Hazelwood School District

We're on the move!

1st Grade Mathematics

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TABLE OF CONTENTS

1st Grade Mathematics

Hazelwood School District Mission Statement 3

Hazelwood School District Vision Statement 3

Hazelwood School District Goals.....3

Curriculum Overview.....4

Implementation Plan.....5

1st Grade Assessments.....11

1st Grade Unit 1.....74

1st Grade Unit 2.....87

1st Grade Unit 3.....97

1st Grade Unit 4.....115

1st Grade Unit 5.....126

1st Grade Unit 6.....141

1st Grade Unit 7.....151

1st Grade Unit 8.....167

Hazelwood School District

Mission Statement

We are a collaborative learning community guided by a relentless focus to ensure each student achieves maximum growth.

Vision Statement

HSD will foster lifelong learners, productive citizens and responsible leaders for an ever-evolving society.

Board of Education on January 5, 2010

Goals

Goal #1: Hazelwood students will meet or exceed state standards in all curricular areas with emphasis in reading, writing, mathematics, science and social studies.

Goal #2: Hazelwood staff will acquire and apply skills necessary for improving student achievement.

Goal #3: Hazelwood School District, the community and all families will support the learning of all children.

Mathematics Curriculum Overview

The Hazelwood School District's (HSD) most recent adoption of elementary mathematics curriculum occurred in 2009. In 2010, Missouri officially adopted the Common Core State Standards and subsequently created and adopted the Missouri Learning Standards in 2016. These changes in state standards and learning progressions have resulted in the need for an intensive curriculum revision to ensure that all students in the Hazelwood School District are adequately prepared to meet grade-level learning expectations and be prepared for entry into college, or equipped to begin securing a career.

During the 2016-2017 school year, HSD piloted Investigations in Number, Data & Space 3rd Edition in 13 classrooms across the district. All pilot teachers were enamored with the updates to the curricular materials and were pleased with the strong alignment to the Missouri Learning Standards. Additionally, as of January 2017, the pilot teachers in grades 3-5 had an average of 46.2% of students meeting proficiency, compared to the district's 38.8% as measured by Evaluate mathematics benchmark assessment. Furthermore, 2016 Missouri Assessment Program data results for Grades 3-5 indicates a need for strengthening our current mathematics curriculum as the district's mathematics students scoring proficient and advanced fell to 34.6% from 37.1%. After a careful review of state and district data, it was determined by the Curriculum Department to revise the curriculum to align with the most recent state adopted standards.

The committee members aligned the curriculum with the 2016 Missouri Learning Standards published by Missouri Department of Elementary and Secondary Education. The curriculum meets all of the state and district requirements for research, technology, workplace readiness skills, gender/racial equity, and disability awareness.

The curriculum contains learning activities and unit assessments components that are rigorous, and outline clear learning expectations. As the curriculum is implemented and taught, the learning activities and assessments may be revised. The assessments are required. The learning activities should be implemented in the order, and with the fervor, as intended by the TERC curriculum writers.

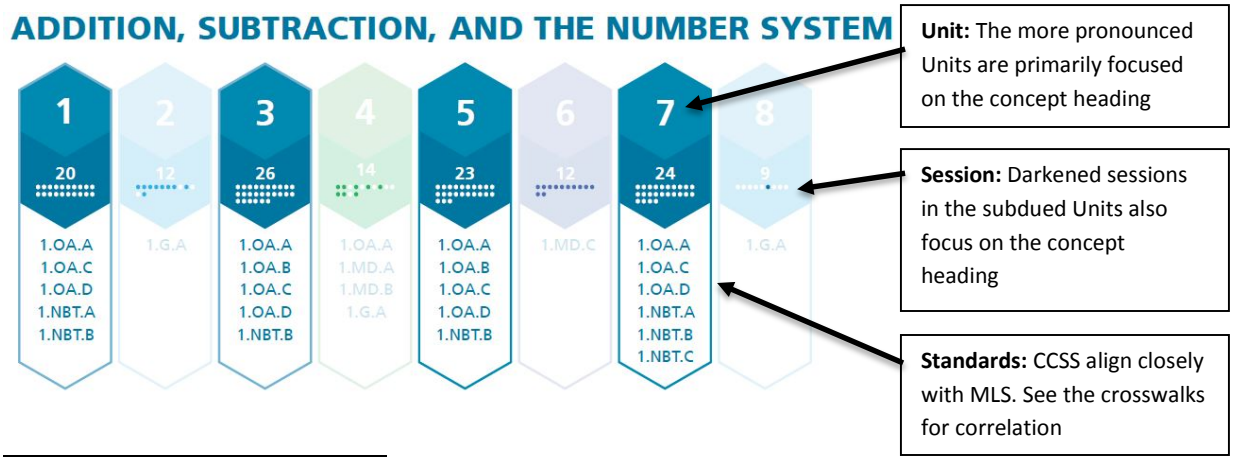
We must be aware that students have mathematical ideas. The curriculum supports all students in developing and expanding those ideas. Also, teachers are engaged in ongoing learning about mathematics content, pedagogy, and student learning. The curriculum supports them in this learning. Moreover, teachers collaborate with the students and curriculum materials to create the curriculum as enacted in the classroom. The curriculum provides a clear, focused, and coherent mathematical agenda and supports teachers in implementing in a way that accommodates the needs of their particular students. Most of the learning activities are very sequential and, when all of them are used, a student should be able to successfully complete the unit assessments.

Mathematics Implementation Plan

The Investigations curriculum requires 55–60 minutes of math time a day in Kindergarten and 70–75 minutes a day in Grades 1–5. This includes a 45-minute (for Kindergarten) or 60-minute session (for Grades 1–5) and 10–15 minutes outside of math time for the daily Classroom Routine (Kindergarten–Grade 2) or Ten-Minute Math (Grades 3–5) activity. Each curriculum unit consists of 2–5 investigations. An investigation focuses on a set of related mathematical ideas, coordinating students' work in hands-on activities, written activities, assessments, and classroom discussions over a period of several days. The duration of an investigation ranges from 4–9 class sessions. Each session begins with a list of all of the activities to help you plan the math time for the day. It is important to move through all of the activities because they are carefully designed to offer coherent and focused work on the main math ideas of the unit.

Mathematics teaching and learning, at its best, is a collaboration among teachers, students, and the curriculum. The curriculum materials provide a coherent, carefully sequenced core of mathematics content for students and supportive professional development material for teachers. Modifying the curriculum and making it work in your classroom requires knowing the curriculum well. It means taking the time to understand the mathematical focus of each lesson, how the Math Focus Points build over many lessons, and how the Mathematical Practices are integrated into the content. Learning the curriculum well means holding back the urge to change activities because you think they are too easy or too difficult for your students before you have tried them and actually seen your students' work. Keep in mind that the way ideas are developed and sequenced has been researched and tested in multiple classrooms[1], and many suggestions for accommodations are already built into the curriculum.

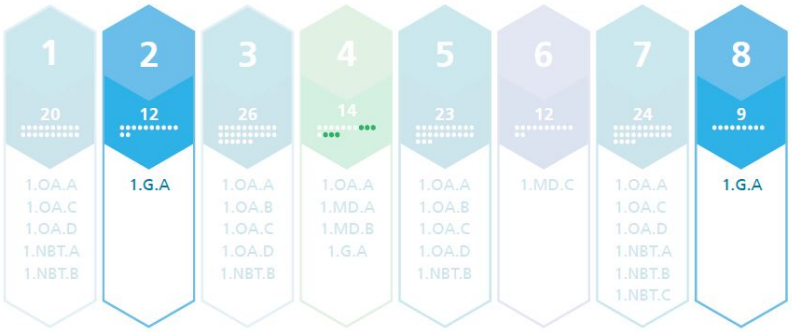
Moreover, the curriculum has been written in a coherent manner and is horizontally and vertically connected. This means that several mathematics ideas and concepts are purposefully introduced in a particular sequence and over a period of time. Therefore, the curriculum should be presented in order, without omitting any session. The following charts below provide a visual of the spiraling of major concepts for grade 1. The darkened dots appear as sessions within units having another major focus.



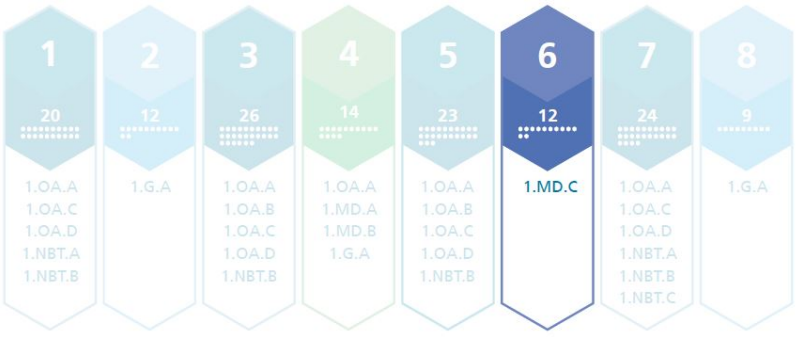
[1] http://assets.pearsonschool.com/asset_mgr/current/201021/PEAR_ResSum_InvMath_LoRes.pdf

MEASUREMENT AND FRACTIONS

GEOMETRY



MODELING WITH DATA



The HSD approach to assessing student learning is a comprehensive, carefully woven one that makes use of multiple sources of data: student written work, written assessments, and informal and formal observation of student behaviors and interactions. These multiple sources of data allow for a more in-depth portrait of each student's understandings of and proficiencies with key mathematical concepts, helping teachers provide more targeted instructional support. Assessments are tied to Unit Benchmarks that set clear expectations for what students should know and be able to do. These assessments include

Embedded Assessments, Quizzes, and Assessment Checklists. Embedded Assessments in each curriculum unit are written activities that provide information on students' progress toward the Benchmarks. Starting in Grade 1, students encounter a Quiz every 5 to 10 sessions. These assessments have the dual purpose of providing evidence of students' progress towards meeting the Benchmarks and offering students exposure to the types assessment items that they are likely to encounter on the Missouri Assessment Program Grade Level Assessments. Finally, some Benchmarks are best assessed by observing students as they are actively engaged in doing mathematics. Because younger students are learning how to communicate their understanding through reading problems and writing responses, Assessment Checklists are used more often in Kindergarten and Grade 1 than in Grades 2–5.

Additional components that are germane to successful implementation of the curriculum include some combination of these five parts on a daily basis: Activity, Discussion, Math Workshop, Assessment Activity, and Session Follow-Up.

ACTIVITY: An Activity is where mathematical ideas are introduced and investigated. Activities are organized as work for the whole class, pairs, small groups, or individuals. Many activities are available as digital presentations, some of which include digital tools. Activities typically require 30-45 minutes.

Discussion: Many sessions include a whole-class Discussion, during which students share strategies and conclusions and compare methods and results. A subset of the session's Math Focus Points helps you guide each discussion. It is essential to allow time for class discussions, giving students an opportunity to articulate their own ideas, compare solutions, and consolidate their understanding. Discussions require 15-20 minutes.

Math Workshop: Some sessions include a Math Workshop, where students choose from and complete a set of activities. Students work individually, in pairs, or in small groups for 30-45 minutes during Math Workshop.

Assessment Activity: Some sessions include an Assessment Activity, where students are assessed on their progress toward unit specific Benchmarks through both written activities and observations. The Assessment Activities range from 10-40 minutes.

Session Follow-Up: Every session has a Session Follow-Up section where details about the review and practice assignments are found. Daily Practice offers ongoing review of materials from previous units or practice of content in the current unit. These practice activities can be completed in class or for homework. Homework offers practice with the content of the unit, review of previous content, or preparation for an upcoming activity.

COURSE TITLE: Investigations in Number, Data and Space

GRADE LEVEL: 1st Grade

CONTENT AREA: Mathematics

Course Description:

Students focuses on counting and comparing quantities, connecting counting to the operations of addition and subtraction, and developing an understanding of and strategies for solving addition and subtraction problems via story problems and games. Students focus on observing and describing defining attributes of 2-D shapes, using those attributes to build, compare, and sort 2-D shapes, and composing and decomposing 2-D shapes. Students count on/back as a strategy for adding/ subtracting; composing and decomposing numbers into two or more parts and playing games that involve an unknown change; adding more than two numbers; expanding students' understanding of addition and subtraction notation, in particular the meaning of the equal sign; and counting and comparing larger quantities. They also focus on ideas about linear measurement and time, and story problems that involve comparing lengths. Students are introduced to fractions as parts of a whole and the meanings of one half and one fourth. Students develop fluency with addition and subtraction within 10, including the 2-addend combinations of 10, understanding of the meaning of the equal sign as a symbol of equivalence, and deepening students' understanding of addition and subtraction through problems and games that involve finding an unknown addend or an unknown change. Number composition and foundational ideas of place value are also a focus. Students focus on representing, describing and comparing data in two and three categories, and on conducting data investigations. As students engage in their own surveys, they use data to model real world problems with mathematics. Surveys and data are also used as a context for revisiting comparison problems with the difference unknown and for solving new types of comparison story problems. Students count by numbers other than 1, with an emphasis on groups of 10; adding and subtracting 10 from a 2-digit number, and subtracting a multiple of 10 from a multiple of 10; and on representing 2-digit numbers with tens and ones and using those models to add within 100. Students also focus on: observing, describing, comparing, and building 3-D shapes; developing vocabulary for naming and describing defining attributes of 2-D and 3-D shapes; and exploring the relationship between 2-D and 3-D shapes.

Course Rationale:

Investigations in Number, Data, and Space is a K–5 mathematics curriculum designed to engage students in making sense of mathematical ideas. The curriculum is designed to: support students to make sense of mathematics and learn that they can be mathematical thinkers; focus on computational fluency with whole numbers as a major goal of the elementary grades; provide substantive work in important areas of mathematics—rational numbers, geometry, measurement, data, and early algebra—and the connections among them; emphasize reasoning about mathematical ideas; communicate mathematics content and pedagogy to teachers; and engage the range of learners in understanding mathematics.

Course Scope and Sequence		
Unit 1: ADDITION, SUBTRACTION, AND THE NUMBER SYSTEM 1 (Approx. 20 days)	Unit 2: 2-D GEOMETRY (Approx. 12 days)	Unit 3: ADDITION, SUBTRACTION, AND THE NUMBER SYSTEM 2 (Approx. 26 days)

Unit 4: MEASUREMENT AND FRACTIONS (Approx. 14 days)	Unit 5: ADDITION, SUBTRACTION, AND THE NUMBER SYSTEM 3 (Approx. 23 days)	Unit 6: MODELING WITH DATA (Approx. 12 days)
Unit 7: ADDITION, SUBTRACTION, AND THE NUMBER SYSTEM 4 (Approx. 24 days)	Unit 8: GEOMETRY 2 (Approx. 26 days)	

Essential Terminology/Vocabulary

Multiplication, equation, digit, factor, product, multiple, array, row, column, dimension, square number, area, square units, square inches, division, data, categories, bar graph, double-bar graph, key, scale, interval, pictograph, half, less than half, more than half, line plot, length, distance, U.S. Standard System, metric system, nearest half inch, unmarked number line, landmark numbers, estimate, round, difference, add up, subtract back, measurement, benchmark, polygon, tetromino, area, square units, square inch, square foot, square yard, square centimeter, square meter, gaps, overlaps, multiplication, division, multiple, parenthesis, product, quotient, fraction, numerator, denominator, unit fraction, equivalent fractions, nearest 1/4 inch, liquid volume, millimeter, ml, liter, l, weight, mass, gram ,g, kilogram, kg, conjecture, column, row, table.

Unit Objectives:

Unit 1: ADDITION, SUBTRACTION, AND THE NUMBER SYSTEM 1 (Approx. 20 days)

- Understand that you can count on/back to add/subtract 1 or 2.
- Fluency with the +1, +2, -1,-2 facts.
- Determine which of two pairs of numbers to 10 is greater.
- Solve a take from story problem with result unknown.
- Solve an add to story problem with total unknown.
- Solve a put together story problem with total unknown.

Unit 2: 2-D GEOMETRY (Approx. 12 days)

- Compose and decompose shapes in different ways.
- Build and draw familiar 2-D shapes
- Use geometric language to describe and identify important attributes, and use those attributes to sort familiar 2-D shapes

Unit 3: ADDITION, SUBTRACTION, AND THE NUMBER SYSTEM 2 (Approx. 26 days)

- Understand that you can count on/back to add/subtract
- Understand ten ones as one ten, and the teen numbers as on ten and some number of ones.
- Find at least 5 solutions to a put together/take apart problem with both addends unknown.
- Solve story problems with 3 addends.

- Rote count, read, and write numbers to 120.
- Represent numbers with equivalent expressions.

Unit 4: MEASUREMENT AND FRACTIONS (Approx. 14 days)

- Compare the lengths of two objects indirectly by using a third length.
- Demonstrate accurate measuring techniques when measuring an object or distance with multiple units. These techniques include starting at the beginning, ending at the end, leaving no gaps or overlaps, measuring in a straight line, and keeping track of the number of units.
- Tell time to the hour.
- Understand that halves or fourths apply to wholes divided into two (four) equal parts; partition circles and rectangles into two and four equal parts.
- Solve comparison story problems with the difference unknown (how many more, and how many fewer).

Unit 5: ADDITION, SUBTRACTION, AND THE NUMBER SYSTEM 3 (Approx. 23 days)

- Fluency with addition and subtraction within 10.
- Solve a put together/take apart/problem with one addend unknown.
- Understand the meaning of the equal sign.
- Determine the unknown in an addition or subtraction equation relating 3 numbers. (5+__=8)
- Solve add to and take from problems with unknown change.

Unit 6: MODELING WITH DATA (Approx. 12 days)

- Represent and describe a set of data with two or three categories.
- Solve comparison story problems with a bigger or smaller unknown

Unit 7: ADDITION, SUBTRACTION, AND THE NUMBER SYSTEM 4 (Approx. 24 days)

- Understand that the multiples of 10 through 90 refer to 1-9 tens and 0 ones.
- Represent a number of objects with a numeral and given a number, represent it with objects.
- Subtract multiples of 10 from multiples of 10 using concrete models that represent tens and ones.
- Use standard notation (< ,>) to represent the comparison of two 2-digit numbers.
- Add and subtract 10 to/from any 2-digit number.
- Add within 100 using concrete models that represent tens and ones.

Unit 8: GEOMETRY 2 (Approx. 26 days)

- Use geometric language to describe and identify defining attributes of familiar 3-D shapes.
- Compose 3-D shapes.
- Match a 2-D representation of a 3-D shape to the outline of one of its faces.
- Tell time to the half hour.

Approved Course Materials and Resources:

Investigations in Number, Data, and Space 3rd Edition
Pearson Education, Inc.
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