ADDISON WESLEY

QUÉBEC EDITION

Math Makes Sense

Elementary

Cycle 1
Year 1

Québec Teacher Companion

ISBN 0-321-41040-8

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PEARSON Education Canada

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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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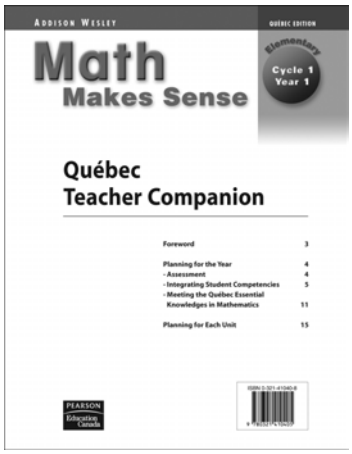
Foreword

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).



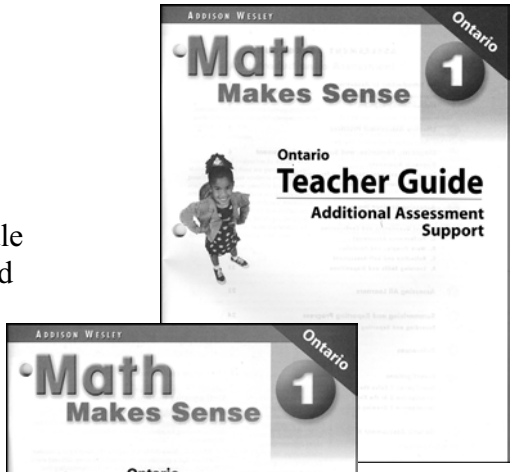
This **Québec Teacher Companion** provides additional support so that you can tailor the ***Math Makes Sense*** program to your specific needs. In particular, this module provides support to demonstrate how ***Math Makes Sense*** will help you nurture the development of the core competencies identified 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

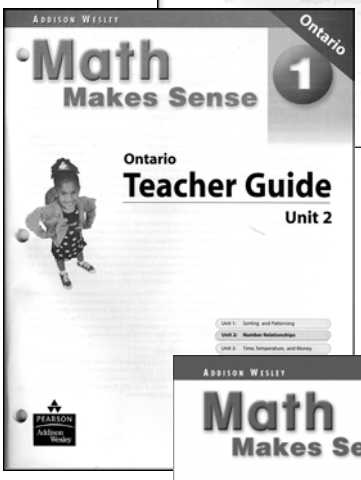
Assessment

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

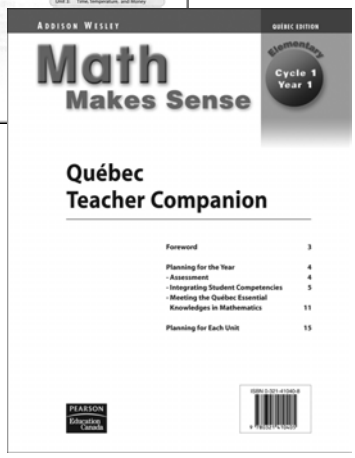
This module includes a variety of general-use rubrics, checklists, and other assessment tools. Go to this module for these assessment tools, as well as teaching notes and assessment support for the **Investigations**.



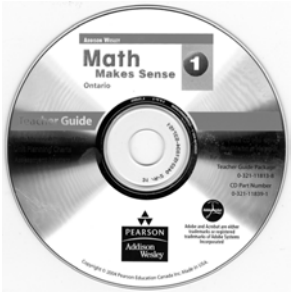
Each individual ***Unit module*** in your Teacher Guide includes a **Planning for Assessment** chart, and a variety of assessment tools that are written for specific assessment of the content of the unit, in reproducible master format.



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 helps 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 Knows**, 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 1 Correlations	*Math Makes Sense* Cycle 1, Year 1 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 3–5 Unit 2, Lessons 1–10 Unit 4, Lesson 1 Unit 7, Lessons 1–5 Unit 10, Lessons 1–5	Unit 3, Lesson 5 (extension)
• approximation	Unit 2, Lesson 9 Unit 7, Lesson 2 Unit 10, Lesson 3	
Fractions • fractions related to the child's everyday life	Unit 9, Lesson 6	

Arithmetic: Meaning of Operations Involving Numbers

Québec Essential Knowledge	*Math Makes Sense* Cycle 1, Year 1 Correlation	*Math Makes Sense* Cycle 1, Year 1 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, Lesson 5 Unit 3, Lessons 6, 7 Unit 4, Lessons 1, 2, 4, 5 Unit 7, Lessons 1, 6–8 Unit 10, Lessons 5, 6	Unit 3, Lessons 6, 7 (extension)
• choice of operation: addition, subtraction	Unit 4, Lessons 3, 5, 6 Unit 7, Lessons 7, 8 Unit 10, Lessons 5, 6	
• meaning of an equality relation (equation), meaning of an equivalence relation	Unit 4, Lesson 6 Unit 7, Lesson 7	
• relationships between the operations	Unit 4, Lesson 6 Unit 7, Lesson 7 Unit 10, Lessons 5, 6	
• property of operations: commutative law	Unit 4, Lessons 1, 2, 4, 5 Unit 7, Lesson 7 Unit 10, Lessons 5, 6	

Arithmetic: Operations Involving Numbers

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

Geometry: Geometric Figures and Spatial Sense

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

Measurement

Québec Essential Knowledge	*Math Makes Sense* Cycle 1, Year 1 Correlation	*Math Makes Sense* Cycle 1, Year 1 Optional Pages
Lengths: estimating and measuring • dimensions of an object	Unit 8, Lessons 1–5	Unit 8, Lesson 6 (extension)
• unconventional units: comparison, construction of rulers	Unit 8, Lessons 1–5	
• conventional units (m, dm, cm)		(covered more in Cycle 1, Year 2) 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 9, Lesson 7	

Statistics

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

Probability

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

Planning for Each Unit

Unit 1: Sorting and Patterning

Materials
Master Q1.1:
Unit Rubric: Sorting and Patterning
Master Q1.2:
Performance Task Rubric

Supporting Cross-Curricular Competencies

Unit Focus: to adopt effective work methods

Sorting and Patterning 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 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:
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.

Display children's pattern borders in the classroom. Ask:

- Why do we display schoolwork, like the pattern borders, in our classroom?
  (*To make it look nice; to share our work with each other; to give us interesting things to look at*)
- Who do we display our schoolwork for?
  (*The whole class, the whole school, people in the community*)

Discuss the concept of community. Tell children that they are part of a classroom community. Reinforce how everyone in a classroom community is responsible for helping to make it the best learning environment possible. Invite children to suggest new ways to make their classroom community a respectful, comfortable, and safe place for all teachers and students. Have children create a poster using their suggestions. Display children's posters.

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 of attributes and sorting by demonstrating with concrete objects, explaining orally, and/or recording in pictures, numbers, or words	shows very limited understanding that figures and objects have attributes that can be used to sort or make simple patterns	shows some understanding that figures and objects have attributes that can be used to sort or make simple patterns	shows understanding that figures and objects have attributes that can be used to sort or make simple patterns	in various contexts, consistently shows understanding that figures and objects have attributes that can be used to sort or make simple patterns
Processes • accurately: - identifies attributes (e.g., shape, colour, size) - compares and sorts figures and objects, using one attribute - creates or reproduces simple patterns using actions, objects, diagrams, or words	limited accuracy; often makes major errors or omissions in: - identifying attributes - comparing and sorting using one attribute - creating or reproducing simple patterns	partially accurate; makes frequent minor errors or omissions in: - identifying attributes - comparing and sorting using one attribute - creating or reproducing simple patterns	generally accurate; makes few errors or omissions in: - identifying attributes - comparing and sorting using one attribute - creating or reproducing simple patterns	accurate; rarely makes errors or omissions in: - identifying attributes - comparing and sorting using one attribute - creating or reproducing simple patterns
Solves situational problems				
• uses appropriate strategies to create and solve simple problems involving sorting or patterning	needs one-to-one assistance to create and solve simple problems	with some help, uses appropriate strategies to create and solve simple problems; may need help to get started	chooses appropriate strategies to create and solve simple problems	uses effective strategies to create and solve problems; shows some complexity or innovation
Communicates using mathematical language				
• interprets and produces messages about sorting and patterning, using simple, mathematical language, including objects, drawings, symbols, and 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 adopt effective work methods				
• uses materials and space appropriately for the task	needs one-to-one ongoing supervision to choose materials and use them appropriately; unable to manage physical space (often encroaches on others' space)	with help, selects and uses materials appropriately and tries to manage physical space appropriately with partial success	selects and uses materials, and tries to manage physical space appropriately and is usually successful	selects and uses materials, and manages physical space appropriately

Master Q1.2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding by creating and describing a simple repeating pattern	with ongoing one-to-one help, may be able to create and answer questions about a simple pattern	shows partial understanding by creating and answering questions about a simple pattern; may need help to get started	shows understanding by creating and telling about some features of a simple pattern; may show minor flaws in reasoning	shows in-depth understanding by creating and describing a pattern that has some complexity or innovation
Processes • represents own pattern and reproduces another's pattern accurately	limited accuracy; makes major errors or omissions	somewhat accurate; some minor errors or omissions	generally accurate; few minor errors or omissions	accurate and precise; few, if any, errors or omissions
Solves situational problems				
• uses appropriate strategies to create and represent a pattern border	uses few appropriate strategies; does not adequately create and represent a pattern border	uses some appropriate strategies, with partial success, to create and represent a pattern border	uses appropriate and successful strategies to create and represent a pattern border	uses innovative and effective strategies to create and represent a pattern border
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 a pattern clearly	does not represent and present a pattern clearly	represents and presents a pattern with some clarity; may be hard to follow in places	represents and presents a pattern clearly	represents and presents a pattern clearly and precisely

Planning for Each Unit

Unit 2: Number Relationships

Materials
Master Q2.1:
Unit Rubric: Number Relationships
Master Q2.2:
Performance Task Rubric

Supporting Cross-Curricular Competencies

Unit Focus: to use creativity

The Number Relationships 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 10) using a different strategy than the one highlighted (such as drawing a picture).

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:
Media Literacy

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

Ask children to think about some of their favourite television shows, movies, or video games, and have them brainstorm 12 characters from any of the media. Print the name of each character on an index card. Use a pocket chart to sort the cards by an obvious attribute, such as gender or adult/child. Challenge children to guess how you sorted the cards. Collaborate with the children to find various ways of grouping the characters into two or more groups (such as good/bad, funny/not funny, people/animals/cartoons). After each sort, summarize what children have done. For example, "Some of the characters are good—they try to help people; some of the characters are not good—they try to hurt people."

After children have explored various ways of sorting and describing media characters, ask:

- Are these characters real?
- If they are not real, where did they come from?
- Who gave these characters their personalities (or made them funny, good, mean, and so on)?

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 demonstrating with concrete objects, explaining orally, telling number stories, and/or recording in pictures, numbers, or words	may be unable to explain or represent: - one-to-one correspondence - conservation - more and less relationships - part-part-whole relationships	partially able to explain or represent: - one-to-one correspondence - conservation - more and less relationships - part-part-whole relationships	able to explain or represent: - one-to-one correspondence - conservation - more and less relationships - part-part-whole relationships	in various contexts, consistently able to explain or represent: - one-to-one correspondence - conservation - more and less relationships - part-part-whole relationships
Processes • accurately: - counts objects - reads and prints numerals to 20 and number words to 10 - compares quantities to 20	major errors or omissions in: - counting to 20 by 1s - counting backward from 10 - reading and printing numerals to 20 - reading and printing number words to 10 - identifying 1 or 2 and more or less - comparing sets	makes frequent minor errors or omissions in: - counting to 20 by 1s - counting backward from 10 - reading and printing numerals to 20 - reading and printing number words to 10 - identifying 1 or 2 and more or less - comparing sets	makes few errors or omissions in: - counting to 20 by 1s - counting backward from 10 - reading and printing numerals to 20 - reading and printing number words to 10 - identifying 1 or 2 and more or less - comparing sets	rarely make errors or omissions in: - counting to 20 by 1s - counting backward from 10 - reading and printing numerals to 20 - reading and printing number words to 10 - identifying 1 or 2 and more or less - comparing sets
Solves situational problems				
• uses appropriate strategies to solve and create simple 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 use creativity				
• shows flexibility; willing to explore a variety of ways to attain an objective (e.g., to represent a number)	little flexibility; unable or unwilling to suggest multiple ways to represent a number	with prompting, willing to explore multiple ways to represent a number; tends to follow teachers' or classmates' lead	willing to explore multiple ways to represent a number; takes pride in discovering new ways	independently explores multiple ways to represent a number; takes pride in developing unusual or original representations

Master Q2.2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • oral explanations, demonstrations, and number stories show understanding of: - conservation of number - part-part-whole relationships (numbers can be built from smaller numbers	often does not recognize that the same sets or objects, arranged in two ways, can both equal 12 with one-to-one help, may be able to tell a number story that shows very limited understanding of part-part-whole relationships	with prompting and support, recognizes that the same sets or objects, arranged in two ways, can both equal 12 tells a number story that shows limited understanding of part-part-whole relationships; usually closely modelled on a story told by others	recognizes that the same sets or objects, arranged in various ways, can both equal 12 tells a number story that shows understanding of part-part-whole relationships	recognizes that the same sets or objects, arranged in various ways, can both equal 12 tells number stories that show in-depth understanding of part-part-whole concepts in various contexts
Processes • accurately: - uses 1:1 correspondence - records numerals to 20 and number words to 10	needs assistance to represent 12 with 12 objects records numerals to 20 and number words to 10 with major errors	with limited assistance, represents 12 with 12 objects records numerals to 20 and number words to 10 with several minor errors	represents 12 with 12 objects records numerals to 20 and number words to 10 with few minor errors	represents 12 with 12 objects with ease records numerals to 20 and number words to 10 with practically no errors
Solves situational problems				
• finds several ways to represent 12 using concrete objects	unable to build 12 in more than one way	builds 12 in two ways; may need help to find a third way	builds 12 in three ways	builds 12 in three ways; may explore a more complex or innovative way (e.g., using 3 sets)
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 their pattern clearly	does not represent and present their pattern clearly	represents and presents their pattern with some clarity; may be hard to follow in places	represents and presents their pattern clearly	represents and presents their pattern clearly and precisely

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

Supporting Cross-Curricular Competencies

Unit Focus: to cooperate with others

The Time, Temperature, and Money 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 Lesson 3 and Lesson 5); 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 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:
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.

Invite children to share any experiences with garage sales. Ask:

- What are some of the jobs that people need to do when they have a sale?
- What do you have to do *before* the sale to get ready?
- What do you have to do *during* the sale while people are looking at and buying items?
- What do you have to do *after* the sale?

Record children's ideas. Ask children to think about which of the jobs they would most enjoy doing. Have each child choose one job to think about; then tell a partner about that job and why he or she would like it.

Have children role-play a garage sale. Assign children "before," "during," or "after" roles for the sale. The "before" and "after" groups can be customers during the sale. After the role-play, have children draw and label a picture of themselves doing one of their favourite jobs.
Use Master Q3.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q .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: - comparing the duration of activities - making reasonable estimates about passage of time - relating temperature to daily activities	shows very limited understanding; may be unable to: - compare duration of activities - make reasonable estimates about passage of time - relate temperature to daily activities	some understanding; partially able to: - compare duration of activities - make reasonable estimates about passage of time - relate temperature to daily activities	basic understanding; generally able to: - compare duration of activities - make reasonable estimates about passage of time - relate temperature to daily activities	thorough understanding; in various contexts, consistently able to: - compare duration of activities - make reasonable estimates about passage of time - relate temperature to daily activities
Processes • accurately: - orders events - names weekdays and seasons - measures duration of time (unconventional units) - reads analog clocks to the hour - counts and records money amounts	limited accuracy; often makes major errors or omissions in: - ordering events - naming weekdays and seasons - measuring duration of time - reading analog clocks to the hour - counting and recording money amounts	partially accurate; makes frequent minor errors or omissions in: - ordering events - naming weekdays and seasons - measuring duration of time - reading analog clocks to the hour - counting and recording money amounts	generally accurate; makes few errors or omissions in: - ordering events - naming weekdays and seasons - measuring duration of time - reading analog clocks to the hour - counting and recording money amounts	accurate; rarely makes errors or omissions in: - ordering events - naming weekdays and seasons - measuring duration of time - reading analog clocks to the hour - counting and recording money amounts
Solves situational problems				
• uses appropriate strategies to solve oral problems related to time and money in their daily activities	needs one-to-one help to attempt problems related to their daily activities	with some help, uses appropriate strategies to solve simple problems related to their daily activities; partially successful	uses appropriate strategies to solve simple problems related to their daily activities; usually successful	uses effective strategies to successfully solve problems related to their daily activities; often shows innovation
Communicates using mathematical language				
• interprets and produces messages about time and money, using simple, measurement terms (hour, day) and objects, drawings, or words	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 cooperate with others				
• participates actively in partner or group activities	shows little interest in partner or group activities; needs a lot of encouragement and close supervision to participate	with help, sometimes participates actively in partner or group activities; inconsistent; may have trouble staying on task	usually participates actively in partner or group activities; may need reminders to stay on task	almost always participates actively in a wide range of partner or group activities; may help others stay on task

Master Q .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding by: - placing events in reasonable order (Student page 59) - using pictures, numbers, or words to show how they decided on which 2 items to buy (Student page 61)	shows very limited understanding; needs one-to-one assistance to: - create a reasonable sequence - choose 2 items that total 10 cents or less	shows partial understanding; with prompting and support able to: - create a reasonable sequence - choose 2 items that total 10 cents or less	shows basic understanding; able to: - create a reasonable sequence - choose 2 items that total 10 cents or less	shows in-depth understanding; independently able to: - create a reasonable sequence - choose 2 items that total 10 cents or less
Processes • chooses the correct number of coins for each item (Student page 60)	needs help to select the correct number of coins for any of the items	with limited prompting, selects the correct number of coins for at least two items	selects the correct number of coins for most items	selects the correct number of coins for all items
• determines how much the two items cost (Student page 61)	answer is not reasonable; may be omitted	answer is reasonable but incorrect	answer is correct (within 1 cent)	answer is correct; may use mental math
Solves situational problems				
• selects the smallest number of coins to buy an item (Student page 60)	unable to select the smallest number of coins without one-to-one help	selects the smallest number of coins for some items; may need prompting	selects the smallest number of coins for most items	selects the smallest number of coins for all items
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 their solutions clearly using objects, drawings, tables, symbols, or words	does not represent their solutions clearly	represents their solutions with some clarity; may be hard to follow in places	represents their solutions clearly	represents their solutions clearly and precisely

Planning for Each Unit

Unit 4: Addition and Subtraction to 12

Materials
Master Q4.1:
Unit Rubric: Addition and Subtraction to 12
Master Q4.2:
Performance Task Rubric

Supporting Cross-Curricular Competencies

Unit Focus: to communicate appropriately

The Addition and Subtraction to 12 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, 2, 4, and 5) 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 100) asks children to use pictures, numbers, or words 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 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:
Environmental Awareness

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.

Remind children that the story tells about children getting on and off a bus. Invite children to brainstorm a list of ways that people move from one place to another, such as, walk, bicycle, drive a car, take a bus, take a train, ride a horse, and so on. Discuss reasons why people take the bus instead of driving a car. Record children's ideas. Prompt them to think about conservation by asking questions, such as:

- Which would use up more gas: one bus carrying 20 children or 20 cars each carrying one child?
- What are some other ways people can save gas (or energy)? (*Walk or bike to school or work*)

Engage children in one of the following activities:

- Make a poster or chart about buses
- Create a Big Book about "How to Get Around"
- Make a list poem beginning with *I like to walk because…*or *I like buses because…*
- Have children gather information from their families about when and why they take the bus.

Use Master Q4.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q .1

Unit Rubric: Addition and Subtraction to 12

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, represent, or explain that: - numbers can be made of smaller numbers (part-part-whole) - addition involves uniting - subtraction involves taking one group away from another	may be unable to demonstrate, represent, or explain that: - numbers can be made of smaller numbers - addition involves uniting - subtraction involves taking away	partially able to demonstrate, represent, or explain that: - numbers can be made of smaller numbers - addition involves uniting - subtraction involves taking away	able to demonstrate, represent, or explain that: - numbers can be made of smaller numbers - addition involves uniting - subtraction involves taking away	in various contexts, able to demonstrate, represent, or explain that: - numbers can be made of smaller numbers - addition involves uniting - subtraction involves taking away
Processes • accurately: - demonstrates addition and subtraction facts to 12 - represents addition and subtraction sentences	limited accuracy; often makes major errors or omissions in: - demonstrating addition and subtraction facts to 12 - representing addition and subtraction sentences	partially accurate; makes frequent minor errors or omissions in: - demonstrating addition and subtraction facts to 12 - representing addition and subtraction sentences	generally accurate; makes few errors or omissions in: - demonstrating addition and subtraction facts to 12 - representing addition and subtraction sentences	accurate; rarely makes errors or omissions in: - demonstrating addition and subtraction facts to 12 - representing addition and subtraction sentences
Solves situational problems				
• uses appropriate strategies (e.g., estimation, mental math, concrete objects, pictures) to solve and create problems involving numbers and their relationships	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, 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 communicate appropriately				
• listens attentively and reacts appropriately when others are speaking	shows little interest and frequently reacts inappropriately when others are speaking; needs close supervision and intensive support	listens quietly when others are speaking; may need support and scaffolding in order to react or respond appropriately	listens attentively and reacts appropriately; may need reminders or prompts	listens attentively and reacts appropriately when others are speaking; offers feedback and encouragement

Master Q .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding that adding involves uniting and subtracting involves taking away	shows very limited understanding; needs one-to-one assistance to tell a very simple number story about addition	shows partial understanding; with prompting and support, able to tell a number story that shows understanding of addition; may have more difficulty with subtraction	shows basic understanding; tells a number story that shows understanding of addition or subtraction	shows in-depth understanding; tells a number story that includes both addition and subtraction
Processes • makes and records addition and subtraction changes accurately	needs one-to-one help; makes major errors or omissions in: - story of 10 - on and off the bus	somewhat accurate; some minor errors or omissions in: - story of 10 - on and off the bus	generally accurate; few minor errors or omissions in: - story of 10 - on and off the bus	accurate and precise; few, if any, errors in: - story of 10 - on and off the bus
Solves situational problems				
• chooses an appropriate strategy to solve addition and subtraction problems (e.g., using concrete objects, drawing, using numbers)	needs one-to-one, step-by-step assistance to solve number problems	needs help to choose strategies; able to solve number problems	chooses and uses appropriate strategies to solve number problems	chooses and uses effective strategies to create and solve number 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 their thinking and stories clearly	does not represent their thinking and stories clearly	represents their thinking and stories with some clarity; may be hard to follow in places	represents their thinking and stories clearly	represents their thinking and stories clearly and precisely

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 construct his/her identity

The Data Management and Probability 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 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:
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.

Invite children to tell what they found out in their surveys. Initiate a discussion about individual interests and preferences with questions, such as:

- Why doesn't everyone like the same things, even when they are the same age and go to the same school?
- Does everyone have a favourite _____? (Fill in the blank with *game*, *food*, *colour*, *book*, *toy*, and so on.)
- How do you get "favourites?" What makes you like one game/food/colour/book/toy better than another?
- Is it okay to have different "favourites" than your friends? Than other people in your family?
- What if everyone had the same "favourites?" What would be good/bad about that?

Consider having children write and draw about one of more of their "favourites." Create a display. Invite children to talk about their choices.

Use Master Q5.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q .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 graphs and data by offering ideas, comparisons, and questions during discussions • offers and justifies reasonable predictions about the likelihood of an event	shows little or no understanding that: - data can be organized and displayed in graphs - graphs can be analyzed to draw conclusions and ask new questions - previous experience can be used to make predictions about future events	shows partial understanding that: - data can be organized and displayed in graphs - graphs can be analyzed to draw conclusions and ask new questions - previous experience can be used to make predictions about future events	shows basic understanding that: - data can be organized and displayed in graphs - graphs can be analyzed to draw conclusions and ask new questions - previous experience can be used to make predictions about future events	shows in-depth understanding that: - data can be organized and displayed in graphs - graphs can be analyzed to draw conclusions and ask new questions - previous experience can be used to make predictions about future events
Processes • accurately: -sorts objects using 1 attribute - records simple data - creates simple graphs and pictographs - interprets graphs (e.g., counts, compares)	limited accuracy; often makes major errors or omissions in: - sorting by 1 attribute - recording data - creating simple graphs - interpreting simple graphs	partially accurate; makes frequent minor errors or omissions in: - sorting by 1 attribute - recording data - creating simple graphs - interpreting simple graphs	generally accurate; makes few errors or omissions in: - sorting by 1 attribute - recording data - creating simple graphs - interpreting simple graphs	accurate; rarely makes errors or omissions in: - sorting by 1 attribute - recording data - creating simple graphs - interpreting simple graphs
Solves situational problems				
• uses appropriate strategies to plan and conduct a simple inquiry, draw conclusions, and pose questions about the results with a partner or group	needs one-to-one assistance; may be unable to contribute to an inquiry using data	with limited assistance, uses appropriate strategies to contribute to an inquiry using data	chooses appropriate strategies to contribute to an inquiry using data	uses effective strategies to contribute to an inquiry using data; may contribute innovative ideas
Communicates using mathematical language				
• interprets and produces messages about statistics and probability, using simple, mathematical language (e.g., possible/impossible; more/less/equal to)	has difficulty interpreting and producing simple mathematical messages about statistics and probability	partially able to interpret and produce simple mathematical messages about statistics and probability	interprets and produces simple mathematical messages about statistics and probability	easily and confidently interprets and produces simple mathematical messages about statistics and probability
Cross-curricular competency: to construct his/her identity				
• identifies preferences; relates own experiences to classroom activities	has difficulty identifying preferences or relating own experiences to classroom activities	with teacher support, identifies preferences and relates own experiences in response to direct questions or structured tasks	readily and confidently identifies preferences and relates own experiences in response to direct questions or structured tasks	readily and confidently identifies preferences and relates own experiences in an increasing variety of situations

Master Q .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of graphs and data by: - offering ideas, comparisons, and questions during discussions - making and justifying predictions about the probability of finding the same result on another day	shows very limited understanding; needs intensive support to offer: - any description of the information on simple graphs - a prediction about the likelihood that the same event will occur	shows partial understanding; with some support, is able to offer: - a partial explanation of basic information on simple graphs - a reasonable prediction about the likelihood that the same result will occur	shows basic understanding; able to offer: - explanations of basic information on simple graphs; may offer questions if prompted - reasonable predictions about the likelihood that the same result will occur	shows in-depth understanding; able to offer: - explanations of numeric and comparative information shown on simple graphs along with questions about results - reasonable predictions and justifications about the likelihood that the same result will occur
Processes • records survey data and constructs graph accurately	needs one-to-one help; makes several major errors or omissions in: - recording data - constructing graph	partially accurate; makes some minor errors or omissions in: - recording data - constructing graph	generally accurate; makes few errors or omissions in: - recording data - constructing graph	accurate and precise; makes very few or no errors or omissions in: - recording data - constructing graph
Solves situational problems				
• generates appropriate questions	needs one-to-one guidance to generate an appropriate question	with limited prompting, generates at least one appropriate question	generates one or more appropriate questions	generates several appropriate questions; may be innovative
• makes a workable plan for their inquiry	may be unable to contribute to a workable plan	with support, creates a workable plan	creates a workable plan	creates an effective plan; may be innovative
Communicates using mathematical language				
• uses simple mathematical language correctly (e.g., more, less, survey)	uses few appropriate mathematical terms	uses some appropriate mathematical terms	uses appropriate mathematical terms	uses a range of appropriate mathematical terms with precision
• represents their thinking and results clearly using drawings, graphs, tables, and words	does not represent their thinking and results clearly	represents their thinking and results with some clarity; may be hard to follow in places	represents their thinking and results clearly	represents their thinking and results clearly and precisely

Master Q .

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

Names: _____ and _____

Our Survey

Other children knew how to answer our question.	Yes	No
We recorded other children's answers.	Yes	No
Our graph shows what we found out.	Yes	No
We shared our graph.	Yes	No

Use picture or words. Tell something you are proud of in your work.

Planning for Each Unit

Unit 6: 3-D and 2-D Geometry

Materials
Master Q6.1:
Unit Rubric: 3-D and 2-D Geometry
Master Q6.2:
Performance Task Rubric
Master Q6.3:
Self-Assessment: Show What You Know (Unit 6)

Supporting Cross-Curricular Competencies

Unit Focus: to use information

The 3-D and 2-D Geometry 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.
- The **Numbers Every Day** feature in every lesson sometimes includes suggestions related to calculator skills, to ensure children develop an understanding of how to use technology as a meaningful tool.

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:
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 what they learned in this unit about building castles. Invite children to share what they know about castles by asking questions, such as:

- How are castles different from other buildings?
- Who lives in castles?
- Why did people build big castles?

Children are likely to have a great deal of prior knowledge about castles from their experiences with stories, books, movies, and/or video games. Point out that a castle was the most important building in communities long ago. Focus the discussion on how a castle helped a community, for example, by protecting people, giving people a safe place to gather, providing work, and so on. Invite children to talk about buildings and gathering places that are important in their community, for example, community centres, schools, and parks. Have each child choose one important place in their community to represent in pictures and words.
Use Master Q6.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q6.1

Unit Rubric: 3-D and 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 • shows understanding of the attributes of objects and plane figures by describing, comparing, sorting, and classifying • applies spatial sense to describe and compare relative position	shows very limited understanding that: - objects and plane figures have attributes that can be used to classify, sort, and compare - relative position of objects and plane figures can be described and compared	shows partial understanding that: - objects and plane figures have attributes that can be used to classify, sort, and compare - relative position of objects and plane figures can be described and compared	shows basic understanding that: - objects and plane figures have attributes that can be used to classify, sort, and compare - relative position of objects and plane figures can be described and compared	shows in-depth understanding that: - objects and plane figures have attributes that can be used to classify, sort, and compare - relative position of objects and plane figures can be described and compared
Processes • accurately: - sorts objects according to one attribute - identifies geometric attributes - names some solids and plane figures - follows and gives simple spatial directions	limited accuracy; often makes major errors or omissions in: - sorting - identifying attributes - naming some solids and plane figures - following and giving spatial directions	partially accurate; makes frequent minor errors or omissions in: - sorting - identifying attributes - naming some solids and plane figures - following and giving spatial directions	generally accurate; makes few errors or omissions in: - sorting - identifying attributes - naming some solids and plane figures - following and giving spatial directions	accurate; rarely makes errors or omissions in: - sorting - identifying attributes - naming some solids and plane figures - following and giving spatial directions
Solves situational problems				
• uses appropriate strategies to create structures using solids, and pictures using plane figures	needs one-to-one assistance to create structures using solids, and pictures using plane figures	with limited assistance, uses appropriate strategies to create structures using solids, and pictures using plane figures	chooses appropriate strategies to create structures using solids, and pictures using plane figures	uses effective strategies, often showing complexity or innovation, to create structures using solids, and pictures using plane figures
Communicates using mathematical language				
• interprets and produces messages about solids and plane figures, using simple, mathematical language and objects, drawings, or tables	has difficulty interpreting and producing mathematical messages about solids and plane figures	partially able to interpret and produce mathematical messages about solids and plane figures	interprets and produces mathematical messages about solids and plane figures	interprets and produces mathematical messages about solids and plane figures with precision
Cross-curricular competency: to use information				
gathers information by observing carefully; focuses on an objective (e.g., identifying solids or plane figures in their environment or in a picture)	often unable to focus on an objective for observing	with scaffolding, able to focus on a simple objective for observing, and gather some relevant information	able to focus on a simple objective for observing, and gather some relevant information	in a variety of contexts, able to focus on an objective for observing, and gather relevant information

Master Q6.2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of geometric attributes by choosing an attribute and sorting a set of objects • recognizes the geometric attributes others used to sort their collections	shows very limited understanding; unable to: - use a geometric attribute to sort a collection - identify attributes others used in their sorting	shows partial understanding; with prompting and support, able to: - use a geometric attribute to sort a collection - identify attributes others used in their sorting	shows basic understanding; able to: - use a geometric attribute to sort a collection - identify attributes others used in their sorting	shows in-depth understanding; independently able to: - use a geometric attribute to sort a collection - identify attributes others used in their sorting
Processes • uses knowledge of geometric solids and positional terms to: - follow building instructions - describe location of objects	needs one-to-one help; makes major errors or omissions in: - building the required construction - describing location	partially accurate; some errors or omissions in: - building the required construction - describing location	generally accurate; few minor errors or omissions in: - building the required construction - describing location	accurate and precise; few, if any, errors in: - building the required construction - describing location
Solves situational problems				
• uses appropriate strategies to detect differences when the same solids are arranged in slightly different ways (identifies and describes "secret" object)	uses few appropriate strategies; needs one-to-one, step-by-step, assistance to detect differences when the same solids are arranged in slightly different ways	uses some appropriate strategies; needs help to detect differences when the same solids are arranged in slightly different ways	uses appropriate and successful strategies to detect differences when the same solids are arranged in slightly different ways	uses innovative and effective strategies to detect differences when the same solids are arranged in slightly different ways
Communicates using mathematical language				
• uses simple mathematical language correctly (e.g., circle, square, straight line, cube)	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 their thinking and solutions clearly, using objects, drawings, tables, symbols, or words	does not represent their thinking and solutions clearly	represents their thinking and solutions with some clarity; may be hard to follow in places	represents their thinking and solutions clearly	represents their thinking and solutions clearly and precisely

Master Q6.

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

My Name: _____

I found a good way to sort my objects.	Yes	Partly	No
I could tell how my castle was the same and different. (Student page 136)	Yes	Partly	No
I found a good hiding place in my castle.	Yes	Partly	No
I could tell where I hid the object. (Student page 137).	Yes	Partly	No

Think about your work. Use pictures or words. Tell something you liked.

Planning for Each Unit

Unit 7: Number Patterns

Materials
Master Q7.1:
Unit Rubric: Number Patterns
Master Q7.2:
Performance Task Rubric
Master Q7.3:
Peer and Self-Assessment: Show What You Know (Unit 7)

Supporting Cross-Curricular Competencies

Unit Focus: to adopt effective work methods

Number Patterns is an appropriate topic to emphasize the value of working effectively. Use these Teacher Guide features to support children's development of effective work and management habits:

- The **Explore** in each lesson engages children in working together productively, harmoniously, and responsibly.
- The **Show and Share** section in each lesson prompts children to discuss how they worked in the **Explore** activity; encourage children to talk about whether they think they had an effective approach and why, and how they organized their work to keep track of their results.
- The **Practice** in each lesson includes ideas for Reinforcement and Extra Support for children who require additional help.
- Reproducible **Line Masters** provide greater structure for children, and help to build children's developing work habits.

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:
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.
Remind children that they have been working on a problem about a neighbourhood party. Prompt a discussion of neighbourhoods by asking questions, such as:

- Where is your neighbourhood? Tell about it.
- Does everyone live in a neighbourhood?
- What is a neighbourhood? (Focus on the word *neighbour*.) Who are your neighbours?
- How are neighbours the same/different from friends?

Invite children to tell how neighbours help each other and some of the things they do together. Ask:

- How do neighbours help each other?
- What kinds of things to neighbours do together?
- The neighbours in this story had a children's party. What activities does your neighbourhood have for children?

Encourage children to talk to their families to find out more about their neighbours and their neighbourhood. Invite children to report on what they find by drawing or painting a neighbourhood picture.
Use Master Q7.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q .1

Unit Rubric: Number Patterns

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: - representing and explaining number patterns and relationships - modelling and discussing number problems - choosing appropriate operations - explaining their thinking and the strategies they use	shows very limited understanding; may be unable to: - represent and explain number patterns and relationships - model and discuss number problems - choose appropriate operations - explain their thinking	some understanding; partially able to: - represent and explain number patterns and relationships - model and discuss number problems - choose appropriate operations - explain their thinking	basic understanding; generally able to: - represent and explain number patterns and relationships - model and discuss number problems - choose appropriate operations - explain their thinking	in-depth understanding; consistently able to: - represent and explain number patterns and relationships - model and discuss number problems - choose appropriate operations - explain their thinking
Processes • accurately: - reads and prints numerals to 50 - counts by 1s, 2s, and 5s - identifies doubles and their equal parts - demonstrates and represents addition and subtraction facts to 18	limited accuracy; often makes major errors or omissions in: - reading and printing numerals to 50 - counting by 1s, 2s, and 5s - identifying doubles and their equal parts - demonstrating and representing addition and subtraction facts to 18	partially accurate; makes frequent minor errors or omissions in: - reading and printing numerals to 50 - counting by 1s, 2s, and 5s - identifying doubles and their equal parts - demonstrating and representing addition and subtraction facts to 18	generally accurate; makes few errors or omissions in: - reading and printing numerals to 50 - counting by 1s, 2s, and 5s - identifying doubles and their equal parts - demonstrating and representing addition and subtraction facts to 18	accurate; rarely makes errors or omissions in: - reading and printing numerals to 50 - counting by 1s, 2s, and 5s - identifying doubles and their equal parts - demonstrating and representing addition and subtraction facts to 18
Solves situational problems				
• uses appropriate strategies to create and solve simple number problems orally or with concrete materials	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
Communicates using mathematical language				
• interprets and produces messages about numbers using simple, mathematical language and objects, drawings, tables, symbols, or words	has difficulty interpreting and producing mathematical messages about numbers	partially able to interpret and produce mathematical messages about numbers	interprets and produces mathematical messages about numbers	interprets and produces mathematical messages about numbers
Cross-curricular competency: to adopt effective work methods				
• focuses and manages time to complete a simple task	needs one-to-one ongoing supervision to complete a simple, structured task	with some help, is able to focus and manage time to complete simple, structured tasks	usually able to focus and manage time to complete simple, structured tasks	almost always able to focus and manage time to complete simple tasks; relatively independent

Master Q .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of number patterns (skip counting), and the processes of addition and subtraction	shows very limited understanding; needs one-to-one assistance to demonstrate and explain: - number patterns - addition (uniting) - subtraction (separating)	shows partial understanding; with prompting and support able to demonstrate and explain: - number patterns - addition (uniting) - subtraction (separating)	shows basic understanding; able to demonstrate and explain: - number patterns - addition (uniting) - subtraction (separating)	shows in-depth understanding; independently able to demonstrate and explain: - number patterns - addition (uniting) - subtraction (separating)
Processes • correctly determines: - number of party hats and additional balloons needed - number of stickers needed for 20 party bags - number of children playing tug-that-rope ("doubles")	needs one-to-one help; makes major errors or omissions in: - number of party hats - additional balloons - number of stickers - number of children playing tug-that-rope	somewhat accurate; some minor errors or omissions in: - number of party hats - additional balloons - number of stickers - number of children playing tug-that-rope	generally accurate; few minor errors or omissions in: - number of party hats - additional balloons - number of stickers - number of children playing tug-that-rope	accurate and precise; few, if any, errors in: - number of party hats - additional balloons - number of stickers - number of children playing tug-that-rope
Solves situational problems				
• uses appropriate strategies to create and solve a new party problem	uses few appropriate strategies; needs one-to-one, step-by-step, assistance to create and solve a problem	uses some appropriate strategies; needs help to create and solve a simple problem	uses appropriate and successful strategies to create and solve a simple problem	uses appropriate, often innovative strategies to create and solve a problem; may voluntarily introduce some complexity
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 their thinking and solutions clearly using objects, drawings, symbols, or words	does not represent their thinking and solutions clearly	represents their thinking and solutions with some clarity; may be hard to follow in places	represents their thinking and solutions clearly	represents their thinking and solutions clearly and precisely

Master Q .

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

My Name: _____ My Partner's Name: _____

Show your new party problem to a partner.

Tell something you like about my party problem.

Ask me a question about my party problem.

Planning for Each Unit

Unit 8: Linear Measurement and Area

Materials
Master Q8.1:
Unit Rubric: Linear Measurement and Area
Master Q8.2:
Performance Task Rubric
Master Q8.3:
Self-Assessment: Show What You Know (Unit 8)

Supporting Cross-Curricular Competencies

Unit Focus: to exercise critical judgment

The Linear Measurement and Area 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 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:
Media Literacy

Educational Aim: to develop students' critical and ethical judgment with respect to media and to give them opportunities to produce media documents that respect individual and collective rights

Show What You Know can be opened up mathematically, and extended.
Review with children some of the words and expressions they know that relate to size. Focus their suggestions on words and phrases that tell when something is *big.* Prompt children to extend their thinking to stories, cartoons, and other media (e.g., gigantic, bigger than a house.) Record their ideas in a chart or web. Initiate a discussion about how advertisers use words. Ask:

- Imagine that you want to write a scary story about a big monster. Which words on our list would you use? Tell us about your thinking.
- What if you had a new toy robot to sell, and you were trying to make kids want it. Which words would you use?
- What if you had a restaurant and you wanted everyone to come and eat your pizza. What words would you use to tell them that your pizzas were big?

Provide children with advertisements and have them find words that tell how big or small something is. Paste the words on chart paper, and invite the children to talk about what they notice. Consider having children work with their parents to collect more advertisements for toys or food they like. Ask them to circle all the words that tell about size and share them with the class.
Use Master Q8.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q .1

Unit Rubric: Linear Measurement and Area

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 or explaining that: - measurement involves comparing - measurement involves repeated use of a unit to describe attributes - dimensions of objects can be compared, measured, and recorded	may be unable to show understanding that: - measurement involves comparing - measurement involves repeated use of a unit to describe attributes - dimensions of objects can be compared, measured, and recorded	shows partial understanding that: - measurement involves comparing - measurement involves repeated use of a unit to describe attributes - dimensions of objects can be compared, measured, and recorded	shows basic understanding that: - measurement involves comparing - measurement involves repeated use of a unit to describe attributes - dimensions of objects can be compared, measured, and recorded	shows in-depth understanding that: - measurement involves comparing - measurement involves repeated use of a unit to describe attributes - dimensions of objects can be compared, measured, and recorded
Processes • accurately measures, records, compares, and orders objects by length, height, and distance around (unconventional units)	limited accuracy; often makes major errors or omissions in: - measuring linear dimensions (non-standard units) - recording measures - ordering and comparing	partially accurate; makes frequent minor errors or omissions in: - measuring linear dimensions (non-standard units) - recording measures - ordering and comparing	generally accurate; makes few errors or omissions in: - measuring linear dimensions (non-standard units) - recording measures - ordering and comparing	accurate; rarely makes errors or omissions in: - measuring linear dimensions (non-standard units) - recording measures - ordering and comparing
Solves situational problems				
• uses a range of strategies (e.g., estimation, concrete objects, pictures) to solve and create measurement problems related to measurement in their own environment	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 exercise critical judgment				
• gives logical reasons to support estimates and judgments (e.g., about which of two objects is longer)	estimates are often wildly improbable guesses; does not offer logical reasons	with scaffolding, in familiar contexts, gives a logical reason to support estimates or judgments	in familiar contexts, gives at least one logical reason to support estimates and judgments	in various contexts, consistently offers logical reasons to support predictions and interpretations

Master Q .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding by choosing and measuring with appropriate units, and explaining their choices	with one-to-one help, may be able to choose and use an appropriate unit for some objects; gives explanations that show very limited understanding of linear measurement	with support, chooses and uses appropriate units for most objects; gives explanations that show partial understanding of linear measurement	chooses and uses appropriate units for each object; gives explanations that show understanding of linear measurement	chooses and uses appropriate and efficient units for each object; gives explanations that show in-depth understanding of linear measurement
Processes • accurately: - orders objects - measures (e.g., uses baseline; measures nose-to-nose; counts units) - records results	needs one-to-one help; makes major errors or omissions in: - ordering objects - measuring objects - recording results	somewhat accurate; some minor errors or omissions in: - ordering objects - measuring objects - recording results	generally accurate; few minor errors or omissions in: - ordering objects - measuring objects - recording results	accurate and precise; few, if any, errors in: - ordering objects - measuring objects - recording results
Solves situational problems				
• uses appropriate estimating strategies	needs one-to-one guidance to use a strategy for estimating length	with limited prompting, uses a reasonable strategy for estimating length	uses a reasonable strategy for estimating length	uses an effective strategy for estimating length
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 their thinking and solutions clearly using objects, drawings, tables, symbols, or words	does not represent their thinking and solutions clearly	represents their thinking and solutions with some clarity; may be hard to follow in places	represents their thinking and solutions clearly	represents their thinking and solutions clearly and precisely

Master Q .

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

Name: _____

Think about how you put the objects in order.
Think about how you estimated and measured.
Look at your work. (Student pages 198 and 199)

Tell something you are proud of.

Tell something you would like to get better at.

Planning for Each Unit

Unit 9: 2-D Geometry and Applications

Materials
Master Q9.1:
Unit Rubric: 2-D Geometry and Applications
Master Q9.2:
Performance Task Rubric
Master Q9.3:
Peer and Self-Assessment: Show What You Know (Unit 9)

Supporting Cross-Curricular Competencies

Unit Focus: to use information

The 2-D Geometry and Applications 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.
- The **Numbers Every Day** feature sometimes includes suggestions related to calculator skills, to ensure children develop an understanding of how to use technology as a meaningful tool; encourage children to check their solutions using a calculator (for example, in Lesson 5, children can check the sums with a calculator).

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.
Invite children to talk about how they made their designs. Ask:

- What did you like about making the design?
- What is your favourite way to make a design?

Display a variety of designs from real objects, packages, signs, and so on. Have children talk to a partner about one of their favourites and why they chose it. Have children share their ideas with the class. You can make a simple class graph to display the children's favourites.
Prompt children to think about people who create designs and the kinds of jobs they do. Ask:

- Where do designs on packages/clothing/wall paper come from? Who makes them?
- What do you need to be good at to do that job?
- Do you think that is a job you would like? Why?

Have children find designs in their home. They can draw a picture to share the designs they found.
Use Master Q9.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q .1

Unit Rubric: 2-D Geometry and Applications

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 2-D figures and their attributes by describing, comparing, sorting, and classifying • creates "half" or "fair shares" using concrete objects	shows very limited understanding; may be unable to: - describe, compare, sort, and classify figures and their attributes - create “half” or “fair” shares" using concrete objects	some understanding; partially able to: - describe, compare, sort, and classify figures and their attributes - create “half” or “fair” shares" using concrete objects	basic understanding; generally able to: - describe, compare, sort, and classify figures and their attributes - create “half” or “fair” shares" using concrete objects	in-depth understanding; in various contexts, consistently able to: - describe, compare, sort, and classify figures and their attributes - create “half” or “fair” shares" using concrete objects
Processes • accurately: - identifies and compares plane figures (square, rectangle, triangle, circle) and their attributes - recognizes "half" or matching parts	limited accuracy; often makes major errors or omissions in: - identifying plane figures and their attributes - comparing shape and size - recognizing ‘"half" or matching parts	partially accurate; makes frequent minor errors or omissions in: - identifying plane figures and their attributes - comparing shape and size - recognizing ‘"half" or matching parts	generally accurate; makes few errors or omissions in: - identifying plane figures and their attributes - comparing shape and size - recognizing ‘"half" or matching parts	accurate; rarely makes errors or omissions in: - identifying plane figures and their attributes - comparing shape and size - recognizing ‘"half" or matching parts
Solves situational problems				
• uses appropriate strategies, including visualization, to solve and create problems involving plane figures	needs one-to-one assistance to solve or create simple problems involving plane figures	with limited assistance, uses appropriate strategies to solve and create problems involving plane figures	chooses appropriate strategies to solve and create problems involving plane figures	uses effective strategies, often showing complexity or innovation, to solve and create problems involving plane figures
Communicates using mathematical language				
• interprets and produces messages about plane figures, using simple, mathematical language (e.g., circle, curved line, straight line, half)	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 use information				
• gathers information by observing carefully; focuses on an objective (e.g., identifying attributes of 2-D figures)	often unable to focus on an objective for observing	with scaffolding, able to focus on a simple objective for observing, and gather some relevant information	able to focus on a simple objective for observing, and gather some relevant information	in a variety of contexts, able to focus on an objective for observing, and gather relevant information

Master Q .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • shows understanding of geometric attributes by describing a plane figure and how it is like another figure	shows very limited understanding; needs one-to-one assistance to describe attributes of a plane figure	shows partial understanding; with prompting and support is able to describe attributes of a plane figure	shows basic understanding; able to describe attributes of a plane figure	shows in-depth understanding; independently able to describe attributes of a plane figure
Processes • accurately: - uses knowledge of attributes to sort figures - matches figures and halves	needs one to one help; makes major errors or omissions in: - sorting - matching figures and halves	somewhat accurate; some minor errors or omissions in: - sorting - matching figures and halves	generally accurate; few minor errors or omissions in: - sorting - matching figures and halves	accurate and precise; few, if any, errors in: - sorting - matching figures and halves
Solves situational problems				
• uses geometric figures to create matching designs with a partner	needs one-to-one guidance to create a symmetrical design	with limited prompting, uses appropriate strategies to create a simple symmetrical design	uses appropriate strategies to create a simple symmetrical design	uses appropriate, often innovative, strategies to create a symmetrical design with some complexity
Communicates using mathematical language				
• uses simple mathematical language correctly (e.g., triangle, straight line, half)	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 their thinking and solutions clearly using objects, drawings, tables, symbols, or words	does not represent their thinking and solutions clearly	represents their thinking and solutions with some clarity; may be hard to follow in places	represents their thinking and solutions clearly	represents their thinking and solutions clearly and precisely

Master Q .

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

My Name: _____ My Partner's Name: _____

Draw a picture of you and your partner. Show how you worked together to make the design.
Use thinking bubbles to show your ideas.
Use speech bubbles to show what you were saying.

Planning for Each Unit

Unit 10: Place Value and Number Applications

Materials
Master Q10.1:
Unit Rubric: Place Value and Number Applications
Master Q10.2:
Performance Task Rubric
Master Q10.3:
Peer and Self-Assessment: Show What You Know (Unit 10)

Supporting Cross-Curricular Competencies

Unit Focus: to solve problems

In the Place Value and Number Applications unit, children solve problems in various contexts. Utilize these Student Book and 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 6), 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 **Grade 1 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.

Discuss with children that the dancers are Aboriginal from the west coast of Canada. They are wearing clothing that is meant for important events and celebrations, and community gatherings. Invite children to tell a partner about what *they* wear for special occasions. Work as a class to make a web or list titled *What We Wear.* Ask:

- Why do people get dressed up for special occasions?
- What are some times when you get dressed up?
- Do you like getting dressed up or wearing special clothes? Why or why not?

Extend the discussion to talk about various cultures that are represented in your community, and any experiences children have had with national or traditional costumes.
Have children fold a large piece of paper in half. On one half, ask them to make a picture of themselves, dressed up for a special occasion. On the other half, ask children to make a picture of someone their age, wearing a special costume. (If they have few experiences, they can draw one of the Aboriginal dancers.)
Use Master Q10.2: Performance Task Rubric to support the assessment of *Show What You Know*.

Master Q1 .1

Unit Rubric: Place Value and Number Applications

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 demonstrating or explaining number patterns, estimating and counting strategies, and ways of representing large numbers (to 100)	shows very limited understanding; may be unable to demonstrate or explain: - number patterns - estimating strategies - counting strategies - ways of representing large numbers to 100	some understanding; partially able to demonstrate or explain: - number patterns - counting strategies - estimating strategies - ways of representing large numbers to 100	basic understanding; generally able to demonstrate or explain: - number patterns - estimating strategies - counting strategies - ways of representing large numbers to 100	in-depth understanding; consistently able to demonstrate or explain: - number patterns - estimating strategies - counting strategies - ways of representing large numbers to 100
Processes • accurately: - reads and prints numerals to 100 - counts by 1s, 2s, 5s, and 10s - identifies counting patterns on a 100 chart - shows numbers as groups of 10s and 1s - demonstrates addition and subtraction facts to 18	limited accuracy; often makes major errors or omissions in: - printing numerals - counting by 1s, 2s, 5s, and 10s - identifying counting patterns on a 100 chart - representing numbers as 10s and 1s - adding and subtracting to 18	partially accurate; makes frequent minor errors or omissions in: - printing numerals - counting by 1s, 2s, 5s, and 10s - identifying counting patterns on a 100 chart - representing numbers as 10s and 1s - adding and subtracting to 18	generally accurate; makes few errors or omissions in: - printing numerals - counting by 1s, 2s, 5s, and 10s - identifying counting patterns on a 100 chart - representing numbers as 10s and 1s - adding and subtracting to 18	accurate; rarely makes errors or omissions in: - printing numerals - counting by 1s, 2s, 5s, and 10s - identifying counting patterns on a 100 chart - representing numbers as 10s and 1s - adding and subtracting to 18
Solves situational problems				
• chooses and uses appropriate strategies to solve and create simple number problems orally or with concrete materials	needs one-to-one assistance; may be unable to solve or create simple problems	with some help, uses appropriate strategies to solve and create simple problems	chooses appropriate strategies to solve and create simple problems	uses appropriate, often innovative, strategies to solve and create problems
Communicates using mathematical language				
• interprets and produces messages about numbers 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				
• identifies key elements of a simple problem	unable to identify key elements of a simple problem; often does not know what to do	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

Master Q1 .2

Performance Task Rubric

	Level 1	Level 2	Level 3	Level 4
Uses mathematical concepts and processes				
Concepts • appropriately uses and explains or demonstrates estimating, counting, grouping by 10s, adding and subtracting	shows very limited understanding; needs one-to-one assistance to use and demonstrate or explain: - estimating - counting - grouping by 10s - adding - subtracting	shows partial understanding; with prompting and support able to use and demonstrate or explain: - estimating - counting - grouping by 10s - adding - subtracting	shows basic understanding; able to use and demonstrate or explain: - estimating - counting - grouping by 10s - adding - subtracting	shows in-depth understanding; independently able to use and demonstrate or explain: - estimating - counting - grouping by 10s - adding - subtracting
Processes • accurately: - creates and records stories for addition and subtraction - counts and records buttons - organizes by 10s and 1s	needs one-to-one help; makes major errors or omissions in: - addition and subtraction stories - counting and recording buttons - organizing by 10s and 1s	somewhat accurate; some minor errors or omissions in: - addition and subtraction stories - counting and recording buttons - organizing by 10s and 1s	generally accurate; few minor errors or omissions in: - addition and subtraction stories - counting and recording buttons - organizing by 10s and 1s	accurate and precise; few, if any, errors in: - addition and subtraction stories - counting and recording buttons - organizing by 10s and 1s
Solves situational problems				
• uses appropriate strategies to create addition and subtraction stories	uses few appropriate strategies; needs one-to-one, step-by-step assistance to create number stories	uses some appropriate strategies; needs help to create number stories	uses appropriate and successful strategies to create number stories	uses innovative and effective strategies to create number 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 their thinking and solutions clearly using objects, drawings, tables, symbols, or words	does not represent their thinking and solutions clearly	represents their thinking and solutions with some clarity; may be hard to follow in places	represents their thinking and solutions clearly	represents their thinking and solutions clearly and precisely

Master Q1 .

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

My Name: _____ My Partner's Name: _____

The Dancers!

1. Look at your work.

What are you proud of?

2. Share your work with a classmate.

Tell something you like about my work.

Planning for Each Unit

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

Materials
Master Q11.1:
Unit Rubric: Mass and Capacity
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 cooperate with others

The Mass and Capacity 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; 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** and **Investigations** 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 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:
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 *Part 1* of the activity with children. Point out that popcorn is often a healthy snack. Ask children to suggest other healthy snacks. Make a collaborative list of healthy snacks, and prompt a discussion of healthy/unhealthy snacks. Ask:

- What makes snacks healthy?
- Why is it important to eat healthy snacks?
- What is your favourite healthy snack?
- What is “junk food”?
- Why is “junk food” not good for your body?
- Is it ever okay to eat “junk food”?

Have children make large pictures of their favourite healthy snacks. Create a display. Consider making simple pictographs to summarize the children's favourite healthy snacks.
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 by explaining and demonstrating basic measurement concepts	shows very limited understanding; unable to demonstrate or explain that measuring involves comparing, repeating the same, and using a unit smaller than the object to be measured	shows some understanding; partially able to demonstrate or explain that measuring involves comparing, repeating the same, and using a unit smaller than the object to be measured	shows basic understanding; generally able to demonstrate or explain that measuring involves comparing, repeating the same, and using a unit smaller than the object to be measured	in-depth understanding; in various contexts, consistently able to demonstrate or explain that measuring involves comparing, repeating the same, and using a unit smaller than the object to be measured
Processes • accurately measures, orders, and compares containers and 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 concrete objects to solve and create measurement problems using unconventional units	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 cooperate with others				
• supports and helps classmates, especially when working in pairs or small groups	shows little awareness of partners' or group members' needs or feelings; does not offer support or help	with help, notices partners' or group members' most obvious needs and feelings; offers very general help or support	usually notices partners' or group members' more obvious needs and feelings, and tries to provide help or support	notices partners' or group members' more obvious needs or feelings, and offers specific help and support; becoming sensitive to others

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 predictions	shows very limited understanding; needs one-to-one assistance to make estimates and predictions	shows partial understanding; with prompting and support able to make reasonable estimates and predictions	shows basic understanding; able to make reasonable estimates and predictions and offer some justification	shows in-depth understanding; independently able to make and justify reasonable estimates and predictions
Processes • accurately measures, records, and compares	needs one- to-one help; makes major errors or omissions in measuring, recording, and comparing	somewhat accurate; some minor errors or omissions in measuring, recording, and comparing	generally accurate; few minor errors or omissions in measuring, recording, and comparing	accurate and precise; few, if any, errors in measuring, recording, and comparing
Solves situational problems				
• uses appropriate strategies for: - comparing popped and unpopped popcorn - sharing popcorn fairly - creating a new problem	uses few appropriate strategies; needs one-to-one, step-by-step assistance to work on the problems	needs help to choose and carry out strategies to solve the problems; may solve one part but have difficulty with other parts	uses appropriate and successful strategies to solve the problems; may need help getting started	uses innovative and effective strategies to solve the 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 their thinking and solutions clearly using objects, drawings, tables, symbols, or words	does not represent their thinking and solutions clearly	represents their thinking and solutions with some clarity; may be hard to follow in places	represents their thinking and solutions clearly	represents their thinking and solutions clearly and precisely

Master Q11.

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

Names: _____and _____

We know how to share the popcorn.	Yes	Partly	No
We showed our thinking.	Yes	Partly	No
We made a good popcorn problem.	Yes	Partly	No
We shared the work fairly.	Yes	Partly	No

What would you like other people to know about your work?

Addison Wesley
Mathematics
Makes Sense

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