

Subject Area - MATH

Grade Level – 3/4

Mission Statement: It is the mission of the Elba Central School District to actualize the phrase “Elba Equals Educational Excellence for Everyone.” We are committed to providing both quality and equity. Every student will have the opportunity to develop to the best of his/her ability.

Elba Standards: In addition to the knowledge and basic skills they need in order to participate in society, graduates of Elba Central School will develop:

1. Empowering skills: decision making, goal setting, creative thinking and problem solving abilities;
2. Communication and social interaction skills;
3. Technological literacy;
4. Total wellness (social, physical, emotional health and self-esteem);
5. The values necessary to participate in society.

As a result of achieving these outcomes, our students will embrace lifelong learning.

New York State Standards:

Standard 1

Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

1. Critical thinking skills are used in the solution of mathematical problems.

Standard 3

Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.

- Mathematical Reasoning
- Numbers and Numeration
- Operations
- Modeling/Multiple Representations
- Measurement
- Uncertainty
- Patterns/Functions

Standard 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.

1. Systems Thinking
2. Models
3. Magnitude and Scale

4. Equilibrium and Stability
5. Patterns of Change
6. Optimization

National Standards:

Number and Operation Standard

Instructional programs from pre-kindergarten through grade 12 should enable all students to understand numbers, ways of representing numbers, relationships among numbers and number systems.

Algebra Standard

Instructional programs from pre-kindergarten through grade 12 should enable all students to understand patterns, relations, and functions.

Geometry Standard

Instructional programs from pre-kindergarten through grade 12 should enable all students to analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Measurement Standard

Instructional programs from pre-kindergarten through grade 12 should enable all students to understand measurable attributes of objects and the units, systems, and processes of measurement.

Data Analysis and Probability Standard

Instructional programs from pre-kindergarten through grade 12 should enable all students to formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them

Performance Indicators: Description of the levels of student achievement pertaining to standard.

Standard 1

- 3A. apply mathematical knowledge to solve real-world problems and problems that arise from the investigation of mathematical ideas, using representations such as pictures, charts, and tables

Standard 3

Mathematical Reasoning

- 1A. Use models, facts, and relationships to draw conclusions about mathematics and explain their thinking.
- 1B. Use patterns and relationships to analyze mathematical situations.
- 1C. Justify their answers and solution processes.
- 1D. Use logical reasoning to reach simple conclusions.

Numbers and Numeration

- 2A. Use whole numbers and fractions to identify locations, quantify groups of objects, and measure distances.
- 2B. Use concrete materials to model numbers and number relationships for whole numbers and common fractions, including decimal fractions.
- 2C. Relate counting to grouping and place value.
- 2D. Recognize order of whole numbers and commonly used fractions and decimals.
- 2E. Demonstrate the concept of ratio and percent through problems related to actual situations.

Operations

- 3A. Add, subtract, multiply, and divide whole numbers.
- 3B. Develop strategies for selecting the appropriate computational and operational method in problem-solving situations.
- 3C. Know single digit addition, subtraction, multiplication, and division facts.
- 3D. Understand the commutative and associative properties.

Models and Multiple Representations

- 4A. Use concrete materials to model spatial relationships.
- 4B. Construct tables, charts, and graphs to display and analyze real-world data.
- 4C. Use multiple representations (simulations, manipulative materials, pictures, and diagrams) as tools to explain the operation of everyday procedures.
- 4D. Use variables such as height, weight, temperature, and hand size to predict changes over time.
- 4E. Use physical materials, pictures, and diagrams to explain mathematical ideas and processes to demonstrate geometric concepts.

Measurement

- 5A. Understanding that measurement is approximate, never exact.
- 5B. Select appropriate standard and nonstandard measurement tools in measurement activities.

- 5C. Understand the attributes of area, length, capacity, weight, volume, time, temperature, and angles.
- 5D. Estimate in fine measures such as length, perimeter, area, and volume, using both nonstandard and standard units.
- 5E. Collect and display data.
- 5F. Use statistical methods such as graphs, table, and charts to interpret data.

Uncertainty

- 6A. Make estimates to compare to actual results of both formal and informal measurement.
- 6B. Make estimates to compare to actual results of computations.
- 6C. Recognize situations in which only an estimate is required.
- 6D. Develop a wide variety of estimation skills and strategies.
- 6E. Determine the reasonableness of results.
- 6F. Predict experimental probabilities.
- 6G. Make predictions, using unbiased random samples.
- 6H. Determine probabilities of simple events.

Patterning

- 7A. Recognize, describe, extend, and create a wide variety of patterns.
- 7B. Represent and describe mathematical relationships.
- 7C. Explore and express relationships, using variables and open sentences.
- 7D. Solve for an unknown, using manipulative material.
- 7E. Use a variety of manipulative materials and technologies to explore patterns.
- 7F. Interpret graphs.
- 7G. Explore and develop relationships among two- and three-dimensional geometric shapes.
- 7H. Discover patterns in nature, art, music, and literature

Assessment:	Acceptable Performance Level
A measure of student progress on performance indicators.	Based on pre-established criteria.
(any kind of test you are giving that is testing the performance indicator - formal or informal)	
New York State 4 th Grade Math Test	Score of 3 or 4

Scope: Range of subject matter.

Our third and fourth grade students will learn how to use mathematics to organize, understand, compare, and interpret their experiences. It is our endeavor to connect classroom instruction to the real world. They will accomplish this by following the sequence of topics listed in this document.

Sequence: Order of subject matter

Third Grade

1. Addition and Subtraction Facts
 - Understand the properties of addition
commutative and associative
 - Understand fact families
 - Choose the operation (addition or subtraction) as it deals with word problems

2. Place Value and Number Sense
 - Understand the use of numbers in the real world
 - Understand ordinal numbers
 - Use counting patterns
Even and odd numbers
 - Use place value models to build numbers to hundreds, thousands, and hundred
thousands
 - Use expanded and standard forms
 - Compare and order numbers through hundred thousands
 - Make a table as a problem solving strategy
 - Round numbers to the nearest ten and hundred

3. Addition and Money
 - Stress patterns in adding larger whole numbers
 - Estimate sums
 - Addition of two and three digit numbers with and without regrouping
 - Use column addition
 - Draw a picture as a problem solving strategy
 - Addition of greater numbers through thousands
 - Count money and make change
 - Compare, order and round money
 - Add money

4. Subtraction
 - Stress patterns in subtracting whole numbers
 - Estimate differences
 - Subtraction of two and three digit numbers with and without regrouping
 - Solve multistep problems
 - Subtraction of greater numbers through thousands
 - Subtract across zero
 - Subtract money

5. Time, Data, and Graphs
 - Estimate time
 - Tell time to the nearest minute
 - Elapsed time
 - Using a calendar
 - Use the guess, test and revise strategy in solving word problems
 - Use tallies and line plots
 - Use pictographs
 - Use bar graphs

6. Understanding Multiplication
 - Make equal groups
 - Understand the relationship between addition and multiplication
 - Understand the multiplication properties of zero and one
 - Use factors two through five
 - Use a multiplication table

7. Multiplication Facts
 - Use factors six through nine
 - Make an organized list as a problem solving strategy
 - Square numbers
 - Use the associative property of multiplication

8. Division Facts
 - Relate multiplication and division
 - Divide by one, two, three, four, five, six, seven, eight, and nine
 - Divide with zero and one
 - Use a multiplication table to divide
 - Work backwards as a problem solving strategy
 - Use fact families with multiplication and division
 - Divide numbers having a remainder

9. Measurement
 - Measure in customary and metric units (length)
 - Use perimeter
 - Use area (square units)
 - Use volume (cubic units)
 - Three dimensional figures
 - Use logical reasoning as a problem solving strategy
 - Use capacity (customary and metric units)
 - Use weight/mass (customary and metric units)

10. Geometry
 - Name two and three dimensional figures
 - Recognize polygons
 - Use lines, line segments, rays, and angles
 - Find a pattern
 - Use motion and congruence
 - Recognize symmetry
 - Use ordered pairs

11. Fractions, Decimals, Probability
 - Understand the meaning of fractions
 - Understand equivalent fractions
 - Compare fractions
 - Use mixed numbers
 - Use decimals less than one
 - Use decimals greater than one
 - Add and subtract decimals
 - Conduct an experiment as a problem solving strategy
 - Use probability

12. Multiply and Divide by 1-Digit Numbers
 - Multiply by one digit numbers
 - Divide by one digit numbers

Fourth Grade

1. Place Value and Number Sense
 - Understand the use of numbers in the real world
 - Build to thousands
 - Use expanded, standard and word name forms
 - Compare and order numbers through millions
 - Make a table as a problem solving strategy
 - Round numbers

2. Money, Addition, and Subtraction
 - Count money and make change
 - Compare, order, and round money
 - Use addition strategies
 - Estimate sums
 - Add whole numbers with and without regrouping
 - Use commutative and associative properties
 - Use subtraction strategies
 - Estimate differences
 - Subtract whole numbers with and without regrouping
 - Chose operation strategy for problem solving
 - Subtract across zero

3. Time, Data, and Graphs
 - Tell time
 - Figure elapsed time
 - Work backwards as a problem solving strategy
 - Understand range, median, and mode
 - Use pictographs, bar graphs, and line graphs
 - Use ordered pairs

4. Multiplication and Division Facts
 - Making equal groups
 - Use single digit factors
 - Find a pattern as a problem solving strategy
 - Use commutative and associative properties
 - Relate multiplication and division
 - Dividing by single digit numbers
 - Use fact families
 - Divide with remainders

5. Multiply by One Digit Numbers
 - Use multiplication patterns
 - Estimate products
 - Solve multistep problems

- Multiply money
- 6. Multiply by Two Digit Numbers
- 7. Measurement
- 8. Divide by One Digit Numbers
- 9. Geometry
- 10. Fractions and Probability
- 11. Decimals - Only in Money

Methodology: Best Practices

Use of manipulatives to demonstrate understandings of a concept

Incorporate Elements of Instruction

Provide real life problems for knowledge application

Use written expression to explain how mathematical problems are solved