.1:
Unit Rubric: ass and a acit
Master Q11.2:
Performance Task Rubric
Master Q11.3:
Peer and Self-Assessment: Show What You Know (Unit 11)

Supporting Cross-Curricular Competencies

Unit Focus: to use information

The Mass and Capacity unit provides children with opportunities to use information in meaningful contexts. The following Teacher Guide features support children as they learn how to compare, group, organize, display, and question information:

- The **Get Started** section in each lesson prompts children to assess prior knowledge and make connections to new concepts.
- The **Explore** and **Practice** activities, the **Strategies Tool Kit** lesson, and the **Investigations** give children a chance to use given information to solve relevant problems; support children in selecting materials that best suit their needs for solving each problem.
- The **Connect and Reflect** section in each lesson allows for children to make connections between what they already know and new information; encourage children to share any connections they make with the class.

Use Master Q11.1: Unit Rubric, to support your ongoing assessment during the unit, with a focus on the cross-curricular competency highlighted here.

Addressing Broad Areas of Learning:
Media Literacy

Educational Aim: to develop students' critical and ethical judgment with respect to media

Show What You Know can be opened up mathematically, and extended.

Gather a collection of photographs, illustrations, and cartoon drawings of plants. Include videos (e.g., Jack and the Beanstalk; short science videos) if possible. Ensure that some of the depictions are clearly accurate; some are clearly fictional; and others are ambiguous.
Review with children what they know about plants and how they grow. Make a list of "plant facts." Remind children that when they read books or magazines, read information on the Internet, or view videos, some of the information is true and factual, while some is not. Ask:

- How can you tell the difference between information that is true and factual, and information that is not?

Have children look at different information and pictures of plants. In groups, have children examine and sort the pictures/information into 3 categories: definitely true and factual; definitely not true (fictional); and could be true. If possible, show video clips and have groups decide which category each clip goes into. As a class, talk about how children decided what was true, not true, and possibly true. Consider making a class chart of "Tips for Deciding What is True," or "Places to Find Facts."
Use Master Q11.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q11.1

Unit Rubric: Mass and Capacity

This assessment tool is designed to record overall student performance as you accumulate evidence by reviewing portfolios, observation records, unit assessment activities, and other work. It can be used to guide feedback and help prepare for reporting. It should not be used for just one specific activity.

To create a profile of a child's achievement, use a highlighter to identify behaviours you have observed.

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of measurement concepts by: - measuring objects that involve comparing - using the measurements of one object to describe a similar attribute of another object - measuring, ordering, and comparing objects using unconventional units	shows very limited understanding; may be unable to: - measure objects that involve comparing - use the measurements of one object to describe a similar attribute of another object - measure, order, and compare objects using unconventional units	some understanding; partially able to: - measure objects that involve comparing - use the measurements of one object to describe a similar attribute of another object - measure, order, and compare objects using unconventional units	basic understanding; generally able to: - measure objects that involve comparing - use the measurements of one object to describe a similar attribute of another object - measure, order, and compare objects using unconventional units	in-depth understanding; consistently able to: - measure objects that involve comparing - use the measurements of one object to describe a similar attribute of another object - measure, order, and compare objects using unconventional units
Processes • accurately: - measures, orders, and compares objects using unconventional units	limited accuracy; often makes major errors or omissions in measurements	partially accurate; makes frequent minor errors or omissions in measurements	generally accurate; makes few errors or omissions in measurements	accurate; rarely makes errors or omissions in measurements
Solves situational problems				
• uses a range of strategies (e.g., estimation, concrete objects, pictures, conventional units) to solve and create measurement problems	needs one-to-one assistance to solve or create simple problems involving measurement	with limited assistance, uses appropriate strategies to solve and create simple problems involving measurement	chooses appropriate strategies to solve and create simple problems involving measurement	uses effective strategies to solve and create problems involving measurement; often shows complexity or innovation
Communicates using mathematical language				
• interprets and produces messages about measurement, using simple, mathematical language, and objects, drawings, tables, symbols, graphs, or words	has difficulty interpreting and producing mathematical messages about measurement	partially able to interpret and produce mathematical messages about measurement	interprets and produces mathematical messages about measurement	interprets and produces precise mathematical messages about measurement
Cross-curricular competency: to use information				
• collects first-hand information by observing and recording carefully	has difficulty collecting first-hand information to complete a specific task	with support, collects simple first-hand information to complete a specific task; may need additional help with recording	collects and records simple first-hand information to complete a specific task	collects and records first-hand information to complete a variety of tasks; shows initiative and resourcefulness (may discover own methods)

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Master Q11.2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of measurement by making reasonable estimates, and justifying their choice of containers of objects (makes comparisons)	shows very limited understanding; needs one-to-one assistance to: - make reasonable estimates - explain their choices	shows partial understanding; with prompting and support able to: - make reasonable estimates - explain their choices	shows basic understanding; able to: - make reasonable estimates - explain their choices	shows in-depth understanding; independently able to: - make reasonable estimates - explain their choices
Processes • accurately: - uses measuring units/tools (e.g., scoop, scale) - counts and records units - compares and orders containers and objects	needs one-to-one help; makes major errors or omissions in: - using units/tools - counting and recording units - comparing and ordering containers and objects	somewhat accurate; some minor errors or omissions in: - using units/tools - counting and recording units - comparing and ordering containers and objects	generally accurate; few minor errors or omissions in: - using units/tools - counting and recording units - comparing and ordering containers and objects	accurate and precise; few, if any, errors in: - using units/tools - counting and recording units - comparing and ordering containers and objects
Solves situational problems				
• uses appropriate strategies (e.g., estimate, use objects, draw a picture, guess and check, measure) to solve measurement problems	uses few appropriate strategies; needs one-to-one, step-by-step assistance to solve measurement problems	uses some appropriate strategies; needs help to choose a strategy; able to solve measurement problems	uses appropriate and successful strategies to solve measurement problems	uses innovative and effective strategies to solve measurement problems
Communicates using mathematical language				
• uses simple mathematical language correctly	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents and describes his/her thinking and solutions clearly, using objects, drawings, tables, symbols, or words	does not represent his/her thinking and solutions clearly	represents his/her thinking and solutions with some clarity; may be hard to follow in places	represents his/her thinking and solutions clearly	represents his/her thinking and ' solutions clearly and precisely

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Master Q11.3

Peer and Self-Assessment:
Show What You Know (Unit 11)

Names: _____

Work together to answer the questions.

1. We answered all parts of the questions.	YES	PARTLY	NO
2. We measured and recorded very carefully.	YES	PARTLY	NO
3. We checked our answers.	YES	PARTLY	NO
4. We can **all** explain our answers.	YES	PARTLY	NO
5. We shared the work fairly.	YES	PARTLY	NO

What would you like other people to know about how you worked together?

_____

_____

_____

What would you like others to learn about from your answers?

_____

_____

_____

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