Wayne Central School District
Ontario Center, NY 14519

Math Curriculum

EIGHTH GRADE
Draft

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Curriculum Team
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Scope and Sequence Team
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I. District Philosophy

The Wayne Central School District believes that the goal of education is the all-around development of each student. The role of the school is to enable individuals to develop to their fullest potential.

The school, in cooperation with the home and community, will assist the student with intellectual, social, cultural, emotional, physical and moral growth. The school should help create within each student an awareness of civic responsibilities and respect for authority to assist the student in becoming a well-integrated, responsible person capable of assuming a vital role in an evolving civilization.

The Wayne Central School District subscribes to the general theory of individual differences; namely, that each student is an individual and has innate abilities, ambitions, and emotions. In the process of educating this individual, the program should provide a challenge while reflecting a concern for needs based on individual capabilities.

The Wayne Central School District further subscribes to the following fundamental principles:

1. **Children, regardless of potential, are capable of learning and acquiring the skill and knowledge needed to function to the best of their ability in our society,**

2. **Our responsibility is to see that children learn. The energies of all participants should be focused on achieving the desired outcomes. Accountability does not end with following established rules and procedures; its essence is found in results,**

3. **Minimum competence, while necessary, is not enough. Successful participation in our society demands much more. All children are entitled to approved curriculum, to instructional methods, and to expectations that challenge them to perform at their best, and help them to become truly proficient in knowledge and skills,**

4. **Every child in New York State is entitled to the resources necessary to provide the sound, basic education that the state constitution requires,**

5. **Each participant in the educational system should have the opportunity to effectively discharge his or her responsibility, and each participant should be held accountable for achieving desired results. This principle applies to all participants in the educational process – students, parents, teachers, counselors, librarians, administrators, the Board of Education, and others,**

6. **Achievement of desired results by individuals and groups should be rewarded. Creativity in our students needs to be nurtured and encouraged. Occasional failure in a large and diverse system us probably unavoidable. However, failure should not be permitted to persist. When it occurs, with either individuals or groups, help should be provided and the situation changed.**

II. District Mission Statement:

Based upon the belief that all students can learn, the staff of Wayne Central School district accepts the responsibility to teach all students regardless of differences, the fundamental skills. We further accept the responsibility to challenge all students to attain higher levels of achievement. Wayne Central will provide the opportunity, environment, and encouragement to meet this goal while developing the whole child physically, emotionally, and culturally.

III. NYS Learning Standards:

Health, Physical Education, and Home Economics

1. Personal Health and Fitness – Students will have the necessary knowledge and skills to establish and maintain physical fitness, participate in physical activity, and maintain personal health.
2. A Safe and Healthy Environment – Students will acquire the knowledge and ability necessary to create and maintain a safe and healthy environment
3. Resource Management – Students will understand and be able to manage their personal and community resources.

Mathematics, Science, and Technology

1. Analysis, Inquiry, and Design – Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.
2. Information Systems – Students will access, generate, process, and transfer information using appropriate technologies
3. Mathematics – Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.
4. Science – Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.
5. Technology – Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.
6. Interconnectedness: Common Themes – Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.
7. Interdisciplinary Problem Solving – Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.

English Language Arts

1. Students will listen, speak, read and write for information and understanding. As listeners and readers, students will collect data, facts and ideas; discover relationships, concepts, and generalizations; and use knowledge generated from oral, written, and electronically produced texts. As speakers and writers, they will use oral and written language that follows the accepted conventions of the English language to acquire, interpret, apply, and transmit information.
2. Language for Literary Response and Expression – Students will read and listen to oral, written, and electronically produced texts and performances from American and world literature; relate texts and performances to their own lives; and develop an understanding of the diverse social, historical, and cultural dimensions the texts and performances represent. As speakers and writers. Students will use oral and written language that follows the accepted conventions of the English language for self-expression and artistic creation.
3. Language for Critical Analysis and Evaluation – Students will listen, speak, read and write for critical analysis and evaluation. As listeners and readers, students will analyze experiences, ideas, information, and issues presented by others using a variety of established criteria. As speaker and writers, they will use oral and written language that follows the accepted conventions of the English language to present, from a variety of perspectives, their opinions and judgements on experiences, ideas, information and issues.
4. Language for Social Interaction – Students will listen, speak, read, and write for social interaction. Students will use oral and written language that follows the accepted conventions of the English language for effective social communication with a wide variety of people. As reader and listeners, they will use the social communications of others to enrich their understanding of people and their views.

Languages Other Than English

1. Communication Skills – Students will be able to use a language other than English for communication.
2. Cultural Understanding – Students will develop cross-cultural skills and understandings.

The Arts

1. Creating, Performing, and Participating in the Arts – Students will actively engage in the processes that constitute creation and performance in the arts (dance, mucus, theatre, and visual arts) and participate in various roles in the arts.
2. Knowing and Using arts materials and Resources – Students will be knowledgeable about and make use of the materials and resources available for participation in the arts in various roles.
3. Responding to and Analyzing Works of Art – Students will respond critically to a variety of works in the arts, connecting the individual work to other works and to other aspects of human endeavor and thought.
4. Understanding the Cultural Contributions of the Arts – Students will develop an understanding of the personal and cultural forces that shape artistic communication and how the arts in turn shape the diverse cultures of past and present society.

Career Development and Occupational Studies

1. Career Development – Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions.
2. Integrated Learning – Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings.
3. Universal Foundation Skills – Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace.
4. Career Majors – Students who choose a career major will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.

Social Studies

1. History of the United State and New York – Students will use a variety of intellectual skills to demonstrate their understanding of major ideas, eras themes, developments, and turning points in the history of the United States and New York.
2. World History – Students will use a variety of intellectual skills to demonstrate their understanding of major ideas, eras, themes, developments and turning points in world history and examine the broad sweep of history from a variety of perspectives.
3. Geography – Students will use a variety of intellectual skills to demonstrate their understanding of the geography of the interdependent world in which we live – local, national and global – including the distribution of people, places, and environments over the Earth's surface.
4. Economics – Students will use a variety of intellectual skills to demonstrate their understanding of how the United States and other societies develop economic systems and associated institutions to allocate scarce resources, how major decision-making units function in the United States and other national economies, and how an economy solves the scarcity problem through market and nonmarket mechanisms.
5. Civics, Citizenship, and Government – Students will use a variety of intellectual skills to demonstrate their understanding of the necessity for establishing governments; the governmental system of the United States Constitution; the basic civil values of American constitutional democracy; and the roles, rights, and responsibilities of citizenship including avenues of participation.

IV. Commencement Outcomes

"Adult Roles, Skills & Knowledge"

CITIZEN

A citizen is a responsible, law-abiding member of society who:

- Has a strong sense of values;
- Knows right from wrong;
- Is aware of community news, issues and norms;
- Accepts diversity in ethnicity and belief;
- Has knowledge of government at all levels and issues relative to each;
- Associates with others in positive and productive ways.

LIFE - LONG LEARNER

A life-long learner is one who perseveres, is self-motivated, is innately curious, focused and:

- Is able to set goals;
- Adheres to deadlines/due-dates, has time management skills and abilities;
- Is a problem solver, can define problems, analyze information and task analyze/prioritize potential solutions, has the ability to select the best "tool/strategy" for the situation, and can enlist others in the process of evaluation and refocusing.

LEADER

A leader is a problem solver with effective communication skills. He/she has an ability to motivate others and:

- Is a strong willed person with vision, beliefs and convictions to carry out each.
- Is able to recognize and effectively use all resources, such as material, time and human
- Is responsible and accountable for self and others.

WORKER/WAGE EARNER/BUSINESS OWNER

A worker/wage earner is an individual who is trust worthy, moral and ethical, and who:

- Possess basic job skills with a willingness to change, grow and develop new skills;
- Is a good communicator;
- Demonstrates leadership skills and initiative and the ability to work as a team player;
- Is responsible, reliable and respectful to others;
- Has the ability to make sound decisions.

CONSUMER

A consumer is an individual who has knowledge of the global economy and:

- Utilizes and applies budgeting skills and credit awareness;
- Maintains long-terms personal financial planning (savings, banking, retirement);
- Understand one's rights, responsibilities and risks.

COUNSELOR/TEACHER/MENTOR

A counselor/teacher/mentor is an individual who is patient, self-confident, assertive leader who:

- Is a problem solver and can guide others to solve problems;
- Is an active listener;
- Is aware of issues, societal, family, religious differences and different customs;
- Has interpersonal skills and values others opinions.

PARENT/FAMILY MEMBER

A parent/family member is an individual who:

- Is nurturing and loving;
- Displays flexibility;
- Has high character and morals;
- Is accountable and consistent with respect to expectations and follow through;
- Becomes actively involved in their children and family's education and other pursuits.

FRIEND

A friend is an individual who shows great interest and respect for others, and who:

- Is non-judgmental and available when a time of need arises;
- Is unselfish, honest, supportive, caring and genuine;
- Is an open-minded listener who seeks to understand before being understood;
- Give him/herself to other without expectations of compensation or return of favor.

V. Scope and Sequence

	STRANDS	GRADE LEVEL 6	7	8
PROBLEM SOLVING				
Develop a plan		D	D	D
Strategies				
Look for a pattern	7A/7B	D	D	D
Solve a simpler problem	1A	D	D	D
Act it out	1A		D	D
Guess and check	1A	D	D	D
Draw a diagram	1A	D	D	D
Make a table	1A	D	D	D
Work backward	1A	I	D	M/R
Choose the method of computation	1B	D	D	D
Make a list	1A	D	D	D
Eliminate the possibilities	1A	D	D	D
Determine reasonable answers	1A	D	D	D
Make a model	1A	D	D	D
Use a graph	1B/5E	D	D	D
Use an equation	4E	I	D	D
Use logical reasoning	1C	D	D	D
Use the Pythagorean Theorem	5C/7I		I	D
Use a Venn diagram	1D	I	D	D/R
Use a frequency table	4D	D	D	D
Use a spreadsheet	5D	I	I	I
Use proportional reasoning	2B			D
Decimal concepts	2A	D	D/M	R
Reading and writing	2A	D	M	R
Decimal place value	2A	D	M	R
Comparing and ordering	2A	D	D/M	R
Rounding.	6A	D	D/M	R
Relating decimals and fractions	2A	I	D	M/R
Relating decimals, ratios, and percents	2A	I	D	M/R
Terminating and repeating decimals	3A	I	D	M/R
Scientific Notation	2D		I/D	D
Powers of Ten	2A	I	D	M/R

Key:

I Introduce – new topic/skill
D Develop – more in depth study of the skill
M Mastery – learning benchmark has been reached
R Reinforce – continued use of a mastered skill

			STRANDS	GRADE LEVEL 6	7	8
Fractions						
	Fraction concepts		2A	D	D/M	R
	Writing mixed numbers as fractions		2A	D	D/M	R
	Mixed numbers and improper fractions		2A	D	D/M	R
	Equivalent fractions		2A	D	D/M	R
	Comparing and ordering fractions		2D	D	D/M	R
	Simplifying fractions		2A	D	D/M	R
	Least common denominator (LCD)		2C	D	D/M	R
	Rounding and estimating fractions		6A	I	D/M	R
	Relating fractions and decimals		2B	D	D	D
	Relating fractions and percents		2B		I/D	D
Proportional Reasoning						
	Ratio					
		Concept of ratio	2B	I	D	D
		Reading and writing ratios	2B	I	D	D
		Simplifying ratios	2B		I/D	M/R
		Relating ratios and fractions	2B		I/D	D
		Relating ratios and rate	2B		I/D	D
		Ratio and probability	6E	I	I/D	I/D
	Proportion					
		Concept of proportion	2B		I/D	M
		Solving proportions	3G		I/D	D
		Property of proportion (cross product)	2D	I	D	D
		Scale drawings	4B		D	D
		Similar figures	7E	D	D	M/R
		Dilations	4H		I	D
		Indirect measurement	3G		I	D
	Percent					
		Concept of percent	2B	I	D	M
		Writing fractions and decimals as percent	2B		I/D	D
		Percents greater than l00 % or less than l %	2B		I/D	D

	Find percent of a number	2B/2D		I/D	D
	Percent one number is of another	2B/2D		I/D	D
Key: **I** Introduce – new topic/skill **D** Develop – more in depth study of the skill **M** Mastery – learning benchmark has been reached **R** Reinforce – continued use of a mastered skill		**STRANDS**	**GRADE LEVEL** **6**	**7**	**8**
	Finding number when percent is known	2B/2D		I/D	D
	Percent proportion	2B/2D		I/D	D/M
	Relating percent and ratio	2B		I/D	I/D
	Percent equation	2B/2D		I	D
	Non-proportional relationships	2B			I/D
Computations and Estimation					
Order of operations		3C	I/D	D	M
Decimals					
	Adding and subtracting	3A	D	M	R
	Multiplying by a whole number	3A	D	M	R
	Multiplying two decimals	3A	I/D	D/M	R
	Dividing by a whole number	3A	I/D	D/M	R
	Dividing by decimals	3A	I/D	D/M	R
	Dividing with zeros in the quotient	3A	I	D/M	R
Fractions					
	Adding and subtracting	3A	D	D	M
	Subtracting with renaming	3A	I/D	D	M
	Multiplying and dividing	3A/3D	I	D	M
	Add and subtract mixed numbers	3A	I	D	M
	Multiply and divide mixed numbers	3A/3C	I	D	M
Percents					
	Discount	2B		I/D	D
	Sales tax	2B		I/D	M
	Simple interest	2B		I/D	D
	Percent of change	2B		I	D
Integers					
	Adding and subtracting	3A		I/D	D/M
	Multiplying and dividing	3A		I/D	D/M
Estimation					
	Whole numbers				
	Roundin	6A	D	M	R

	g				
	Sums and differences	6A	D	M	R
	Products and quotients	6A	D	M	R
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Decimals					
	Roundin g	6A	I	D	M
	Sums and differences	6A	I	D	M
	Products and quotients	6A	I	D	M
Fractions					
	Sums and differences	6A		I/D	M
	Products and quotients	6A		I/D	M
Percents				I	D
Use equivalent fractions, decimals, and percents		6A			I/D
Strategies for estimating					
	Roundin g	6B	I	D	M
	Clusteri ng	6B	I	M	
Square roots				I	D
Area or volume		5A/5C	D	D	D
Mental math					
Divisibility patterns		2C	D	M	R
Solving equations mentally		4E	M		
Finding percents		6A		I	D
Powers of ten		2A/3B	I/D	M	R
Using formulas		7H	I	D	D
Number Systems and Number Theory		2A/2C	D	D	M
Reading and writing whole numbers		2A	M	R	
Place value of whole numbers		2A	M	R	
Place value of decimals		2A/6A	D	M	R

Comparing and ordering					
	Whole numbers	2D	R		
	Decimals	2D	D	M	R
	Fractions	2D	D	M	R
	Integers	2D		I/D	M
	Rationals	2D			I/D
Positive exponents		2A	I	D	M
Negative exponents		2A		I	D
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Divisibility patterns		2C	D	M	R
Prime and composite numbers		2C	D	M	R
Relative primes		2C		M	R
Prime factorization		2C	I	D/M	R
Least common multiple (LCM)		2C	D	M	R
Scientific notation		2A		I/D	M
Square roots		2D/3C/7I		I	D
Properties					
	Properties of number	2A/3C	D	D	M
	Distributive property	3C/3D		I	D
	Property of proportions (cross products)	2B/2D		I/D	M
	Properties of equality	4E/7A/7E		I	D
PATTERNS AND FUNCTIONS					
Numeric patterns					
	Sequences	7A	I	D	D
	Fibonacci sequence	7A			I
	Divisibility patterns	2C	D	M	R
Geometric patterns					
	Recognizing geometry patterns	7A		M	R
	Tessellations	4A/1C		I	D
	Fractals	4A/1C		I	
Represent relationships					
	Tables	7B	I	D	D
	Graphs	7B			I/D
	Function rules	7A/7B/7D			I/D

Analyze functional relationships		7D			I/D
Use patterns and functions to solve problems		7A/7C	I	D	D
ALGEBRA					
Integers					
	Reading and writing integers	2A		I/D	M
	Graphing integers on a number line	2A/4D		I/D	M
	Comparing and ordering integers	2D		I/D	M
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	Adding and subtracting integers	3A		I/D	M
	Multiplying and dividing integers	3A		I/D	M
	Absolute value	3A		I/D	M
Rational numbers					
	Identify and simplify rational numbers	2A/2D			I/D
	Properties of rational numbers	2D/3D			I/D
	Rational numbers and decimals	2A/2D			I/D
	Scientific notation	2A/2D			I/D
	Comparing and ordering	2D			I/D
	Solving equations with rational number solutions	4E/7C			I/D
Real numbers					
	Identify and classify real numbers	2A			I/D
	Square roots	3B		I	D
	Irrational numbers	2A		I	D
Functions					
	Function tables	7B			I/D
	Linear functions	7C			I/D
	Analyze tables and graphs	5D/7B			I/D
Equations and expressions					
	Concepts of variable, expression, equation	4E	I	D	M
	Order of operations	3B/3C	D	M	M/R
	Evaluate algebraic expressions	4E		I/D	M
	Write algebraic expressions and equations	4E		I/D	M
	Solve addition and subtraction equations	4E	I	D	M
	Solve multiplication and division equations	4E	I	D	M

	Solve two-step equations	7C			I/D
	Solve equations with two variables	7C			I/D
	Solve inequalities	2D/7C		I/D	D
	Solve equations with concrete methods	4F	I	M	
	Solve equations algebraically	4E/7A	I	D	D
Graphing					
	Integers on a number line	2D		I/D	M
	Irrational numbers on a number line	2D			I
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	Inequalities on a number line	2D		I	D
	Points on a coordinate plane	4C	I	D	M
	Transformations on a coordinate plane	4C/4H		I	D
	Functions	7A		I	D
	Linear functions (equations)	4E/7C			I/D
Polynomials					I/D
	Hands on equations	4F			I/D
	Represent and simplify polynomials	4E			I/D
	Like and unlike terms	4E			I/D
	Laws of exponents (Add, Subtract, Multiply and divide)	4E			I/D
Apply algebra to real-world and math problems		2A/4F		I	D
STATISTICS					
Taking a survey		1B	D	D	D
Analyzing survey data		1B/5D	D	D	D
Organizing Data					
	Using a table to organize data.	1B/7B	D	D	D
	Frequency tables	1B/7B	I	D	D
	Using tables to solve problems	1B/7B		I	D
	Using matrices to organize data	1B/7B			I
Constructing and interpreting graphs					
	Bar graphs	4D/5D	D	M	R
	Circle graphs	4D/5D		I	D
	Line graphs	4D/5D	D	M	

	Line plots	4D/5D		I	M
	Histograms	4D/5E			I/D
	Scatter plots	4D		I	D
Interpreting data					
	Clusters	5D		I	D
	Mean, median, and mode	5D	I	D	M
	Range	5D	I	D	D
	Making predictions from statistics	5D/1B	D	D	D
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	Making predictions from graphs	4D/5D	D	D	D
PROBABILITY					
	Outcomes	4G/6A/6E	I	D	D
	Simple event	4G/6C/6E	I	D	D
	Independent events	4G/6E		I	D
	Dependent events	4G/6E		I	D
	Complementary events	6C/6E	I/D		
	Experimental probability	6C/6D/6E	I	D	D
	Theoretical probability	4G/6E	I	D	D
	Tree diagrams	4F/4G	I	D	D
	Counting principle	4F4G	I	D	D
	Probability and ratio	4G/6C	I	D	D
	Fair and unfair games	4G/6C	I	D	D
	Simulations or experiments	4G/6D	I	D	R
GEOMETRY					
Constructions					
	Congruent segments	4I/4J		I	
	Perpendicular lines	4I/4J		I	
	Parallel lines	4I/4J		I	
	Segment bisectors	4I/4J		I	
	Congruent angles	4I/4J		I	
	Angle bisectors	4I/4J		I	

	Polygons, inscribed	4I/4J		I	
	Congruent triangles	4I/4J		I	
Angles					
	Classify and measure angles	5B/4I/4J	I	D	M/R
	Sum of angle measures	7G		I/D	M
	Parallel lines and transversal	7H		I	D
Polygons					
	Identify polygons	4A/7G	I	D	M
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	Classify triangles and quadrilaterals	7G	I	D	M
	Identify congruent figures	4I	I	D	M
Triangles					
	Determine congruent triangles	4I			I
	Right triangle relationships (trigonometry)	5C/7I			I
	Pythagorean Theorem	5C/7I		I	I/D
	Special right triangles	7I/7J			I
Similarity					
	Corresponding parts of similar figures	4H/4I	I	I/D	D
	Identify similar figures	4H/4I	I	I/D	D
	Scale drawings	4B		I	D
	Dilations	4H		I	D
Circles					
	Circumference (radius, diameter)	5C		I/D	M
	Area	5C		I/D	M
Perimeter					
	Regular shapes	5C	D	D	M
	Irregular shapes	5C	I	D	M
Area					
	Rectangles	5B/5C	D	D	M
	Parallelograms (base, height)	5B/5C		I/D	M
	Trapezoids	5B/5C		I/D	M
	Triangles	5B/5C	I	D	M
	Circles	5B/5C		I/D	M
	Square roots and area of squares	2D/5C		I	D

Transformations					
	Translations, reflections, and rotations	4H		I	D
	Dilations	4H		I	D
	On the coordinate plane	4H		I	D
	Symmetry	4H	D	D	D
Solids					
	Identify, draw three-dimensional figures	4A		I	D
	Surface area	5C/5B		I	D
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	Volume	5C/5B	I	D	D
Coordinate Geometry					
	Graphing ordered pairs	4C	I	D	M
	Transformations on the coordinate plane	4H		I	D
Patterns					
	Recognizing geometric patterns	4A/7K	I	D	M
	Symmetry	4H	D	D	D
	Fractals	4A/1C		I	
Trigonometry		7J			I
Inductive and deductive thinking		1A			I
MEASUREMENT					
Metric System					
	Units of length, capacity, and mass	5F	I	D	M
	Changing units within the metric system	5F	I	D/M	R
Customary system					
	Units of length, capacity, and weight	5F		I/D	
	Change units within the customary system	5F		I/D	
Time			D		
Perimeter and circumference			I	D	D
Area					
	Irregular figures	5C		I/D	M
	Rectangles	5C	D	D	M

	Parallelograms	5C		I/D	M
	Triangles	5C	I	D	M
	Circles	5C		I/D	M
	Trapezoids	5C		I/D	M
Surface area					
	Rectangular prisms	5C		I	D
Volume					
	Rectangular prisms	5C	I	D	M
Key:	**I** Introduce – new topic/skill **D** Develop – more in depth study of the skill **M** Mastery – learning benchmark has been reached **R** Reinforce – continued use of a mastered skill	**STRANDS**	**GRADE LEVEL**		
			6	**7**	**8**
	Cylinders	5C		I	D
	Pyramids and cones	5C		I	D
Precision and significant digits		5B			I
Indirect measurement		3G		I	D

VI. Course Overview

Mathematics: Applications and Connections (Course 3) continues to prepare all students for success in Algebra and Geometry. Students use manipulatives to bridge the gap from the concrete to the abstract, hands-on labs and mini-labs to discover concepts on their own, and cooperative learning to achieve academic and interpersonal skills. (Glencoe, Course 3,T4-T5, 1999.)
This course is used to help prepare students for the NYS Math 8 Exam and for their transition to High School Math courses.

1. Problem-Solving and Algebra
2. Algebra – Using Integers
3. Using Proportion and Percent
4. Statistics – Analyzing Data
5. Geometry-Investigating Patterns
6. Transformations
7. Rational Numbers
8. Applying Proportional Reasoning
9. Exploring Real Numbers
10. Trigonometry
11. Algebra – Graphing Functions
12. Geometry – Using Area and Volume
13. Investigating Discrete Math and Probability

VII. Instructional Outline

I. Problem Solving, Numbers, and Algebra

1. Problem solving four step plan
2. Patterns
3. Estimation using rounding
4. Order of operations
5. Algebraic expressions
6. Exponents
7. Problem Solving Strategy – Guess and Check

II. Statistics: Graphing Data

1. Frequency tables
2. Scales and intervals
3. Bar graphs, line graphs, circle graphs
4. Mean, median, mode, and range
5. Misleading graphs
6. Ordered pairs
7. Computer generated graphs

III. Adding and Subtracting Decimals

1. Model decimals
2. Read and write decimals
3. Metric units of length
4. Compare and order decimals
5. Round decimals
6. Estimate sums and differences
7. Add and subtract decimals

IV. Multiplying and Dividing Decimals

1. Estimate products of decimals
2. Multiply decimals
3. Perimeter and area of rectangles and squares
4. Solve problems by first solving a simpler problem
5. Divide decimals by whole numbers
6. Divide decimals by decimals
7. Metric units of mass and capacity

V. Using Number Patterns, Fractions, and Ratios

1. Divisibility rules
2. Prime and composite numbers
3. Prime factorization
4. Problem solving – organized list
5. Greatest common factor
6. Equivalent fractions
7. Simplest form- fractions and ratios
8. Experimental probability
9. Mixed numbers and improper fractions
10. Measurement using fractions
11. Least common multiple
12. Compare and order fractions
13. Decimals to fractions and vice versa

VI. Adding and subtracting fractions

1. Round and estimate fractions
2. Add and subtract fractions
3. Add and subtract mixed numbers
4. Add and subtract measures of time

VII. Multiplying and Dividing Fractions

1. Estimating products
2. Multiplying fractions and mixed numbers
3. Divide fractions and mixed numbers
4. Customary system of measurement
5. Problem solving using patterns

VIII. Geometry

1. Geometry Symbols
2. Angles
    a. Classify
    b. Measure
3. Lines
    a. Parallel
    b. Perpendicular
    c. Symmetry
4. Two-dimensional figures
5. Similar and congruent

IX. Geometry (Area and Volume)

1. Area
    a. Square
    b. Rectangle
    c. Triangle
2. Three Dimensional Figures
3. Volume of Rectangular Prisms

X. Equations

1. Addition
2. Subtraction
3. Multiplication and division

XI. Probability

1. Fair and unfair games
2. Theoretical probability
3. Making predictions using samples
4. Finding outcomes (combinations)

VIII. Course Benchmarks

IX. Units of Study

Unit One

Problem-Solving and Algebra

A. Unit Benchmarks

Students will be able to:

1. Solve problems by using the four-step plan.
2. Use powers and exponents in expressions.
3. Evaluate expressions and find the solutions of equations.
4. Identify and use the properties of Real numbers.
5. Solve simple equations by using the properties of equality.
6. Combine like and unlike terms.
7. Write algebraic expressions and equations from verbal phrases and sentences.
8. Solve two-step equations by using the properties of equality.
9. Find perimeters and areas of triangles, rectangles, squares, rhombus, parallelograms, and trapezoids. (memorize all area formulas)
10. Find perimeter and area of irregular polygons.
11. Find shaded area. (side by side polygons and one polygon inside the other)
12. Write, solve and graph inequalities.

B. Unit Assessment

Informal checks for understanding
Observation/dialogue
Quiz/Test
Cooperative group activities
NYS Extended Response Questions

C. Rubric

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. Calculator Keys Clear/reset key Y^x key X^2 key Y^3 key *Materials: Calculator*	**2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3**
b. Journal Writing Compare definitions of: Factor Base Power Evaluate *Materials: Math spiral-journal*	**2, 3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1**
c. Group Activity: Creating Expressions using flash cards (Teacher edition ,p. 11-multiple learning styles) *Materials: f lash cards*	**2, 3, 4, 7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 4**
d. Partner Activity: Measure and calculate perimeter and area of pre-cut polygons using appropriate formulas. *Materials: Pre-cut Polygons, Calculator, ruler, spiral or worksheet*	**9, 10**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 4**

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. Classwork/Homework Exercises Pgs. 2- 53, pgs. 301-304, pgs. 561-571. Practice/Study Guide/Enrichment worksheets/transparencies are available in teacher set. *Materials: Spiral and Text*	**1-12**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2**
b. Writing rules for Order of Operations Write four sentences explaining how to evaluate a given expression (teacher edition, p. 15- closing activity) *Materials: Math spiral-journal*	**2, 3**	HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	**1, 2, 4**
c. Evaluating Algebraic Expressions using a scientific calculator (Student edition, p. 16 –Technology lab) *Materials: Textbook, Scientific Calculator*	**7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3**
d. Cooperative Learning: Hands-on lab Function Machines, p.37 Student edition *Materials: Text, Hands-On lab masters, WS p. 40*	**2, 3, 4**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2**

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. Test and review software available in teacher set. *Materials: Software CD*	**1-12**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

E. Vocabulary

The four-step plan
Exponent
Factor
Power
Base
Evaluate
Numerical expression
Order of operations
Variable
Algebraic expression
Equation
Open sentence
Replacement set
Inverse operation
Addition property of equality
Subtraction property of equality
Division property of equality
Multiplication property of equality
Commutative property
Associative property
Distributive property
Two-step equation
Parallelograms
Trapezoid
Triangle
Perimeter
Area
inequality

F. References and Resources

Mathematics; Applications and Connections, Course 3, Glencoe /McGraw-Hill, 1999.

Unit Two

Algebra – Using Integers

A. Unit Benchmarks

Students will be able to:

1. Graph integers on a number line and find absolute value.
2. Compare and order integers.
3. Add, subtract, multiply and divide integers.
4. Evaluate algebraic expressions using integers.
5. Solve simple and two-step equations with integers.
6. Name and graph ordered pairs in the coordinate system

.

B. Unit Assessment

Informal checks for understanding
Observation/dialogue
Quiz/Test
Cooperative group activities

C. Rubric

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. **Hands on activity:** Have students draw a thermometer and label given temperatures using positive and negative values. *Materials: spiral and pencil*	**1, 2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
b. **Partner Activity:** Brainstorm situations that use positives, negatives, or neither positive nor negative integers. Share ideas with class. Teacher edition p.58- Extending the lesson. Teacher edition p.63-Cross curriculum cue. *Materials: Worksheet or spiral*	**1, 2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
c. Group Activity: Give each of five students a card with an Integer or Absolute Value on it. Then have the students line up from least to greatest. Repeat with five new students and cards and line up from greatest to least. *Materials: class set of Integer/Absolute Value cards*	**1, 2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 4**
d. Addition or multiplication WAR: Red cards are positive and black cards are negative. (Write this on the board) Game closely resembles the card game War except students must state the correct solution in order to collect the round of cards. *Materials :playing cards*	**3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. Classwork/Homework Exercises Pgs. 56-101 Practice/Study Guide/Enrichment worksheets/transparencies are available in teacher set. *Materials: Spiral and Text*	**1-6**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-5**
b. Let the Games Begin: Student Edition p. 61 *Materials: Index cards, scissors*	**3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2**
c. Partner activity: Sum and product pairs. Teacher Edition, p. 80- extending the lesson. *Materials: Spiral or worksheet*	**3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3**

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. Test and review software available in teacher set. *Materials: Software CD*	**1-6**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

E. Vocabulary

Integer
Graph
Coordinate
Absolute value
Additive inverse
Opposite
Coordinate system
Origin
X- axis
Y -axis
Quadrant
Ordered pair
X- coordinate
Y -coordinate

F. References and Resources

Mathematics: Applications and Connections, Course 3, Glencoe /McGraw-Hill, 1999.
Glencoe: Teacher Classroom Resources, Course 3.
Buckle Down: Sharpen Up, New York Mathematics, Book 8.
Topical Review Book Company: Practice Tests for Grade 8.
Glencoe: State Test Practice and Sample Test Workbook, Grade 8 Mathematics.
Westsea publishing Company Inc: New York State Intermediate Mathematics 8.

Unit Three

Using Proportion and Percent

A. Unit Benchmarks

Students will be able to:

1. Express ratios as fractions in simplest form and determine unit rates.
2. Express ratios as percents and vice versa.
3. Solve proportions.
4. Express percents as fractions and decimals and vice versa.
5. Compute mentally with percents.
6. Determine whether answers to problems are reasonable.
7. Estimate by using equivalent fractions, decimals and percents.

B. Unit Assessment

Informal checks for understanding
Observation/dialogue
Quiz/Test
Cooperative group activities
NYS Extended Response Questions

C. Rubric

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. Time Management activity: Have students keep track of how they spend their time for one week. Categories could include sleeping, eating, attending school, exercising, and so on. Students can then determine specified ratios from their own data. (This information will later be used to produce circle graphs and bar graphs in activity c.) *Materials :Worksheet*	**1, 2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
b. Cooperative groups: Teacher will produce circle graphs that are divided into equal sections. Color some of the sections of each graph and distribute to each group. Have students work together to determine what percent of each graph is shaded. *Materials :Circle graphs, protractor, calculator*	**1, 2, 4, 6, 7**	HPEHE: MST: 3 ELA: LOTE: CDOS: SS:	**1, 2, 3, 4**
c. Circle graph activity: Students will create their own circle graphs based on the data they collected in the Time management activity. *Materials : Worksheet, protractor, ruler, calculator.*	**1, 2, 4, 6, 7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
d. Percent Chart: Teacher Edition, p.116. Reteaching the lesson. *Materials : Worksheet, Calculator.*	**1, 2, 4, 5, 6, 7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
e. Estimate the percent of shaded sections of irregular regions using 10 x 10 grids. (similar to p.128 examples 11-13) *Materials: 10 x 10 grids, worksheets*	**6, 7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. Calculator mini-lab: Changing fractions to percents to decimals and vice-versa. Student edition,p.114. *Materials: Text, Scientific calculator, Spiral*	**4**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
b. Hands-On Lab: The Golden Ratio- Student edition, p. 118-119. *Materials: Graph paper, scissors, calculator, ruler, worksheet.*	**1, 6, 7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
c. Mental Math: Student Edition-p.122, exercises 10-21. *Materials: Text*	**5, 6, 7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
d. Problem-solving activity: Teacher Edition p.122/Extending the Lesson. *Materials: Transparency*	**6, 7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

e. Let The games begin- Student edition p. 123. *Materials: Index cards*	**2, 4, 5, 6, 7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
g. Classwork/Homework Exercises Pgs. 102-137. Practice/Study Guide/Enrichment worksheets/ transparencies are available in teacher set. *Materials :Text, spiral*	**1-7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
f. *Problem-Solving: Reasonable Answers-* *Student edition, p.124-125.* *Materials: Calculator, spiral*	**6**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. **Class activity:** Using Excel to produce circle and bar graphs using data from teacher constructed activity Time-management. *Materials :Computer, student data*	**1, 2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
b. Test and review software available in teacher set. *Materials: Software cd*	**1-7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**

E. Vocabulary

Ratio
Rate
Unit rate
Percent
Proportion
Cross-products
Reasonable answers (problem-solving)

F. References and Resources

Mathematics; Applications and Connections, Course 3, Glencoe /McGraw-Hill, 1999.
Glencoe: Teacher Classroom Resources, Course 3.
Buckle Down: Sharpen Up, New York Mathematics, Book 8.
Topical Review Book Company: Practice Tests for Grade 8.
Glencoe: State Test Practice and Sample Test Workbook, Grade 8 Mathematics.
Westsea publishing Company Inc: New York State Intermediate Mathematics 8.

Unit Four

Statistics – Analyzing Data

A. Unit Benchmarks

Students will be able to:

1. Solve problems by organizing data into a table.
2. Construct and interpret bar graphs and histograms.
3. Construct and interpret circle graphs.
4. Construct and interpret line plots.
5. Find the mean, median, and mode of a set of statistical data.

B. Unit Assessment

Informal checks for understanding
Observation/dialogue
Quiz/Test
Cooperative group activities
NYS Extended Response Questions
Computer generated bar and circle graphs.

C. Rubric (Bar & Circle graphs)

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. Construct a Frequency Table – Teacher edition p. 140-Reteaching the Lesson, p.141-Extending the Lesson *Materials :Text and spiral, ruler*	**1, 2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
b. Construct a Bar Graph or Histogram for the Frequency Table from activity a. *Materials :Data from activity a , graph paper, ruler*	**2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
c. Constructing a Circle Graph-Teacher edition p.149 in class example. *Materials :Transparency showing frequency table, protractor, worksheet*	**3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
d. Construct a Line plot – Teacher edition p. 154, In- class example. *Materials : tranparency showing data , spiral*	**4**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
e. Class activity: Central Tendencies of baseball players:(Ruth vs. Maris) *Materials: Worksheet, calculator*	**6**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. Problem-Solving: Make A Table Student Edition p.140-141. *Materials: Text and spiral*	**1, 2**	HPEHE: MST ELA: Arts: LOTE: CDOS: SS:	**1-4**
b. Guided practice – Constructing a table and circle graph. Student Edition p.150, Example #3. *Materials :Text, spiral, protractor*	**1, 3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
c. Classwork/Homework Exercises Pgs. 138- 161. Practice/Study Guide/Enrichment worksheets/ transparencies are available in teacher set. *Materials :Text, spiral*	**1-5**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-5**
d. Standardized Test Practice: Chapters 1-4 Student Edition p. 182-183. Assessment and Evaluation masters, pp.101-102. *Materials: Text and worksheets.*	**1-5**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
e. Cumulative Review, Chapters 1-4 Assessment and Evaluation masters, p. 103. *Materials: Worksheet*	**1-5**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. Test and review software available in teacher set. *Materials: Software CD*	**1-5**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
b. Construct Circle and Bar Graphs on EXCEL. *Materials: Computer, EXCEL*	**2, 3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

E. Vocabulary

Frequency Table
Statistics
Bar Graph
Histogram
Circle graph
Line plot
Measures of Central Tendency (Mean, Median, Mode)

F. References and Resources

Mathematics: Applications and Connections, Course 3, Glencoe /McGraw-Hill, 1999.
Glencoe: Teacher Classroom Resources, Course 3.
Buckle Down: Sharpen Up, New York Mathematics, Book 8.
Topical Review Book Company: Practice Tests for Grade 8.
Glencoe: State Test Practice and Sample Test Workbook, Grade 8 Mathematics.
Westsea publishing Company Inc: New York State Intermediate Mathematics 8.

Unit Five

Geometry – Investigating Patterns

A. Unit Benchmarks

Students will be able to:

1. Identify lines that are parallel and types of angles formed by parallel lines and transversals.
2. Use a Venn Diagram to solve problems.
3. Classify triangles by their angles and their size, and find measures of missing angles in triangles.
4. Classify quadrilaterals.
5. Verify congruent triangles by using SSS, ASA, and SAS (optional)
6. Identify similar triangles.
7. Identify corresponding parts of similar polygons and find missing measures of similar polygons.
8. Solve problems involving similar triangles/similar polygons.
9. Construct similar/congruent polygons on the coordinate plane.

B. Unit Assessment

Informal checks for understanding
Observation/dialogue
Quiz/Test
Cooperative group activities
NYS Extended Response Questions
Assessment and Evaluation masters

C. Rubric

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. Congruent Angles formed by Parallel lines and a Transversal. Activity is similar to the mini-lab on p. 188 except do not measure the angles. Give the measurement of angle 1 and from there teach all congruent angles using colored pencils. *Materials :Spiral, colored pencils*	**1**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
b. Cooperative groups: Teacher edition, pg. 191 – Reteaching the lesson *Materials : spinner, diagram of angles formed by parallel lines, score sheet*	**1**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
c. Class activity: Understanding a Venn Diagram Teacher edition, Pg. 194 In – class Example *Materials : Transparency*	**2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
d. Class activity: Naming triangles by their sides and by their angles Teacher edition, Pg. 197 – In-class Examples *Materials : transparency*	**3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2**
e. Class activity: Memory game – Naming Triangles Draw each of the seven possible angle/side classifications for triangles on poster board. Call on students for correct name and definition. *Materials: poster board flash cards for triangle classifications*	**3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2**

f. Class Activity: Comparing Quadrilaterals Give each student 5 sheets of Xerox paper. Each sheet will have a different quadrilateral drawn on it. Using a ruler and a protractor, have the students compare and contrast these quadrilaterals. Guide them to consider congruence of angles and sides and to look for parallel sides and right angles**.** *Materials: packet of 5 quadrilaterals, ruler, protractor*	**4**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**4**
g. Class activity: Similar vs. Congruent Triangles. Create a chart using a geometer and protractor. Brainstorm a list of facts pertaining to each type of triangle. Share information with class. ***Show how corresponding sides are proportional.** ***Similar triangles may be congruent.** *Materials: geometer, protractor, spiral*	**6, 8**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
h. Construct similar/congruent polygons on the coordinate plane. Modeling questions similar to NYS Math 8 Exam. *Materials: worksheet*	**9**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. Hands on mini – lab: Measuring Angles student edition, p. 190 *Materials: ruler, protractor, worksheet*	**1**	HPEHE: MST : 3 ELA: Arts: LOTE: CDOS: SS:	**1–4**
b. Partner Thinking Lab using Venn Diagrams: Student edition, pp. 194-195 *Materials : text, spiral*	**2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
c. Partner Activity: Sum of the Angles in a Polygon. Student Edition p. 200. *Materials: Ruler, spiral*	**3, 4**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
d. Cooperative Groups: Hands-on mini lab. Student Edition p.202. *Materials: protractor, ruler, spiral*	**4**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
e. Classwork/Homework Exercises **pgs. 184-204, 210-218, 357-364.** Practice/Study Guide/Enrichment worksheets/ transparencies are available in teacher set. *Materials :Text, spiral*	**1-9**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. Test and review software available in teacher set. *Materials: Software CD*	**1-8**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**

E. Vocabulary

Parallel lines
Transversal
Alternate interior angles
Alternate exterior angles
Corresponding angles
Vertical angles
Supplementary angles
Congruent
Polygon
Triangle
Acute angle/triangle
Right angle/triangle
Obtuse angle/triangle
Scalene triangle
Isosceles triangle
Equilateral triangle
Congruent triangles (ASA, SAS, SSS)
Perpendicular
Complementary angles
Quadrilateral
Parallelogram
Rectangle
Rhombus
Square
Trapezoid
Congruent triangles
Corresponding parts
Similar triangles
Similar polygons
Indirect measurement

F. References and Resources

Mathematics; Applications and Connections, Course 3, Glencoe/McGraw-Hill, 1999.
Glencoe: Teacher Classroom Resources, Course 3.
Buckle Down: Sharpen Up, New York Mathematics, Book 8.
Topical Review Book Company: Practice Tests for Grade 8.
Glencoe: State Test Practice and Sample Test Workbook, Grade 8 Mathematics.
Westsea publishing Company Inc: New York State Intermediate Mathematics 8.

Unit Six

Transformations

A. Unit Benchmarks

Students will be able to:

1. Identify line and point symmetry.
2. Graph the reflection of a figure.
3. Graph the rotation of a figure. (90 rule, 180 rule)
4. Graph the translation of a figure.
5. Graph the dilation of a figure.

B. Unit Assessment

Informal checks for understanding
Observation/dialogue
Quiz/Test
Cooperative group activities
NYS Extended Response Questions
Assessment and Evaluation masters

C. Rubric

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. Partner Activity: Using a Geomirror to introduce Lines of Symmetry of polygons. *Materials: Worksheet,* Geomirror	**1**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
b. **Class Activity:** Folding paper to test for symmetry. Teacher Edition p. 208. Reteaching the Lesson *Materials: Photocopies of enlarged polygons, ruler, worksheet or spiral.*	**1**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
c. Journal Writing: Have students write e few sentences how they would decide whether a figure has line symmetry, rotational symmetry or neither. Teacher Edition p. 209-Closing Activity. *Materials :journal*	**1-3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
d. Class activity: Scale factor. Teacher will write an ordered pair and its image after applying a scale factor. Students will name the scale factor. *Materials : spiral*	**5**	HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	**1-4**

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. Classwork/Homework Exercises Symmetry Pgs. 206-209, Reflections Pgs 460 - 463, Rotations Pgs. 464 – 467 Translations Pgs. 456 – 459 Dilations Pgs. 370-373 Practice/Study Guide/Enrichment worksheets/ transparencies are available in teacher set. *Materials: text, spiral, graph paper, ruler*	**1-5**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
b. Partner activity: Hands on mini-lab: Reflections Student Edition p. 460. *Materials: graph paper, ruler, geomirror, spiral*	**2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
c. **Cooperative Groups:** Hands on mini-lab: Rotations Student Edition p. 464. *Materials: protractor, text*	**3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
d. **Class activity:** Mini-Lab: Translations Student Edition p. 456. *Materials : graph paper (worksheet), ruler*	**4**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
e. **Partner activity:** Hands on mini-lab: Dilations Student Edition p. 371. *Materials: graph paper, ruler*	**5**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. Test and review software available in teacher set. *Materials: Software cd*	**1-9**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**

E. Vocabulary

Transformation
Line symmetry
Point symmetry
Vertices
Reflection
Rotation
Rotational symmetry
Translation
Dilation
Scale Factor

F. References and Resources

Mathematics; Applications and Connections, Course 3, Glencoe /McGraw-Hill, 1999.
Glencoe: Teacher Classroom Resources, Course 3.
Buckle Down: Sharpen Up, New York Mathematics, Book 8.
Topical Review Book Company: Practice Tests for Grade 8.
Glencoe: State Test Practice and Sample Test Workbook, Grade 8 Mathematics.
Westsea publishing Company Inc: New York State Intermediate Mathematics 8.

Unit Seven

Rational Numbers

A. Unit Benchmarks

Students will be able to:

1. Review divisibility rules.
2. Review prime and composite numbers.
3. Review prime factorization.
4. Identify sets of numbers: rational, whole, natural, integers.
5. Express rational numbers as decimals and decimals as fractions.
6. Compare and order rational numbers expressed as fractions and/or decimals.
7. Express numbers in scientific notation (by hand and on the scientific calculator).
8. Add, subtract, multiply, and divide rational numbers.(review 1 day)
9. Add, subtract, multiply, and divide rational numbers using a scientific calculator.
10. Identify and use rational number properties.
11. Solve equations involving rational numbers.
12. Solve inequalities involving rational numbers and graph their solutions.

B. Unit Assessment

Informal checks for understanding
Observation/dialogue
Quiz/Test
Cooperative group activities
NYS Extended Response Questions
Assessment and Evaluation masters

C. Rubric

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. Class activity: Divisibility Chart Teacher edition, Pg. 233 – Reteaching the Lesson *Materials : spiral*	**1**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2**
b. Class activity: Logical Thinking – Determining whether a number is Prime. Teacher edition, pg. 235 – Multiple Learning Styles *Materials : calculator and spiral*	**2, 3**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3**
c. Class activity: Sieve of Eratosthenes List all the numbers in chart from 2 – 100. 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 etc.. Using the divisibility rules cancel out rows, diagonals and columns, leaving the 25 prime numbers from 2 - 100. *Materials : chart or graph paper*	**1, 2**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
d. Class activity: Classifying Numbers In spiral students will create a chart with 5 columns: Number, Natural Numbers, Whole Numbers, Integers, Real Numbers. Under the number column pick all types of numbers and then have the students decide whether that particular number is also in the set of Naturals, Wholes, Integers, Reals by writing yes or no in that particular column**.** *Materials : spiral*	**4**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**

e. Teaching – Tip: Using Calculators Teacher edition, pg. 250 *Materials : Calculator and spiral*	**5**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
f. Cooperative Groups: Comparing Rational Numbers Teacher Edition, pg. 262 – Reteaching the Lesson Variation: placing numbers on the number line *Materials : index cards, number line*	**6**	HPEHE: MST : 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**
g. Partners: Scientific notation Teacher edition, pg. 266 – Reteaching the lesson *Materials: index cards and spiral*	**7**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
h. Class activity: Properties of Real Numbers Teacher edition, pg. 291 – Reteaching the Lesson *Materials : index cards*	**10**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3**
i. Class activity: Solving equations verbally Teacher edition, pg. 316 – Reteaching the Lesson *Materials: chalkboard*	**11**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

j. Using Logical Reasoning: Inequalities Teacher edition, Pg. 319 *Materials: none*	**12**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. Classwork / Homework Exercises Pgs. 232 – 238 Pgs. 245 – 252 Pgs. 261 –273 Pgs. 278 – 298 Pgs. 312 - 327 Practice/Study Guide/Enrichment worksheets/ transparencies are available in teacher set. *Materials: text, spiral,*	**1-12**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
b. Basic Fraction Skills: (+, - , x , ÷) Student edition, Pgs. 602 – 604 Pgs. 623 – 624 *Materials : text and spiral*	**8**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. Test and review software available in teacher set. *Materials: Software CD*	**1-12**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**

E. Vocabulary

Divisible
Prime Number
Composite number
Prime Factorization
Rational Number
Whole Number
Natural Number
Integer
Terminating decimal
Repeating decimal
Scientific Notation
Multiplicative Inverse
Sequence
Term

F. References and Resources

Mathematics: Applications and Connections, Course 3, Glencoe /McGraw-Hill, 1999.
Glencoe: Teacher Classroom Resources, Course 3.
Buckle Down: Sharpen Up, New York Mathematics, Book 8.
Topical Review Book Company: Practice Tests for Grade 8.
Glencoe: State Test Practice and Sample Test Workbook, Grade 8 Mathematics.
Westsea publishing Company Inc: New York State Intermediate Mathematics 8.

Unit Eight

Applying Proportional Reasoning

A. Unit Benchmarks

Students will be able to:

1. Solve word problems by using proportions.
2. Solve problems using the percent proportion.
3. Solve problems using the percent equation.
4. Express percents greater than 100 or less than 1 as fractions and decimals.
5. Find and use the percent of increase or decrease.
6. Solve problems involving simple interest.
7. Solve problems using indirect measurement.
8. Solve problems involving scale drawings and models.

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B. Unit Assessment

Informal checks for understanding
Observation/dialogue
Quiz/Test
Cooperative group activities
NYS Extended Response Questions
Assessment and Evaluation masters

C. Rubric

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. Teaching tip: Teach students to place a label above each ratio when setting up the proportion. *Materials :none*	**1**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
b. Cooperative Groups: Percent Rummy Game Teacher Edition p. 346 – Reteaching the Lesson *Materials :index cards with fractional percents/ decimal equivalents.*	**4**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
c. Motivating the lesson: Percent of Change Teacher Edition p. 348. – Hands- on activity. *Materials : pencils*	**5**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
d. Teaching Tip: Indirect Measurement Students should be required to draw and label diagrams before setting up the proportion. *Materials : none*	**7**	HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	**1-4**

e. Partner activity: Blue Print Reading Each pair of students receives their own copy of a floor plan. Together they must determine the dimensions of each room and the total square footage of the house. *Materials: Blue Prints, ruler, spiral*	**8**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**
g. Modeling proportion questions similar to NYS Math 8 Exam. *Materials: worksheet*	**1-8**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. Classwork / Homework Exercises pgs. 330- 356, 361-369. Practice/Study Guide/Enrichment worksheets/ transparencies are available in teacher set. *Materials: text, spiral,*	**1-8**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1-4**

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. Test and review software available in teacher set. *Materials: Software CD*	**1-8**	HPEHE: MST: 3 ELA: Arts: LOTE: CDOS: SS:	**1, 2, 3, 4**

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

E. Vocabulary

Proportion
Cross Product Method
Rate
Base
Percentage
Percent of Increase/Decrease
Discount
Mark –Up
Selling Price
Sales Tax
Total Cost
Interest
Principal
Indirect Measurement
Scale

F. References and Resources

Mathematics: Applications and Connections, Course 3, Glencoe /McGraw-Hill, 1999.
Glencoe: Teacher Classroom Resources, Course 3.
Buckle Down: Sharpen Up, New York Mathematics, Book 8.
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Glencoe: State Test Practice and Sample Test Workbook, Grade 8 Mathematics.
Westsea publishing Company Inc: New York State Intermediate Mathematics 8.

Unit Nine

Exploring Real Numbers

A. Unit Benchmarks

Students will be able to:

1. Find square roots of perfect squares.
2. Estimating square roots.
3. Identify and classify numbers in the real number system.
4. Use the Pythagorean Theorem to solve problems.
5. Find missing measures in special right triangles.

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B. Unit Assessment

Informal checks for understanding
Observation/dialogue
Quiz/Test
Cooperative group activities
NYS Extended Response Questions
Assessment and Evaluation masters

C. Rubric

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. *Materials :*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials :*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials :*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials :*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST ELA: Arts: LOTE: CDOS: SS:	
b. *Materials :*		HPEHE: MST ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. *Materials :*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

4. Cross Disciplinary

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

5. Miscellaneous

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

E. Vocabulary

F. References and Resources

Unit Ten

Trigonometry

A. Unit Benchmarks

Students will be able to:

1. Identify the parts of a right triangle.
2. Use given information to set up the appropriate Trig ratios.
3. Find the missing angle of a triangle using Trig ratios.
4. Find the missing side of a triangle using Trig ratios.
5. Find the angle of elevation using Trig ratios.
6. Solve word problems using Trigonometry.

B. Unit Assessment

C. Rubric

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

4. Cross Disciplinary

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

5. Miscellaneous

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

E. Vocabulary

F. References and Resources

Unit Eleven

Algebra – Graphing Functions

A. Unit Benchmarks

Students will be able to:

1. Complete function tables.
2. Graph functions by using function tables.
3. Find solutions of equations with two variables.
4. Graph linear functions by plotting points.

B. Unit Assessment

C. Rubric

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

4. Cross Disciplinary

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

5. Miscellaneous

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

E. Vocabulary

F. References and Resources

Unit Twelve

Geometry – Using Area and Volume

A. Unit Benchmarks

Students will be able to:

1. Find the circumference of circles.
2. Find the area of circles.
3. Identify and sketch 3-D figures.
4. Find the volume of prisms and cylinders.
5. Find the volume of pyramids and cones.
6. Find the surface areas of rectangular and triangular prisms.
7. Investigate how surface area and volume are related.
8. Analyze measurements.

B. Unit Assessment

C. Rubric

D. Activities

1. **Teacher Constructed Activities**:

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

4. Cross Disciplinary

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

5. Miscellaneous

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

E. Vocabulary

F. References and Resources

Unit Thirteen

Investigating Discrete Math and Probability

A. Unit Benchmarks

Students will be able to:

1. Discover how to determine whether a game is fair or unfair.
2. Count outcomes by using a tree diagram or the counting principle.
3. Find the probability of independent and dependent events.

B. Unit Assessment

C. Rubric

D. Activities

1. Teacher Constructed Activities:

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

2. Textbook with Teaching Strategies

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

3. Computer Assisted Instruction

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

4. Cross Disciplinary

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

5. Miscellaneous

Activity	Benchmark	Standard	Application Level
a. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
b. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
c. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	
d. *Materials:*		HPEHE: MST: ELA: Arts: LOTE: CDOS: SS:	

Application Level:

1: Knowledge
2: Apply in Discipline
3: Apply Across Disciplines
4: Apply to Real World Predictable Situations
5: Apply to Real World Unpredictable Situations

E. Vocabulary

F. References and Resources

X. Course Assessment

XI. Curriculum Review Process