

Northpoint Horizons

CAVS (Content Academic Vocabulary System) Correlated to the New Jersey State Mathematics Core Curriculum Content Standards

Grade 4

This document provides a sampling of the extensive math directives offered throughout the *CAVS* program that meet the New Jersey Mathematics Core Curriculum Content Standards.

4.0 Mathematics Core Curriculum Content Standards	<i>CAVS</i> Math Grades 3-5 Teacher's Guide Examples/Lessons
4.1 Number and Numerical 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.	
Number Sense	
1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 4 pertain to these sets of numbers as well). <ul style="list-style-type: none"> • Whole numbers through millions • Commonly used fractions (denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 16) as part of a whole, as a subset of a set, and as a location on a number line • Decimals through hundredths 	<i>How can you put numbers in order?</i> Lesson 1 – TG p. 1 Weather Report - Activity Placemat 1 Reader Card – Lesson 1 <i>How do numbers tell a story?</i> Lesson 2 – TG p. 7 Reader Card – Lesson 2 Concept Poster 1
2. Demonstrate an understanding of place value concepts.	<i>How can you put numbers in order?</i> Lesson 1 – TG p. 1 Weather Report - Activity Placemat 1 Reader Card – Lesson 1
3. Demonstrate a sense of the relative magnitudes of numbers.	<i>How do we count large amounts?</i> Lesson 3 – TG p. 13 Reader Card – Lesson 1, 3 Concept Poster 1
4. Understand the various uses of numbers. <ul style="list-style-type: none"> • Counting, measuring, labeling (e.g., numbers on 	<i>How do numbers tell a story?</i> Lesson 2 – TG p. 7

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baseball uniforms), locating (e.g., Room 235 is on the second floor)	Reader Card – Lesson 2 Concept Poster 1
5. Use concrete and pictorial models to relate whole numbers, commonly used fractions, and decimals to each other, and to represent equivalent forms of the same number.	<i>How do you show that a number is not a whole?</i> Lesson 5 – TG p. 25 Reader Card – Lesson 5
6. Compare and order numbers.	<i>How can you put numbers in order?</i> Lesson 1 – TG p. 1 Weather Report - Activity Placemat 1 Reader Card – Lesson 1 Vocabulary Cards – Numbers and Operations - Lessons 1 - 6
7. Explore settings that give rise to negative numbers. <ul style="list-style-type: none"> • Temperatures below 0°, debts • Extension of the number line 	<i>How can you put numbers in order?</i> Lesson 1 – TG p. 1 Weather Report - Activity Placemat 1 Reader Card – Lesson 1
Numerical Operations	
1. Develop the meanings of the four basic arithmetic operations by modeling and discussing a large variety of problems. <ul style="list-style-type: none"> • Addition and subtraction: joining, separating, comparing • Multiplication: repeated addition, area/array • Division: repeated subtraction, sharing 	<i>How can you put numbers in order?</i> Lesson 1 – TG p. 1 Reader Card – Lesson 1 <i>How do numbers tell a story?</i> Lesson 2 – TG p. 7 Reader Card – Lesson 2 <i>How do we count large amounts?</i> Lesson 3 – TG p. 13 <i>How do we make equal groups?</i> Lesson 4 – TG p. 19 Concept Poster 1
2. Develop proficiency with basic multiplication and division number facts using a variety of fact strategies (such as "skip counting" and "repeated subtraction") and then commit them to memory.	<i>How do we count large amounts?</i> Lesson 3 – TG p. 13 <i>How do we make equal groups?</i> Lesson 4 – TG p. 19
3. Construct, use, and explain procedures for performing whole number calculations and with: <ul style="list-style-type: none"> • Pencil-and-paper • Mental math • Calculator 	<i>How can you put numbers in order?</i> Lesson 1 – TG p. 1 Reader Card – Lesson 1 <i>How do numbers tell a story?</i> Lesson 2 – TG p. 7

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	Reader Card – Lesson 2 <i>How do we count large amounts?</i> Lesson 3 – TG p. 13 <i>How do we make equal groups?</i> Lesson 4 – TG p. 19 Activity Placemats 1 through 4
4. Use efficient and accurate pencil-and-paper procedures for computation with whole numbers. <ul style="list-style-type: none"> • Addition of 3-digit numbers • Subtraction of 3-digit numbers • Multiplication of 2-digit numbers • Division of 3-digit numbers by 1-digit numbers 	<i>How can you put numbers in order?</i> Lesson 1 – TG p. 1 Reader Card – Lesson 1 <i>How do numbers tell a story?</i> Lesson 2 – TG p. 7 Reader Card – Lesson 2 <i>How do we count large amounts?</i> Lesson 3 – TG p. 13 <i>How do we make equal groups?</i> Lesson 4 – TG p. 19 Activity Placemats 1 through 4
5. Construct and use procedures for performing decimal addition and subtraction.	<i>How else can you show less than one whole?</i> Lesson 6 – TG p. 31 Colorful Creations - Activity Placemat 6 Reader Card – Lesson 6
6. Count and perform simple computations with money. <ul style="list-style-type: none"> • * Standard dollars and cents notation 	<i>How do you show that a number is not a whole?</i> Lesson 5 – TG p. 25 Comparing Coins – Activity Placemat 5 Reader Card – Lesson 5
7. Select pencil-and-paper, mental math, or a calculator as the appropriate computational method in a given situation depending on the context and numbers.	<i>How can you put numbers in order?</i> Lesson 1 – TG p. 1 <i>How do numbers tell a story?</i> Lesson 2 – TG p. 7 <i>How do we count large amounts?</i> Lesson 3 – TG p. 13 <i>How do we make equal groups?</i> Lesson 4 – TG p. 19 Concept Posters 1, 2, 3 Weather Report – Activity Placemat 1 Pick a Counter - Activity Placemat 2

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	Arranging Chairs - Activity Placemat 3 Vacation Plans - Activity Placemat 4
8. Check the reasonableness of results of computations.	<i>How can you solve problems?</i> Lesson 24 – TG p. 139 See Record Sheet 24 Is it Relevant? – Activity Placemat 24 Reader Card – Lesson 24 See Make Connections
9. Use concrete models to explore addition and subtraction with fractions.	<i>How else can you show less than one whole?</i> Lesson 6 – TG p. 31 Colorful Creations – Activity Placemat 6 Reader Card – Lesson 6
10. Understand and use the inverse relationships between addition and subtraction and between multiplication and division.	<i>How can you put numbers in order?</i> Lesson 1 – TG p. 1 Reader Card – Lesson 1 <i>How do numbers tell a story?</i> Lesson 2 – TG p. 7 Reader Card – Lesson 2 <i>How do we count large amounts?</i> Lesson 3 – TG p. 13 <i>How do we make equal groups?</i> Lesson 4 – TG p. 19 Activity Placemats 1 through 4
Estimation	
1. Judge without counting whether a set of objects has less than, more than, or the same number of objects as a reference set.	CAVS K-2 Math <i>How Do Numbers Work Together?</i> Lesson 3 - TG p. 13
2. Construct and use a variety of estimation strategies (e.g., rounding and mental math) for estimating both quantities and the results of computations.	<i>How can you solve problems?</i> Lesson 24 – TG p. 139 See Record Sheet 24 Is it Relevant? – Activity Placemat 24 Reader Card – Lesson 24 See Make Connections
3. Recognize when an estimate is appropriate, and understand the usefulness of an estimate as distinct from an exact answer.	<i>How can you solve problems?</i> Lesson 24 – TG p. 139 See Record Sheet 24 Is it Relevant? – Activity Placemat 24 Reader Card – Lesson 24 See Make Connections

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4. Use estimation to determine whether the result of a computation (either by calculator or by hand) is reasonable.	Concept Poster 8 <i>How can you solve problems?</i> Lesson 24 – TG p. 139 See Record Sheet 24 Is it Relevant? – Activity Placemat 24 Reader Card – Lesson 24 See Make Connections Concept Poster 8
4.2 Geometry and Measurement All students will develop spatial sense and the ability to use geometric properties, relationships, and measurement to model, describe and analyze phenomena.	
Geometric Properties	
1. Identify and describe spatial relationships of two or more objects in space. <ul style="list-style-type: none"> • Direction, orientation, and perspectives (e.g., which object is on your left when you are standing here?) • Relative shapes and sizes • Shadows (projections) of everyday objects 	<i>How do we describe shapes with straight sides?</i> Lesson 16 – TG p. 91 Making 4-Sided Shapes – Activity Placemat 16
2. Use properties of standard three-dimensional and two-dimensional shapes to identify, classify, and describe them. <ul style="list-style-type: none"> • Vertex, edge, face, side, angle • 3D figures - cube, rectangular prism, sphere, cone, cylinder, and pyramid • 2D figures - square, rectangle, circle, triangle, quadrilateral, pentagon, hexagon, octagon • Inclusive relationships - squares are rectangles, cubes are rectangular prisms 	<i>How do we describe shapes with straight sides?</i> Lesson 16 – TG p. 91 Making 4-Sided Shapes – Activity Placemat 16 <i>How do we draw different shapes?</i> Lesson 18 – TG p. 103 What's the Same? – Activity Placemat 18 Reader Card – Lesson 18 <i>What attributes do solid shapes share?</i> Lesson 19 – TG p. 109 What am I? – Activity Placemat 19 Concept Posters 5, 6
3. Identify and describe relationships among two-dimensional shapes. <ul style="list-style-type: none"> • Congruence • Lines of symmetry 	<i>How do we draw different shapes?</i> Lesson 18 – TG p. 103 What's the Same? – Activity Placemat 18 Reader Card – Lesson 18 Concept Poster 5
4. Understand and apply concepts involving lines, angles, and	<i>How do we describe shapes with straight sides?</i>

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circles. <ul style="list-style-type: none"> • Point, line, line segment, endpoint • Parallel, perpendicular • Angles - acute, right, obtuse • Circles - diameter, radius, center 	Lesson 16 – TG p. 91 Making 4-Sided Shapes – Activity Placemat 16 Concept Poster 5
5. Recognize, describe, extend, and create space-filling patterns.	<i>How do we describe shapes with straight sides?</i> Lesson 16 – TG p. 91 Making 4-Sided Shapes – Activity Placemat 16 <i>How do we describe shapes with three sides?</i> Lesson 17 – TG p. 97 Making Straw Triangles – Activity Placemat 17 Concept Poster 5
Transforming Shapes	
1. Use simple shapes to cover an area (tessellations).	<i>How can you change shapes?</i> Lesson 20 – TG p. 115 What's in a Name? - Activity Placemat 20
2. Describe and use geometric transformations (slide, flip, turn).	<i>How can you change shapes?</i> Lesson 20 – TG p. 115 What's in a Name? - Activity Placemat 20 Reader Card – Lesson 20
3. Investigate the occurrence of geometry in nature and art.	Concept Posters 3, 5
Coordinate Geometry	
1. Locate and name points in the first quadrant on a coordinate grid.	<i>How can you use models?</i> Lesson 8 – TG p. 43 What Does it Make? – Activity Placemat 8 Reader Card – Lesson 8 Vocabulary Cards – Lesson 8
2. Use coordinates to give or follow directions from one point to another on a map or grid.	<i>How can you use models?</i> Lesson 8 – TG p. 43 What Does it Make? – Activity Placemat 8 Reader Card – Lesson 8
Units of Measurement	
1. Understand that everyday objects have a variety of attributes, each of which can be measured in many ways.	<i>How do you measure?</i> Lesson 11 – TG p. 61

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	Choose a Tool to Measure. – Activity Placemat 11 Reader Card – Lesson 11
<p>2. Select and use appropriate standard units of measure and measurement tools to solve real-life problems</p> <ul style="list-style-type: none"> • Length - fractions of an inch (1/8, 1/4, 1/2), mile, decimeter, kilometer • Area - square inch, square centimeter • Volume - cubic inch, cubic centimeter • Weight - ounce • * Capacity - fluid ounce, cup, gallon, milliliter 	<p><i>How do you measure?</i> Lesson 11 – TG p. 61 Reader Card – Lesson 11</p> <p><i>How do you measure flat shapes?</i> Lesson 12 – TG p. 67 Reader Card – Lesson 12</p> <p><i>How do you measure solid shapes?</i> Lesson 13 – TG p. 73</p> <p><i>What are units of measurement?</i> Lesson 14 – TG p. 79 Activity Placemats 10, 11, 12, 13, 14 Vocabulary Cards 10 - 14</p>
<p>3. Develop and use personal referents to approximate standard units of measure (e.g., a common paper clip is about an inch long).</p>	<p><i>What do you use to measure things?</i> Lesson 10 – TG p. 55 Measuring a Jump – Activity Placemat 10</p> <p><i>What are units of measurement?</i> Lesson 14 – TG p. 79 Choose a Tool to Measure – Activity Placemat 11 Guess and Measure – Activity Placemat 14</p>
<p>4. Incorporate estimation in measurement activities (e.g., estimate before measuring).</p>	<p><i>What do you use to measure things?</i> Lesson 10 – TG p. 55 Measuring a Jump – Activity Placemat 10</p> <p><i>How do you measure?</i> Lesson 11 – TG p. 61 Choose a Tool to Measure. – Activity Placemat 11</p> <p><i>How do you measure flat shapes?</i> Lesson 12 – TG p. 67 Measuring Space – Activity Placemat 12</p>
<p>5. Solve problems involving elapsed time.</p>	<p><i>How long does it take?</i> Lesson 15 – TG p. 85 Passing Time – Activity Placemat 15 Reader Card – Lesson 15</p>
Measuring Geometric Objects	
<p>1. Determine the area of simple two</p>	<p><i>How do you measure flat shapes?</i></p>

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	Lesson 12 – TG p. 67 Measuring Space – Activity Placemat 12
2. Distinguish between perimeter and area and use each appropriately in problem	<i>How do you measure flat shapes?</i> Lesson 12 – TG p. 67 Measuring Space – Activity Placemat 12
3. Measure and compare the volume of three	<i>How do you measure solid shapes?</i> Lesson 13 – TG p. 73 Measuring Volume – Activity Placemat 13
4.3 Patterns and Algebra All students will represent and analyze relationships among variable quantities and solve problems involving patterns, functions, and algebraic concepts and processes.	
Patterns	
1. Recognize, describe, extend, and create patterns. <ul style="list-style-type: none"> • Descriptions using words, number sentences/expressions, graphs, tables, variables (e.g., shape, blank, or letter) • Sequences that stop or that continue infinitely • Whole number patterns that grow or shrink as a result of repeatedly adding, subtracting, multiplying by, or dividing by a fixed number (e.g., 5, 8, 11, ... or 800, 400, 200, ...) • Sequences can often be extended in more than one way (e.g., the next term after 1, 2, 4, ... could be 8, or 7, or ...) 	<i>What is a pattern?</i> Lesson 7 – TG p. 37 Reader Card – Lesson 7 Vocabulary Cards – Patterns and Functions – Lessons 7 - 9
Functions and Relationships	
1. Use concrete and pictorial models to explore the basic concept of a function. <ul style="list-style-type: none"> • Input/output tables, T-charts • Combining two function machines • Reversing a function machine 	The concepts in Lessons 7–9 will allow students to understand basic functions. <i>How can you use models?</i> Lesson 8 – TG pp. 43
Modeling	
1. Recognize and describe change in quantities. <ul style="list-style-type: none"> • Graphs representing change over time (e.g., 	<i>Why do you need information?</i> Lesson 21 – TG p. 121

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temperature, height) <ul style="list-style-type: none"> • How change in one physical quantity can produce a corresponding change in another (e.g., pitch of a sound depends on the rate of vibration) 	Sorting Circles – Activity Placemat 21 City Populations - Activity Placemat 22
2. Construct and solve simple open sentences involving any one operation (e.g., $3 \times 6 = _$, $n = 15 \div 3$, $3 \times _ = 0$, $16 - c = 7$).	<i>How do numbers tell a story?</i> Lesson 2 – TG p. 7 Reader Card – Lesson 2 <i>How can math rules help you solve equations?</i> Lesson 9 – TG P. 49 Quick Thinking – Activity Placemat - 9
Procedures	
1. Understand, name, and apply the properties of operations and numbers. <ul style="list-style-type: none"> • Commutative (e.g., $3 \times 7 = 7 \times 3$) • Identity element for multiplication is 1 (e.g., $1 \times 8 = 8$) • Associative (e.g., $2 \times 4 \times 25$ can be found by first multiplying either 2×4 or 4×25) • Division by zero is undefined • Any number multiplied by zero is zero. 	<i>How can math rules help you solve equations?</i> Lesson 9 – TG P. 49 Quick Thinking – Activity Placemat – 9 Reader Card – Lesson 9
2. Understand and use the concepts of equals, less than, and greater than in simple number sentences. <ul style="list-style-type: none"> • Symbols (= , < , >) 	<i>How can you put numbers in order?</i> Lesson 1 – TG p. 1 Reader Card – Lesson 1 CAVS K-2 Math <i>How Do Numbers Work Together?</i> Lesson 3 - TG p. 13
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.	
Data Analysis or Statistics	
1. Collect, generate, organize, and display data in response	<i>Why do you need information?</i>

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<p>to questions, claims, or curiosity.</p> <ul style="list-style-type: none"> Data collected from the school environment 	<p>Lesson 21 – TG p. 121 Sorting Circles – Activity Placemat 21 <i>How do you compare facts and information?</i> Lesson 22 – TG p. 127 City Populations – Activity Placemat 22 Reader Card – Lesson 22</p>
<p>2. Read, interpret, construct, analyze, generate questions about, and draw inferences from displays of data.</p> <ul style="list-style-type: none"> Pictograph, bar graph, line plot, line graph, table Average (mean), most frequent (mode), middle term (median) 	<p><i>Why do you need information?</i> Lesson 21 – TG p. 121 Sorting Circles – Activity Placemat 21 <i>How do you compare facts and information?</i> Lesson 22 – TG p. 127 City Populations – Activity Placemat 22 Reader Card – Lesson 22</p>
Probability	
<p>1. Use everyday events and chance devices, such as dice, coins, and unevenly divided spinners, to explore concepts of probability.</p> <ul style="list-style-type: none"> Likely, unlikely, certain, impossible, improbable, fair, unfair More likely, less likely, equally likely Probability of tossing "heads" does not depend on outcomes of previous tosses 	<p><i>Do you think it will happen?</i> Lesson 23 – TG p. 133 Making Predictions – Activity Placemat 23 Reader Card – Lesson 23 Vocabulary Cards – Lesson 23</p>
<p>2. Determine probabilities of simple events based on equally likely outcomes and express them as fractions.</p>	<p><i>Do you think it will happen?</i> Lesson 23 – TG p. 133 Making Predictions – Activity Placemat 23 Reader Card – Lesson 23 Vocabulary Cards – Lesson 23</p>
<p>3. Predict probabilities in a variety of situations (e.g., given the number of items of each color in a bag, what is the probability that an item picked will have a particular color).</p> <ul style="list-style-type: none"> What students think will happen (intuitive) Collect data and use that data to predict the probability (experimental) Analyze all possible outcomes to find the 	<p><i>Do you think it will happen?</i> Lesson 23 – TG p. 133 Making Predictions – Activity Placemat 23 Reader Card – Lesson 23 Vocabulary Cards – Lesson 23</p>

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probability (theoretical)	
Discrete Mathematics—Systematic Listing and Counting	
1. Represent and classify data according to attributes, such as shape or color, and relationships. <ul style="list-style-type: none"> • Venn diagrams • Numerical and alphabetical order 	<i>Why do you need information?</i> Lesson 21 – TG p. 121 Sorting Circles – Activity Placemat 21 Reader Card – Lesson 21
2. Represent all possibilities for a simple counting situation in an organized way and draw conclusions from this representation. <ul style="list-style-type: none"> • Organized lists, charts, tree diagrams • Dividing into categories (e.g., to find the total number of rectangles in a grid, find the number of rectangles of each size and add the results) 	<i>How do you compare facts and information?</i> Lesson 22 – TG p. 127 City Populations – Activity Placemat 22 Reader Card – Lesson 22
Discrete Mathematics—Vertex-Edge Graphs and Algorithms	
1. Follow, devise, and describe practical sets of directions (e.g., to add two 2-digit numbers).	<i>How can you solve problems?</i> Lesson 24 – TG p. 139 See Record Sheet 24 Reader Card – Lesson 24 See Make Connections Concept Poster 8
2. Play two-person games and devise strategies for winning the games (e.g., "make 5" where players alternately add 1 or 2 and the person who reaches 5, or another designated number, is the winner).	<i>Do you think it will happen?</i> Lesson 23 – TG p. 133 Making Predictions – Activity Placemat 23 Reader Card – Lesson 23
3. Explore vertex-edge graphs and tree diagrams. <ul style="list-style-type: none"> • Vertex, edge, neighboring/adjacent, number of neighbors • Path, circuit (i.e., path that ends at its starting point) 	<i>Why do you need information?</i> Lesson 21 – TG p. 121 Sorting Circles – Activity Placemat 21 Reader Card – Lesson 21
4. Find the smallest number of colors needed to color a map or a graph.	<i>How else can you show less than one whole?</i> Lesson 6 – TG pp. 31
4.5 Mathematical Processes All students will use mathematical processes of problem solving, communication, connections, reasoning,	

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representations, and technology to solve problems and communicate mathematical ideas.	
Problem Solving	
1. Learn mathematics through problem solving, inquiry, and discovery.	The Activity Placemats , lessons 1 through 24, provide for students to engage in problem solving, inquiry and discovery. They are learning mathematical reasoning in both written (Journal and Record) and verbal (Share) forms. All lessons in the Teacher's Guide provide for students to share their findings in the Discuss the Activity section.
2. Solve problems that arise in mathematics and in other contexts (cf. workplace readiness standard 8.3). <ul style="list-style-type: none"> • Open-ended problems • Non-routine problems • Problems with multiple solutions • Problems that can be solved in several ways 	The Concept Posters (1 through 8) depict real-life situations allowing students to generate and solve problems that include open-ended problems, problems with multiple solutions, multiples methods of solutions, and the possibility of non-routine problems. The teacher-led discussion engages the students to problem solve real-life scenarios that build background knowledge for future workplace readiness.
3. Select and apply a variety of appropriate problem-solving strategies (e.g., "try a simpler problem" or "make a diagram") to solve problems.	<i>How can you solve problems?</i> Lesson 24 – TG p. 139 See Record Sheet 24 Reader Card – Lesson 24 See Make Connections Concept Poster 8
4. Pose problems of various types and levels of difficulty.	Concept Posters 1 through 8 The Build Background section of the Teachers Guide (lessons 1 – 24) help the teacher review the Concept Posters with some scripted questions (various types and levels) for all students.
5. Monitor their progress and reflect on the process of their problem solving activity.	Step 5 (Evaluate) of the CAVS 5 Easy Steps to Success program allows the teacher to monitor progress of all students through constant evaluation processes (Lesson Review black-line masters). Students are able to reflect on their own progress by completing the Observe, Record, and Share sections of the Activity Placemats (lessons 1 – 24). Record and Share Sheets are available for every lesson and found in the teacher's guide.
Communication	
1. Use communication to organize and clarify their mathematical thinking.	The Activity Placemats , lessons 1 through 24, provide for students to express their mathematical reasoning in both

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<ul style="list-style-type: none"> • Reading and writing • Discussion, listening, and questioning 	written (Journal and Record) and verbal (Share) forms. All lessons in the Teacher's Guide provide for students to share their findings in the Discuss the Activity section.
2. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.	The CAVS 3 – 5 Concept Posters (1 through 8) allow for whole group discussions pertaining to different mathematical situations. These posters serve as visuals to help the teacher engage the students. The students are encouraged to explore, examine, and make verbal observation about each scene.
3. Analyze and evaluate the mathematical thinking and strategies of others.	All Activity Placemats allow students to work with a partner or in a small group for purposes of collaboration. Each placemat has students Record their findings and then Share with each other by answering questions about alternate problem solving strategies and alternate findings.
4. Use the language of mathematics to express mathematical ideas precisely.	Content Academic Vocabulary System (CAVS) stresses vocabulary throughout every lesson with the use of Vocabulary Cards , the Picture Dictionary , the Reader Cards Level B , and the Concept Web pages provide for vocabulary reinforcement with each lesson. Vocabulary words, appropriate for a Word Wall , are also provided with each lesson in the Teacher's Guide. The Lesson Review and Transparency sheets are specific to current vocabulary words and they can be sent home for additional practice.
Connections	
1. Recognize recurring themes across mathematical domains (e.g., patterns in number, algebra, and geometry).	Concept Posters 1 through 8
2. Use connections among mathematical ideas to explain concepts (e.g., two linear equations have a unique solution because the lines they represent intersect at a single point).	Every Lesson on the Reader Cards provides for students to formally discuss questions with their partners in the Make Connections section. Their Math Journals are used to record their responses and observations.
3. Recognize that mathematics is used in a variety of contexts outside of mathematics.	Concept Posters 1 through 8
4. Apply mathematics in practical situations and in other disciplines.	Weather Report – Activity Placemat 1 Vacation Plans – Activity Placemat 4 Passing Time – Activity Placemat 15
5. Trace the development of mathematical concepts over	N/A

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time and across cultures (cf. world languages and social studies standards).	
6. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	Every Lesson on the Reader Cards provides for students to formally discuss questions with their partners in the Make Connections section. Math Journals are used to record their responses and observations.
Reasoning	
1. Recognize that mathematical facts, procedures, and claims must be justified.	<i>How can math rules help you solve equations?</i> Lesson 9 – TG p. 49 Reader Card – Lesson 9 Vocabulary Cards – Patterns and Functions – Lessons 7- 9
2. Use reasoning to support their mathematical conclusions and problem solutions.	<i>How can you solve problems?</i> Lesson 24 – TG p. 139 See Record Sheet 24 Reader Card – Lesson 24 See Make Connections
3. Select and use various types of reasoning and methods of proof.	<i>How can you solve problems?</i> Lesson 24 – TG p. 139 See Record Sheet 24 Reader Card – Lesson 24 See Make Connections
4. Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their problem solutions.	<i>How can you solve problems?</i> Lesson 24 – TG p. 139 See Record Sheet 24 Reader Card – Lesson 24 See Make Connections Concept Poster 8
5. Make and investigate mathematical conjectures. <ul style="list-style-type: none"> • Counterexamples as a means of disproving conjectures • Verifying conjectures using informal reasoning or proofs. 	<i>Do you think it will happen?</i> Lesson 23 – TG p. 133 Reader Card – Lesson 23
6. Evaluate examples of mathematical reasoning and determine whether they are valid.	<i>Do you think it will happen?</i> Lesson 23 – TG p. 133 Reader Card – Lesson 23
Representations	
1. Create and use representations to organize, record, and communicate mathematical ideas. <ul style="list-style-type: none"> • Concrete representations (e.g., base-ten blocks or algebra tiles) • Pictorial representations (e.g., diagrams, charts, 	<i>Why do you need information?</i> Lesson 21 – TG p. 121 <i>How do you compare facts and information?</i> Lesson 22 – TG p. 127 Reader Card – Lesson 22

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<p>or tables)</p> <ul style="list-style-type: none"> • Symbolic representations (e.g., a formula) • Graphical representations (e.g., a line graph) 	<p>Students are asked to Record their findings on all Activity Placemats (1 – 24) that accompany the lessons.</p>
<p>2. Select, apply, and translate among mathematical representations to solve problems.</p>	<p><i>Why do you need information?</i> Lesson 21 – TG p. 121 Sorting Circles – Activity Placemat 21</p>
<p>3. Use representations to model and interpret physical, social, and mathematical phenomena.</p>	<p><i>Why do you need information?</i> Lesson 21 – TG p. 121 Sorting Circles – Activity Placemat 21 <i>How do you compare facts and information?</i> Lesson 22 – TG p. 127 City Populations – Activity Placemat 22 Reader Card – Lesson 22</p>
<p>Technology</p>	
<p>1. Use technology to gather, analyze, and communicate mathematical information.</p>	<p>The skills and practices taught in each lesson of CAVS can easily transition to computer, calculator, and technology laboratory. Students transfer learning from the lesson to the technology process after achievement of appropriate skill level.</p>
<p>2. Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information.</p>	
<p>3. Use graphing calculators and computer software to investigate properties of functions and their graphs.</p>	
<p>4. Use calculators as problem-solving tools (e.g., to explore patterns, to validate solutions).</p>	
<p>5. Use computer software to make and verify conjectures about geometric objects.</p>	
<p>6. Use computer-based laboratory technology for mathematical applications in the sciences.</p>	