

Master 1.1

Unit Rubric: Patterns and Equations

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding by explaining and/or demonstrating: <ul style="list-style-type: none"> relationships shown in a table of values or on a graph the use of equations to represent number relationships preservation of equality 	may be unable to demonstrate or explain: <ul style="list-style-type: none"> relationships shown in a table of values or on a graph the use of equations to represent number relationships preservation of equality 	partially able to demonstrate or explain: <ul style="list-style-type: none"> relationships shown in a table of values or on a graph the use of equations to represent number relationships preservation of equality 	able to demonstrate and explain: <ul style="list-style-type: none"> relationships shown in a table of values or on a graph the use of equations to represent number relationships preservation of equality 	in various contexts, appropriately demonstrates and explains: <ul style="list-style-type: none"> relationships shown in a table of values or on a graph the use of equations to represent number relationships preservation of equality
Procedural Knowledge				
Accurately: <ul style="list-style-type: none"> identifies and represents the relationship in a table of values graphs a table of values creates a table of values from a pattern or graph describes the relationship on a graph develops equations that illustrate the commutative properties writes equivalent forms of an equation 	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> identifying and representing relationships graphing a table of values creating a table of values describing relationships on a graph developing equations writing equivalent forms of an equation 	partially accurate; frequent minor errors or omissions in: <ul style="list-style-type: none"> identifying and representing relationships graphing a table of values creating a table of values describing relationships on a graph developing equations writing equivalent forms of an equation 	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> identifying and representing relationships graphing a table of values creating a table of values describing relationships on a graph developing equations writing equivalent forms of an equation 	accurate; no errors or omissions in: <ul style="list-style-type: none"> identifying and representing relationships graphing a table of values creating a table of values describing relationships on a graph developing equations writing equivalent forms of an equation
Problem-Solving Skills				
Selects and uses appropriate strategies to solve problems involving relationships within tables of values	does not select and use appropriate strategies to solve problems successfully	with limited help, selects and uses some strategies to solve problems with partial success	selects and uses appropriate strategies to solve problems successfully	selects and uses appropriate strategies to solve problems with a high degree of success
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology	does not 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 1.3

**Performance Assessment Rubric:
Crack the Code!**

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding of patterns and relations by explaining processes and solutions	shows very limited understanding of patterns and relations; incomplete explanation	shows limited understanding of patterns and relations; gives appropriate but incomplete explanation	shows understanding of patterns and relations; gives appropriate explanation	shows thorough understanding of patterns and relations; gives detailed and precise explanation
Procedural Knowledge				
Creates tables of values Identifies pattern rules Plots points on a grid Represents patterns in words, symbols, graphs	limited accuracy; major errors or omissions in: – creating tables – identifying pattern rules – plotting points on a grid – representing patterns	somewhat accurate; several minor errors or omissions in: – creating tables – identifying pattern rules – plotting points on a grid – representing patterns	generally accurate; few errors or omissions in: – creating tables – identifying pattern rules – plotting points on a grid – representing patterns	accurate; no errors in: – creating tables – identifying pattern rules – plotting points on a grid – representing patterns
Problem-Solving Skills				
Chooses and carries out appropriate strategies to solve the problems (decode the messages) Uses appropriate strategies to create and solve a problem involving a number code	chooses and carries out a limited range of appropriate patterning strategies, resulting in unsuccessful solutions for most parts of the problem does not adequately create and solve a problem	chooses and carries out some appropriate patterning strategies, resulting in successful solutions for some parts of the problem partially successful in creating and solving a new problem (problem may be very basic or have some flaws)	chooses and carries out appropriate patterning strategies, resulting in successful solutions for most parts of the problem uses appropriate and successful strategies to create and solve a new problem	chooses and carries out effective patterning strategies, resulting in successful solutions for all or almost all parts of the problem uses effective, and often innovative, strategies to create and solve a relatively complex or challenging problem
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology	does not 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 _____

Master 1.6

To Parents and Adults at Home ...

Your child's class is starting a mathematics unit on patterns and equations.

Patterns occur in nature, art, and many everyday activities. They can be described using numbers, words, symbols and models. Equations are an important way of stating mathematical relationships. Analysing patterns and balancing equations are important skills that help develop your child's number sense and algebraic reasoning.

In this unit, your child will:

- Find a pattern rule for a number pattern.
- Identify, extend, and create patterns.
- Describe the same pattern in many ways.
- Use patterns to solve problems.
- Create a graph to represent a number pattern.
- Preserve the balance in an equation by making the same change to each side of the equation.

Patterns occur in many forms. We find them in fabrics, price lists, growth charts, and sports schedules. By drawing your child's attention to the patterns that occur in everyday life, you can help to foster her or his mathematical thinking.

Master 2.1

Unit Rubric: Understanding Number

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding by explaining and/or demonstrating: <ul style="list-style-type: none"> - place value of large numbers - multiples and factors; prime and composite numbers - integers 	may be unable to demonstrate or explain: <ul style="list-style-type: none"> - place value - multiples and factors; prime and composite numbers - integers 	partially able to demonstrate or explain: <ul style="list-style-type: none"> - place value - multiples and factors; prime and composite numbers - integers 	able to demonstrate and explain: <ul style="list-style-type: none"> - place value - multiples and factors; prime and composite numbers - integers 	in various contexts; appropriately demonstrates and explains: <ul style="list-style-type: none"> - place value - multiples and factors; prime and composite numbers - integers
Procedural Knowledge				
Accurately: <ul style="list-style-type: none"> - represents, reads, and writes large numbers - uses technology to compute with large numbers - finds multiples, common multiples, factors, and common factors of numbers - identifies prime and composite numbers - uses, compares, and orders integers - applies the order of operations 	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> - representing, reading, and writing large numbers - using technology to compute with large numbers - finding multiples, common multiples, factors, and common factors of numbers - identifying prime and composite numbers - using, comparing, and ordering integers - applying the order of operations 	partially accurate; frequent minor errors or omissions in: <ul style="list-style-type: none"> - representing, reading, and writing large numbers - using technology to compute with large numbers - finding multiples, common multiples, factors, and common factors of numbers - identifying prime and composite numbers - using, comparing, and ordering integers - applying the order of operations 	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> - representing, reading, and writing large numbers - using technology to compute with large numbers - finding multiples, common multiples, factors, and common factors of numbers - identifying prime and composite numbers - using, comparing, and ordering integers - applying the order of operations 	accurate; no errors or omissions in: <ul style="list-style-type: none"> - representing, reading, and writing large numbers - using technology to compute with large numbers - finding multiples, common multiples, factors, and common factors of numbers - identifying prime and composite numbers - using, comparing, and ordering integers - applying the order of operations
Problem-Solving Skills				
Selects and uses appropriate strategies to solve one- and multi-step problems	does not select and use appropriate strategies to solve one- and multi-step problems	with limited help, selects and uses strategies with partial success to solve one- and multi-step problems	selects and uses appropriate strategies to successfully solve one- and multi-step problems	selects and uses appropriate strategies with a high degree of success to solve one- and multi-step problems
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology and symbols	does not 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: At the Apiary

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding of whole numbers by explaining strategies and solutions	shows very limited understanding of whole numbers; gives inappropriate explanations	shows limited understanding of whole numbers; gives appropriate but incomplete explanations	shows understanding of whole numbers; gives reasonable explanations	shows thorough understanding of whole numbers; gives effective and detailed explanations
Procedural Knowledge				
Accurately: – uses the correct operation – uses a calculator to operate on large numbers	limited accuracy; major errors or omissions in: – using the correct operation – using a calculator to operate on large numbers	somewhat accurate; several minor errors or omissions in: – using the correct operation – using a calculator to operate on large numbers	generally accurate; few minor errors or omissions in: – using the correct operation – using a calculator to operate on large numbers	accurate; no errors in: – using the correct operation – using a calculator to operate on large numbers
Problem-Solving Skills				
Chooses and carries out appropriate strategies to solve multi-step problems Uses appropriate estimation and problem-solving strategies to: – create and solve story problems using data about honeybees – check reasonableness of results	chooses and carries out a limited range of appropriate strategies: – does not solve most parts of the problems successfully – does not adequately create and solve story problems using data about honeybees – does not adequately check reasonableness of results	chooses and carries out some appropriate strategies: – solves parts of the problems successfully – partially successful in creating and solving story problems using data about honeybees (problem may be very basic or have some flaws) – partially successful in checking reasonableness of results	chooses and carries out appropriate strategies: – successfully solves most parts of the problems – creates and solves appropriate story problems using data about honeybees – appropriately checks reasonableness of results	chooses and carries out effective, often innovative, strategies: – successfully solves all parts of the problems – creates and solves relatively complex or challenging story problems using data about honeybees – effectively checks reasonableness of results
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology	does not present work and explanations clearly; uses few appropriate mathematical terms	presents work and explanations with some clarity; uses some appropriate mathematical terms	presents work and explanations clearly; uses appropriate mathematical terms	presents work and explanations precisely; uses a range of appropriate mathematical terms

Name _____ Date _____

Master 2.6

To Parents and Adults at Home ...

Your child's class is starting a mathematics unit on understanding number. In this unit, your child will:

- Represent, read, and write very large numbers.
- Identify multiples, factors, and prime and composite numbers.
- Learn which method of computation (estimation, mental math, paper and pencil, or technology) is appropriate in a given situation.
- Read and write whole numbers in standard, expanded, and written forms.
- Use place value to represent, read, and order whole numbers.
- Identify and describe multiples and factors to 100.
- Identify and describe composite and prime numbers to 100.
- Use the order of operations.
- Use a calculator to add, subtract, multiply, and divide.
- Pose and solve multi-step problems.
- Develop an understanding of integers.

Whole numbers and integers are used and encountered frequently in our world. For example, whole numbers identify populations, altitudes of mountains, elevations of aircraft, and salaries. Integers identify temperatures above and below freezing, elevations above and below sea level, and plus/minus scores in hockey.

Here are some activities you can do to enhance your child's learning:

- Together, plan the cost of a family outing or trip.
- Help your child find and read large numbers in newspapers and magazines.
- Encourage your child to estimate the total cost of several items as you shop.

Name _____ Date _____

Master 3.1

Unit Rubric: Decimals

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding by explaining and/or demonstrating: – place value (numbers less than one-thousandth) – multiplying decimals (1-digit whole number multipliers) – dividing decimals (1-digit natural number divisors)	may be unable to demonstrate or explain: – place value – multiplying decimals – dividing decimals	partially able to demonstrate or explain: – place value – multiplying decimals – dividing decimals	able to demonstrate and explain: – place value – multiplying decimals – dividing decimals	in various contexts; appropriately demonstrates and explains: – place value – multiplying decimals – dividing decimals
Procedural Knowledge				
Accurately: – reads/writes numbers less than one-thousandth – places/corrects decimal points – multiplies and divides decimals (multipliers from 0 to 9; divisors from 1 to 9)	limited accuracy; major errors or omissions in: – reading/writing small decimals – placing/correcting decimal points – multiplying decimals – dividing decimals	partially accurate; frequent minor errors or omissions in: – reading/writing small decimals – placing/correcting decimal points – multiplying decimals – dividing decimals	generally accurate; few errors or omissions in: – reading/writing small decimals – placing/correcting decimal points – multiplying decimals – dividing decimals	accurate; no errors or omissions in: – reading/writing small decimals – placing/correcting decimal points – multiplying decimals – dividing decimals
Problem-Solving Skills				
Selects and uses appropriate strategies to solve problems involving multiplication or division of decimals	does not select and use appropriate strategies to successfully solve problems that involve multiplying or dividing decimals	with limited help, selects and uses strategies with partial success to solve problems that involve multiplying or dividing decimals	selects and uses appropriate strategies to successfully solve problems that involve multiplying or dividing decimals	selects and uses appropriate strategies with a high degree of success to solve problems that involve multiplying or dividing decimals
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology	does not 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:
Harnessing the Wind**

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding of decimals by explaining strategies and solutions	shows very limited understanding of decimals; gives inappropriate explanations	shows limited understanding of decimals; gives appropriate but incomplete explanations	shows understanding of decimals; gives reasonable explanations	shows thorough understanding of decimals; gives effective and detailed explanations
Procedural Knowledge				
Accurately: – multiplies decimals (multipliers from 0 to 9) – divides decimals (divisors from 1 to 9)	limited accuracy; major errors or omissions in: – multiplying decimals – dividing decimals	somewhat accurate; several minor errors or omissions in: – multiplying decimals – dividing decimals	generally accurate; few minor errors or omissions in: – multiplying decimals – dividing decimals	accurate; no errors in: – multiplying decimals – dividing decimals
Problem-Solving Skills				
Chooses and carries out appropriate strategies to solve the problems Uses appropriate estimation and problem-solving strategies to create and solve a problem	chooses and carries out a limited range of appropriate strategies: – does not solve most parts of the problems successfully – does not adequately create and solve a problem	chooses and carries out some appropriate strategies: – solves parts of the problems successfully – partially successful in creating and solving a new problem (problem may be very basic or have some flaws)	chooses and carries out appropriate strategies: – successfully solves most parts of the problems – creates and solves an appropriate new problem	chooses and carries out effective strategies: – successfully solves all or almost all parts of the problems – creates and solves a relatively complex or challenging problem
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology	does not present work and explanations clearly; uses few appropriate mathematical terms	presents work and explanations with some clarity; uses some appropriate mathematical terms	presents work and explanations clearly; uses appropriate mathematical terms	presents work and explanations precisely; uses a range of appropriate mathematical terms

Name _____ Date _____

Master 3.6

To Parents and Adults at Home ...

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

In this unit, your child will:

- Use a place-value chart to investigate numbers with decimal places beyond thousandths.
- Estimate products and quotients with decimals.
- Multiply decimals by a whole number.
- Divide decimals to thousandths by a 1-digit number.
- Pose and solve problems involving decimal operations.

Decimals are used and encountered frequently in our world. For example, decimals are found in the prices of items in stores, in baseball batting averages, in times taken to complete races, in dosages of medication, and on the spines of library books.

Here are some activities you can do with your child to support her or his learning.

- Have your child look through newspapers, magazines, or the Internet for examples of numbers with decimal places beyond thousandths (for example, 0.0003 mg, or 23.0235 kg). Have your child say these numbers aloud.
- While shopping, encourage your child to estimate the total cost of 3 or more of the same item. Have your child explain whether the estimate is an overestimate or an underestimate.
- While shopping, given the price of a package of 3 or more items, have your child estimate the cost of one.

Name _____ Date _____

Master 4.1

Unit Rubric: Angles and Polygons

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding of angles by: <ul style="list-style-type: none"> - identifying examples in the environment - estimating measure - sketching angles - explaining, using models, the sum of angles in triangles and quadrilaterals 	may be unable to: <ul style="list-style-type: none"> - identify examples - estimate measures - sketch angles - explain the sum of angles in triangles and quadrilaterals 	partially able to: <ul style="list-style-type: none"> - identify examples - estimate measures - sketch angles - explain the sum of angles in triangles and quadrilaterals 	able to: <ul style="list-style-type: none"> - identify examples - estimate measures - sketch angles - explain the sum of angles in triangles and quadrilaterals 	in various contexts, appropriately: <ul style="list-style-type: none"> - identifies examples - estimates measures - sketches angles - explains the sum of angles in triangles and quadrilaterals
Procedural Knowledge				
Accurately: <ul style="list-style-type: none"> - names, describes, and classifies angles - determines angle measures in degrees - draws and labels angles 	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> - naming, describing, and classifying angles - determining angle measures - drawing and labelling angles 	partially accurate; frequent minor errors or omissions in: <ul style="list-style-type: none"> - naming, describing, and classifying angles - determining angle measures - drawing and labelling angles 	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> - naming, describing, and classifying angles - determining angle measures - drawing and labelling angles 	accurate; no errors or omissions in: <ul style="list-style-type: none"> - naming, describing, and classifying angles - determining angle measures - drawing and labelling angles
Problem-Solving Skills				
Selects and uses appropriate strategies to solve problems involving angles	does not select and use appropriate strategies to solve problems with angles successfully	with limited help, selects and uses some strategies to solve problems with angles with partial success	selects and uses appropriate strategies to solve problems with angles successfully	selects and uses appropriate strategies to solve problems with angles with a high degree of success
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology	does not 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 4.3

**Performance Assessment Rubric:
Designing a Quilt Block**

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Explanation in Part 3 shows understanding of: – classification of angles – the sum of angles in triangles and rectangles	shows very limited understanding of: – classification of angles – sum of angles	shows limited understanding; gives appropriate but incomplete explanations of: – classification of angles – sum of angles	shows understanding; gives complete and appropriate explanations of: – classification of angles – sum of angles	shows thorough understanding; gives detailed and precise explanations of: – classification of angles – sum of angles
Procedural Knowledge				
Names and describes angles Measures angles in degrees	limited accuracy; major errors or omissions in: – naming and describing angles – measuring angles	somewhat accurate; several minor errors or omissions in: – naming and describing angles – measuring angles	generally accurate; few errors or omissions in: – naming and describing angles – measuring angles	accurate; no errors in: – naming and describing angles – measuring angles
Problem-Solving Skills				
Chooses and carries out appropriate strategies to create a quilt block that meets the guidelines	chooses and carries out a limited range of appropriate strategies; quilt block does not meet guidelines in several ways	chooses and carries out some appropriate strategies; quilt block successfully meets some guidelines	chooses and carries out appropriate strategies; quilt block meets most guidelines	chooses and carries out effective strategies; may be innovative; quilt block meets all guidelines; features some complexity
Communication				
Presents pattern and explanations clearly, using appropriate mathematical terminology	does not present pattern and explanations clearly; uses few appropriate mathematical terms	presents pattern and explanations with some clarity, using some appropriate mathematical terms	presents pattern and explanations clearly, using appropriate mathematical terms	presents pattern and explanations precisely, using a range of appropriate mathematical terms

Name _____ Date _____

Master 4.6

To Parents and Adults at Home ...

Your child's class is starting a mathematics unit on angles and polygons.

In this unit, your child will:

- Identify, describe, and classify angles.
- Measure, name, and construct angles using informal methods.
- Estimate, measure, draw, and label angles using a protractor.
- Make and apply generalizations about the sum of the angles in triangles and quadrilaterals.

Geometry is an important part of a student's mathematical experience. Geometry provides students with a strong link between the mathematics they learn in the classroom and the real world. 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 at home with your child.

- Have your child give examples of various types of angles.
Have them check their angles using the corner of a square or rectangle.
- Look for shapes and objects, and estimate the sizes of the angles that you see. Use 45° , 90° , 180° , and 360° as reference angles to make more refined estimates.
- Go on an angle hunt. Look for objects with angles that are less than 90° , 90° , between 90° and 180° , 180° , and between 180° and 360° .

Master 5.1

Unit Rubric: Fractions, Ratios, and Percents

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding by: – demonstrating and explaining fractions, ratios, and percents, and their relationships – relating improper fractions and mixed numbers	limited understanding; may be unable to: – demonstrate and explain fractions, ratios, and percents, and their relationships – relate improper fractions and mixed numbers	some understanding; partially able to: – demonstrate and explain fractions, ratios, and percents, and their relationships – relate improper fractions and mixed numbers	shows understanding; able to: – demonstrate and explain fractions, ratios, and percents, and their relationships – relate improper fractions and mixed numbers	shows thorough understanding; in various contexts, able to: – demonstrate and explain fractions, ratios, and percents, and their relationships – relate improper fractions and mixed numbers
Procedural Knowledge				
Accurately: – expresses ratios in multiple forms – places fractions and mixed numbers on a number line – compares mixed numbers and fractions – relates percents to fractions and decimals	limited accuracy; major errors or omissions in: – expressing ratios in multiple forms – placing fractions and mixed numbers on a number line – comparing mixed numbers and fractions – relating percents to fractions and decimals	partially accurate; frequent minor errors or omissions in: – expressing ratios in multiple forms – placing fractions and mixed numbers on a number line – comparing mixed numbers and fractions – relating percents to fractions and decimals	generally accurate; few errors or omissions in: – expressing ratios in multiple forms – placing fractions and mixed numbers on a number line – comparing mixed numbers and fractions – relating percents to fractions and decimals	accurate and precise; no errors in: – expressing ratios in multiple forms – placing fractions and mixed numbers on a number line – comparing mixed numbers and fractions – relating percents to fractions and decimals
Problem-Solving Skills				
Chooses and carries out a variety of appropriate strategies and methods to solve problems that involve fractions, ratios, and percents	may be unable to use appropriate strategies to solve problems; usually not successful	with limited help, uses some appropriate strategies to solve problems; partially successful	uses appropriate strategies to solve problems; considerably successful	uses appropriate, often innovative, strategies to successfully solve problems
Communication				
Explains reasoning and procedures clearly, using appropriate terminology Presents work, including diagrams, drawings, and calculations, clearly, using appropriate conventions (for example, symbols)	limited effectiveness; unable to explain reasoning and procedures clearly; rarely uses appropriate terms presents work with limited clarity and use of appropriate conventions	some effectiveness; explains reasoning and procedures with some clarity and use of appropriate terms presents work with some clarity and use of appropriate conventions	considerable effectiveness; explains reasoning and procedures clearly, using appropriate terms presents work with considerable clarity and use of appropriate conventions	a high degree of effectiveness; explains reasoning and procedures clearly and precisely, using the most appropriate terms presents work with a high degree of clarity and use of appropriate conventions

Name _____ Date _____

Master 5.3

Performance Assessment Rubric: Designing a Floor Plan

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding of fractions, mixed numbers, ratios, percents, and decimals, and their relationships	shows limited understanding of fractions, mixed numbers, ratios, percents, and decimals, and their relationships	shows some understanding of fractions, mixed numbers, ratios, percents, and decimals, and their relationships	shows considerable understanding of fractions, mixed numbers, ratios, percents, and decimals, and their relationships	shows thorough understanding of fractions, mixed numbers, ratios, percents, and decimals, and their relationships
Procedural Knowledge				
Accurately applies skills with fractions, mixed numbers, ratios, and percents to design the individual rooms of the floor plan Accurately performs calculations to show that the plan meets the design guidelines Provides a table showing each section of the plan as a fraction, a percent, and a decimal of the entire floor.	limited effectiveness; major errors or omissions in: – designing the individual rooms of the floor plan – performing calculations to show that the plan meets the design guidelines – showing each section of the plan as a fraction, a percent, and a decimal of the entire floor	some effectiveness; somewhat accurate in: – designing the individual rooms of the floor plan – performing calculations to show that the plan meets the design guidelines – showing each section of the plan as a fraction, a percent, and a decimal of the entire floor	considerable effectiveness; generally accurate in: – designing the individual rooms of the floor plan – performing calculations to show that the plan meets the design guidelines – showing each section of the plan as a fraction, a percent, and a decimal of the entire floor	high degree of effectiveness; accurate and precise in: – designing the individual rooms of the floor plan – performing calculations to show that the plan meets the design guidelines – showing each section of the plan as a fraction, a percent, and a decimal of the entire floor
Problem-Solving Skills				
Uses appropriate strategies to design a floor plan that meets the guidelines	uses a few simple strategies with limited success to design a floor plan that meets a few guidelines	uses some appropriate strategies with some success to design a floor plan that meets some guidelines	uses appropriate strategies with considerable success to design a floor plan that meets most guidelines	uses appropriate, often innovative, strategies with a high degree of success to design a floor plan that meets all guidelines
Communication				
Communicates clearly, using appropriate language and conventions (for example, symbols, units)	limited effectiveness; unable to communicate clearly	some effectiveness; communicates with some clarity	considerable effectiveness; communicates clearly	a high degree of effectiveness; communicates clearly and precisely

Master 5.6**To Parents and Adults at Home ...**

Your child's class is starting a mathematics unit on fractions, ratios, and percents.

In this unit, your child will:

- Relate mixed numbers and improper fractions.
- Compare mixed numbers and fractions.
- Use ratios for part-to-part and part-to-whole comparisons.
- Explore equivalent ratios.
- Explore percents.
- Relate percents to fractions and decimals.

Fractions, ratios, and percents are used daily in many different situations. Encourage your child to find examples in the world outside the classroom. For example, the advertising section of newspapers is one place to find fractions and percents. Ask your child to explain what each fraction or percent means, given its context.

If you are making salad dressing or preparing juice from concentrate, have your child name the ratio of oil to vinegar or water to concentrate. Then ask him or her to name the ratio if the recipe were doubled or tripled.

Name _____ Date _____

Master 6.1

Unit Rubric: Geometry and Measurement

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding by explaining and/or demonstrating how to: <ul style="list-style-type: none"> – construct and compare various triangles – determine the perimeter of a polygon, the area of a rectangle, and the volume of a rectangular prism 	may be unable to demonstrate or explain how to: <ul style="list-style-type: none"> – construct and compare various triangles – determine perimeter of a polygon; area of a rectangle; volume of a rectangular prism 	partially able to demonstrate or explain how to: <ul style="list-style-type: none"> – construct and compare various triangles – determine perimeter of a polygon; area of a rectangle; volume of a rectangular prism 	able to demonstrate and explain how to: <ul style="list-style-type: none"> – construct and compare various triangles – determine perimeter of a polygon; area of a rectangle; volume of a rectangular prism 	in various contexts, appropriately demonstrates and explains how to: <ul style="list-style-type: none"> – construct and compare various triangles – determine perimeter of a polygon; area of a rectangle; volume of a rectangular prism
Procedural Knowledge				
Accurately: <ul style="list-style-type: none"> – constructs various triangles in different orientations – describes and compares regular and irregular polygons – applies formulas for calculating perimeter (polygon); area (rectangle); volume (rectangular prism) 	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> – constructing various triangles – describing and comparing regular and irregular polygons – applying formulas for: perimeter (polygon); area (rectangle); volume (prism) 	partially accurate; frequent minor errors or omissions in: <ul style="list-style-type: none"> – constructing various triangles – describing and comparing regular and irregular polygons – applying formulas for: perimeter (polygon); area (rectangle); volume (prism) 	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> – constructing various triangles – describing and comparing regular and irregular polygons – applying formulas for: perimeter (polygon); area (rectangle); volume (prism) 	accurate; no errors or omissions in: <ul style="list-style-type: none"> – constructing various triangles – describing and comparing regular and irregular polygons – applying formulas for: perimeter (polygon); area (rectangle); volume (prism)
Problem-Solving Skills				
Selects and uses appropriate strategies to solve problems involving triangles and polygons	does not select and use appropriate strategies to solve problems successfully	with limited help, selects and uses some strategies to solve problems with partial success	selects and uses appropriate strategies to solve problems successfully	selects and uses appropriate strategies to solve problems with a high degree of success
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology	does not 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

Master 6.3

**Performance Assessment Rubric:
Puzzle Mania!**

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding by explaining and justifying solutions	shows very limited understanding; inappropriate explanations	shows limited understanding; gives appropriate but incomplete explanations	shows understanding; gives reasonable explanations	shows thorough understanding; gives effective and detailed explanations
Procedural Knowledge				
Uses attributes to identify shapes Completes tables accurately Calculates and compares perimeter, area, and volume	limited accuracy; major errors or omissions in: – identifying shapes – completing tables – calculating perimeter, area, volume	somewhat accurate; several minor errors in: – identifying shapes – completing tables – calculating perimeter, area, volume	generally accurate; few errors or omissions in: – identifying shapes – completing tables – calculating perimeter, area, volume	accurate; no errors in: – identifying shapes – completing tables – calculating perimeter, area, volume
Problem-Solving Skills				
Chooses and carries out appropriate strategies to solve the problems Uses appropriate strategies to create and solve a problem	chooses and carries out a limited range of appropriate strategies resulting in unsuccessful solutions for most parts of the problem does not adequately create and solve a problem	chooses and carries out some appropriate strategies, resulting in successful solutions for some parts of the problem partially successful in creating and solving a new problem (problem may be very basic or have some flaws)	chooses and carries out appropriate strategies, resulting in successful solutions for most parts of the problem uses appropriate and successful strategies to create and solve a new problem	chooses and carries out effective strategies, resulting in successful solutions for all or almost all parts of the problem uses effective, and often innovative, strategies to create and solve a relatively complex or challenging problem
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology	does not 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 _____

Master 6.6

To Parents and Adults at Home ...

Your child's class is starting a mathematics unit on geometry and measurement. In this unit, the children will explore concepts related to triangles and other polygons, perimeter, area, and volume.

In this unit, your child will:

- Name and sort triangles by their side lengths, angle measures, and angle types.
- Construct triangles given side lengths and/or angle measures.
- Sort polygons into sets of regular and irregular polygons, and into sets of convex or concave polygons.
- Demonstrate congruence.
- Develop and apply formulas to determine:
 - the perimeters of polygons
 - the area of rectangles
 - the volume of rectangular prisms.

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

- Cut cardboard strips of different lengths, then explore different shapes that can be made from them. Compare the angles that result.
- Look for and identify as many 2-D shapes of different types as you can in your environment. Encourage your child to name each type of shape, and to tell how the shapes are alike and different.
- Find the length and width of rectangular-shaped items in your home, such as a table top and the screen of a computer monitor. Have your child find the area and perimeter of each rectangle.
- Compare the volumes of different rectangular prisms in your home, such as a cereal box and a recycling bin.

Master 7.1

Unit Rubric: Data Analysis and Probability

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding of data analysis and probability by: <ul style="list-style-type: none"> – choosing and designing appropriate data collection methods – choosing and creating appropriate graphs for discrete and continuous data – comparing theoretical and experimental probabilities 	limited understanding; may be unable to: <ul style="list-style-type: none"> – choose and design appropriate data collection methods – choose and create appropriate graphs for discrete and continuous data – compare theoretical and experimental probabilities 	some understanding; partially able to: <ul style="list-style-type: none"> – choose and design appropriate data collection methods – choose and create appropriate graphs for discrete and continuous data – compare theoretical and experimental probabilities 	shows understanding; able to: <ul style="list-style-type: none"> – choose and design appropriate data collections methods – choose and create appropriate graphs for discrete and continuous data – compare theoretical and experimental probabilities 	thorough understanding; in various contexts, appropriately: <ul style="list-style-type: none"> – chooses and designs appropriate data collection methods – chooses and creates appropriate graphs for discrete and continuous data – compares theoretical and experimental probabilities
Procedural Knowledge				
Accurately: <ul style="list-style-type: none"> – collects and records data – constructs line graphs and graphs of discrete data – conducts and records probability experiments 	limited accuracy; major errors or omissions in: <ul style="list-style-type: none"> – collecting and recording data – constructing line graphs and graphs of discrete data – conducting and recording probability experiments 	partially accurate; frequent minor errors or omissions in: <ul style="list-style-type: none"> – collecting and recording data – constructing line graphs and graphs of discrete data – conducting and recording probability experiments 	generally accurate; few errors or omissions in: <ul style="list-style-type: none"> – collecting and recording data – constructing line graphs and graphs of discrete data – conducting and recording probability experiments 	accurate; no errors or omissions in: <ul style="list-style-type: none"> – collecting and recording data – constructing line graphs and graphs of discrete data – conducting and recording probability experiments
Problem-Solving Skills				
Selects and uses appropriate strategies to: <ul style="list-style-type: none"> – design appropriate data collection methods (surveys, experiments, databases, electronic media) to answer questions – draw conclusions based on graphs – calculate theoretical and experimental probabilities 	does not select and use appropriate strategies to: <ul style="list-style-type: none"> – design appropriate data collection methods (surveys, experiments, databases, electronic media) to answer questions – draw conclusions based on graphs – calculate theoretical and experimental probabilities 	with limited help, selects and uses some strategies, with partial success, to: <ul style="list-style-type: none"> – design appropriate data collection methods (surveys, experiments, databases, electronic media) to answer questions – draw conclusions based on graphs – calculate theoretical and experimental probabilities 	selects and uses appropriate strategies to successfully: <ul style="list-style-type: none"> – design appropriate data collection methods (surveys, experiments, databases, electronic media) to answer questions – draw conclusions based on graphs – calculate theoretical and experimental probabilities 	selects and uses appropriate strategies, with a high degree of success, to: <ul style="list-style-type: none"> – design appropriate data collection methods (surveys, experiments, databases, electronic media) to answer questions – draw conclusions based on graphs – calculate theoretical and experimental probabilities
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology	does not 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

Master 7.3

**Performance Assessment Rubric:
Alien Encounters!**

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding by appropriately explaining: – choice of graph – conclusions based on a graph – probability of scoring points – predictions	shows very limited understanding; inappropriate explanations of: – choice of graph – conclusions based on a graph – probability of scoring points – predictions	shows limited understanding; gives appropriate but incomplete explanations of: – choice of graph – conclusions based on a graph – probability of scoring points – predictions	shows understanding; gives appropriate explanations of: – choice of graph – conclusions based on a graph – probability of scoring points – predictions	shows thorough understanding; gives detailed and precise explanations of: – choice of graph – conclusions based on a graph – probability of scoring points – predictions
Procedural Knowledge				
Accurately: – constructs graph (with labels) – finds, expresses, and compares theoretical and experimental probabilities	limited accuracy; major errors or omissions in: – constructing graph (with labels) – finding, expressing, and comparing theoretical and experimental probabilities	somewhat accurate; several minor errors in: – constructing graph (with labels) – finding, expressing, and comparing theoretical and experimental probabilities	generally accurate; few errors or omissions in: – constructing graph (with labels) – finding, expressing, and comparing theoretical and experimental probabilities	accurate; no errors in: – constructing graph (with labels) – finding, expressing, and comparing theoretical and experimental probabilities
Problem-Solving Skills				
Chooses and carries out appropriate strategies to solve the problems	chooses and carries out a limited range of appropriate strategies, resulting in unsuccessful solutions for most parts of the problem	chooses and carries out some appropriate strategies, resulting in successful solutions for some parts of the problem	chooses and carries out appropriate strategies, resulting in successful solutions for most parts of the problem	chooses and carries out effective strategies, resulting in successful solutions for all or almost all parts of the problem
Communication				
Presents work and explanations clearly, using appropriate mathematical terminology	does not 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

Master 7.6**To Parents and Adults at Home ...**

Your child's class is starting a mathematics unit on data analysis and probability. These important branches of mathematics help us make informed decisions in such diverse aspects of everyday life as playing games, making major purchases, voting in elections, and choosing medical treatments.

In this unit, your child will:

- Gather data by designing and conducting surveys and experiments.
- Gather data from databases and electronic media.
- Choose and create appropriate graphs for different types of data.
- Solve problems based on the information displayed in graphs.
- Calculate and compare theoretical and experimental probabilities.

Data analysis and probability are an important part of a student's mathematical experience. People use their data analysis skills to interpret data displays in the news, in books they read, and at work. Probability is used in playing games as well as in weather reports and many other areas where predictions are used.

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

- Draw your child's attention to survey results you notice in the news. If possible, discuss the wording of the questions. Do they seem designed to gather unbiased results?
- Ask your child to find different types of graphs in newspapers, magazines, or on the Internet. Discuss the reasons for presenting data in different ways.
- Play games of chance with dice, spinners, or cards. Talk about how probability might affect your game.

Master 8.1

Unit Rubric: Transformations

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding by explaining, demonstrating, and/or modelling: <ul style="list-style-type: none"> – that a 2-D shape and its transformation image are congruent – successive transformations – combinations of different transformations 	may be unable to explain, demonstrate, or model: <ul style="list-style-type: none"> – that a 2-D shape and its transformation image are congruent – successive transformations – combinations of different transformations 	partially able to demonstrate or explain: <ul style="list-style-type: none"> – that a 2-D shape and its transformation image are congruent – successive transformations – combinations of different transformations 	able to demonstrate and explain: <ul style="list-style-type: none"> – that a 2-D shape and its transformation image are congruent – successive transformations – combinations of different transformations 	in various contexts, appropriately demonstrates and explains: <ul style="list-style-type: none"> – that a 2-D shape and its transformation image are congruent – successive transformations – combinations of different transformations
Procedural Knowledge				
Accurately draws and describes: <ul style="list-style-type: none"> – 2-D shapes in the first quadrant of a Cartesian plane – images after combinations of transformations 	limited accuracy; major errors or omissions in drawing and describing: <ul style="list-style-type: none"> – 2-D shapes in the first quadrant of a Cartesian plane – images after combinations of transformations 	partially accurate; frequent minor errors or omissions in drawing and describing: <ul style="list-style-type: none"> – 2-D shapes in the first quadrant of a Cartesian plane – images after combinations of transformations 	generally accurate; few errors or omissions in drawing and describing: <ul style="list-style-type: none"> – 2-D shapes in the first quadrant of a Cartesian plane – images after combinations of transformations 	accurate; no errors or omissions in drawing and describing: <ul style="list-style-type: none"> – 2-D shapes in the first quadrant of a Cartesian plane – images after combinations of transformations
Problem-Solving Skills				
Selects and uses appropriate strategies to: <ul style="list-style-type: none"> – create a design by transforming one or more shapes – analyse a design and identify the shapes and transformations used to create it 	does not select and use appropriate strategies to successfully: <ul style="list-style-type: none"> – create a design using transformations – analyse a design to identify shapes and transformations used 	with limited help, selects and uses some strategies with partial success to: <ul style="list-style-type: none"> – create a design using transformations – analyse a design to identify shapes and transformations used 	selects and uses appropriate strategies to successfully: <ul style="list-style-type: none"> – create a design using transformations – analyse a design to identify shapes and transformations used 	selects and uses appropriate strategies with a high degree of success to: <ul style="list-style-type: none"> – create a design using transformations – analyse a design to identify shapes and transformations used
Communication				
Records and explains reasoning and procedures clearly and completely, including appropriate terminology	does not 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

Master 8.3

**Performance Assessment Rubric:
Art and Architecture**

	Not Yet Adequate	Adequate	Proficient	Excellent
Conceptual Understanding				
Shows understanding by explaining how he/she used transformations in a building pattern	shows very limited understanding of transformations; inappropriate explanation	shows limited understanding of transformations; gives appropriate but incomplete explanation	shows understanding of transformations; gives appropriate explanation	shows thorough understanding of transformations; gives detailed and precise explanation
Procedural Knowledge				
Accurately identifies transformations in patterns	limited accuracy; major errors or omissions in identifying transformations	somewhat accurate; several minor errors in identifying transformations	generally accurate; few errors or omissions in identifying transformations	accurate and complete; correctly identifies all the transformations
Problem-Solving Skills				
Chooses and carries out appropriate strategies (for example, sketching, measuring) to use transformations to create a pattern for a building	chooses and carries out a limited range of appropriate strategies; does not successfully create a pattern using transformations	chooses and carries out some appropriate strategies; partially successful in creating a simple pattern using transformations (some flaws)	chooses and carries out appropriate strategies; successfully creates a pattern using transformations	chooses and carries out effective strategies; successfully creates a relatively complex pattern using a variety of transformations
Communication				
Communicates procedures and explanations clearly, using appropriate mathematical terminology Presents sketches and pattern clearly, using appropriate geometric conventions	does not present explanations clearly, uses few appropriate mathematical terms pattern is unclear	presents explanations with some clarity, using some appropriate mathematical terms presents pattern with some clarity	presents explanations clearly, using appropriate mathematical terms presents pattern clearly	presents explanations precisely, using a range of appropriate mathematical terms presents pattern clearly and precisely

Name _____ Date _____

Master 8.6

To Parents and Adults at Home ...

Your child's class is starting a mathematics unit on motion geometry called transformations.

Working on transformational geometry helps students develop spatial sense. Many everyday activities, such as map reading, giving directions, and following assembly instructions, rely on these skills.

In this unit, your child will:

- Identify and draw shapes on a grid.
- Apply and describe single transformations of a shape on a grid.
- Draw and describe the image of a shape after two or more transformations.
- Use transformations to create designs.
- Explore transformations using technology.

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

- Draw a map of your neighbourhood on a grid. Identify the coordinates of 3 different locations.
- Play games where coordinate grids are used (such as *Battleship*®).
- Look for designs or patterns that show transformations (translations, reflections, rotations) or combinations of transformations; for example, patterns on wallpaper, tiled floors, clothing, and art. Have your child describe the transformations he or she sees.
- Hold an object in front of a mirror. Have your child compare the object to its reflection image.