Year-at-a-Glance (YAG) --- Grade 4 --- Mathematics

The **Year at a Glance (YAG)** lays out all of the long term learning targets a student is expected master by the end of the year by bundling and sequencing them into the right units. On this YAG you will also see the Minnesota Standards and Benchmarks that align to the learning targets.

Learning Targets: Learning Targets are "student friendly" versions of the benchmarks. The Learning Targets should be posted in the classroom and used with students to describe the learning of the day. **Please note:** Because the language of the learning targets has been modified to be more accessible to students they do not fully reflect the depth and rigor of the benchmarks. For this reason it is important to consult the standards and benchmarks when planning instruction.

Standards: Standards and benchmarks set the expectations for achievement in mathematics for K-12 students in Minnesota. The standards represent a connected body of mathematical knowledge students learn through the processes of problem solving, reasoning, communication, making connections, and representation. The standards are grouped by strands: 1) Number and Operation; 2) Algebra; 3) Geometry and Measurement; 4) Data Analysis and Probability.

Benchmarks: The benchmarks provide specific details about the mathematical understanding and skills that students must meet to satisfy the standards. They are designed to inform and guide schools and teachers in developing curriculum and instruction.

Achievement Level Descriptors: The Achievement Level Descriptors provide a description of grade-level student performance for each of the achievement levels on the MCA.

The achievement levels for the MCAs are:
- *Exceeds the Achievement Standards*
- *Meets the Achievement Standards*
- *Partially Meets the Achievement Standards*
- *Does Not Meet the Achievement Standards*

Teachers and schools should use the Achievement Level Descriptors as a way to measure the rigor of classroom instruction. While it is important for students to be able to perform the tasks described in the *Does Not Meet* and *Partially Meets* categories, students need access and exposure to the tasks in the *Meets* and *Exceeds* categories in order to meet grade level expectations on the MCA.

First Semester	Second Semester
Unit 1: Number and Operations I Approximate dates: August 29 – October 14, 2016 *(7 weeks)*	**Unit 5: Geometry** Approximate dates: February 2 – March 3, 2017 *(4 weeks)*
Unit 2: Algebra Approximate dates: October 24 – November 18, 2016 *(2 ½ weeks)*	**Unit 6: Rational Numbers** Approximate dates: March 6 – April 21, 2017 *(5 ½ weeks)*
Unit 3: Data Analysis Approximate dates: November 21 – December 16, 2016 *(3 ½ weeks)*	**Units 1-6 must be taught prior to MCA testing. MCA Testing suggested dates: May 1 & May 2, 2017**
Unit 4: Number and Operations II Approximate dates: January 3 – February 1, 2017 *(3 ½ weeks)*	**Unit 7: Number and Operations III** Approximate dates: May 3 – June 9, 2017 *(5 weeks)*

First Semester				
Unit 1: Number and Operations I _(7 weeks)_ _Approximate dates: August 29 – October 14, 2016_				
Learning Targets	**Standards**			
Unit Long Learning Targets	**Strand / Standard**		**No.**	**Benchmark**
1.1 I can read and write whole numbers through the hundred thousands place. (4.1.2.4) **1.2** I can compare and order whole numbers using models. (4.1.2.5) **1.3** I can demonstrate fluency of multiplication facts. 1-9. (4.1.1.1) **1.4** I can multiply numbers by 10, 100 and 1,000. (4.1.1.2) **1.5** I can multiply whole numbers as great as 3 digit numbers by 2 digit numbers. (4.1.1.3) **1.6** I can estimate products. (4.1.1.4) **1.7** I can solve real-world problems using addition, subtraction and multiplication. (4.1.1.5)	**Number & Operation**	Represent and compare fractions and decimals in real-world and mathematical situations; use place value to understand how decimals represent quantities.	4.1.2.4	Read and write decimals with words and symbols; use place value to describe decimals in terms of thousands, hundreds, tens, ones, tenths, hundredths and thousandths.
			4.1.2.5	Compare and order decimals and whole numbers using place value, a number line and models such as grids and base 10 blocks.
		Demonstrate mastery of multiplication and division basic facts; multiply multi-digit numbers; solve real-world and mathematical problems using arithmetic.	4.1.1.1	Demonstrate fluency with multiplication and division facts.
			4.1.1.2	Use an understanding of place value to multiply a number by 10, 100 and 1000.
			4.1.1.3	Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.
			4.1.1.4	Estimate products and quotients of multi-digit whole numbers by using rounding, benchmarks and place value to assess the reasonableness of results.
			4.1.1.5	Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.

*_Highlighted benchmarks indicate areas where data shows that students in MPS struggle._

First Semester			
Unit 2: Algebra *(2 ½ weeks)* *Approximate dates: October 24 – November 18, 2016*			
Learning Targets	**Standards**		
Unit Long Learning Targets	**Strand / Standard**	**No.**	**Benchmark**
2.1 I can create and use input-output rules to solve (*addition, subtraction, multiplication, and division*) problems and can record the inputs and outputs in a table. (4.2.1.1) **2.2** I can write and interpret (*read*) number sentences that involve multiplication, division, and unknowns (*variables*) to represent a real-world problem. (4.2.2.1) **2.3** I can find the values for the unknowns that make a number sentence true. (4.2.2.2)	**Algebra** — Use input-output rules, tables and charts to represent patterns and relationships and to solve real-world and mathematical problems.	4.2.1.1	Create and use input-output rules involving addition, subtraction, multiplication and division to solve problems in various contexts. Record the inputs and outputs in a chart or table.
	Use number sentences involving multiplication, division and unknowns to represent and solve real-world and mathematical problems; create real-world situations corresponding to number sentences.	4.2.2.1	Understand how to interpret number sentences involving multiplication, division and unknowns. Use real-world situations involving multiplication or division to represent number sentences.
		4.2.2.2	Use multiplication, division and unknowns to represent a given problem situation using a number sentence. Use number sense, properties of multiplication, and the relationship between multiplication and division to find values for the unknowns that make the number sentences true.

First Semester
Unit 3: Data Analysis (3 ½ weeks) *Approximate dates: November 21 – December 16, 2016*

Learning Targets	Standards		
Unit Long Learning Targets	**Strand / Standard**	**No.**	**Benchmark**
3.1 I can display a data set in several ways, including a bar graph, timeline, Venn diagram, line plot or pictograph. (4.4.1.1) **3.2** I can interpret data displayed on graph or spreadsheet table. (4.4.1.1)	**Data Analysis** Collect, organize, display and interpret data, including data collected over a period of time and data represented by fractions and decimals.	4.4.1.1	Use tables, bar graphs, and timelines and Venn diagrams to display data sets. The data may include fractions or decimals. Understand that spreadsheet tables and graphs can be used to display data.

Unit 4: Number and Operations II   *(3 ½ weeks)*
Approximate dates: January 3 – February 1, 2017

Learning Targets	Standards		
Unit Long Learning Targets	**Strand / Standard**	**No.**	**Benchmark**
4.1 I can demonstrate knowledge of multiplication and division facts 1-9. (4.1.1.1) **4.2** I can solve whole number division problems as great as 3 digit numbers by 2 digit numbers. (4.1.1.6)	**Number & Operation** Demonstrate mastery of multiplication and division basic facts; multiply multi-digit numbers; solve real-world and mathematical problems using arithmetic.	4.1.1.1	Demonstrate fluency with multiplication and division facts.
		4.1.1.6	Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two- digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.

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Second Semester				
Unit 5: Geometry *(4 weeks)* *Approximate dates: February 2 – March 3, 2017*				
Learning Targets	**Standards**			
Unit Long Learning Targets	**Strand / Standard**	**No.**		**Benchmark**
5.1 I can identify and describe different types of triangles in various contexts. (4.3.1.1) **5.2** I can identify, draw and describe quadrilaterals in various contexts. (4.3.1.2) **5.3** I can measure angles in geometric figures and in real-world objects with a protractor. (4.3.2.1) **5.4** I can compare angles according to size. (4.3.2.2) **5.5** I can find the area of common quadrilaterals (square and rectangles). (4.3.2.3) **5.6** I can find the areas of different geometric figures and real-world objects. (4.3.2.4) **5.7** I can identify and apply translations (slides), reflections (flips), or rotations (turns) to figures. (4.3.3.1) (4.3.3.2) (4.3.3.3) **5.8** I can recognize that translations, reflections and rotations preserve congruency. (4.3.3.4)	Geometry & Measurement	Name, describe, classify and sketch polygons.	4.3.1.1	Describe, classify and sketch triangles, including equilateral, right, obtuse and acute triangles. Recognize triangles in various contexts.
			4.3.1.2	Describe, classify and draw quadrilaterals, including squares, rectangles, trapezoids, rhombuses, parallelograms and kites. Recognize quadrilaterals in various contexts.
		Understand angle and area as measurable attributes of real- world and mathematical objects. Use various tools to measure angles and areas.	4.3.2.1	Measure angles in geometric figures and real-world objects with a protractor or angle ruler.
			4.3.2.2	Compare angles according to size. Classify angles as acute, right and obtuse.
			4.3.2.3	Understand that the area of a two-dimensional figure can be found by counting the total number of same size square units that cover a shape without gaps or overlaps. Justify why length and width are multiplied to find the area of a rectangle by breaking the rectangle into one unit by one unit squares and viewing these as grouped into rows and columns.
			4.3.2.4	Find the areas of geometric figures and real-world objects that can be divided into rectangular shapes. Use square units to label area measurements.
		Use translations, reflections and rotations to establish congruency and understand symmetries.	4.3.3.1	Apply translations (slides) to figures.
			4.3.3.2	Apply reflections (flips) to figures by reflecting over vertical or horizontal lines and relate reflections to lines of symmetry.
			4.3.3.3	Apply rotations (turns) of 90˚ clockwise or counterclockwise.
			4.3.3.4	Recognize that translations, reflections and rotations preserve congruency and use them to show that two figures are congruent.

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Second Semester				
Unit 6: Rational Numbers *(5 ½ weeks)* *Approximate dates: March 6 – April 21, 2017*				
Learning Targets	**Standards**			
Unit Long Learning Targets	**Strand / Standard**		**No.**	**Benchmark**
6.1 I can represent equivalent fractions with models. (4.1.2.1) **6.2** I can locate fractions, including improper fractions and mixed numbers, on a number line. (4.1.2.2) **6.3** I can compare fractions using a number line. (4.1.2.2) **6.4** I can add and subtract fractions with like denominators using models. (4.1.2.3) **6.5** I can prove the fraction and decimal equivalents for tenths, hundredths, halves and fourths. (4.1.2.6) **6.6** I can read and write decimals through the thousandths place. (4.1.2.4) **6.7** I can compare and order decimals using models. (4.1.2.5) **6.8** I can round decimals to the nearest tenth. (4.1.2.7) **6.9** I can organize data that may include fractions or decimals. (4.4.1.1) **MCA Testing** *(1 week)* **Units 1-6 must be taught prior to MCA testing.**	Number & Operation	Represent and compare fractions and decimals in real-world and mathematical situations; use place value to understand how decimals represent quantities.	4.1.2.1	Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.
			4.1.2.2	Locate fractions on a number line. Use models to order and compare whole numbers and fractions, including mixed numbers and improper fractions.
			4.1.2.3	Use fraction models to add and subtract fractions with like denominators in real- world and mathematical situations. Develop a rule for addition and subtraction of fractions with like denominators.
			4.1.2.4	Read and write decimals with words and symbols; use place value to describe decimals in terms of thousands, hundreds, tens, ones, tenths, hundredths and thousandths.
			4.1.2.5	Compare and order decimals and whole numbers using place value, a number line and models such as grids and base 10 blocks.
			4.1.2.6	Read and write tenths and hundredths in decimal and fraction notations using words and symbols; know the fraction and decimal equivalents for halves and fourths.
			4.1.2.7	Round decimals to the nearest tenth.
	Data Analysis	Collect, organize, display and interpret data, including data collected over a period of time and data represented by fractions and decimals.	4.4.1.1	Use tables, bar graphs, and timelines and Venn diagrams to display data sets. The data may include fractions or decimals. Understand that spreadsheet tables and graphs can be used to display data.

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Second Semester			
Unit 7: Number and Operations III *(5 weeks)* *Approximate dates: May 3– June 9, 2017*			
Learning Targets	**Standards**		
Unit Long Learning Targets	**Strand / Standard**	**No.**	**Benchmark**
7.1 I can use addition and subtraction strategies to solve real-world problems with multi-digit numbers. (5.1.1.4) **7.2** I can use more than one strategy to solve multi-digit addition and subtraction problems. (5.1.1.4)	**Number & Operation** Divide multi-digit numbers; solve real-world and mathematical problems using arithmetic.	5.1.1.4	Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.