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Curriculum Overview

A. Major Content Emphasis

Kindergarten

Numeration – number recognition, counting, one-to-one correspondence, order, odd/even, parts of a whole or group, etc.

Data and Chance – bar graphs, tally marks, probability, Venn Diagrams, etc

Geometry – 2D shapes, 3D shapes, symmetry, spatial vocabulary, right/left orientation, etc.

Operations and Computations – addition, subtraction, number stories, mental mathematics, estimation, operation symbols, etc.

Patterns and Functions – number and visual patterns, properties, sequences, function rules, etc.

Money – coin/bill recognition and exchanges, dollar and cent notations, etc.

Clocks and Calendars – monthly calendar, analog and digital clocks, sequences of events, estimations of time, etc

Measurement – linear measurement, temperature, capacity weight, time, volume, etc.

First Grade

Numeration – rote counts by 1 and 5, count and compare money amounts, base-10 block structures, relation symbol cards (<, >, or =), fraction concepts, etc.

Data and Chance – record data with tally marks, record "dice roll" data, bar graph of student heights, flip a penny data, analyze "inches grown" data table, etc.

Geometry – draw shapes, geoboards, cover shapes with pattern blocks, relationships, label fractional parts of geometric figures, construct polygons, etc.

Operations and Computations – number lines, change-to-more/less, addition with dominoes, counting up, tic-tac-toe addition problems, etc.

Patterns, Functions and Algebra – pattern blocks, sort dominoes, odd/even number patterns, fill in 100-number grid, "What's my rule?", solve number grid puzzles, etc.

Measurement – estimate relative lengths, cent notation, measure to nearest inch, explore area by counting units, compare capacities of three containers, how many inches grown, etc.

Reference Frames – begin dating work, read daily temperature, estimate time shown on an hour-hand only clock, introduce digital clocks and digital time notation, etc.

Second Grade

Numbers and Routines, Addition and subtraction facts, place value, money and time, 3-D and 2-D shapes, Whole number and operation stories.

Third Grade

Routines, Review, and Assessment, Adding and Subtracting with whole numbers, Linear Measures and Area, Multiplication and Division, place value in whole numbers and decimals, geometry, fractions, measurement and data, and probability.

Fourth Grade

Numeration; operations and computation; patterns, functions, and algebra; geometry; measurement and reference frames; and data and chance are the major content areas focused on in fifth grade, but more specifically that includes: naming and constructing geometric figures, using numbers and organizing data, multiplication and division; number sentences and algebra, decimals and their uses, big numbers, estimation, and computation, division; map reference frames; measures of angles, fractions and their uses; chance and probability, perimeter and area, percents, reflections and symmetry, 3-D shapes, weight, volume, and capacity, and rates

Fifth Grade

Numeration; operations and computation; patterns, functions, and algebra; geometry; measurement and reference frames; and data and chance are the major content areas focused on in fifth grade, but more specifically that includes: number theory, estimation and computation, geometry explorations, division, fractions, decimals, and percents, using data; addition and subtraction of fractions, exponents and negative numbers, fractions and ratios, coordinates, area, volume, and capacity, algebra concepts and skills, probability, ratios, and rates

Sixth Grade

Whole numbers, decimals and percents, fractions and rational numbers, rates, ratios and proportions, data and probability, geometry and constructions, measurements, and algebra

B. Topics of measurement

Kindergarten

Measurement has three sub-categories: 1) Measurement, 2) Money, and 3) Clocks and Calendars. Everyday Mathematics, as the series name implies, seeks to have students investigate issues of measurement in their daily lives. Activities include: children's height, children's weight, comparing lengths, measuring container volume, using a balance, comparing body height to objects, measure time, etc. Some of these activities can be related to science such as measuring the weight of water as a solid as compared to a liquid. The activities, overall, are very hands on and interactive.

First Grade

In first grade, students are introduced to more standardized forms of measurement. After using nonstandard forms of linear measure meant, they learn about the inch, 6" ruler, and measuring with a tape measure. They compare their personal "foot" to a standard foot. They also begin using base-10 blocks and extend their use of thermometers and clocks.

Second Grade

Measurement in the second grade curriculum in Everyday Mathematics covers measuring with yards and meters, linear measures, perimeter, measuring longer distances, area, capacity and weight. Students are introduced to ideas about measurement in the form of learning how to tell time in Unit 3. They also explore money and coin exchanges while learning about place value and that is a form of measurement.

Third Grade

Third grade does a unit that focuses on Linear Measurement and Area. They start by exploring the need for a standard unit of measure but participating in the "class shoe" unit of length activity. Students then learn how to use a ruler and round to the nearest inch, ½ inch and ¼ inch. Students are to review the U.S customary and metric units of length and to know the difference between an inch and a centimeter. Students then move on to explore perimeter and Area. They finally tackle measurement by measuring the diameter and circumference of circular objects. Students are encouraged to use geoboards, tape measurers, pattern blocks and rulers throughout the unit. They make good use of manipulatives to help emphasize the concepts.

Forth Grade

Measure objects to the nearest ½ centimeter, use a scale to convert a map measurement to the actual distance, measure to the nearest centimeter and millimeter, use a protractor to measure and draw angles, classify angles according to their measure, find the perimeter of a figure by adding measurements of the sides, create a scale drawing from measurements and a given scale, find the area of a figure, convert area measurements from one unit to another, develop a formula for area, estimate and measure weights in grams and ounces, and find the volume of rectangular prisms

Fifth Grade

Label fractions on a ruler, measure angles formed by intersecting lines and explore the relationships between their measures, estimate and measure angles, measure to find the sum of the angles in a polygon, use a map scales to estimate actual distances, classify and measure angles, measure length in metric and U.S. customary units, develop and apply formulas for finding area and volume, measure the diameter and circumference of a circle, use a formula to calculate the area of a circle, convert units of capacity to units of volume

Sixth Grade

The sixth grade text has a unit on measurement. Its main focus is on measuring area and volumes. The unit begins with units, particularly comparing the metric system and the U.S. Customary System. And there is work on converting units before getting to work on area and volume of different geometric shapes. There is then just a little bit of work with temperature and weight. The unit ends measuring and drawing angles, with a little work with latitude and longitude.

Topics of geometry

Kindergarten

This program seeks to build on the prior knowledge of students based on their understanding of their surroundings and informal ideas about geometric shapes.

To accomplish this, the program uses playing, tracing, drawing, and constructing. Students engage in activities such as: pattern blocks, right/left orientation using songs like Hokey Pokey, combining shapes to make designs, making geometric shapes with students' bodies, and games like I Spy. Students are encouraged to learn words to name geometric properties (sides, faces, corners), name shapes, and name geometric properties (inside, outside, above, below).

First Grade

Within first grade geometry, students continue to work with 2 dimensional shapes, 3 dimensional shapes, and symmetry and begin points, lines, and angles. They begin to do things like compare polygons and non-polygons, record geoboard shapes on dot paper, and draw line segments with a straightedge. The students also continue and extend their previous experiences drawing 2D shapes as well as constructing 2D and 3D shapes.

Second Grade

The second grade geometry is focused on 3-D and 2-D shapes. Student use attribute blocks to explore differences and similarities among them. Students will explore polygons and classify polygons to develop readiness for multiplication. The objective of this unit is to develop classification skills through hands-on activities. Children will observe similarities and differences among various shapes and explore special relationships. Quadrangles, Pyramids and line symmetry are introduced. Students are also able to compare and contrast 3-D shapes.

Third Grade

Everyday Mathematics explains that previous to third grade students have learned to progress from 3-D to 2-D and after reviewing those figures the order is reversed. Students in third grade will start with points, and then move into live segments, rays and lines. They will also explore the geometric figures that can be built from them such as angles, polygons, and frames for prisms and pyramids. Students learn through exploring various types of triangles, quadrangles, and polygons. In the geometry unit symmetry and congruence are also introduced.

Forth Grade

Names angles, classify quadrangles, identify properties of polygons and develop a definition for polygon, construct convex and concave polygons, explore the basic properties of reflections of 2-dimensional figures and line symmetry, draw reflected images, identify lines of symmetry, complete symmetric figures, and identify solids by their properties

Fifth Grade

Sort geometric shapes according to attributes, explore regular tessellations, classify and measure angles, build geometric figures from paper, compare properties of prisms, pyramids, cylinders, and cones

Sixth Grade

Everyday Mathematics sixth grade text has a whole unit on geometry. The unit begins with defining geometry and other important geometry terms. The students then learn about angles and lines and their relationship. The unit then moves onto talk about the different geometric shapes, such as polygons,

triangles, prisms, pyramids, circles, spheres, and others. The unit ends with discusses the proper way to construct and copying the different geometric shapes. The unit that follows talks about how to measure the figures.

Topics of statistics

Kindergarten

This program supports the notion that the most meaningful questions are based on real life problems in the classroom and ideas which are directly meaningful to students. To collect data, students may do surveys by asking classmates a question of the day and then graphing the results. When discussing graphs, this program suggests using open-ended questions like, "What did we find out?" They also suggest making the graphs with objects or slips of paper as manipulatives.

First Grade

Students continue to collect data by counting, conducting surveys, making tally charts and bar graphs, and recording data in tables/charts. In addition to these, first graders are introduced to making predictions about data, making a frequency table, and finding the range and median of data.

Second Grade

In second grade students are encouraged to estimate costs and participate in a "shopping activity" that briefly touches on the idea of supply and demand. There is not a direct connection to statistic in the second grade but Everyday Mathematics does try to make real world examples out of their math problems.

Third Grade

In Everyday Mathematics in third grade student's explorer graphing through a line graph. Students are asked to gather data on the length of day for several days, they will then translate their data to a graph and draw in appropriate points and lines to show their results. Students practice graphing different data and plotting it on graph paper. They also deal with bar charts to represent found data. Students will be familiar with place values in decimals.

Forth Grade

Find the minimum, maximum, range, and mode for a set of data, compare predicted and actual results from a random outcome experiment, solve probability problems, use percents to rank and compare data

Fifth Grade

Solve ratio problems involving ratios of part of a set to the whole set, analyze data from an experiment, explore the sources and reliability of a set of data, use ratios to examine trends in data

Sixth Grade

Statistics is only a small portion of the sixth grade mathematics text. There is a small unit on rates, ratios, and proportions. The unit defines the three concepts and provides examples. Also, there are problems to go along with each concept. There is also a small unit on data and probability. The unit begins with how to collect and organize data. There is also a section on different kinds of graphs, how to use them, and how to construct them.

C. Fractions prior to grade 4

Kindergarten

There are several ways in which this program includes the use of fractions. One activity it describes is using money and explain to children using quarters. Children also have a sense of fractions through fair sharing and can experience this through dividing food evenly. They can experience limitations of division fairness by trying to divide odd numbers. The series also includes the use of fraction stories and manipulative shapes to divide a whole.

First Grade

Students in first grade use fractions to examine parts of shapes including ½, 1/3, ¼, 1/6, and 1/8. The students will use images of shapes with shaded regions to express fractions.

Second Grade

In the Everyday Mathematics text for second grade the idea of fractions is reintroduced. Students review using manipulative the equal parts of one. Students learn that fractions can be a collection of things. They also go over what equivalent fractions are and use fraction cards to understand equivalent fractions. Students compare fractions and use fraction number stories to conceptualize fractions.

Third Grade

There is a unit of fractions in second grade that covers naming parts with fractions, exploring fractions, number line posters for fractions, equivalent fractions, comparing fractions, fractions greater than one, and fractions in numbers stories. Students have the opportunity to use several manipulatives in this unit including geobaords, pie charts showing 1/12, etc.

D. Decimals prior to grade 4

Kindergarten

Like fractions, decimals can be introduced with the use of money, but this program does not focus on decimals in the kindergarten level.

First Grade

First graders use decimals to express the number of dollars represented, but decimals are still not a main focus of first grade.

Second Grade

In second grade students learn about the concepts of decimals through money. Students will learn decimal notation for pennies and dimes followed by calculating money amounts with a calculator. Students will use money manipulatives to make change. In second grade students also learn place value with decimals. They use place value tools to understand where decimals belong. Students will also understand how to group with parentheses.

Third Grade

Decimals are introduced to students using base-10 blocks in third grade. Students use money and base 10- blocks to extend their understanding of decimal notation for tenths and hundredths. Students use grids (that are 100 squares representing ONE) that are shaded to represent a fraction or decimal. Students are taught the place value of tenths and hundredths and the exchange

between them. Students will also learn the decimal notation for metric measures and to convert from centimeters to meters. To practice with decimals students use numbers lines that cover decimals for example going from 0-0.08 or 0 .05-0.13. Students will make place value books that show tens, ones, tenths, hundredths, and thousandths to practice their decimal knowledge.

E. Technology incorporation

Kindergarten

This program recommends tool kits consisting of calculators, measuring tools, and manipulatives. Other devices such as digital clocks, scales, and boom-boxes for music are included in some activities.

First Grade

First graders use the same materials as are listed for kindergarteners. They expand their use of calculators to include "broken calculator puzzles," counting with calculators, simulating function machines, and timing a count.

Second and Third Grade:

Students use calculators, and teachers are encouraged to use graphing software to show charts and bar graphs. Students also learn to read both analog and digital clock to tell time.

Fourth Grade

The technology integration in the fourth grade version of Everyday Mathematics is almost non-existent. There are only two activities listed in both Volume 1 and Volume 2 combined. Both activities have students using the Internet. There is no creativity involved with the technology-integrated activities. Some of the activities in the lesson plans could use technology with some teacher creativity and modifying.

Fifth Grade

The technology integration in the fifth grade version of Everyday Mathematics is very weak. There are only four activities listed in both Volume 1 and Volume 2 combined. The use of technology does not seem particularly important in this textbook series probably because of marketing to teachers without technological resources available to them. All four of the technology links fore the fifth grade version of Everyday Mathematics are activities using the Internet. There does not seem to be other aspects of technology integrated into the lessons.

Sixth Grade

Students are encouraged to calculators through out the book. In fact, there is a small unit on basic operations, fractions and percent, and advanced operations on the calculator. In the unit about data collecting, students are taught how to use computer to understand spreadsheets on computers.

F. Problem solving incorporation

Everyday Mathematics believes that problem solving is a vital part of learning mathematics. They expect teacher to encourage students to use a variety of strategies when attacking a given problem and to explain those strategies. Some common strategies they recommend are: modeling with manipulatives, using a number line,

using a table, finding a pattern, listing possibilities, acting out the problem, working backwards, drawing a picture and using computation. Everyday Mathematics believes that problem solving is more than just word problems. They say, "Problem solving is a process of building a mathematical model of a situation and then reasoning with the model to draw conclusions about the situation" (p. 37). Every lesson has a problem solving activity for students to do. Some of the activities are better than others, but students are exposed to problem solving in each lesson. The steps involved in problem solving are not regarded as a separate part of the curriculum but is applied to all topics. They also say that problems which children do not have immediate solutions are the most productive. Everyday mathematics believes that "Lessons teach through problem solving, not just about problem solving".

G. Math and Science integration
Kindergarten
> Children can investigate aspects of science such as living things grow in size from young to adult, measuring changes in states of matter, charting weather observations, and others. These provisions, however, are not directly stated.

First Grade
> In first grade, this program continues to integrate activities using weather observations, temperature, and other similar activities as are listed in kindergarten.

Second Grade
> There is a chart at the start of every unit that shows the cross-curricular links. Students learn some important basic science skills through their mathematics curriculum. For example: students identify and learn to read *F as "degrees Fahrenheit". Students also learn that Fahrenheit is named for Gabriel Fahrenheit who was the physicist who developed it. Later on in the year students will be introduced to the Celsius scale and learn to use thermometers to measure degrees in Fahrenheit and Celsius. Students will also cut out grocery store sale ads and use them to make food group collages.

Third Grade
> A few examples of science connections are: record the time of sunrise and sunset for length of day project, Use clutch sizes (the number of eggs in a nest) to demonstrate parts and total diagrams, and show children how to use division to understand how many stars are in the universe. This book makes meaningful connections between science and mathematics in creative ways and also through the emphasis of measurement in relation to scientific experiments.

Forth Grade
> Science is not addressed very much in this textbook series. The first unit that connects math and science is Unit 3, where students solve problems about eclipses. Students use science to work on their measurement skills by measuring the wingspan on invertebrates. The number of mammal species is used for students to work on division. Data interpretation about rain forests is used to teach students about percents. Ratios are studied by students when they compare their weight with other mammals. Most of the science connected

activities have to do with animals because students love to learn about animals, and it is an easy way to integrate math into something they are interested in.

Fifth Grade

The science connections are not great, and the first science activity is in Unit 2, which is about measuring time. The next science activity that is creative is in Unit 7, and has students use both scientific and standard notation to date important events in the history of Earth. In Unit 10 students take temperature measurements of Old Faithful. There are several activities that connect science and math that are about health. Students do things like take their heart rates and calculate their cardiac output. There are very few science connections made and they are mostly about measurement.

Sixth Grade

Science is seen not through a whole unit, but rather in example problems. For example, in some of the data collecting problems, the problem is revolving around the science experiments and how to graph the data acquired from the experiment.

Math and Social Studies integration

Kindergarten

In relation to the Virginia SOLs for social studies, this program encourages students to learn directionality (K.3), using money for learning about mathematics (K.7), and sharing evenly (K.8a).

First Grade

In relation to the Virginia SOLs for social studies, this program connects with the use of money (1.9) and the use of calendars ((1.3).

Second Grade

Social Studies is integrated into the curriculum aligned with the social studies standards. Students will look at the step-by-step process of building an ancient Egyptian pyramid and compare the characteristics of the Egyptian pyramids to the pyramids made in class.

Third Grade

Some Social students examples are: solve addition and subtraction problems based on the distance between cities on the mileage map, discuss the history of the "about three times" rule and how it was named Pi, research different vacation areas and create brochures, explore the history of the word phalanx, a type of array invented by the Greeks, and discuss the place value in the Hindu numeration system. This text provides interesting connections to history, geography, and social studies in relation to mathematics.

Forth Grade

Most of the Social Studies connections are using reference materials to interpret data and collect information. Geography is used for students to research architecture around the world and then measure it, for example students measure distances on a map of Egypt. There is an activity where students use a table that shows the time it takes to fly between five capitals in Europe to solve elapsed-time problems. Geometry is addressed using social studies when

students make a model of a globe. Students also do geometry by comparing area of different countries, like Brazil and other South American countries.

Fifth Grade

Students research a historical mystery about even numbers and prime numbers. Geography is used for students to estimate distances and times based on an imaginary trip. Students conduct a classroom census and use old censuses' to learn about early American colonial populations. Most of the connections between math and social studies are using resources to research about different countries. The activities do not seem particularly creative and are very repetitive. I think teachers could create better ideas that worked for their specific class.

Sixth Grade

The students learn mapping skills, such as latitude and longitude and map scales. There are also many examples that incorporate events in history. For example, there is an adding and subtracting decimals problem that uses a situation from a past Olympics.

Math and other areas

Kindergarten & First Grade

This program also includes a list if different mathematically related literature as well as commercially produced games.

Second Grade:

There are several literature connections using books to relate to the curriculum of that unit. Students also discuss the limited number of suffixes used for ordinal numbers and see if students can find patterns for the original words. Students will discuss the importance of word choice involved in creating and solving riddles.

Third Grade:

There are several literature connections throughout the Everyday mathematics book. The authors often connect books to the curriculum such as How Big is a Foot? By Rolf Myllar where a carpenter uses his own foot as a measuring tools and A Cloak for Dreamer by Aileen Friedman where creative tailors use geometry to sew cloaks. Students also learn about affixes such as the prefix tri- and quad.

Forth Grade

Most of the interdisciplinary links are between math and language arts. There are more interdisciplinary links in the fourth grade version than the fifth grade version, but most of the connections are literature based. Some of the lessons within units have multiple interdisciplinary links, but some lessons do not have any connections at all. There are probably about half of the lessons in each unit that have interdisciplinary links between content areas.

Fifth Grade

The interdisciplinary links are sparse, but there are a few lessons in each unit that make connections between content areas. There are also a few art connections made in this series, but most of the interdisciplinary links are with Language Arts and social studies. Some of the lessons have multiple interdisciplinary links, while others do not have any at all.

Sixth Grade

Since geometry is a large section of the sixth grade text, geometric patterns are made. Art and design activities are included that use the math skills from the units to make perspective drawings, draw an enlargement of a picture, working with symmetry, and make quilts.

H. Textbook series appropriate for use with various exceptional children

Within the program's Teacher's Reference Manual for each grade level, there is a section dedicated to children with special needs. In this section, it is described how the program is a hands-on curriculum that builds of the experience and interests of the students, which make it accessible to many different children. They suggest pacing and revisiting, rather than remaining on one topic for too long. When accommodations need to be made for a student, they suggest modifying the curriculum rather than supplementing. At the end of most lessons included in the program, a teacher can find sections called "Adjusting the Activity" and "Options for Individualizing." This program also has a section in its Teacher's Reference Manual that covers the use of the program with language diversity. It offers students learning English the opportunity to "learn through content and contact that is relevant to the students" (p. 26). To accomplish this, the program encourages the use of group work as well as the use of manipulatives, models, and demonstrations. There are also suggestions for how to organize the students appropriately. However, the various exceptional populations like learning disabled (LD), autism spectrum disorder (ASD), and MR are not well supported with this textbook series.

I. Following the guidelines in NCTM

This program is in tune with the expectations listed on the NCTM Standards website. Under sections of the Teacher's Lesson Guide, there is a section that lists the NCTM Standards covered in that section. For some of the grades, some units cover all standards while others cover most standards. However, for most of the grades, every standard is addressed at least once throughout the textbook series. Some units address all the standards, while other units only address a few standards. The Everyday Mathematics books are organized though content strands. These standards line up well with the NCTM recommended standards. There is a lack of algebra in the curriculum but every other standard is covered in this curriculum.

J. Following the Virginia SOLs

Kindergarten

This program's kindergarten curriculum appears to match very well with the kindergarten SOLs. Each of the topics are covered at some point, but some topics such as operations as well as clocks & calendars and data collection receive less focus than other areas.

First Grade

Once again, this program closely matches the topics which are required to be covered according to the first grade Virginia SOLs. The program includes activities for things such as the 100th day of school, ordinal positions first through

twelfth, concepts of ½ and ¼, learning of basic facts, values of money, and others.

Second and Third Grade

This program covers all the Virginia SOL's. In the two volumes for each grade there is a vast amount of content and the curriculum goes over all of the required standards for the state of Virginia.

Fourth Grade:

It does not seem like the Virginia Standards of Learning are addressed very specifically in this textbook series. The concepts in the fourth grade version of Everyday Mathematics are very general, and many of the specific standards are not addressed. This textbook series could be supplemented with teacher support and planning to address their state's specific standards.

Fifth Grade

It seems like this textbook series follows the Virginia Standards of Learning, but does not go beyond what the standards list 5th graders should know. There are many activities listed that address the basic standards, but the 5th grade version of Everyday Mathematics does not seem to "dig deeper" than what is listed on the state website. The textbook series was created at the University of Chicago, so the specific standards for Virginia are not addressed in depth.

Sixth Grade

Overall, this textbook does address most of the Virginia Standards of Learning. There is a great amount of coverage on the measurement requirements, yet a poor focus on the probability and statistics requirements. Although this book is not based around the Virginia SOLs, there is not much coverage outside the Virginia SOLs.

K. Letter grade to the series

Overall, we would give *Everyday Mathematics* about a B. We feel the program is good overall. It provides a lot of materials to teachers, a great deal of suggestions for planning, includes whole-group, small-group, and independent activities, and covers the topics of the NCTM and SOLs rather well. We also think that this series uses a lot of support with manipulatives, which is important for students to understand some of the abstract concepts. Their view on problem solving in the classroom is in accordance with the concept of problem solving we have discusses in class. There are also many activities and games available for teachers to use to teach their students basic concepts. However, *Everyday Mathematics* is lacking in some areas. The connections made to areas such as science, social studies, and others are weak or stretched. This aspect of inter-curricular connections does not seem to have been strongly considered when the program was made. We also believe this series is lacking in technology since there are so many online resources in mathematics today they should be added to the curriculum where appropriate. This program does describe that teachers can adapt the program for use with exceptional students, but it does not clearly lay out for teachers how this can be done within specific lessons. In all, I think this program would be a very useful tool to a teacher for mathematics in the classroom with some added creativity from the teacher, which is something any good teacher should do anyway!