NJCCCS AREA: Math

North Brunswick Township Public Schools

Adaptive Math 6-8 for Small Group Instruction Special Education

Acknowledgements

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Board Adoption_____

New Jersey Core Curriculum Content Standard Area: Math

Topic/Course: Adapted Math Grades 6-8 **Grade:** 6-8 **Date** 07/2008

Essential Question NJCCC Standard	NJCCCS – Skills/Objectives/ Areas of Focus	Instructional Strategies Activities/ Materials / Technology/ Interdisciplinary Connections/ Cultural Diversity	Modifications ESL / Special Education Academic Support/ G&T	Assessments Formative Summative Benchmarks	Pacing
Standard 4.1 **Number Sense & Operations** All students will develop number sense and will perform standard numerical operations and estimations on all types of numbers in a variety of ways.					
Strand A. Number Sense How do mathematical ideas interconnect and build on one another to produce a coherent whole? How can we compare and contrast numbers? **4.1.6-8.A.1-8** One representation may sometimes be more helpful than another; and, used together, multiple representations give a fuller understanding of a problem. A quantity can be represented numerically in various ways. Problem solving depends upon choosing wise ways. Numeric fluency includes both the understanding of and the ability to appropriately use numbers.	1. Develop and apply number theory concepts in problem solving situations: primes, factors, multiples, Common multiples, common factors Least common multiple, greatest common factor 2. Use real-life experiences, physical materials, and technology to construct meanings for numbers: All integers; All fractions as part of a whole, as subset of a set, as a location on a number line, and as divisions of whole numbers; All decimals. 3. Recognize the decimal nature of United States currency and compute with money. 4. Understand and use whole-number percents between 1 and 100 in a variety of situations. 5. Use whole numbers, fractions, and decimals	1. Use Prime Time CMP2 a. 1.1 Factor Game b. 1.3 Product Game c. 1.3 Finding Multiples d. 2.1 Finding Patterns e. 2.2 Evens & Odds f. 2.3 Classifying Numbers 2. Use Bits & Pieces 1 CMP2 a. 1.1 Fundraising Fractions b. 1.2 Folding Fraction Strips c. 1.3 Measuring Progress d. 2.1 Equal Shares e. 2.2 Equivalent Fractions f. 2.3 Comparing Fractions g. 3.1 Smaller Parts h. 3.4 Fractions to Decimals 3. 4. Use Bits & Pieces 1 CMP2 a. 4.1 Who's The Best b. 4.2 Choosing the Best 5. Encompassed in Bits & Pieces 1 Problems 3.1 & 3.4	• Read questions aloud • Leveled small groups • Multiplication chart • Fact family strips • Calculator (enlarged for visually impaired) • Fraction chart • Fraction tiles • Equivalent chart of key fractions, decimals, percents • Simplified vocabulary • Picture dictionary • Flip book glossary	Oral responses Homework Class Practice Quizzes Tests Cooperative work	6 weeks- 2 weeks for factors & multiples; 2 weeks for fractions; 2 weeks for equal fractions, decimals, percents

	to represent equivalent forms of the same number. 6. Compare and order numbers.	6. Encompassed in Bits & Pieces 1 Problems 2.3 & 3.4			
Strand B. **Numerical Operations** What makes a computational strategy both effective and efficient? How do operations affect numbers? How do mathematical representations reflect the needs of society across cultures? **4.1.6-8.B.1-8** Computational fluency includes understanding the meaning and the appropriate use of numerical operations. The magnitude of numbers affects the outcome of operations on them. In many cases, there are multiple algorithms for finding a mathematical solution, and those algorithms are frequently associated with different cultures.	1. Recognize the appropriate use of each arithmetic operation in problem situations. 2. Construct, use, and explain procedures for performing calculations with fractions and decimals with: Pencil-and-paper; Mental math; Calculator. 3. Find squares and cubes of whole numbers. 4. Understand and use the various relationships among operations and properties of operations. 5. Understand and apply the standard algebraic order of operations for the four basic operations, including appropriate use of parentheses.	1. & 2. Use Houghton-Mifflin Mathematics Level 4 a. Chapter 7 Lessons 7-11 and Enrichment b. Chapter 8 Lessons 7,8,10,11 c. Find the percent of a number (tax, discount) 3. Mini-lesson on common squares and cubes (4,9,16,…) 4. Compare multiplication and division problems. Identify key words. 5. This will be address later in 4th MP with standard 4.3.	• Use Houghton-Mifflin Level 3 to differentiate • Single-step problems rather than multi-step problems • List of key words for each operation • List of steps for problem-solving	Oral responses Homework Class Practice Quizzes Tests Cooperative work	4 weeks

Strand C. **Estimations** How can we decide when to use an exact answer and when to use an estimate? **4.1.C.6-8.1-4** Context is critical when using estimation.	Determine the reasonableness of an answer by estimating the result of an operation	• Use Houghton-Mifflin Mathematics Level 4 Chapter 8 Lesson 9 • Estimate large numbers (Is it closer to 1 million or 1 thousand?); Round large numbers; Round to the nearest dollar or cent		Oral responses Homework Class Practice Quizzes Tests Cooperative work	1 week

Standard 4.2 **Geometry & Measurement** All students will develop spatial sense and the ability to use geometric properties, relationships, and measurement to model, describe and analyze phenomena.					
Strand A. **Geometric Properties** How can spatial relationships be described by careful use of geometric language? How do geometric relationships help to solve problems and/or make sense of phenomena? **4.2.6-8.A.1-8** Geometric properties can be used to construct geometric figures. Geometric relationships provide a means to make sense of a variety of phenomena.					2 weeks
Strand B. **Transforming Shapes** What situations can be analyzed using transformations and symmetries? **4.2.6-8.B.1-2** Shape and area can be conserved during mathematical transformations.					2 weeks

Strand C. **Coordinate Geometry** How can we best represent and verify geometric/algebraic relationships? **4.2.6-8.C.1-2** Reasoning and/or proof can be used to verify or refute conjectures or theorems in geometry. Coordinate geometry can be used to represent and verify geometric/algebraic relationships.					2 weeks
Strand D. **Units of Measurement** How can measurements be used to solve problems? **4.2.6-8.D.1-6** Everyday objects have a variety of attributes, each of which can be measured in many ways. What we measure affects how we measure it. Measurements can be used to describe, compare, and make sense of phenomena.					1 week
Strand E. **Measuring Geometric Objects** How can measurements be used to solve problems?					2 weeks

4.2.6-8.E.1-4 Everyday objects have a variety of attributes, each of which can be measured in many ways. What we measure affects how we measure it. Measurements can be used to describe, compare, and make sense of phenomena.					

Standard 4.4 **Data Analysis, Probability, and Discrete Mathematics** All students will develop an understanding of the concepts and techniques of data analysis, probability, and discrete mathematics, and will use them to model situations, solve problems, and analyze and draw appropriate inferences from data.					
Strand A. **Data Analysis (Statistics**) How can the collection, organization, interpretation, and display of data be used to answer questions? **4.4.6-8.A.1-4** The message conveyed by the data depends on how the data is collected, represented, and summarized. The results of a statistical investigation can be used to support or refute an argument.					4 weeks
Strand B. **Probability** How can experimental and theoretical probabilities be used to make predictions or draw conclusions? **4.4.6-8.B.1-6** Experimental results tend to approach theoretical probabilities after a large number of trials.					3 weeks
Strand C. **Discrete Mathematics-Systematic Listing and Counting** How can attributes be used					1 week

to classify data/objects? What is the best way to solve this? What counting strategy works best here? **4.4.6-8.C.1-3** Grouping by attributes (classification) can be used to answer mathematical questions. Algorithms can effectively and efficiently be used to quantify and interpret discrete information.					
Strand D. **Discrete Mathematics** - **Vertex-Edge Graphs and Algorithms** How can visual tools such as networks (vertex-edge graphs) be used to answer questions? How can algorithmic thinking be used to solve problems? **4.4.6-8.D.1-3** Optimization is finding the best solution within given constraints. Algorithms can effectively and efficiently be used to quantify and interpret discrete information.		Given a map of 4 towns, how many routes are there? Which route is shortest?			1 week

Standard 4.3 **Patterns & Algebra** All students will represent and analyze relationships among variable quantities and solve problems involving patterns, functions, and algebraic concepts and processes.					
Strand C. **Modeling** How can we use mathematical models to describe physical relationships? How can we use physical models to clarify mathematical relationships? **4.3.6-8.C.1-2** Mathematical models can be used to describe and quantify physical relationships. Physical models can be used to clarify mathematical relationships.		Use chips, etc. to model patterns Use hands-on equations			2 weeks
Strand A. **Patterns and Algebra** How can change be best represented mathematically? How can patterns, relations, and functions be used as tools to best describe and help explain real-life situations? **4.3.6-8.A.1** The symbolic language of algebra is used to communicate and generalize the patterns in					2 weeks

mathematics. Algebraic representation can be used to generalize patterns and relationships.					
Strand B. **Functions and Relationships** How are patterns of change related to the behavior of functions? **4.3.6-8.B.1-2** Patterns and relationships can be represented graphically, numerically, symbolically, or verbally.		Create tables of linear (ex. Making $5/hour babysitting) and exponential (ex. Getting twice as many pennies each consecutive day) functions and then graph the data.			1 week
Strand D. **Procedures** What makes an algebraic algorithm both effective and efficient? **4.3.6-8.D.1-5** Algebraic and numeric procedures are interconnected and build on one another to produce a coherent whole. Reasoning and/or proof can be used to verify or refute conjectures or theorems in algebra		Solve one and two step variable equations; simplify variable expressions			2 weeks

Standard 4.5 Mathematical Processes
All students will use mathematical processes of problem solving, communication, connections, reasoning, representations, and technology to solve problems and communicate mathematical ideas.