Grade 5 Mathematics

The Mathematics Curriculum Framework represents the commitment of the Hinsdale School District to the Common Core State Standards and the ideas of Grant Wiggins and Jay McTighe in their principles of *Understanding by Design.* The Mathematics Curriculum Revision Committee (2015-16) believes that this document provides the necessary framework for teachers to develop mathematical units and lessons based on best practices in curriculum, instruction and assessment.

The Common Core State Standards for Mathematics requires that students develop a conceptual understanding of key concepts, procedural skills and fluency and the ability to use their knowledge to solve real world problems. Teachers are expected to develop lessons that meet these requirements by using a variety of instructional techniques and resources to meet individual student needs.

More information about the Common Core State Standards can be found at:

www.corestandards.org

Grade 5 Mathematics

Standard 5.OA: Operations and Algebraic Thinking

Write and Interpret numerical expressions.
Analyze patterns and relationships.

21st Century Learning Expectations

Hinsdale students will be able to solve problems.
Hinsdale students will communicate through various means.
Hinsdale students will take responsibility for their own learning.

Enduring Understandings

Algebra is part of everyday life.
Numerical expressions combine numbers and operations.
Order of operations is a way to simplify problems and enable us to solve them.

Learning Competencies	Essential Questions
Students will be able to • use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. • write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. • generate two numerical patterns using two given rules. • identify apparent relationships between corresponding terms. • form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.	• When is algebra used in the real world? • How can numerical expressions be used to solve problems? • How can rules be used to create number patterns?

Grade 5 Mathematics

Standard 5.NBT: Number and Operations Base Ten

Understand the place value system.

Perform operations with multi-digit whole numbers and with decimals to hundredths.

21st Century Learning Expectations

Hinsdale students will be able to solve problems.

Hinsdale students will communicate through various means.

Hinsdale students will take responsibility for their own learning.

Enduring Understandings

Multiplication and division are inverse operations.

Models can be used to understand decimals.

Place value allows us to compare numbers.

Learning Competencies	Essential Questions
Students will be able to • demonstrate that in a multi-digit number, a digit in any place is 10 times the place to its right and 1/10 the place to its left. • identify patterns to show that the number of zeros in a product is equal to the whole number exponent. • read, write and compare decimals to the thousandths place. • rounding decimals to the thousandths place. • multiply multi-digit whole numbers using the standard algorithm while applying mental strategies such as the associative property or FOIL. • compute quotients of whole numbers with up to four-digit dividends and two-digit divisors. • perform the four operations on decimals to the hundredths using any strategy/method and explain their reasoning in writing.	• How does knowing how to compute decimals connect to real world problems? • How can models help us understand decimals? • How do you compare decimals using place value? • What patterns can we identify in the base ten system? • How do numbers allow people to communicate?

Grade 5 Mathematics

Standard 5.NF: Number and Operations -Fractions

Use equivalent fractions as a strategy to add and subtract fractions

Apply and extend previous understandings of multiplication and division to multiply and divide fractions

21st Century Learning Expectations

Hinsdale students will be able to solve problems.

Hinsdale students will communicate through various means.

Hinsdale students will take responsibility for their own learning.

Enduring Understandings

Fractions are connected to decimals.

Drawings and models can help with understanding fractions.

Addition and subtraction of fractions requires common denominators.

Fractions are division problems.

Learning Competencies	Essential Questions
Students will be able to • find common denominators in order to add and subtract fractions with unlike denominators. • solve addition and subtraction word problems containing fractions with either common or unlike denominators. • use strategies (unit, benchmark, number line) to determine if the answer is reasonable. • understand and explain in models that fractions are division of whole numbers. • multiply a fraction or whole number by a fraction. • represent multiplication of a fraction by a fraction or whole number with drawings and story problems. • find the area of a rectangle. • interpret multiplication as scaling • solve real world problems involving multiplication of fractions and mixed numbers. • apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.	• How can you apply the multiplication and division of fractions to real life situations? • How can you find out whether fractions are equivalent? • What is the relationship between the whole and the fraction? • How are fractions related to decimals? • What are some ways fractions are used to represent numbers in real world situations?

Grade 5 Mathematics

Standard 5.MD: Measurement and Data

Convert like measurement units within a given measurement system.
Represent and interpret data.
Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

21st Century Learning Expectations

Hinsdale students will be able to solve problems.
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Enduring Understandings:

Metric and customary units of measurement can be converted using multiplication and division.
Line plots can help interpret data.
Objects can be measured and compared by their attributes.

Learning Competencies	Essential Questions
Students will be able to • convert among different-sized standard measurement units within a given measurement and use these conversions in solving multi-step, real world problems. • plot fractional data on a line plot and solve fractional word problems using the data. • identify volume as an attribute of solid figures and understand concepts of volume measurement. • measure volumes by counting unit cubes with various measurements (ex. in, cm, ft.) • apply the operations of multiplication and addition to find the volume of solid figures.	• What are some examples of real world situations where you would need to convert from one unit to another? • How can knowledge of measurement be applied? • Why is it important to know how to measure volume?

Grade 5 Mathematics

Standard 5.G: Geometry

Graph points on the coordinate plane to solve real-world and mathematical problems.
Classify two-dimensional figures into categories based on their properties.

21st Century Learning Expectations

Hinsdale students will be able to solve problems.
Hinsdale students will communicate through various means.
Hinsdale students will take responsibility for their own learning.

Enduring Understandings

Coordinates have application in real world situations.
Attributes of two dimensional shapes have a hierarchy.
Objects can be described, classified, and analyzed by using their geometric attributes.

Learning Competencies	Essential Questions
Students will be able to • define a coordinate system and identify a given point in the plane using ordered numbers. • locate the x and y axis and identify the x and y coordinate in a pair. • use ordered pairs of numbers to graph points in the first quadrant of a coordinate plane and use ordered pairs to name points already on a grid. • understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. • classify two-dimensional figures based on their attributes, from general to most specific.	• How is the coordinate system used? • How are lists, tables, charts, and diagrams used to illustrate mathematical relationships? • How is geometry connected to my world? • How are geometric properties used to solve problems in everyday life?