# Mount Pleasant Central School District

## 5th Grade, Math

***We believe that students should learn the mathematical practice standards by showing the connections between real world problems and mathematical solutions by modeling, explorations and discovery.***

How does understanding fractions as numbers help students develop the conceptual basis for all operations. In this class, students will identify patterns and relationships within the base ten number system to solidify their understanding of the core arithmetic operations with whole numbers, fractions, and decimals. Our main goal is to build fluency in calculations while developing reasoning skills through multi-step problem solving experiences. Students will apply this work to solve problems in geometric and measurement contexts. We emphasize critical thinking, reflection, collaboration and resilience in both whole-group and small-group instruction. Assessments will be primarily through exit tickets and quizzes, end-of-module assessments, as well as performance-based assessments, which enable students to apply their learning to real-world situations.

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|---|---|---|---|---|---|---|---|
| **Module 1 Place Value Concepts for Multiplication and Division with Whole Numbers** | September | Students deepen their understanding of the base-ten place value system and apply it to multi-digit operations. They multiply and divide whole numbers using powers of ten, standard algorithms, and place value strategies. Instruction emphasizes solving multi-step word problems and evaluating expressions using the Order of Operations. | Dividend<br>Divisor<br>Quotient<br>Remainder<br>Exponent<br>Exponential form<br>Power of 10<br>Factor<br>Product | 5.NBT.1: Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.<br>5.NBT.2: Use whole-number exponents to denote powers of 10. Explain patterns in the number of zeros of the product when multiplying a number | Students will multiply and divide by powers of 10.<br>Students will multiply and divide multi digit numbers by the standard algorithm.<br>Students will solve multi-step word problems involving the four operations | How does the value of a digit in a multi-digit number change when it is multiplied or divided by a power of ten?<br>How is finding the product or quotient using the standard algorithm related to other strategies that we have learned? | Written assessment; Performance Based Assessment |

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| | | | | by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.<br>5.NBT.5: Fluently multiply multi-digit whole numbers using a standard algorithm.<br>5.NBT.6: Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based | | | |

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| | | | | on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.<br>5.OA.1: Apply the order of operations to evaluate numerical expressions.<br>5.OA.2: Write simple expressions that record calculations with numbers, and | | | |

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| | | | | interpret numerical expressions without evaluating them.<br>5.MD.1: Convert among different-sized standard measurement units within a given measurement system when the conversion factor is given. Use these conversions in solving multi-step, real world problems. | | | |

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| **Module 2 Addition and Subtraction with Fractions** | October - November | Students add and subtract fractions, mixed numbers, and whole numbers with unlike denominators by creating equivalent fractions. They interpret fractions as division and solve real-world problems involving fractional measurements and line plots. | Difference<br>Sum<br>Numerator<br>Denominator<br>Equivalent Fraction<br>Common Unit<br>Mixed number | 5.NF.1: Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.<br>5.NF.2: Solve word problems involving addition and subtraction of fractions referring to the same whole, | Students will represent fractions as division by using models.<br>Students will add and subtract fractions, mixed numbers and whole numbers by using different models and by creating equivalent fractions. | Why is it important to find like units before adding or subtracting fractions and mixed numbers? | Written assessment; Performance Based Assessment |

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| | | | | including cases of unlike denominators. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.<br>5.NF.3: Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of | | | |

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| | | | | fractions or mixed numbers.<br>5.MD.2: Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. | | | |

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| **Module 3 Multiplication and Division with Fractions** | December - January | Students extend their understanding of multiplication and division to include fractions. They multiply fractions by whole numbers and by other fractions, divide fractions by whole numbers, and solve multi-step real-world problems involving fractional operations. | Convert<br>Dividend<br>Divisor<br>Quotient<br>Denominator<br>Numerator | 5.NF.4: Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.<br>5.NF.5: Interpret multiplication as scaling (resizing).<br>5.NF.6: Solve real world problems involving multiplication of fractions and mixed numbers.<br>5.NF.7: Apply and extend previous | Students will multiply and divide fractions using pictorial models. Students will solve multi-step problems involving fractions. | How does the size of the dividend and the divisor affect the size of the quotient? | Written assessment |

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| | | | | understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. | | | |

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| **Module 4 Place Value Concepts for Decimal Operations** | February - March | Students extend place value understanding to decimals through the thousandths. They read, write, compare, round, and perform all four operations with decimals. Instruction emphasizes connecting decimals to fractions and solving multi-step real-world problems. | Tenths<br>Hundredths<br>Thousandths<br>Inequality | 5.NBT.1: Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.<br>5.NBT.2: Use whole-number exponents to denote powers of 10. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and | Students will perform the four operations using decimal numbers.<br>Students will solve multi-step word problems using decimal numbers. | How do the decimal place values relate to standard fractions? | Written assessment |

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| | | | | explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.<br>5.NBT.3: Read, write, and compare decimals to thousandths.<br>5.NBT.4: Use place value understanding to round decimals to any place.<br>5.NBT.7: Using concrete models or drawings and strategies based on | | | |

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| | | | | place value, properties of operations, and/or the relationship between operations: add and subtract decimals to hundredths; multiply and divide decimals to hundredths. Relate the strategy to a written method and explain the reasoning used. | | | |
| **Module 5** | March - May | Students classify two-dimensional | Base<br>Composite figure | 5.NF.4: Apply and extend previous | Students will classify shapes based on their | Why is volume measured with three | Written assessment |

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| **Addition and Multiplication with Area and Volume** | | shapes, find the area of rectangles with fractional side lengths, and explore volume as a measurable attribute of solid figures. They solve real-world problems involving area, perimeter, and volume. | Cubic centimeter<br>Cubic inch<br>Kite<br>Midpoint<br>Plane<br>Property<br>Right rectangular prism<br>Volume | understandings of multiplication to multiply a fraction or whole number by a fraction.<br>5.NF.6: Solve real world problems involving multiplication of fractions and mixed numbers. | properties.<br>Students will find the area and perimeter of shapes with fractional side lengths.<br>Students will find the volume of solid figures using unit cubes and the formula. | dimensions? | |
| **Module 6 Foundations to** | May - June | Students explore patterns on the coordinate plane and | Axes<br>Coordinate<br>Coordinate plane | 5.G.1: Use a pair of perpendicular number lines, called axes, to | Students will identify points on a coordinate plane by using | How can ordered pairs help me describe the | Written assessment; Performance Based Assessment |

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| **Geometry in the Coordinate Plane** | | solve mathematical and real-world problems using ordered pairs. They draw figures on the coordinate plane and reason about area and perimeter in the first quadrant. | Ordered pair<br>Origin<br>Y-axis<br>X-axis | define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how | ordered pairs. Students will draw lines and figures on a coordinate plane. Students will reason about area and perimeter of shapes on a coordinate plane. | location of points and solve problems on the coordinate plane? How does graphing points in the first quadrant help me analyze patterns and relationships in real-world situations? | |

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| | | | | far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond.<br>5.G.2: Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. | | | |

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