

Scope:

Math 6 is the first of three intermediate math courses at Scotia-Glenville Middle School. Students should have successfully met all NYS Math K-5 standards prior to beginning this course (Course 1). Math 6 is a course designed to help students develop higher-level thinking and problem solving skills. We cover a variety of math topics that encourage and enhance both written and verbal communication skills. Key topics include Patterns and Variables, Number theory and Fractions, Adding, Subtracting, Multiplying and Dividing Fractions, Ratios, Proportions and Percents, Data and Graphs, Geometry and Measurement, Integers, Probability and Equations and Inequalities.

Assessment:

Assessment comes in a variety of forms and wherever possible should be used to reflect and enhance the teaching and learning process that occurs in a classroom. Assessment should not be seen as a separate activity, but as an integral part of the teaching and learning process. Alternative assessments apply to any and all assessments that differ from multiple choice, timed, one-shot approaches that characterize most standardized and classroom assessment. Authentic assessments are assessments that engage students in applying knowledge and skills in the same way they are used in the real-world. Performance assessment is a broad term, encompassing many of the characteristics of both authentic and alternative assessments.

As this course of study demonstrates, it is clear that no single type of assessment could provide an accurate measurement of the learning experience. Students should have the best opportunity to demonstrate their understanding of the learning experience. Therefore, it is suggested that a variety of data gathering methods be used such as objective tests, observations, products, written reports, performances and a collection of student works.

The **TIME** column offers a suggested time-line and order so that all topics listed in the **CONTENT/SKILLS** column are feasibly met. It is understood that times will need adjustments as the course develops. The **APPLICATION/PROJECT IDEAS** column offers suggestions and sources for the teacher. This column should be updated periodically to keep current and as new ideas are generated. The **CHAPTER/SPECIAL NOTES** column coordinates topics by chapter and allows for any special notes that may need to go with the topic.

5th Grade Post-March Topics to be reviewed at the beginning of the year as warm-ups

- Translate simple verbal expressions into algebraic expressions
- Substitute assigned values into variable expressions and evaluate using order of operations
- Solve and explain simple one-step equations using inverse operations involving whole numbers
- Plot points to form basic geometric shapes (identify and classify)
- Calculate perimeter of basic geometric shapes drawn on a coordinate plane
- Create a sample space and determine the probability of a single event, given a simple experiment.
- Solve simple one-step equations using basic whole-number facts
- Identify and plot points in the first quadrant.
- List the possible outcomes for a single-event experiment.
- Record experiment results using fractions/ratios

Please Note:

Italics—Indicates topics that are to be covered in Fifth Grade—Post March

BOLD—Indicates topics to be covered in Sixth Grade—Pre March

Normal—Indicates topics to be covered in Sixth Grade—Post March

6th Grade Math Standards – Content Strands

*Post-March 5th Grade Topics
to be covered on 6th grade test*

Time Frame	Content/ Skills	Key Idea/Performance Indicator	Chapters/ Special Notes
5 th Grade Post-March	<p><u>Algebraic Expressions</u></p> <ul style="list-style-type: none"> ➤ Variables and Expressions ➤ Writing Expressions ➤ Using Equations ➤ Solving Equations 	<p><u>Algebra Strand</u></p> <ul style="list-style-type: none"> • 5.A.2 Translate simple verbal expressions into algebraic expressions • 5.A.3 Substitute assigned values into variable expressions and evaluate using order of operations • 5.A.4 Solve simple one-step equations using basic whole-number facts • 5.A.5 Solve and explain simple one-step equations using inverse operations involving whole numbers 	Review
5 th Grade Post-March	<p><u>Coordinate Plane</u></p> <ul style="list-style-type: none"> ➤ Plotting points ➤ Calculate perimeter of shapes 	<p><u>Geometry Strand</u></p> <ul style="list-style-type: none"> • 5.G.12 Identify and plot points in the first quadrant • 5.G.13 Plot points to form basic geometric shapes (identify and classify) • 5.G.14 Calculate perimeter of basic geometric shapes drawn on a coordinate plane (rectangles and shapes composed of rectangles having sides with integer lengths and parallel to the axes) 	Review
5 th Grade Post-March	<p><u>Probability</u></p> <ul style="list-style-type: none"> ➤ Outcomes ➤ Ratios ➤ Sample Space 	<p><u>Statistics and Probability Strand</u></p> <ul style="list-style-type: none"> • 5.S.5 List the possible outcomes for a single-event experiment • 5.S.6 Record experiment results using fractions/ratios • 5.S.7 Create a sample space and determine the probability of a single event, given a simple experiment (i.e., rolling a number cube) 	Review

6th Grade Math Standards – Content Strands

6th Grade Pre- March and Post March Topics

Time Frame	Content/Skills	Key Idea/Performance Indicator	Chapters/ Special Notes
<u>Ongoing</u>	<u>Estimation</u>	<u>Number Sense and Operations Strand</u> <ul style="list-style-type: none"> 6.N.27 Justify the reasonableness of answers using estimation (including rounding) 	<ul style="list-style-type: none"> Throughout all chapters
<u>September</u> Chapter 1 & 2 (4 weeks)	<u>Understanding Whole Numbers</u> <ul style="list-style-type: none"> Write whole numbers Compare whole numbers <u>Number Properties</u> <ul style="list-style-type: none"> Commutative Associative Distributive Identity Zero Property Order of Operations <u>Patterns and Variables</u> <ul style="list-style-type: none"> Patterns Variables Expressions One-step equations Solve equations with inverse operations Exponents 	<u>Number Sense and Operations Strand</u> <ul style="list-style-type: none"> 6.N.1 Read and write whole numbers to trillions 6.N.2 Define and identify the commutative and associative properties of addition and multiplication 6.N.3 Define and identify the distributive property of multiplication over addition 6.N.4 Define and identify the identity and inverse properties of addition and multiplication 6.N.5 Define and identify the zero property of multiplication 6.N.22 Evaluate numerical expressions using order of operations (may include exponents of two and three) 6.N.23 Represent repeated multiplication in exponential form 6.N.24 Represent exponential form as repeated multiplication 6.N.25 Evaluate expressions having exponents where the power is an exponent of one, two, or three <u>Algebra Strand</u> <ul style="list-style-type: none"> 6.A.1 Translate two-step verbal expressions into algebraic expressions 6.A.2 Use substitution to evaluate algebraic expressions with <u>one</u> variable (may include exponents of one, two and three) 	<ul style="list-style-type: none"> Chapter 1 deals primarily with decimals which should be review Lesson 1-1 teaches writing and comparing large whole numbers Lesson 1-5 teaches the number properties of addition (commutative, associative, identity). Supplemental materials may be used instead. Lesson 1-7 teaches the number properties of multiplication (commutative, associative, identity). Supplemental materials may be used instead. Zero property is addressed in PH NYS supplement page 24. Order of operations is addressed in Lesson 1-10 Distributive property is covered in Chapter 2.

6th Grade Math Standards – Content Strands

6th Grade Pre- March and Post March Topics

Time Frame	Content/Skills	Key Idea/Performance Indicator	Chapters/ Special Notes
<u>October-December</u> Chapters 3, 4 & 5 (10 weeks)	<u>Number Theory and Fractions</u> <ul style="list-style-type: none"> ➤ Divisibility ➤ Prime Numbers ➤ LCM ➤ GCF ➤ Add/subtract fractions & mixed numbers ➤ Multiply/divide fractions & mixed numbers ➤ Fractions and decimals ➤ Customary units 	<u>Number Sense and Operations Strand</u> <ul style="list-style-type: none"> • 6.N.16 Add and subtract fractions with unlike denominators • 6.N.17 Multiply and divide fractions with unlike denominators • 6.N.18 Add, subtract, multiply, and divide mixed numbers with unlike denominators • 6.N.19 Identify the multiplicative inverse (reciprocal) of a number • 6.N.20 Represent fractions as terminating or repeating decimals • 6.N.21 Find multiple representations of rational numbers (fractions, decimals, and percents 0 to 100) <u>Measurement Strand</u> <ul style="list-style-type: none"> • 6.M.2 Identify customary units of capacity (cups, pints, quarts and gallons) • 6.M.3 Identify equivalent customary units of capacity (cups to pints, pints to quarts, and quarts to gallons) 	
<u>December/January</u> Chapter 6 (3 weeks)	<u>Ratio, Proportion, Percents</u> <ul style="list-style-type: none"> ➤ Write ratios ➤ Unit rates ➤ Solve proportions ➤ Cross products ➤ Find percentage of a number 	<u>Number Sense and Operations Strand</u> <ul style="list-style-type: none"> • 6.N.6 Understand the concept of rate • 6.N.7 Express equivalent ratios as a proportion • 6.N.8 Distinguish the difference between rate and ratio • 6.N.9 Solve proportions using equivalent fractions • 6.N.10 Verify the proportionality using the product of the means equals the product of the extremes • 6.N.11 Read, write and identify percents of a whole(0% to 100%) • 6.N.12 Solve percent problems involving percent, rate and base • 6.N.26 Estimate a percent of quantity (0% to 100%) <u>Algebra Strand</u> <ul style="list-style-type: none"> • 6.A.5 Solve simple proportions within context (Post March) 	

6th Grade Math Standards – Content Strands

6th Grade Pre- March and Post March Topics

Time Frame	Content/Skills	Key Idea/Performance Indicator	Chapters/ Special Notes
<p style="text-align: center;"><u>January</u></p> <p style="text-align: center;">Chapter 7 (2 weeks)</p>	<p><u>Data and Graphs</u></p> <ul style="list-style-type: none"> ➤ Read graphs ➤ Interpret graphs ➤ Mean ➤ Median ➤ Mode ➤ Range 	<p><u>Statistics and Probability Strand</u></p> <ul style="list-style-type: none"> • 6.S.5 Determine the mean, mode and median for a given set of data • 6.S.6 Determine the range for a given set of data • 6.S.7 Read and interpret graphs • 6.S.8 Justify predictions made from data • 6.S.3 Construct Venn diagrams to sort data (<i>Post-March</i>) • 6.S.2 Record data in a frequency table (<i>Post-March</i>) • 6.S.4 Determine and justify the most appropriate graph to display a given set of data (pictograph, bar graph, line graph, histogram, or circle graph)(<i>Post March</i>) 	<p>Included are some Post-March topics, makes sense to introduce them here and review again after March.</p> <ul style="list-style-type: none"> • Frequency tables & appropriate graphs are post-March topics. Could be introduced with Chapter 7 and reviewed again after March. • Venn diagram covered in PH NYS supplement pg.23
<p style="text-align: center;"><u>January/February</u></p> <p style="text-align: center;">Chapter 8 & 9 (4 weeks)</p>	<p><u>Tools of Geometry</u></p> <ul style="list-style-type: none"> ➤ Points ➤ Lines ➤ Angles ➤ Polygons ➤ Similar Figures ➤ Symmetry <p><u>Geometry & Measurement</u></p> <ul style="list-style-type: none"> ➤ Perimeter ➤ Area ➤ Circles ➤ Volume 	<p><u>Algebra Strand</u></p> <ul style="list-style-type: none"> • 6.A.6 Evaluate formulas for given input values (area, circumference, volume, distance, temperature, interest, etc.) <p><u>Geometry Strand</u></p> <ul style="list-style-type: none"> • 6.G.1 Calculate the length of corresponding sides of similar triangles, using proportional reasoning • 6.G.2 Determine the area of triangles and quadrilaterals (squares, rectangles, rhombi, and trapezoids) and develop formulas • 6.G.3 Use a variety of strategies to find the area of regular and irregular polygons • 6.G.4 Determine the volume of rectangular prisms by counting cubes and develop the formula • 6.G.5 Identify radius, diameter/ chords and central angles of a circle • 6.G.6 Understand the relationship between the diameter and radius of a circle • 6.G.7 Determine the area and circumference of a circle, using the appropriate formula • 6.G.8 Calculate the area of a sector of a circle, given the measure of a central angle and the radius of the circle • 6.G.9 Understand the relationship between the circumference and the diameter of a circle 	<ul style="list-style-type: none"> • Chapter 8 should be mostly review except for similar figures • Area of a sector of a circle is covered in PH NYS supplement page 33

6th Grade Math Standards – Content Strands

6th Grade Pre- March and Post March Topics

Time Frame	Content/Skills	Key Idea/Performance Indicator	Chapters/ Special Notes
<p style="text-align: center;"><u>January/February</u></p> <p style="text-align: center;">Chapter 8 & 9 (Continued) (4 weeks)</p>	<p><u>Geometry & Measurement</u></p> <ul style="list-style-type: none"> ➤ Metric Units ➤ Volume 	<p><u>Measurement Strand</u></p> <ul style="list-style-type: none"> • 6.M.1 Measure capacity and calculate volume of a rectangular prism • 6.M.2 Identify customary units of capacity (cups, pints, quarts and gallons) • 6.M.3 Identify equivalent customary units of capacity (cups to pints, pints to quarts, and quarts to gallons) • 6.M.4 Identify metric units of capacity (liter /milliliter) • 6.M.5 Identify equivalent metric units of capacity (milliliter to liter and liter to milliliter) • 6.M.6 Determine the tool and technique to measure with an appropriate level of precision: capacity • 6.M.7 Estimate volume, <u>area</u>, and <u>circumference</u> (see figures identified in geometry strand) • 6.M.8 Justify the reasonableness of estimates • 6.M.9 Determine personal references for capacity 	
<p style="text-align: center;"><u>February</u></p> <p style="text-align: center;">Chapter 10 (3 weeks)</p>	<p><u>Integers</u></p> <ul style="list-style-type: none"> ➤ Absolute value ➤ Comparing integers ➤ Ordering integers ➤ Graphing ➤ Area of polygon on coordinate plane 	<p><u>Number Sense and Operations Strand</u></p> <ul style="list-style-type: none"> • 6.N.13 Define absolute value and determine the absolute value of rational numbers (including positive and negative) • 6.N.14 Locate rational numbers on a number line (including positive and negative) • 6.N.15 Order rational numbers (including positive and negative) <p><u>Geometry Strand (con't)</u></p> <ul style="list-style-type: none"> • 6.G.10 Identify and plot points in all four quadrants(Post March topic) • 6.G.11 Calculate the area of basic polygons drawn on a coordinate plane (rectangles and shapes composed of rectangles having sides <u>with integer lengths</u>)(Post March topic) 	<ul style="list-style-type: none"> • Lesson 1 in chapter 10 covers all the Pre-March material • Lesson 6 covers graphing which is a post-March standard • PH NYS supplement page 35 covers area on a coordinate plane • 3 weeks were allotted to allow for review for the NYS assessment • Operations with integers(most of Chapter 10) could be taught during the post-March period

6th Grade Math Standards – Content Strands

6th Grade Pre- March and Post March Topics

Time Frame	Content/Skills	Key Idea/Performance Indicator	Chapters/ Special Notes
<p><u>March/April</u> Chapter 11 (2 weeks)</p>	<p><u>Exploring Probability</u></p> <ul style="list-style-type: none"> ➤ Experimental ➤ Tree diagrams ➤ Counting Principle ➤ Permutations ➤ Independent events ➤ Compound events 	<p><u>Statistics and Probability Strand</u></p> <ul style="list-style-type: none"> • 6.S.1 Develop the concept of sampling when collecting data from a population and decide the best method to collect data for a particular question • 6.S.2 Record data in a frequency table • 6.S.4 Determine and justify the most appropriate graph to display a given set of data (pictograph, bar graph, line graph, histogram, or circle graph) • 6.S.9 List possible outcomes for compound events • 6.S.10 Determine the probability of dependent events • 6.S.11 Determine the number of possible outcomes for a compound event by using the fundamental counting principle and use this to determine the probabilities of events when the outcomes have equal probability 	
<p><u>May</u> Chapter 12 (1 week)</p>	<p><u>Equations and Inequalities</u></p> <ul style="list-style-type: none"> ➤ Two-step equations 	<p><u>Algebra Strand</u></p> <ul style="list-style-type: none"> • 6.A.2 Use substitution to evaluate algebraic expressions with two variables (may include exponents of one, two, and three) • 6.A.3 Translate two-step verbal sentences into algebraic equations • 6.A.4 Solve and explain two-step equations involving whole numbers using inverse operations 	<ul style="list-style-type: none"> • Lesson 12-1 covers two-step equations • PH NYS supplement covers translating sentences into algebraic equations • Remainder of the chapter may be covered in post-March period if time allows • Operations with integers may also be covered during the post-March period if time allows