



# **Pine Grove Area**

SCHOOL DISTRICT

**MATHEMATICS**

**GRADE SIX**

**September 17, 2009**

## **I. PHILOSOPHY**

The Grade Six Mathematics course of the Pine Grove Area School District has been structured to introduce, review and build upon, the five core mathematical concepts including numbers and operations, measurement, geometry, algebraic concepts, and data analysis and probability. Developmentally appropriate activities will include opportunities for collaborative learning and use of manipulatives. The course will allow for the accommodation of many learning styles, motivational levels, and academic abilities.

## II. CORE CONCEPTS

1. Whole Numbers and Decimals: Compare and order whole numbers and decimals; select and/or use operations to simplify or solve problems; apply estimation strategies to a variety of problems; add, subtract, multiply, and divide whole numbers and decimals; use the order of operations to simplify expressions.
2. Number Theory: Apply number theory concepts including divisibility, exponents, prime factorization, greatest common factor, and least common multiple.
3. Fractions: Determine equivalent fractions; compare and order fractions; add, subtract, multiply, and divide fractions; convert between fractions and decimals; distinguish between terminating decimals, repeating decimals, and irrational numbers.
4. Geometry: Identify properties of points, lines, and rays; measure and classify angles; identify and classify triangles and polygons; solve problems involving length, perimeter, and area; identify and calculate parts of a circle; locate and plot points on the coordinate plane.
5. Measurement: Determine elapsed time; choose or use appropriate tools and or units to determine measurement within the same system; measure lengths using a ruler.
6. Algebra: Describe and extend patterns; write and evaluate expressions; solve one-step equations.
7. Data Analysis & Probability: Analyze data using mean, median, mode, and range; organize and interpret data using a variety of graphs; determine possible outcomes and the probability of an event.
8. Percents: Identify common fraction, decimal, and percent equivalencies; convert between fractions, decimals, and percents; calculate the percent of a number; estimate taxes, tips, and discounts.
9. Integers: compare and order integers; solve problems using integers; add, subtract, multiply and divide integers.
10. Problem Solving & Communication: Solve and write mathematical problems and decide on correct answers by interpreting results; explain and justify steps used to reach results (taught throughout all core concepts).

### **III. COURSE OF STUDY**

- A. Course Name: Mathematics
- B. Grade Level: 6
- C. Length of Course: year-long
- D. Academic Level: Sixth Grade
- E. Credits: None
- F. Prerequisites: None
- G. Course Description: This is an introductory course covering several topics adhering to the Pennsylvania State Mathematics Standards. Students will review and build upon the five core mathematical concepts including numbers and operations, measurement, geometry, algebraic concepts, and data analysis and probability. Students will participate in appropriate activities to include collaborative learning and use of manipulatives.

**IV. CONTENT:** Grade Six Mathematics

**CORE CONCEPT 1:** Whole Numbers and Decimals

**MAJOR OBJECTIVE:** Compare and order whole numbers and decimals; select and/or use operations to simplify or solve problems; apply estimation strategies to a variety of problems; add, subtract, multiply, and divide whole numbers and decimals; use the order of operations to simplify expressions.

| <b>CURRICULUM STANDARD:</b>  |  |   |   |
|--|--|---|---|
| PA State Standard/Student Expectation  | Specific Content   | Assessments   | Resources/Materials   |
| <p><b>PA Standard 2.1.8.C</b><br/>Distinguish between and order rational and irrational numbers.</p> | <p>Teacher will guide students to:</p> <p><b>M6.A.1.2.1</b> Compare and/or order whole numbers, mixed numbers, fractions and/or decimals (do not mix fractions and decimals – decimals through thousandths).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

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**CURRICULUM STANDARD:**

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|--|--|---|---|
| <p><b>PA Standard 2.1.8.B</b><br/>Simplify numerical expressions involving exponents, scientific notation and using order of operations.</p> | <p>Teacher will guide students to:</p> <p><b>M6.A.2.1.1</b> Complete equations by using the following properties: associative, commutative, distributive and identity.</p> <p>Use the order of operations to simplify expressions.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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| <p><b>PA Standard 2.2.8.A</b><br/>Complete calculations by applying the order of operations.</p> | <p>Teacher will guide students to:<br/><br/>Use the order of operations to simplify expressions.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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| <p><b>PA Standard 2.2.8.B</b><br/>Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimal fractions, percents and proper and improper fractions.</p> | <p>Teacher will guide students to:</p> <p><b>M6.A.3.2.1</b> Solve problems involving operations (+, -, x, ÷) with whole numbers, decimals (through thousandths) and fractions (avoid complicated LCDs) - straight computation or word problems.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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|--|--|---|---|
| <p><b>PA Standard 2.4.8.D</b><br/>Construct, use and explain algorithmic procedures for computing and estimating with whole numbers, fractions, decimals and integers.</p> | <p>Teacher will guide students to:</p> <p><b>M6.A.3.1.1</b> Use estimation to solve problems involving whole numbers and decimals (up to 2-digit divisors and 4 operations).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 2:** Number Theory

**MAJOR OBJECTIVE:** Apply number theory concepts including divisibility, exponents, prime factorization, greatest common factor, and least common multiple.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content  | Assessments   | Resources/Materials   |
|--|---|---|---|
| <p><b>PA Standard 2.1.8.A</b><br/>Represent and use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, exponents, scientific notation, and square roots).</p> | <p>Teacher will guide students to:</p> <p><b>M6.A.1.1.3</b> Represent a number in exponential form (e.g., <math>10 \times 10 \times 10 = 10^3</math>).</p> <p><b>M6.A.1.3.1</b> Find the Greatest Common Factor (GCF) of two numbers (through 50) and/or use the GCF to simplify fractions.</p> <p><b>M6.A.1.3.2</b> Find the Least Common Multiple (LCM) of two numbers (through 50) and/or use the LCM to find the common denominator of two fractions.</p> <p>Find the prime factorization of a number and/or use the prime factorization to find the Least Common Multiple and/or Greatest Common Factor of two numbers.</p> <p><b>M6.A.1.3.3</b> Use divisibility rules for 2, 3, 5 and/or 10 to draw conclusions and/or solve problems.</p> <p>Use divisibility rules for 2, 3, 5, 6, 9, and/or 10 to simplify fractions.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content   | Assessments   | Resources/Materials   |
|--|--|---|---|
| <p><b>PA Standard 2.1.8.B</b><br/>Simplify numerical expressions involving exponents, scientific notation and using order of operations.</p> | <p>Teacher will guide students to:</p> <p><b>M6.A.1.1.3</b> Represent a number in exponential form (e.g., <math>10 \times 10 \times 10 = 10^3</math>).</p> <p>Use the order of operations to simplify expressions.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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|--|---|---|---|
| <p><b>PA Standard 2.1.8.E</b><br/>Simplify and expand algebraic expressions using exponential forms.</p> | <p>Teacher will guide students to:<br/><br/>Represent a variable expression in exponential form (e.g., <math>n \cdot n \cdot n = n^3</math>).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 3:** Fractions

**MAJOR OBJECTIVE:** Determine equivalent fractions; compare and order fractions; add, subtract, multiply, and divide fractions; convert between fractions and decimals; distinguish between terminating decimals, repeating decimals, and irrational numbers.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content   | Assessments   | Resources/Materials   |
|--|--|---|---|
| <p><b>PA Standard 2.1.8.A</b><br/>           A. Represent and use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, exponents, scientific notation, and square roots).</p> | <p>Teacher will guide students to:</p> <p><b>M6.A.1.1.4</b> Represent a mixed number as an improper fraction.</p> <p>Identify and calculate equivalent fractions and simplify fractions to lowest terms.</p> <p><b>M6.A.1.1.2</b> Convert between fractions and decimals and/or differentiate between a terminating decimal and a repeating decimal.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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| <p><b>PA Standard 2.1.8.C</b><br/>Distinguish between and order rational and irrational numbers</p> | <p>Teacher will guide students to:</p> <p><b>M6.A.1.2.1</b> Compare and/or order whole numbers, mixed numbers, fractions and/or decimals (do not mix fractions and decimals – decimals through thousandths).</p> <p>Distinguish between rational and irrational numbers.</p> <p><b>M6.A.1.1.2</b> Convert between fractions and decimals and/or differentiate between a terminating decimal and a repeating decimal.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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|--|--|---|---|
| <p><b>PA Standard 2.2.8B</b><br/>Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimal fractions, percents and proper and improper fractions.</p> | <p>Teacher will guide students to:</p> <p><b>M6.A.3.2.1</b> Solve problems involving operations (+, -, x, ÷) with whole numbers, decimals, (through thousandths) and fractions (avoid complicated LCDs)-straight computation or word problems.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 3:** Fractions

**MAJOR OBJECTIVE:** Determine equivalent fractions; compare and order fractions; add, subtract, multiply, and divide fractions; convert between fractions and decimals; distinguish between terminating decimals, repeating decimals, and irrational numbers.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content   | Assessments   | Resources/Materials   |
|---|--|---|---|
| <p><b>PA Standard 2.4.8.D</b><br/>Construct, use and explain algorithmic procedures for computing and estimating with whole numbers, fractions, decimals and integers</p> | <p>Teacher will guide students to:<br/><br/>Use estimation to solve problems involving fractions (all 4 operations).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 4:** Geometry

**MAJOR OBJECTIVE:** Identify properties of points, lines, and rays; measure and classify angles; identify and classify triangles and polygons; solve problems involving length, perimeter, and area; identify and calculate parts of a circle; locate and plot points on the coordinate plane.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content  | Assessments   | Resources/Materials   |
|--|---|---|---|
| <p><b>PA Standard 2.3.8.A</b><br/>Develop formulas and procedures for determining measurements (e.g., area, volume, distance).</p> | <p>Teacher will guide students to:</p> <p><b>M6.B.2.2.1</b> Find the perimeter of any polygon (may include regular polygons where only the measure of one side is given – same units throughout).</p> <p>Find the area of triangles and quadrilaterals.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 4:** Geometry

**MAJOR OBJECTIVE:** Identify properties of points, lines, and rays; measure and classify angles; identify and classify triangles and polygons; solve problems involving length, perimeter, and area; identify and calculate parts of a circle; locate and plot points on the coordinate plane.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content  | Assessments   | Resources/Materials   |
|--|---|---|---|
| <p><b>PA Standard 2.3.8.C</b><br/>Measure angles in degrees and determine relations of angles.</p> | <p>Teacher will guide students to:</p> <p><b>M6.B.2.1.3</b> Measure angles using a protractor up to 180° - protractor must be drawn - one side of the angle to be measured should line up with the straight edge of the protractor.</p> <p>Identify and calculate complimentary and supplementary angles.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 4:** Geometry

**MAJOR OBJECTIVE:** Identify properties of points, lines, and rays; measure and classify angles; identify and classify triangles and polygons; solve problems involving length, perimeter, and area; identify and calculate parts of a circle; locate and plot points on the coordinate plane.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content   | Assessments   | Resources/Materials   |
|--|--|---|---|
| <p><b>PA Standard 2.3.8.D</b><br/>Estimate, use and describe measures of distance, rate, perimeter, area, volume, weight, mass and angles.</p> | <p>Teacher will guide students to:</p> <p><b>M6.B.2.2.1</b> Find the perimeter of any polygon (may include regular polygons where only the measure of one side is given – same units throughout).</p> <p>Find the area of triangles and quadrilaterals.</p> <p><b>M6.B.2.1.3</b> Measure angles using a protractor up to 180° - protractor must be drawn - one side of the angle to be measured should line up with the straight edge of the protractor.</p> <p>Identify and calculate complimentary and supplementary angles.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 4:** Geometry

**MAJOR OBJECTIVE:** Identify properties of points, lines, and rays; measure and classify angles; identify and classify triangles and polygons; solve problems involving length, perimeter, and area; identify and calculate parts of a circle; locate and plot points on the coordinate plane.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content   | Assessments   | Resources/Materials   |
|---|--|---|---|
| <p><b>PA Standard 2.9.8.A</b><br/>Construct figures incorporating perpendicular and parallel lines, the perpendicular bisector of a line segment and an angle bisector using computer software.</p> | <p>Teacher will guide students to:</p> <p><b>M6.C.1.2.1</b> Identify, describe and/or label parallel, perpendicular or intersecting lines.</p> <p><b>M6.C.1.2.2</b> Identify, draw and/or label points, planes, lines, line segments, rays, angles and vertices.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 4:** Geometry

**MAJOR OBJECTIVE:** Identify properties of points, lines, and rays; measure and classify angles; identify and classify triangles and polygons; solve problems involving length, perimeter, and area; identify and calculate parts of a circle; locate and plot points on the coordinate plane.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content   | Assessments   | Resources/Materials   |
|--|--|---|---|
| <p><b>PA Standard 2.9.8.B</b><br/>Draw, label, measure and list the properties of complementary, supplementary and vertical angles</p> | <p>Teacher will guide students to:</p> <p><b>M6.B.2.1.3</b> Measure angles using a protractor up to 180° - protractor must be drawn - one side of the angle to be measured should line up with the straight edge of the protractor.</p> <p>Identify and calculate complimentary and supplementary angles</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 4:** Geometry

**MAJOR OBJECTIVE:** Identify properties of points, lines, and rays; measure and classify angles; identify and classify triangles and polygons; solve problems involving length, perimeter, and area; identify and calculate parts of a circle; locate and plot points on the coordinate plane.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content  | Assessments   | Resources/Materials   |
|---|---|---|---|
| <p><b>PA Standard 2.9.8.C</b><br/>Classify familiar polygons as regular or irregular up to a decagon.</p> | <p>Teacher will guide students to:</p> <p><b>M6.C.1.1.1</b> Identify, classify and/or compare polygons (up to ten sides.)</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 4:** Geometry

**MAJOR OBJECTIVE:** Identify properties of points, lines, and rays; measure and classify angles; identify and classify triangles and polygons; solve problems involving length, perimeter, and area; identify and calculate parts of a circle; locate and plot points on the coordinate plane.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content  | Assessments   | Resources/Materials   |
|---|---|---|---|
| <p><b>PA Standard 2.9.8.D</b><br/>Identify, name, draw and list all properties of squares, cubes, pyramids, parallelograms, quadrilaterals, trapezoids, polygons, rectangles, rhombi, circles, spheres, triangles, prisms and cylinders</p> | <p>Teacher will guide students to:</p> <p><b>M6.C.1.1.1</b> Identify, classify and/or compare polygons (up to ten sides.)</p> <p><b>M6.C.1.1.2</b> Identify and/or describe properties of all types of triangles (scalene, equilateral, isosceles, right, acute, obtuse).</p> <p><b>M6.C.1.1.3</b> Identify and/or determine the measure of the diameter and/or radius of a circle (when one or the other is given).</p> <p><b>M6.C.1.1.4</b> Identify and/or use the total number of degrees in a triangle, quadrilateral and/or circle.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 4:** Geometry

**MAJOR OBJECTIVE:** Identify properties of points, lines, and rays; measure and classify angles; identify and classify triangles and polygons; solve problems involving length, perimeter, and area; identify and calculate parts of a circle; locate and plot points on the coordinate plane.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content  | Assessments   | Resources/Materials   |
|---|---|---|---|
| <p><b>PA Standard 2.8.8.G</b><br/>           A. Represent relationships with tables or graphs in the coordinate plane and verbal or symbolic rules.</p> | <p>Teacher will guide students to:</p> <p><b>M6.C.3.1.1</b> Plot, locate or identify points in Quadrant I and/or on the x and y axes with intervals of 1, 2, 5 or 10 units - up to a 200 by 200 grid. Points may be in-between lines.</p> <p><b>M6.C.3.1.1</b> Plot, locate or identify points in Quadrant I, II, III and IV and/or on the x and y axes . Points may be in-between lines.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 5:** Measurement

**MAJOR OBJECTIVE:** Determine elapsed time; choose or use appropriate tools and or units to determine measurement within the same system; measure lengths using a ruler.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content   | Assessments   | Resources/Materials   |
|---|--|---|---|
| <p><b>PA Standard 2.3.8.D</b><br/>Estimate, use and describe measures of distance, rate, perimeter, area, volume, weight, mass and angles</p> | <p>Teacher will guide students to:</p> <p><b>M6.B.2.1.1</b> Use or read a ruler to measure to the nearest 1/16 inch or millimeter.</p> <p><b>M6.B.2.1.2</b> Choose the more precise measurement of a given object (e.g., smaller measurements are more precise).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 5:** Measurement

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**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content   | Assessments   | Resources/Materials   |
|--|--|---|---|
| <p><b>PA Standard 2.4.8.F</b><br/>Use measurements and statistics to quantify issues (e.g., in family, consumer science situations).</p> | <p>Teacher will guide students to:</p> <p><b>M6.B.1.1.1</b> Determine and/or compare elapsed time to the minute (time may cross AM to PM or more than one day).</p> <p>Analyze results of experiments (e.g. egg drop).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 6:** Algebra

**MAJOR OBJECTIVE:** Describe and extend patterns; write and evaluate expressions; solve one-step equations.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content  | Assessments   | Resources/Materials   |
|---|---|---|---|
| <p><b>PA Standard 2.1.8.G</b><br/>Use the inverse relationships between addition, subtraction, multiplication, division, exponentiation and root extraction to determine unknown quantities in equations.</p> | <p>Teacher will guide students to:</p> <p><b>M6.D.2.1.1</b> Identify the inverse operation needed to solve a one-step equation.</p> <p><b>M6.D.2.1.2</b> Solve a one-step equation (i.e., using the inverse operation -whole numbers only).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"><li>• Student notebooks</li><li>• Group projects</li><li>• Partner projects</li><li>• Individual projects</li><li>• Homework</li><li>• Class work</li><li>• Teacher observations</li><li>• Tests/quizzes</li><li>• Independent activities</li><li>• Cooperative activities</li><li>• Student journals</li><li>• Teacher demonstrations and student observations</li><li>• Student demonstrations</li><li>• Oral presentations</li><li>• Oral questions and answers</li><li>• Worksheets</li><li>• Concept maps/graphic organizers</li><li>• Diagrams</li><li>• Portfolio</li><li>• Rubrics</li><li>• Open-Ended Questions</li></ul> | <p>All possible resources:</p> <ul style="list-style-type: none"><li>• Student textbook</li><li>• Instructors textbook</li><li>• Textbook resources</li><li>• Instructor generated resources</li><li>• Internet sites</li><li>• Videos</li><li>• Software programs</li><li>• Newspapers &amp; magazines</li><li>• Cable in the Classroom</li><li>• Math centers</li><li>• Promethean board</li><li>• Podcasts</li><li>• Library</li><li>• Student developed resources</li><li>• Outside presenters</li><li>• Community resources</li><li>• Math journal/notebook</li><li>• Supplemental materials</li><li>• Computer</li><li>• Worksheets</li><li>• Calculators</li></ul> |

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| <p><b>PA Standard 2.8.8.A</b><br/>Apply simple algebraic patterns to basic number theory and to spatial relations</p> | <p>Teacher will guide students to:</p> <p><b>M6.D.1.1.1</b> Create, extend or find a missing element in a pattern displayed in a table, chart or graph (pattern must show at least 3 repetitions - may use up to 2 operations with whole numbers).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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|---|---|---|---|
| <p><b>PA Standard 2.8.8.B</b><br/>Discover, describe and generalize patterns, including linear, exponential and simple quadratic relationships.</p> | <p>Teacher will guide students to:</p> <p><b>M6.D.1.1.1</b> Create, extend or find a missing element in a pattern displayed in a table, chart or graph (pattern must show at least 3 repetitions - may use up to 2 operations with whole numbers).</p> <p><b>M6.D.1.2.1</b> Determine a rule based on a pattern or illustrate a pattern based on a given rule (displayed on a table, chart or graph; pattern must show at least 3 repetitions).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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**CORE CONCEPT 6:** Algebra

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|---|--|---|---|
| <p><b>PA Standard 2.8.8.C</b><br/>Create and interpret expressions, equations or inequalities that model problem situations</p> | <p>Teacher will guide students to:</p> <p><b>M6.D.2.2.1</b> Match an equation or expression involving one variable, to a verbal math situation (one operation only).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

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|---|---|---|---|
| <p><b>PA Standard 2.8.8.D</b><br/>Use concrete objects to model algebraic concepts.</p> | <p>Teacher will guide students to:</p> <p><b>M6.D.2.1.1</b> Identify the inverse operation needed to solve a one-step equation.</p> <p><b>M6.D.2.1.2</b> Solve a one-step equation (i.e., using the inverse operation -whole numbers only).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 6:** Algebra

**MAJOR OBJECTIVE:** Describe and extend patterns; write and evaluate expressions; solve one-step equations.

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|--|--|---|---|
| <p><b>PA Standard 2.8.8.E</b><br/>           Select and use a strategy to solve an equation or inequality, explain the solution and check the solution for accuracy.</p> | <p>Teacher will guide students to:</p> <p><b>M6.D.2.1.1</b> Identify the inverse operation needed to solve a one-step equation.</p> <p><b>M6.D.2.1.2</b> Solve a one-step equation (i.e., using the inverse operation -whole numbers only).</p> <p>Solve and check one step equations using whole numbers, decimals, and/or fractions.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 6:** Algebra

**MAJOR OBJECTIVE:** Describe and extend patterns; write and evaluate expressions; solve one-step equations.

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|--|---|---|---|
| <p><b>PA Standard 2.11.8.C</b><br/>Continue a pattern of numbers or objects that could be extended infinitely.</p> | <p>Teacher will guide students to:</p> <p><b>M6.D.1.1.1</b> Create, extend or find a missing element in a pattern displayed in a table, chart or graph (pattern must show at least 3 repetitions - may use up to 2 operations with whole numbers).</p> <p><b>M6.D.1.2.1</b> Determine a rule based on a pattern or illustrate a pattern based on a given rule (displayed on a table, chart or graph; pattern must show at least 3 repetitions).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 7:** Data Analysis & Probability

**MAJOR OBJECTIVE:** Analyze data using mean, median, mode, and range; organize and interpret data using a variety of graphs; determine possible outcomes and the probability of an event.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content   | Assessments   | Resources/Materials   |
|---|--|---|---|
| <p><b>PA Standard 2.6.8.A</b><br/>Compare and contrast different plots of data using values of mean, median, mode, quartiles and range.</p> | <p>Teacher will guide students to:</p> <p><b>M6.E.2.1.1</b> Determine/calculate the mean, median, mode and/or range of displayed data (data can be displayed in a table or line plot – use whole numbers only up to 2 digits).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

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|---|---|---|---|
| <p><b>PA Standard 2.7.8.A</b><br/>Determine the number of combinations and permutations for an event.</p> | <p>Teacher will guide students to:</p> <p><b>M6.E.3.1.1</b> Define and/or find the probability of a simple event (express as a fraction in lowest terms).</p> <p><b>M6.E.3.1.2</b> Determine/show all possible combinations involving no more than 20 total arrangements (e.g., tree diagram, table, grid).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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| <p><b>PA Standard 2.7.8.B</b><br/>Present the results of an experiment using visual representations (e.g., tables, charts, graphs).</p> | <p>Teacher will guide students to:</p> <p><b>M6.E.1.1.2</b> Choose the appropriate representation for a specific set of data (choices should be the same type of graph).</p> <p><b>M6.E.1.1.3</b> Display data in frequency tables, circle graphs, double-bar graphs, double line graphs or line plots using a title, appropriate scale, labels and a key when needed. Circle graphs for open-ended items must show a center point and tic marks.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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|--|---|---|---|
| <p><b>PA Standard 2.7.8.E</b><br/>Make valid inferences, predictions and arguments based on probability.</p> | <p>Teacher will guide students to:</p> <p><b>M6.E.3.1.1</b> Define and/or find the probability of a simple event (express as a fraction in lowest terms).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 7:** Data Analysis & Probability

**MAJOR OBJECTIVE:** Analyze data using mean, median, mode, and range; organize and interpret data using a variety of graphs; determine possible outcomes and the probability of an event.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content   | Assessments   | Resources/Materials   |
|--|--|---|---|
| <p><b>PA Standard 2.11.8.A</b><br/>Analyze graphs of related quantities for minimum and maximum values and justify the findings.</p> | <p>Teacher will guide students to:</p> <p><b>M6.E.1.1.1</b> Analyze data and/or answer questions pertaining to data represented in frequency tables, circle graphs, double bar graphs, double line graphs or line plots (for circle graphs, no computation with percents).</p> <p><b>M6.E.2.1.1</b> Determine/calculate the mean, median, mode and/or range of displayed data (data can be displayed in a table or line plot – use whole numbers only up to 2 digits).</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 8:** Percents

**MAJOR OBJECTIVE:** Identify common fraction, decimal, and percent equivalencies; convert between fractions, decimals, and percents; calculate the percent of a number; estimate taxes, tips, and discounts.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content  | Assessments   | Resources/Materials   |
|--|---|---|---|
| <p><b>PA Standard 2.1.8.A</b><br/>Represent and use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, exponents, scientific notation, square roots).</p> | <p>Teacher will guide students to:</p> <p><b>M6.A.1.1.1</b> Represent common percents as fractions and/or decimals (e.g., <math>25\% = \frac{1}{4} = .25</math>) – common percents are 1%, 10%, 25%, 50%, 75%, 100%.</p> <p><b>M6.A.1.1.4</b> Represent a mixed number as an improper fraction.</p> <p>Convert between fractions, decimals and percents.</p> <p>Represent other common percents as decimals and/or fractions.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 8:** Percents

**MAJOR OBJECTIVE:** Identify common fraction, decimal, and percent equivalencies; convert between fractions, decimals, and percents; calculate the percent of a number; estimate taxes, tips, and discounts.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content   | Assessments   | Resources/Materials   |
|---|--|---|---|
| <p><b>PA Standard 2.2.8.D</b><br/>Estimate amount of tips and discounts using ratios, proportions and percents.</p> | <p>Teacher will guide students to:</p> <p>Calculate a percent of a given number.</p> <p>Estimate taxes, tips and discounts using mental math and/or decimals.</p> <p>Compare prices to determine the better value.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 8:** Percents

**MAJOR OBJECTIVE:** Identify common fraction, decimal, and percent equivalencies; convert between fractions, decimals, and percents; calculate the percent of a number; estimate taxes, tips, and discounts.

**CURRICULUM STANDARD:**

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|--|--|---|---|
| <p><b>PA Standard 2.4.8.B</b><br/>Combine numeric relationships to arrive at a conclusion.</p> | <p>Teacher will guide students to:</p> <p>Solve problems with fractions and/or decimals and translate answer to percent forms.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"><li>• Student notebooks</li><li>• Group projects</li><li>• Partner projects</li><li>• Individual projects</li><li>• Homework</li><li>• Class work</li><li>• Teacher observations</li><li>• Tests/quizzes</li><li>• Independent activities</li><li>• Cooperative activities</li><li>• Student journals</li><li>• Teacher demonstrations and student observations</li><li>• Student demonstrations</li><li>• Oral presentations</li><li>• Oral questions and answers</li><li>• Worksheets</li><li>• Concept maps/graphic organizers</li><li>• Diagrams</li><li>• Portfolio</li><li>• Rubrics</li><li>• Open-Ended Questions</li></ul> | <p>All possible resources:</p> <ul style="list-style-type: none"><li>• Student textbook</li><li>• Instructors textbook</li><li>• Textbook resources</li><li>• Instructor generated resources</li><li>• Internet sites</li><li>• Videos</li><li>• Software programs</li><li>• Newspapers &amp; magazines</li><li>• Cable in the Classroom</li><li>• Math centers</li><li>• Promethean board</li><li>• Podcasts</li><li>• Library</li><li>• Student developed resources</li><li>• Outside presenters</li><li>• Community resources</li><li>• Math journal/notebook</li><li>• Supplemental materials</li><li>• Computer</li><li>• Worksheets</li><li>• Calculators</li></ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 9:** Integers

**MAJOR OBJECTIVE:** Compare and order integers; solve problems using integers; add, subtract, multiply and divide integers.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content  | Assessments   | Resources/Materials   |
|--|---|---|---|
| <p><b>PA Standard 2.1.8.C</b><br/>Distinguish between and order rational and irrational numbers.</p> | <p>Teacher will guide students to:<br/>Compare and/or order positive and negative integers.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"><li>• Student notebooks</li><li>• Group projects</li><li>• Partner projects</li><li>• Individual projects</li><li>• Homework</li><li>• Class work</li><li>• Teacher observations</li><li>• Tests/quizzes</li><li>• Independent activities</li><li>• Cooperative activities</li><li>• Student journals</li><li>• Teacher demonstrations and student observations</li><li>• Student demonstrations</li><li>• Oral presentations</li><li>• Oral questions and answers</li><li>• Worksheets</li><li>• Concept maps/graphic organizers</li><li>• Diagrams</li><li>• Portfolio</li><li>• Rubrics</li><li>• Open-Ended Questions</li></ul> | <p>All possible resources:</p> <ul style="list-style-type: none"><li>• Student textbook</li><li>• Instructors textbook</li><li>• Textbook resources</li><li>• Instructor generated resources</li><li>• Internet sites</li><li>• Videos</li><li>• Software programs</li><li>• Newspapers &amp; magazines</li><li>• Cable in the Classroom</li><li>• Math centers</li><li>• Promethean board</li><li>• Podcasts</li><li>• Library</li><li>• Student developed resources</li><li>• Outside presenters</li><li>• Community resources</li><li>• Math journal/notebook</li><li>• Supplemental materials</li><li>• Computer</li><li>• Worksheets</li><li>• Calculators</li></ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 9:** Integers

**MAJOR OBJECTIVE:** Compare and order integers; solve problems using integers; add, subtract, multiply and divide integers.

**CURRICULUM STANDARD:**

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|---|--|---|---|
| <p><b>PA Standard 2.1.8.F</b><br/>Use the number line model to demonstrate integers and their applications.</p> | <p>Teacher will guide students to:</p> <p>Locate and identify opposites and absolute value of positive and negative integers on a number line.</p> <p>Use the number line to demonstrate and explain addition and subtraction with positive and negative integers.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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**CORE CONCEPT 9:** Integers

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|---|---|---|---|
| <p><b>PA Standard 2.2.8.B</b><br/>Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimal fractions, percents and proper and improper fractions.</p> | <p>Teacher will guide students to:<br/><br/>Solve problems involving operations (+, -, x, ÷) with positive and negative integers.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

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**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content   | Assessments   | Resources/Materials   |
|--|--|---|---|
| <p><b>PA Standard 2.4.8.D</b><br/>Construct, use and explain algorithmic procedures for computing and estimating with whole numbers, fractions, decimals and integers.</p> | <p>Teacher will guide students to:<br/><br/>Use estimation to solve problems involving positive and negative integers.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 9:** Integers

**MAJOR OBJECTIVE:** Compare and order integers; solve problems using integers; add, subtract, multiply and divide integers.

**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content  | Assessments   | Resources/Materials   |
|---|---|---|---|
| <p><b>PA Standard 2.8.8.D</b><br/>Use concrete objects to model algebraic concepts.</p> | <p>Teacher will guide students to:<br/><br/>Use positive and negative counters to model operations with integers.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"><li>• Student notebooks</li><li>• Group projects</li><li>• Partner projects</li><li>• Individual projects</li><li>• Homework</li><li>• Class work</li><li>• Teacher observations</li><li>• Tests/quizzes</li><li>• Independent activities</li><li>• Cooperative activities</li><li>• Student journals</li><li>• Teacher demonstrations and student observations</li><li>• Student demonstrations</li><li>• Oral presentations</li><li>• Oral questions and answers</li><li>• Worksheets</li><li>• Concept maps/graphic organizers</li><li>• Diagrams</li><li>• Portfolio</li><li>• Rubrics</li><li>• Open-Ended Questions</li></ul> | <p>All possible resources:</p> <ul style="list-style-type: none"><li>• Student textbook</li><li>• Instructors textbook</li><li>• Textbook resources</li><li>• Instructor generated resources</li><li>• Internet sites</li><li>• Videos</li><li>• Software programs</li><li>• Newspapers &amp; magazines</li><li>• Cable in the Classroom</li><li>• Math centers</li><li>• Promethean board</li><li>• Podcasts</li><li>• Library</li><li>• Student developed resources</li><li>• Outside presenters</li><li>• Community resources</li><li>• Math journal/notebook</li><li>• Supplemental materials</li><li>• Computer</li><li>• Worksheets</li><li>• Calculators</li></ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 10:** Problem Solving & Communication

**MAJOR OBJECTIVE:** Solve and write mathematical problems and decide on correct answers by interpreting results; explain and justify steps used to reach results (taught throughout all core concepts)

**CURRICULUM STANDARD:**

| State Standard/Student Expectation   | Specific Content  | Assessments   | Resources/Materials   |
|--|---|---|---|
| <p><b>PA Standard 2.2.8.E</b><br/>Determine the appropriateness of overestimating or underestimating in computation.</p> | <p>Teacher will guide students to:</p> <p>Explain verbally and/or in writing the effects of and use of estimated answers.</p> <p>Use exact answers and the context of the problem to determine appropriateness estimated answers.</p> <p>Use estimation strategies to gauge accuracy of calculated answers.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 10:** Problem Solving & Communication

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**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content  | Assessments   | Resources/Materials   |
|---|---|---|---|
| <p><b>PA Standard 2.2.8.F</b><br/>Identify the difference between exact value and approximation and determine which is appropriate for a given situation.</p> | <p>Teacher will guide students to:</p> <p>Explain verbally and/or in writing the effects of and use of estimated answers.</p> <p>Use exact answers and the context of the problem to determine appropriateness estimated answers.</p> <p>Use estimation strategies to gauge accuracy of calculated answers.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 10:** Problem Solving & Communication

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**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content  | Assessments   | Resources/Materials   |
|---|---|---|---|
| <p><b>PA Standard 2.5.8.A</b><br/>           Invent, select, use and justify the appropriate methods, materials and strategies to solve problems.</p> | <p>Teacher will guide students to:</p> <p>Write all work done to solve a problem in a clear, organized manner.</p> <p>Explain verbally and/or in writing the methods and/or strategies chosen to solve a problem.</p> <p>Explain verbally and/or in writing each step that was used to solve a problem and why.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**CONTENT:** Grade Six Mathematics

**CORE CONCEPT 10:** Problem Solving & Communication

**MAJOR OBJECTIVE:** Solve and write mathematical problems and decide on correct answers by interpreting results; explain and justify steps used to reach results (taught throughout all core concepts)

**CURRICULUM STANDARD:**

| State Standard/Student Expectation  | Specific Content   | Assessments   | Resources/Materials   |
|---|--|---|---|
| <p><b>PA Standard 2.5.8.B</b><br/>Verify and interpret results using precise mathematical language, notation and representations, including numerical tables and equations, simple algebraic equations and formulas, charts, graphs and diagrams.</p> | <p>Teacher will guide students to:</p> <p>Display work and/or results using tables, algorithms, formulas, charts, graphs, and diagrams.</p> <p>Write all work done to solve a problem in a clear, organized manner.</p> <p>Explain verbally and/or in writing the methods and/or strategies chosen to solve a problem.</p> <p>Explain verbally and/or in writing each step that was used to solve a problem and why.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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|--|---|---|---|
| <p><b>PA Standard 2.5.8.C</b><br/>Justify strategies and defend approaches used and conclusions reached.</p> | <p>Teacher will guide students to:</p> <p>Write all work done to solve a problem in a clear, organized manner.</p> <p>Explain verbally and/or in writing the methods and/or strategies chosen to solve a problem.</p> <p>Explain verbally and/or in writing each step that was used to solve a problem and why.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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|---|---|---|---|
| <p><b>PA Standard 2.5.8.D</b><br/>Determine pertinent information in problem situations and whether any further information is needed for solution.</p> | <p>Teacher will guide students to:</p> <p>Identify necessary information and unnecessary information in order to solve a problem.</p> <p>Determine if enough information is given to solve a problem.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

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|--|---|---|---|
| <p><b>PA Standard 2.8.8.E</b><br/>           Select and use a strategy to solve an equation or inequality, explain the solution and check the solution for accuracy.</p> | <p>Teacher will guide students to:</p> <p>Write all work done to solve a problem in a clear, organized manner.</p> <p>Explain verbally and/or in writing the methods and/or strategies chosen to solve a problem.</p> <p>Explain verbally and/or in writing each step that was used to solve a problem and why.</p> | <p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>• Student notebooks</li> <li>• Group projects</li> <li>• Partner projects</li> <li>• Individual projects</li> <li>• Homework</li> <li>• Class work</li> <li>• Teacher observations</li> <li>• Tests/quizzes</li> <li>• Independent activities</li> <li>• Cooperative activities</li> <li>• Student journals</li> <li>• Teacher demonstrations and student observations</li> <li>• Student demonstrations</li> <li>• Oral presentations</li> <li>• Oral questions and answers</li> <li>• Worksheets</li> <li>• Concept maps/graphic organizers</li> <li>• Diagrams</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Open-Ended Questions</li> </ul> | <p>All possible resources:</p> <ul style="list-style-type: none"> <li>• Student textbook</li> <li>• Instructors textbook</li> <li>• Textbook resources</li> <li>• Instructor generated resources</li> <li>• Internet sites</li> <li>• Videos</li> <li>• Software programs</li> <li>• Newspapers &amp; magazines</li> <li>• Cable in the Classroom</li> <li>• Math centers</li> <li>• Promethean board</li> <li>• Podcasts</li> <li>• Library</li> <li>• Student developed resources</li> <li>• Outside presenters</li> <li>• Community resources</li> <li>• Math journal/notebook</li> <li>• Supplemental materials</li> <li>• Computer</li> <li>• Worksheets</li> <li>• Calculators</li> </ul> |

**V. EXPECTED LEVELS OF ACHIEVEMENT**

A. Students are expected to reach the sixth grade level of achievement in mathematics. These skills include all of those noted in the specific content area of this curriculum.

B. Grading system this course is as follows:

| <b>Grading Scale</b> |           |
|----------------------|-----------|
| A                    | 100%-90%  |
| B                    | 89%-80%   |
| C                    | 79%-70%   |
| D                    | 69%-60%   |
| F                    | Below 60% |

| <b>Grading Scale</b> |                      |
|----------------------|----------------------|
| S                    | Satisfactory         |
| N                    | Needs<br>Improvement |
| O                    | Outstanding          |

C. A student's grade will be determined at the conclusion of each marking period. Progress reports will be sent home at the mid-point of each marking period for those students achieving below 70%.