Curriculum Map: Riverview 3rd Grade Mathematics

Course: Math

Grade(s): 3

Course Description:

In third grade the content focuses on procedures, concepts, and applications in six critical areas:

1. Math tools and time

2. Number stories and arrays

3. Operations : addition, subtraction, multiplication, division

4. Measurement and geometry

5. Fractions

6. Multiplication and division

These concepts emphasize problem solving, multiple representations, reasoning, mathematical modeling, tool use, communication, and other ways of making sense of mathematics.

Course Student Learning Outcomes:

Math Tools and Time

The learner will use mathematical tools:

- tool kit clocks (to understand the concept of time)
- number grids and number lines
- graphs, charts, and diagrams
- scales and balances
- student reference book

Number Stories and Arrays

The learner will understand and solve:

- number stories (addition, subtraction, multiplication, division)
- multistep number stories
- arrays
- frames and arrows
- equal groups

Operations

The learner will be exposed to addition, subtraction, multiplication, and division strategies:

- partial-sums addition
- column addition
- counting-up and expand-and-trade subtraction
- finding equivalent names
- trade first subtraction
- commutative property
- adding and subtracting a group
- multiplication fact strategies
- multiplication and division diagrams
- multiplication with larger factors
- order of operations

Measurement and Geometry

The learner will become familiar with:

- measuring with a ruler
- measuring to the 1/4 inch
- line plots
- polygons and geometric shapes
- perimeter and area
- rectilinear figures
- elapsed time

Fractions

The learner will understand:

- fraction representation
- equivalent fractions
- fraction strips
- fraction number lines
- comparing fractions
- fraction number stories
- fractions of collections

Multiplication and Division

The learner will solve problems involving:

- extended facts
- mental math
- multiples of ten
- multi-digit multiplication
- finding factors

- sharing money
- near square factors

Course Essential Questions:

1. Mathematical relationships among numbers can be represented, compared, and communicated.

How is mathematics used to quantify, compare, represent, and model numbers?
How can mathematics support effective communication?
How are relationships represented mathematically?
What does it mean to estimate or analyze numerical quantities?
What makes a tool and/or strategy appropriate for a given task?
How can recognizing repetition or regularity assist in solving problems more efficiently?

2. Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations.

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3. Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.

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4. Patterns exhibit relationships that can be extended, described, and generalized.

How is mathematics used to quantify, compare, represent, and model numbers?
How can mathematics support effective communication?

How are relationships represented mathematically?

How can expressions, equations, and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?

How can recognizing repetition or regularity assist in solving problems more efficiently?

How can patterns be used to describe relationships in mathematical situations?

5. Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.

How can recognizing repetition or regularity assist in solving problems more efficiently?

How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?

How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?

How can geometric properties and theories be used to describe, model, and analyze situations?

How can patterns be used to describe relationships in mathematical situations?

6. Measurement attributes can be quantified, and estimated using customary and non-customary units of measure.

What does it mean to estimate or analyze numerical quantities?

When is it is appropriate to estimate versus calculate?

What makes a tool and/or strategy appropriate for a given task?

Why does "what" we measure influence "how" we measure?

In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?

How precise do measurements and calculations need to be?

7. Mathematical concepts and functions can be modeled through multiple representations and analyzed to raise and answer questions.

What does it mean to estimate or analyze numerical quantities?

What makes a tool and/or strategy appropriate for a given task?

Why does "what" we measure influence "how" we measure?

How can data be organized and represented to provide insight into the relationship between quantities?

How does the type of data influence the choice of display?

How can probability and data analysis be used to make predictions?

8. Data can be modeled and used to make inferences.

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Course Big   1. Mathematical relationships among numbers can be represented, compared, and

Ideas:	communicated.

2. Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations.

3. Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.

4. Patterns exhibit relationships that can be extended, described, and generalized.

5. Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.

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7. Mathematical concepts and functions can be modeled through multiple representations and analyzed to raise and answer questions.

8. Data can be modeled and used to make inferences.

Course Academic Vocabulary:	**Academic Vocabulary**

- **numerator**
- **denominator**
- **pattern**
- **fraction**
- **estimate**
- **equivalent fractions**
- **graphing**
- **area**
- **perimeter**
- **measurement**
- **volume**
- **array**
- **elapsed time**
- **factor**
- **product**
- **quotient**
- **length**
- **divisor**
- **dividend**
- **fact family**
- **sum**
- **difference**

- **mass**
- **quantity**
- **regroup**
- **parentheses**
- **multiple**
- **estimate**
- **equation**
- **polygon**
- **quadrilateral**
- **place value**
- **parallel**
- **perpendicular**
- **intersect**
- **congruent**
- **line segment**
- **ray**
- **line plot**
- **rectilinear**
- **equivalent**

Course Long Term Transfer Goals:

Students will be able to independently use their learning to:

- Apply mathematical knowledge to analyze and model situations/relationships using multiple representations and appropriate tools in order to make decisions, solve problems, and draw conclusions.
- Make sense of and persevere in solving complex and novel mathematical problems.
- Use effective mathematical reasoning to construct viable arguments and critique the reasoning of others.
- Communicate precisely when making mathematical statements and express answers with a degree of precision appropriate for the context of the problem/situation.
- Make use of structure and repeated reasoning to gain a mathematical perspective and formulate generalized problem solving strategies.
- Apply mathematical concepts, such as measurement and fractions, to real life situations.

Academic Standards

Standard - CC.2.1.3.B.1
Apply place value understanding and properties of operations to perform multi-digit arithmetic.

Standard - CC.2.1.3.C.1
Explore and develop an understanding of fractions as numbers.

Standard - CC.2.2.3.A.1

Represent and solve problems involving multiplication and division.

Standard - CC.2.2.3.A.2
Understand properties of multiplication and the relationship between multiplication and division.

Standard - CC.2.2.3.A.3
Demonstrate multiplication and division fluency.

Standard - CC.2.2.3.A.4
Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Standard - CC.2.3.3.A.1
Identify, compare, and classify shapes and their attributes.

Standard - CC.2.3.3.A.2
Use the understanding of fractions to partition shapes into parts with equal areas and express the area of each part as a unit fraction of the whole.

Standard - CC.2.4.3.A.1
Solve problems involving measurement and estimation of temperature, liquid volume, mass or length.

Standard - CC.2.4.3.A.2
Tell and write time to the nearest minute and solve problems by calculating time intervals.

Standard - CC.2.4.3.A.3
Solve problems and make change involving money using a combination of coins and bills.

Standard - CC.2.4.3.A.4
Represent and interpret data using tally charts, tables, pictographs, line plots, and bar graphs.

Standard - CC.2.4.3.A.5
Determine the area of a rectangle and apply the concept to multiplication and to addition.

Standard - CC.2.4.3.A.6
Solve problems involving perimeters of polygons and distinguish between linear and area measures.