

Twin Valley School District

Math K – 3

Everyday Mathematics

Scope & Sequence/Overview

As prepared by Conrad Follmer 5/06

EVERYDAY MATHEMATICS

INTRODUCTION

In grades kindergarten through five, the Twin Valley School District has implemented *Everyday Mathematics*, which is an exemplary elementary mathematics (K-6) program, published by SRA-McGraw-Hill. The extensive spiral curriculum which underlies this program fully represents the mandates of the “Math Reform Movement,” as well as the “Standards” of the Pennsylvania Department of Education, and those of the National Council of Teachers of Mathematics (NCTM). In a recent, though informal study, the correlation between the PA Math Standards and *Everyday Mathematics* was seen to be approximately 94%, which represents an extraordinarily high content match.

The learning and instructional goals for *Everyday Mathematics* fall into six program strands, across all of the grades:

- **Operations and Computation** (including: *basic facts, mental math, algorithms, estimation, number stories, money, powers of ten, and exponents*)
- **Numeration** (including: *counting, order, relations, estimation, odd/even, fractions, decimals, and percents*)
- **Patterns, Functions, & Algebra** (including: *number and visual patterns, properties, sequences, functions, number sentences, equations and inequalities, variables, and formulas*)
- **Data & Chance** (including: *mean, median, range, mode, tally charts, line plots, graphs, and probability*)
- **Measurement & Reference Frames** (including: *linear measures, weight, capacity, money, time, temperature, perimeter, area, volume, diameter and circumference, angle, and coordinate grid*)
- **Geometry** (including: *two-dimensional, three-dimensional, symmetry, congruence, angles*)

For the purposes of this curriculum document, it was decided that the most meaningful way to represent the concepts to-be-learned at each grade, would be to list them under the strands in which they logically are subsumed. Further, for the purposes of brevity and clarity, it was decided to list only those concepts which reach the highest level of learning expectation, called “Secure.” The many concepts which are taught at each grade, but are to-be-learned only to a “Beginning” or “Developing” levels, are not reported in this document.

Kindergarten, Grades 1, 2 & 3

OVERVIEW

As was explained on the cover page of this K-5 curriculum document, only the “Secure” learning goals for this grade are reported below, and those concepts and skills are organized by the six mathematics strands in which they logically are subsumed. Please note that these concepts and skills become progressively “Secure” during the four quarters of the school year, which accounts for the presence of lower level expectations in one quarter which are extended in later quarters of the same grade. Also note that many more concepts are introduced and/or extended in all six mathematics strands at this grade (at “Beginning” and “Developing” levels), so that they can become “Secure” at subsequent grade levels.

Particularly at the primary grades, this program achieves its learning success largely through developmentally-appropriate, concrete instructional experiences. The extraordinarily high level of active engagement of the learners on a daily basis, accounts for the learners’ investment, enjoyment, and retention of the “Secure” concepts listed below.

KINDERGARTEN

- **Operations and Computation**
- **Numeration**
 - Counting orally to 30
 - Counting orally to 70
 - Counting orally backwards from 10 to 0
 - Counting a collection of as many as 10 objects
 - Naming and identifying all numerals 1 to 10, in and out of order
 - Naming and identifying all numerals 11 to 20, in and out of order
- **Patterns, Functions, & Algebra**
 - Identifying the “first” and “last” objects in a set
 - Identifying the size order of a small set of objects (smallest, medium, largest)
 - Extending visual/concrete AB patterns to the fifth place
 - Extending visual/concrete ABC patterns to the fifth place
- **Data & Chance**
 - Uses daily calendar graphs to explain relationships (e.g. the number of cloudy days this month; the number absences...)

- **Measurement & Reference Frames**
 - Recognizing penny, nickel, and dime
- **Geometry**
 - Naming of the four basic geometric shapes

GRADE 1

- **Operations and Computation**
 - Knowing the addition basic facts for +1 and +0
- **Numeration**
 - Writing and counting numbers from 1 to 20
 - Counting up by 1's, starting with any number, up to 100
 - Counting back by 1's, starting with any number, up to 10
 - Counting up to 20 objects
 - Counting by 2's to 20
 - Counting by 5's to 50
 - Ordering and comparing numbers to 22
 - Identifying place value if the 1's, 10's, and 100's digits
- **Patterns, Functions, & Algebra**
- **Data & Chance**
 - Uses daily calendar graphs to explain relationships (e.g. the number of cloudy days this month; the number absences...)
- **Measurement & Reference Frames**
 - Telling time to the nearest hour
 - Telling time to the nearest half-hour
 - Naming and identifying the value of penny, nickel, and dime
 - Naming and identifying the value of a quarter
 - Exchanging pennies for nickels and nickels for dimes
- **Geometry**
 - Naming of the four basic geometric shapes

GRADE 2

- **Operations and Computation**
 - Knowing addition facts up to a sum of 10
 - Knowing addition facts up to a sum of 20
 - Knowing subtraction facts up to a sum of 10
 - Constructing fact families for addition and subtraction
 - Solving one-step addition number stories
 - Adding and subtracting multiples of ten (10), up to 100
 - Adding three 1-digit numbers, mentally
 - Knowing complements of ten (e.g. 2+8, 6+4, 1+9...)

- Finding missing addends for the next multiple of ten (10)
- Multiplying numbers with 0 or 1 as factors
- Complete multiplication-division fact families, given a problem
- Devising and using strategies for finding the sum of two 2-digit numbers
- Devising and using strategies for finding the difference of two 2-digit numbers

➤ **Numeration**

- Counting by 2's, starting at any number up to 100
- Counting by 5's, starting at any number up to 100
- Counting by 10's, starting at any number up to 200
- Identifying place value in 2-digit and 3-digit numbers
- Solving number-grid puzzles up to 100
- Shading a specified fractional part of a region

➤ **Patterns, Functions, & Algebra**

- Solving one-rule “frames and arrows” diagrams, using a number grid
- Finding five equivalent names for numbers
- Counting by 2's, 5's, and 10's and describe the patterns

➤ **Data & Chance**

- Making tallies and giving the total from data
- Comparing quantities from a bar graph

➤ **Measurement & Reference Frames**

- Showing pennies, nickels, dimes, and quarters for amounts up to a total of \$1.00
- Measuring to the nearest inch
- Measuring to the nearest centimeter
- Reading and writing money amounts in decimal notation
- Using equivalent coins to show money amounts in different ways
- Uses a calculator to compute money amounts
- Exchanging pennies, nickels, dimes, and quarters
- Telling time to 5-minute intervals
- Showing understanding of calendar concepts and time skills

➤ **Geometry**

- Identifying all basic 2-dimensional shapes

GRADE 3

- **Operations and Computation**
 - Using basic facts to solve fact extensions (i.e. $2+5=7$, therefore, $20+50=70$)
 - Knowing all basic addition and subtraction facts to 100
 - Completing fact and number families
 - Knowing multiplication basic facts, having a 2, 5, or 10 as factors
 - Knowing multiplication basic facts having a 0 or a 1 as a factor

- **Numeration**
 - Identifying fractional parts of a set
 - Identifying fractional parts of a whole region

- **Patterns, Functions, & Algebra**
 - Finding equivalent names for numbers (at least 5)

- **Data & Chance**
 - Making a bar graph from a set of data

- **Measurement & Reference Frames**
 - Measuring line segments to the nearest centimeter

- **Geometry**
 - Identifying symmetric figures and drawing lines of symmetry