Name _____ Date _____

(**Master 1.1**) # Unit Rubric: Patterns and Equations

	Not Yet Adequate	**Adequate**	**Proficient**	**Excellent**
Conceptual understanding				
Shows understanding by: – describing and explaining patterns and pattern rules – expressing a concrete or pictorial representation as an equation – explaining the meaning of a one-step equation with one unknown	may be unable to demonstrate, apply or explain: – patterns and pattern rules – relationship between a concrete or pictorial representation and an equation – the meaning of a one-step equation with one unknown	partially able to demonstrate, apply, or explain: – patterns and pattern rules – relationship between a concrete or pictorial representation and an equation – the meaning of a one-step equation with one unknown	able to demonstrate, apply, and explain: – patterns and pattern rules – relationship between a concrete or pictorial representation and an equation – the meaning of a one-step equation with one unknown	in various contexts, appropriately demonstrates, applies, and explains: – patterns and pattern rules – relationship between a concrete or pictorial representation and an equation – the meaning of a one-step equation with one unknown
Procedural knowledge				
Accurately: – identifies and describes patterns in tables and charts – reproduces a pattern – extends number patterns – solves one-step equations	limited accuracy; often makes major errors/omissions in – identifying and describing patterns in tables and charts – reproducing a pattern – extending number patterns – solving one-step equations	partially accurate; makes frequent minor errors/omissions in: – identifying and describing patterns in tables and charts – reproducing a pattern – extending number patterns – solving one-step equations	generally accurate; makes few errors/ omissions in: – identifying and describing patterns in tables and charts – reproducing a pattern – extending number patterns – solving one-step equations	accurate; rarely makes errors/omissions in: – identifying and describing patterns in tables and charts – reproducing a pattern – extending number patterns – solving one-step equations
Problem-solving skills				
Solves and create problems involving patterns and mathematical relationships using concrete objects, tables and charts, and equations	unable to use problem-solving strategies successfully, such as: – creating concrete representations of patterns – representing problems using charts or tables – extending patterns – expressing a problem as an equation	with limited help, uses problem-solving strategies with partial success including: – creating concrete representations of patterns – representing problems using charts or tables – extending patterns – expressing a problem as an equation	uses appropriate problem-solving strategies successfully, including: – creating concrete representations of patterns – representing problems using charts or tables – extending patterns – expressing a problem as an equation	uses appropriate, often innovative, problem-solving strategies with a high degree of success, including: – creating concrete representations of patterns – representing problems using charts or tables – extending patterns – expressing a problem as an equation
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology (e.g., pattern rule, equation)	unable to record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

Name _____ Date _____

Performance Assessment Rubric: Calendar Patterns

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual understanding				
Shows understanding and ability to apply patterning concepts by describing and explaining patterns and pattern rules	shows little understanding; may be unable to describe or explain patterns or pattern rules	gives a partially appropriate description and explanation of patterns or pattern rules; may be vague or incomplete	gives an appropriate and complete description and explanation of patterns or pattern rules	gives clear, appropriate, and detailed descriptions and explanations of patterns or pattern rules
Procedural knowledge				
Identifies and describes patterns accurately Solves classmate's equation accurately	makes major errors/omissions in: – identifying and describing patterns – solving an equation	makes frequent minor errors/omissions in: – identifying and describing patterns – solving an equation	makes few errors/omissions in: – identifying and describing patterns – solving an equation	rarely makes errors/omissions in: – identifying and describing patterns – solving an equation
Problem-solving skills				
Uses appropriate strategies to write an equation using number patterns on a calendar	unable to write an equation	uses some appropriate strategies to write a very basic equation; partially successful	uses appropriate strategies to successfully write an equation	uses innovative and effective strategies to successfully write an equation that shows some complexity
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology (e.g., pattern rule, equation)	unable to present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

Name _____ Date _____

To Parents and Adults at Home…

Your child's class is starting a mathematics unit on number patterns. Patterns occur regularly in mathematics. As children learn to analyse patterns, they develop powerful reasoning skills that will help them make sense of mathematics.

In this unit, your child will:

- Investigate and describe patterns in tables and charts.

- Extend number patterns.

- Use concrete materials to display patterns.

- Use patterns to solve problems.

- Write and solve equations.

Patterns occur in many different forms. Encourage your child to look for patterns around the home, and talk about them.

Here's a game you can play with your child that creates a pattern of words that expands.

Expand the List Word Game

Think of words to describe a cat or other animal. Each player repeats the words said by previous players in the correct order, and adds a new word at the end of the descriptive list.

The first player starts by saying, for example, "My cat is an *adorable* cat." The next player must repeat this but add a new descriptive word. For example, "My cat is an adorable, *black* cat."

A player is out of the game when he or she cannot repeat the list or fails to provide a new word.

Name _____ Date _____

(**Master 2.1**) **Unit Rubric: Whole Numbers**

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual understanding				
Shows understanding by applying and explaining: – processes of addition and subtraction – estimation of sums and differences – personal strategies for addition and subtraction – relationships using Venn diagrams and Carroll diagrams	may be unable to demonstrate, apply, or explain: – processes of addition and subtraction – estimation of sums and differences – personal strategies for addition and subtraction – relationships using diagrams	partially able to demonstrate, apply, or explain: – processes of addition and subtraction – estimation of sums and differences – personal strategies for addition and subtraction – relationships using diagrams	able to demonstrate, apply, and explain: – processes of addition and subtraction – estimation of sums and differences – personal strategies for addition and subtraction – relationships using diagrams	in various contexts, appropriately demonstrates, applies, and explains: – processes of addition and subtraction – estimation of sums and differences – personal strategies for addition and subtraction – relationships using diagrams
Procedural knowledge				
Accurately: – compares and orders numbers – adds 3-digit and 4-digit numbers – subtracts 3-digit and 4-digit numbers – recognizes, reads, and represents numbers from 1 to 10 000	limited accuracy; often makes major errors/omissions in – comparing and ordering – adding – subtracting – recognizing, reading, and representing numbers	partially accurate; makes frequent minor errors/omissions in: – comparing and ordering – adding – subtracting – recognizing, reading, and representing numbers	generally accurate; makes few errors/omissions in: – comparing and ordering – adding – subtracting – recognizing, reading, and representing numbers	accurate; rarely makes errors/omissions in: – comparing and ordering – adding – subtracting – recognizing, reading, and representing numbers
Problem-solving skills				
Uses a variety of strategies to create and solve addition and subtraction problems	may be unable to use problem-solving strategies successfully including estimating; concrete materials; diagrams; personal strategies	with limited help, uses problem-solving strategies with partial success including estimating; concrete materials; diagrams; personal strategies	uses appropriate problem-solving strategies successfully, including estimating; concrete materials; diagrams; personal strategies	uses appropriate, often innovative, problem-solving strategies with a high degree of success, including estimating; concrete materials; diagrams; personal strategies
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology	unable to record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

Name _____ Date _____

Master 2.3

Performance Assessment Rubric: Those Amazing Elephants

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual understanding				
Shows understanding by selecting, applying, and explaining the appropriate operation for each part of the question	Does not select, apply, and explain the required concepts of addition and subtraction appropriately; may be incomplete or indicate misconceptions	Selects, applies, and explains some of the required concepts of addition and subtraction; may be minor flaws in reasoning	Selects, applies, and explains the required concepts of addition and subtraction appropriately; indicates basic understanding	Selects, applies, and explains the required concepts of addition and subtraction effectively; indicates thorough understanding
Procedural knowledge				
Compares and orders numbers Adds 3-digit and 4-digit numbers Subtracts 3-digit and 4-digit numbers	makes major errors/omissions in: – comparing and ordering numbers – adding – subtracting	makes some minor errors or omissions in: – comparing and ordering numbers – adding – subtracting	makes few minor errors or omissions in: – comparing and ordering numbers – adding – subtracting	is accurate and precise; few, if any errors in: – comparing and ordering numbers – adding – subtracting
Problem-solving skills				
Uses appropriate strategies to create and solve a story problem about elephants	uses few effective strategies; does not adequately create and solve a problem	uses some appropriate strategies, with partial success, to create and solve a problem (problem may be very basic, or have some flaws)	uses appropriate and successful strategies to create and solve a problem	uses innovative and effective strategies to create and solve a complex or challenging problem
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology	unable to present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

Name _____ Date _____

To Parents and Adults at Home…

Your child's class is starting a mathematics unit on whole numbers.
Children will develop strategies for adding and subtracting whole numbers.
They will use mental math, estimation, and pencil-and-paper calculations.

In this unit, your child will:

- Recognize and read numbers from 1 to 10 000.

- Read and write numbers in standard form, expanded form, and written form.

- Compare and order numbers.

- Use diagrams to show relationships.

- Estimate sums and differences.

- Add and subtract 3-digit and 4-digit numbers mentally.

- Use personal strategies to add and subtract.

- Pose and solve problems.

We use numbers every day in many different situations.
Encourage your child to use mental math to calculate.
Talk with your child about the strategies you use to calculate mentally.
This is an important step to developing number sense.

Here are some games you can play with your child when you are travelling.

Licence Plate Games

Take turns to call out the numbers on a licence plate.
See who can add the numbers the fastest.

Ignore the letters. Read the number out loud.
For example, if the licence plate is ABCD 749, the number is seven hundred forty-nine.
See who can find the greatest number in a certain length of time.

Name _____ Date _____

(Master 3.1)   # Unit Rubric: Multiplication and Division Facts

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual understanding				
Shows understanding by applying and explaining: – processes of multiplication and division, using manipulatives, pictorial representations, and symbols – properties of 0, 1, and 10 for multiplication and the property of 1 for division – calculation of products and quotients using a personal strategy – patterns in a multiplication chart – relationship between multiplication and division	may be unable to demonstrate, apply or explain: – multiplication and division – properties of 0, 1, and 10 for multiplication and the property of 1 for division – calculation of products and quotients – patterns in a multiplication chart – relationship between multiplication and division	partially able to demonstrate, apply, or explain: – multiplication and division – properties of 0, 1, and 10 for multiplication and the property of 1 for division – calculation of products and quotients – patterns in a multiplication chart – relationship between multiplication and division	able to demonstrate, apply, and explain: – multiplication and division – properties of 0, 1, and 10 for multiplication and the property of 1 for division – calculation of products and quotients – patterns in a multiplication chart – relationship between multiplication and division	in various contexts, appropriately demonstrates, applies, and explains: – properties of 0, 1, and 10 for multiplication and the property of 1 for division – multiplication and division – calculation of products and quotients – patterns in a multiplication chart – relationship between multiplication and division
Procedural knowledge				
Accurately applies mental math strategies and: – multiplies by 0, 1, and 10 – divides by 1 – recalls multiplication and division facts to 9 × 9 – writes multiplication and division equations	limited accuracy; often makes major errors/omissions in – multiplying by 0, 1, and 10 – dividing by 1 – recalling multiplication and division facts to 9 × 9 – writing multiplication and division equations	partially accurate; makes frequent minor errors/ omissions in: – multiplying by 0, 1, and 10 – dividing by 1 – recalling multiplication and division facts to 9 × 9 – writing multiplication and division equations	generally accurate; makes few errors/ omissions in: – multiplying by 0, 1, and 10 – dividing by 1 – recalling multiplication and division facts to 9 × 9 – writing multiplication and division equations	accurate; rarely make errors/omissions in: – multiplying by 0, 1, and 10 – dividing by 1 – recalling multiplication and division facts to 9 × 9 – writing multiplication and division equations
Problem-solving skills				
Solves given multiplication problems using arrays Solves given division problems using arrays and base 10 materials Uses personal strategies to create and solve multiplication and division problems	may be unable to use problem-solving strategies successfully including: – arrays – base 10 materials – personal strategies for creating and solving problems	with limited help, uses problem-solving strategies with partial success including: – arrays – base 10 materials – personal strategies for creating and solving problems	uses appropriate problem-solving strategies successfully, including: – arrays – base 10 materials – personal strategies for creating and solving problems	uses appropriate, often innovative, problem-solving strategies with a high degree of success, including: – arrays – base 10 materials – personal strategies for creating and solving problems
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology (e.g., multiply, division, array, factor, product, related facts)	unable to record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

Name _____ Date _____

(**Master 3.3**) **Performance Assessment Rubric: Here Comes the Band!**

	Not Yet Adequate	**Adequate**	**Proficient**	**Excellent**
Conceptual understanding				
Shows understanding by applying the required concepts of multiplication and division to each step, and explaining why arranging 31 band members would be a problem	Does not apply the required concepts of multiplication and division appropriately; may be incomplete or may indicate misconceptions	Applies some of the required concepts of multiplication and division; may indicate some misconceptions, particularly in explaining why 31 would be difficult	Applies the required concepts of multiplication and division appropriately; may be minor flaws in reasoning apparent in the explanation of why 31 would be difficult	Applies the required concepts of multiplication and division effectively throughout; indicates thorough understanding
Procedural knowledge				
Part 1 Records accurate multiplication facts for 48 **Part 2** Represents and solves the problem with equations **Part 3** Writes accurate multiplication and division facts for the chosen number	makes major errors/omissions in: – multiplication facts for 48 – writing equations for division – solving equations – multiplication and division facts for the chosen number	some minor errors or omissions in: – multiplication facts for 48 – writing equations for division – solving equations – multiplication and division facts for the chosen number	few minor errors or omissions in: – multiplication facts for 48 – writing equations for division – solving equations – multiplication and division facts for the chosen number	accurate and precise; few, if any errors in: – multiplication facts for 48 – writing equations for division – solving equations – multiplication and division facts for the chosen number
Problem-solving skills				
Uses appropriate strategies (e.g., drawing, making a table) to identify all possible ways to: – arrange 48 band members in equal rows (arrays) – arrange 30 band members in equal rows (arrays) – arrange chosen number of band members in equal rows (arrays)	uses few effective strategies; does not adequately find all possible arrangements for: – 48 band members – 30 band members – chosen number of band members	uses some appropriate strategies, with partial success, to find all possible arrangements for: – 48 band members – 30 band members – chosen number of band members	uses appropriate and successful strategies to find all possible arrangements for: – 48 band members – 30 band members – chosen number of band members	uses innovative and effective strategies to find all possible arrangements for: – 48 band members – 30 band members – chosen number of band members
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology (e.g., multiply, division, array, factor, product, related facts)	unable to present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

Name _____ Date _____

To Parents and Adults at Home…

Your child's class is starting a mathematics unit on multiplication and division. Multiplication and division are basic computational skills that children will use often, and skills that children must master to succeed in higher levels of mathematics. The focus of this unit is on developing strategies for multiplying and dividing with whole numbers. Children will identify patterns on multiplication charts, use mental math, and pose and solve problems.

In this unit, your child will:

- Use different mental math strategies to multiply and divide.
- Multiply by 0, 1, and 10.
- Divide by 1.
- Recall multiplication and division facts.
- Identify and describe patterns in a multiplication chart.
- Relate multiplication and division.
- Pose and solve story problems using multiplication and division.
- Write and solve equations.

We use multiplication and division in many day-to-day situations. Encourage your child to practise the multiplication facts from 1×1 to 9×9. Talk with your child about the strategies you use to recall these facts.

Here is an activity you can do at home:

Multiplication Challenge

Remove the jokers and face cards from a deck of playing cards.

Shuffle the cards. Divide them into two equal piles.

Keep 1 pile and give the other pile to your child.

Each player turns over two cards and multiplies the numbers on the cards. An ace counts as 1.

The player with the greater answer takes the cards.

Continue playing until one player runs out of cards.

Name _____ Date _____

Unit Rubric: Measurement

	Not Yet Adequate	**Adequate**	**Proficient**	**Excellent**
Conceptual understanding				
Demonstrates and explains area as the measure of surface recorded in square units Selects and justifies appropriate referents for cm^2 and m^2	may be unable to: – demonstrate or explain area – select and justify a referent	partially able to: – demonstrate and explain area – select and justify a referent	able to: – demonstrate and explain area – select and justify a referent	in various contexts, able to thoroughly: – demonstrate and explain area – select and justify a referent
Procedural knowledge				
Accurately: – reads and records time using digital and analog clocks – reads and records calendar dates – determines and records area in cm^2 and m^2	limited accuracy; often makes major errors/omissions in: – reading and recording time – reading and recording calendar dates – determining and recording area	partially accurate; makes frequent minor errors/omissions in: – reading and recording time – reading and recording calendar dates – determining and recording area	generally accurate; makes few errors/omissions in: – reading and recording time – reading and recording calendar dates – determining and recording area	accurate; rarely makes errors/omissions in: – reading and recording time – reading and recording calendar dates – determining and recording area
Problem-solving skills				
Uses strategies effectively to: – estimate area by using personal referents – constructing different rectangles for a given area	may be unable to use problem-solving strategies successfully to: – estimate – construct different rectangles for a given area	with limited help, uses problem-solving strategies with partial success to: – estimate – construct different rectangles for a given area	uses appropriate problem-solving strategies successfully, to: – estimate – construct different rectangles for a given area	uses appropriate, often innovative, problem-solving strategies with a high degree of success to: – estimate – construct different rectangles for a given area
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology	unable to record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

Name _____ Date _____

<table>
<tr><td rowspan="2" style="border-radius:50%">Master 4.3</td><td colspan="5">Performance Assessment Rubric:
Design a Playground</td></tr>
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	Not Yet Adequate	**Adequate**	**Proficient**	**Excellent**
Conceptual understanding				
Explanation shows understanding of concepts of measurement and area	explanation does not show understanding of measurement and area; may indicate major misconceptions	explanation shows some understanding of measurement and area; may be minor flaws in reasoning	explanation shows sound, basic understanding of measurement and area	explanation shows thorough understanding of measurement and area
Procedural knowledge				
Determines and records area of each section correctly	makes major errors/omissions in determining and recording area	makes some minor errors or omissions in determining and recording area	makes few minor errors or omissions in determining and recording area	work is accurate and precise; few, if any, errors in determining and recording area
Problem-solving skills				
Uses appropriate strategies to create a realistic plan for a playground following the specifications given	does not meet specifications or create a workable plan for a playground	partially successful in meeting specifications and creating a workable plan for a playground	successfully meets most specifications and creates a workable plan for a playground	successfully meets all specifications and creates a workable plan for a playground; includes some additional features or complexity beyond basic specifications
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology	unable to present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

Name _____ Date _____

To Parents and Adults at Home…

Your child's class is starting a mathematics unit on measurement. Children will explore telling time to the nearest minute using digital and analog clocks, reading and recording calendar dates, and finding area in square centimetres and square metres.

In this unit, your child will:

- Tell time to the nearest minute using 12-hour and 24-hour clocks.

- Read and record the date in various formats.

- Estimate and measure area.

- Construct different rectangles for a given area.

Measurement is an important part of everyday life.
We plan our time according to schedules.
We buy items such as carpeting by area.

Here are some suggestions for activities you can do at home:

- Frequently ask your child, "What time is it?"
  "What time will it be in 20 minutes?",
  "What time was it 15 minutes ago?"

- Have your child estimate, then measure, the time required to complete different activities.

- Ask questions such as, "What unit would you use to find the area of this table?"

Name _____ Date _____

(**Master 5.1**) **Unit Rubric: Fractions and Decimals**

	Not Yet Adequate	**Adequate**	**Proficient**	**Excellent**
Conceptual understanding				
Shows understanding by demonstrating and explaining: – a given fraction or decimal – relationships between tenths and hundredths as decimals and fractions – that two identical fractions may not represent the same quantity – addition and subtraction of decimals – examples of fractions in the everyday world	does not adequately demonstrate or explain: – a given fraction or decimal – relationships between tenths and hundredths as decimals and fractions – that two identical fractions may not represent the same quantity – addition and subtraction of decimals – examples of fractions in the everyday world	partially able to demonstrate or explain: – a given fraction or decimal – relationships between tenths and hundredths as decimals and fractions – that two identical fractions may not represent the same quantity – addition and subtraction of decimals – examples of fractions in the everyday world	adequately demonstrates and explains: – a given fraction or decimal – relationships between tenths and hundredths as decimals and fractions – that two identical fractions may not represent the same quantity – addition and subtraction of decimals – examples of fractions in the everyday world	thoroughly and effectively demonstrates and explains: – a given fraction or decimal – relationships between tenths and hundredths as decimals and fractions – that two identical fractions may not represent the same quantity – addition and subtraction of decimals – examples of fractions in the everyday world
Procedural knowledge				
Accurately: – names and records fractions – compares and orders fractions – represents decimals (concrete, pictorial, symbolic) – adds and subtracts decimals including money	limited accuracy; often makes major errors/omissions in: – naming and recording fractions – comparing and ordering fractions – representing decimals – adding decimals – subtracting decimals	partially accurate; makes frequent minor errors/omissions in: – naming and recording fractions – comparing and ordering fractions – representing decimals – adding decimals – subtracting decimals	generally accurate; makes few errors/omissions in: – naming and recording fractions – comparing and ordering fractions – representing decimals – adding decimals – subtracting decimals	accurate; rarely makes errors/omissions in: – naming and recording fractions – comparing and ordering fractions – representing decimals – adding decimals – subtracting decimals
Problem-solving skills				
Selects and uses a variety of strategies to solve problems involving addition and subtraction of decimals including estimating; concrete materials; pictures, mental math, personal strategies	may be unable to use problem-solving strategies successfully	uses some problem-solving strategies with partial success	uses appropriate problem-solving strategies successfully	uses effective, often innovative, problem-solving strategies with a high degree of success
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology	unable to record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

Name _____ Date _____

Performance Assessment Rubric: Spring Activities Day

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual understanding				
Shows understanding by selecting appropriate procedures, justifying or explaining results; and using fractions or decimals in examples of new event	shows little understanding; unable to adequately: – justify or explain results – provide examples	shows some understanding; partially able to: – justify and explain results – provide examples	shows understanding; adequately: – justifies and explains results – provides examples	shows thorough understanding; effectively: – justifies and explains results – provides examples
Procedural knowledge				
Accurately: – compares and orders fractions – subtracts decimals – solves own story problem	makes major errors/omissions in: – comparing and ordering fractions – subtracting decimals – solving own story problem	makes some minor errors/omissions in: – comparing and ordering fractions – subtracting decimals – solving own story problem	makes few minor errors/omissions in: – comparing and ordering fractions – subtracting decimals – solving own story problem	is accurate and precise; few, if any errors in: – comparing and ordering fractions – subtracting decimals – solving own story problem
Problem-solving skills				
Uses appropriate strategies to create and solve a story problem, and to design a new event	unable to create and solve a story problem unable to create an appropriate event; may be unworkable	creates and solves a very simple story problem; may have some flaws creates a very simple event, often similar to those provided; parts may be confusing	creates and solves an appropriate story problem creates and gives an example of an appropriate new event	creates and solves a story problem that offers some complexity creates and gives an example of an appropriate and innovative new event
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology (e.g., tenths, numerator, denominator, decimal point)	unable to present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

Name _____ Date _____

To Parents and Adults at Home…

Your child's class is starting a mathematics unit on fractions and decimals.

In this unit, your child will:

- Model, name, and record fractions.

- Compare and order fractions.

- Interpret and model decimals as tenths and hundredths.

- Explore equivalent decimals.

- Use decimals to record money values.

- Add and subtract decimals to hundredths, including money.

Fractions and decimals are a common feature in our world.
Encourage your child to look for and use fractions and decimals at home.
For example, when your child is reading a book, ask her to tell you
when she has read about one-half.

If you are dividing something into equal pieces, such as a cake,
have your child name fractions that describe the pieces.
For example, when a cake is cut in 8 equal pieces, each person
receives one-eighth of the cake.

While shopping, encourage your child to look for decimals on price tags
or labels. Have your child help you estimate the total amount of
your items, and how much change you will receive.

Name _____ Date _____

Master 6.1   # Unit Rubric: Geometry

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual understanding				
Explains, demonstrates, and applies understanding of: – attributes of rectangular and triangular prisms – line symmetry	may be unable to explain, demonstrate, and apply understanding of: – attributes of rectangular and triangular prisms – line symmetry	partially able to explain, demonstrate, and apply understanding of: – attributes of rectangular and triangular prisms – line symmetry	able to explain, demonstrate, and apply understanding of: – attributes of rectangular and triangular prisms – line symmetry	in various contexts, able to thoroughly explain, demonstrate, and apply understanding of: – attributes of rectangular and triangular prisms – line symmetry
Procedural knowledge				
Accurately: – identifies and names attributes – describes and names prisms – sorts prisms – identifies symmetrical and non-symmetrical 2-D shapes – draws lines of symmetry	limited accuracy; often makes major errors/omissions in: – identifying and naming attributes – describing and naming prisms – sorting prisms – identifying symmetrical and non-symmetrical 2-D shapes – drawing lines of symmetry	partially accurate; makes frequent minor errors/omissions in: – identifying and naming attributes – describing and naming prisms – sorting prisms – identifying symmetrical and non-symmetrical 2-D shapes – drawing lines of symmetry	generally accurate; makes few errors/omissions in: – identifying and naming attributes – describing and naming prisms – sorting prisms – identifying symmetrical and non-symmetrical 2-D shapes – drawing lines of symmetry	accurate; rarely makes errors/omissions in: – identifying and naming attributes – describing and naming prisms – sorting prisms – identifying symmetrical and non-symmetrical 2-D shapes – drawing lines of symmetry
Problem-solving skills				
Uses strategies effectively to: – construct prisms from their nets – construct models of prisms – create symmetrical 2-D shapes	may be unable to use problem-solving strategies successfully to: – construct prisms from their nets – construct models of prisms – create symmetrical 2-D shapes	uses some problem-solving strategies with partial success to: – construct prisms from their nets – construct models of prisms – create symmetrical 2-D shapes	uses appropriate problem-solving strategies successfully, to: – construct prisms from their nets – construct models of prisms – create symmetrical 2-D shapes	uses appropriate, often innovative, problem-solving strategies with a high degree of success to: – construct prisms from their nets – construct models of prisms – create symmetrical 2-D shapes
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology	unable to record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

Name _____ Date _____

Performance Assessment Rubric: Building Castles

	Not Yet Adequate	**Adequate**	**Proficient**	**Excellent**
Conceptual understanding				
Shows understanding of line symmetry in explanations	shows very limited understanding of line symmetry; may indicate major misconceptions	shows some understanding of line symmetry; may be minor flaws in reasoning	shows sound, basic understanding of line symmetry	shows thorough understanding of line symmetry in a variety of contexts
Procedural knowledge				
Accurately: – identifies which pentominoes and hexominoes are symmetrical – draws lines of symmetry for pentominoes and hexominoes – determines which pentominoes can be folded to make an open cube	makes major errors/omissions in: – identifying symmetry – drawing lines of symmetry – determining which pentominoes can be folded to make an open cube	makes some minor errors/omissions in: – identifying symmetry – drawing lines of symmetry – determining which pentominoes can be folded to make an open cube	makes few minor errors/omissions in: – identifying symmetry – drawing lines of symmetry – determining which pentominoes can be folded to make an open cube	is accurate and precise; few, if any errors in: – identifying symmetry – drawing lines of symmetry – determining which pentominoes can be folded to make an open cube
Problem-solving skills				
Uses appropriate strategies to: – create a new shape that is symmetrical – determine whether two shapes can be combined to make a new shape with more than one line of symmetry	does not use appropriate strategies; unable to successfully: – create a new symmetrical shape – determine whether two shapes can be combined to make a new shape with more than one line of symmetry	uses some appropriate strategies; partially successful in: – creating a new symmetrical shape – determining whether two shapes can be combined to make a new shape with more than one line of symmetry	uses appropriate strategies to successfully: – create a new symmetrical shape – determine whether two shapes can be combined to make a new shape with more than one line of symmetry	uses appropriate and often innovative strategies to successfully: – create a new symmetrical shape – determine whether two shapes can be combined to make a new shape with more than one line of symmetry
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology	unable to present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

Name _____ Date _____

To Parents and Adults at Home …

Your child's class is starting a mathematics unit on geometry. Through daily activities, your child will explore objects and shapes and the relationships among them.

In this unit, your child will:

- Name, describe, and sort triangular and rectangular prisms.

- Construct prisms from nets.

- Construct models of prisms.

- Identify, create, and sort symmetrical and non-symmetrical shapes.

- Draw lines of symmetry.

Geometry is an important part of a student's mathematical experience. People with a deep understanding of geometry and good spatial sense will be able to describe the world around them and appreciate the geometry found in art, nature, and architecture.

Here are some suggestions for activities you can do with your child.

When you are at the grocery store, look for items on the shelves that have the same size and shape, then have your child name the geometric objects they resemble. For example, a Toblerone bar is a triangular prism, and a cereal box is a rectangular prism.

When you are in the car or on a bus, look for structures that are made of different objects. Have your child name the geometric objects they resemble. For example, apartment buildings may look like rectangular prisms or cubes.

Look through magazines with your child to find as many different symmetrical shapes in a picture as you can.

Name _____ Date _____

Unit Rubric: Data Analysis

	Not Yet Adequate	**Adequate**	**Proficient**	**Excellent**
Conceptual understanding				
• Shows understanding of data analysis concepts in graphing by: – applying and explaining many-to-one correspondence – comparing and explaining different correspondences (many-to-one versus one-to-one)	may be unable to demonstrate, apply or explain: – many-to-one correspondence – comparisons of different correspondences	partially able to demonstrate, apply, or explain: – many-to-one correspondence – comparisons of different correspondences	able to demonstrate, apply and explain: – many-to-one correspondence – comparisons of different correspondences	in various contexts, appropriately demonstrates, applies, and explains: – many-to-one correspondence – comparisons of different correspondences
Procedural knowledge				
• Accurately: – creates and labels a pictograph (many-to-one) – creates and labels a bar graph (many-to-one)	limited accuracy; often makes major errors/omissions in – creating and labelling pictographs – creating and labelling bar graphs	partially accurate; makes frequent minor errors/omissions in: – creating and labelling pictographs – creating and labelling bar graphs	generally accurate; makes few errors/ omissions in: – creating and labelling pictographs – creating and labelling bar graphs	accurate; rarely makes errors/omissions in: – creating and labelling pictographs – creating and labelling bar graphs
Problem-solving skills				
• Constructs and interprets graphs to answer specific questions • Chooses and justifies a scale or key for a given set of data • Identifies and describes correspondence in graphs from the media	does not use appropriate skills and strategies; may be unable to successfully: – construct and interpret graphs to answer specific questions – choose and justify a scale or key – identify and describe correspondence in graphs from the media	uses some skills and strategies with partial success to: – construct and interpret graphs to answer specific questions – choose and justify a scale or key – identify and describe correspondence in graphs from the media	uses appropriate skills and strategies to successfully: – construct and interpret graphs to answer specific questions – choose and justify a scale or key – identify and describe correspondence in graphs from the media	uses appropriate, often innovative, skills and strategies with a high degree of success, to: – construct and interprets graphs to answer specific questions – choose and justify a scale or key – identify and describe correspondence in graphs from the media
Communication				
• Records and explains reasoning and procedures clearly and completely, including appropriate terminology (e.g., key, bar graph, vertical axis, horizontal axis)	unable to record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

Name _____ Date _____

Master 7.3

Performance Assessment Rubric: Using Data to Answer Questions

	Not Yet Adequate	**Adequate**	**Proficient**	**Excellent**
Conceptual understanding				
• Shows understanding by comparing and explaining different scales used in the graphs (many-to-one correspondence)	does not compare or explain: – correspondence – choice of scale	partially compares and explains: – correspondence – choice of scale	appropriately compares and explains: – correspondence – choice of scale	thoroughly and effectively compares and explains: – correspondence – choice of scale
Procedural knowledge				
Part 1 • Draws an accurate and appropriate graph ***Parts 2 and 3*** • Accurately identifies the scale or key	makes major errors/omissions in: – drawing and labelling an appropriate graph – identifying the scale or key	makes some minor errors or omissions in: – drawing and labelling an appropriate graph – identifying the scale or key	makes few minor errors or omissions in: – drawing and labelling an appropriate graph – identifying the scale or key	accurate and precise; few, if any errors in: – drawing and labelling an appropriate graph – identifying the scale or key
Problem-solving skills				
• Chooses and justifies a scale or key for a given set of data • Constructs a graph to represent given data • Interprets a graph to answer specific questions	does not use appropriate skills and strategies; may be unable to successfully: – choose and justify a scale or key – construct and interpret graphs to answer specific questions	uses some skills and strategies with partial success to: – choose and justify a scale or key – construct and interpret graphs to answer specific questions	uses appropriate skills and strategies to successfully: – choose and justify a scale or key – construct and interpret graphs to answer specific questions	uses appropriate, often innovative, skills and strategies with a high degree of success, to: – choose and justify a scale or key – construct and interpret graphs to answer specific questions
Communication				
• Records and explains reasoning and procedures clearly and completely, including appropriate terminology (e.g., key, bar graph, vertical axis, horizontal axis)	unable to record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

Name _____ Date _____

To Parents and Adults at Home …

Your child's class is starting a mathematics unit on data analysis.

In this unit, your child will:

- Read and find information from pictographs and bar graphs.
- Use keys and scales to construct pictographs and bar graphs.
- Answer questions and solve problems by interpreting data in a pictograph or bar graph.

Data analysis is the collection and organization of data. This unit includes concepts and themes that your child may encounter every day in the world outside the classroom. Your child will interpret information from displays of data.

Here is an activity you can do at home to enhance your child's understanding of data analysis.

- Watch for examples of tables and graphs in newspapers, magazines, or on the Internet. Ask your child what information the tables or graphs convey.

Unit Rubric: Multiplying and Dividing Larger Numbers

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual understanding				
Shows understanding by demonstrating and explaining: – personal strategies for multiplying and dividing – connections between concrete and symbolic representations – estimation of products and quotients using a personal strategy – identifying patterns in multiplication and division – relationship between multiplication and division	may be unable to demonstrate or explain: – personal strategies for multiplying and dividing – connections between concrete and symbolic representations – estimation of products and quotients using a personal strategy – identifying patterns in multiplication and division – relationship between multiplication and division	partially able to demonstrate or explain: – personal strategies for multiplying and dividing – connections between concrete and symbolic representations – estimation of products and quotients using a personal strategy – identifying patterns in multiplication and division – relationship between multiplication and division	able to demonstrate, apply, and explain: – personal strategies for multiplying and dividing – connections between concrete and symbolic representations – estimation of products and quotients using a personal strategy – identifying patterns in multiplication and division – relationship between multiplication and division	in various contexts, appropriately demonstrates and explains: – personal strategies for multiplying and dividing – connections between concrete and symbolic representations – estimation of products and quotients using a personal strategy – identifying patterns in multiplication and division – relationship between multiplication and division
Procedural knowledge				
Within the context of a problem, accurately: – multiplies a 2-digit and a 3-digit number by a 1-digit number – divides a 2-digit number by a 1-digit number	limited accuracy; often makes major errors/omissions in: – multiplying a 2-digit and a 3-digit number by a 1-digit number – dividing a 2-digit number by a 1-digit number	partially accurate; makes frequent minor errors/omissions in: – multiplying a 2-digit and a 3-digit number by a 1-digit number – dividing a 2-digit number by a 1-digit number	generally accurate; makes few errors/omissions in: – multiplying a 2-digit and a 3-digit number by a 1-digit number – dividing a 2-digit number by a 1-digit number	accurate; rarely makes errors/omissions in: – multiplying a 2-digit and a 3-digit number by a 1-digit number – dividing a 2-digit number by a 1-digit number
Problem-solving skills				
Creates and solves word problems involving multiplication and division by using appropriate strategies including: – modelling – arrays – base 10 materials – pictorial representations – personal strategies	may be unable to use problem-solving strategies successfully including: – modelling – arrays – base 10 materials – pictorial representations – personal strategies	with limited help, uses problem-solving strategies with partial success including: – modelling – arrays – base 10 materials – pictorial representations – personal strategies	uses appropriate problem-solving strategies successfully, including: – modelling – arrays – base 10 materials – pictorial representations – personal strategies	uses appropriate, often innovative, problem-solving strategies with a high degree of success, including: – modelling – arrays – base 10 materials – pictorial representations – personal strategies
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology (for example, estimate, quotient, remainder)	unable to record and explain reasoning and procedures clearly and completely	records and explains reasoning and procedures with partial clarity; may be incomplete	records and explains reasoning and procedures clearly and completely	records and explains reasoning and procedures with precision and thoroughness

Name _____ Date _____

**Performance Assessment Rubric:
At the Garden Centre**

	Not Yet Adequate	**Adequate**	**Proficient**	**Excellent**
Conceptual understanding				
Shows understanding by applying and explaining the required concepts of multiplication and division, and their relationship.	does not apply the required concepts of multiplication and division appropriately; may be incomplete or indicate misconceptions	applies some of the required concepts of multiplication and division; may indicate some misconceptions	applies the required concepts of multiplication and division appropriately; may be minor flaws in reasoning	applies the required concepts of multiplication and division effectively throughout; indicates thorough understanding
Procedural knowledge				
Accurately: – multiplies by 1-digit numbers – divides by 1-digit numbers	makes major errors/omissions in: – multiplying by 1-digit numbers – dividing by 1-digit numbers	makes some minor errors/omissions in: – multiplying by 1-digit numbers – dividing by 1-digit numbers	makes few minor errors/omissions in: – multiplying by 1-digit numbers – dividing by 1-digit numbers	is accurate and precise; makes few, if any errors in: – multiplying by 1-digit numbers – dividing by 1-digit numbers
Problem-solving skills				
Uses appropriate strategies to solve word problems that involve multiplying and dividing (for example, arrays, estimation, making a table, modelling, using concrete materials)	uses few effective strategies; does not adequately solve the problems	uses some appropriate strategies; has partial success in solving the problems	uses appropriate and successful strategies to solve the problems	uses effective and often innovative and effective strategies to solve the problems
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology (for example, estimate, quotient, remainder)	unable to present work and explanations clearly, uses few appropriate mathematical terms	presents work and explanations with some clarity, using some appropriate mathematical terms	presents work and explanations clearly, using appropriate mathematical terms	presents work and explanations precisely, using a range of appropriate mathematical terms

Name _____ Date _____

To Parents and Adults at Home…

Your child's class is starting a mathematics unit on multiplying and dividing larger numbers. We completed a unit earlier in the year on multiplication and division facts and the relationship between the two operations. Now children will use their knowledge of basic facts and place value to develop strategies for multiplying and dividing larger numbers. They will use mental math, estimation, concrete materials, and paper-and-pencil calculations.

In this unit, your child will:

- Use personal strategies to multiply and divide.

- Estimate products and quotients.

- Use models and arrays to multiply and divide.

- Multiply a 2-digit and a 3-digit number by a 1-digit number.

- Divide a 2-digit number by a 1-digit number.

- Relate multiplication and division.

- Identify and describe patterns in multiplication and division.

Fluency with basic multiplication and division facts is a key to success as we develop strategies for multiplying and dividing larger numbers. Encourage your child to continue to practise the basic multiplication and division facts (to $9 \times 9 = 81$ and $81 \div 9 = 9$). Discuss how you remember these facts and encourage your child to share her or his strategies for recall.

Here are some suggestions for things you can do at home:

- Point out when you need to multiply or divide to solve a problem and share your strategies for solving the problem.

- Involve your child in estimating the costs when you shop together.
  For example: Juice is on sale for 89¢ a can.
  About how much will 6 cans cost?

- Use a store flyer to create and solve problems together.
  For example: DVDs are on sale for $18 each.
  How much would it cost to buy 6?
  How many can we buy with $50?