

## Subject Area Math Grade Level 2

**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 3: *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;*

1. Mathematical Reasoning
2. Numbers and Numeration
3. Operations
4. Modeling/Multiple Representation
5. Measurement
6. Uncertainty
7. 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.

The Key Ideas for Standard Six are

1. Systems Thinking—Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.
2. Models—Models are simplified representations of objects, structure, or systems used in analysis, explanation, interpretation, or design.

3. Magnitude and Scale—The grouping of magnitudes of size, time, frequency, and pressures or other units of measurement into a series of relative order provides a useful way to deal with the immense range and the changes in scale that affect the behavior and design of systems.
4. Equilibrium and Stability—Equilibrium is a state of stability due either to a lack of changes (static equilibrium) or a balance between opposing forces (dynamic equilibrium).
5. Patterns of Change—Identifying patterns of change is necessary for making predictions about future behavior and conditions.
6. Optimization—In order to arrive at the best solution that meets criteria within constraints, it is often necessary to make trade-offs.

### **National Standards:**

#### Number and Operations Standard for Grades Pre-K–2

##### Expectations

In prekindergarten through grade 2 all students should—

Understand numbers, ways of representing numbers, relationships among numbers, and number systems

#### Algebra Standard for Grades Pre-K–2

##### Expectations

In prekindergarten through grade 2 all students should—

Understand patterns, relations, and functions

#### Geometry Standard for Grades Pre-K–2

##### Expectations

In prekindergarten through grade 2 all students should—

Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships

#### Measurement Standard for Grades Pre-K–2

##### Expectations

In prekindergarten through grade 2 all students should—

Understand measurable attributes of objects and the units, systems, and processes of measurement

### Data Analysis and Probability Standard for Grades Pre-K–2

#### Expectations

In prekindergarten through grade 2 all students should—

Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them

### Problem Solving Standard for Grades Pre-K–2

Instructional programs from prekindergarten through grade 12 should enable all students to—

- \* build new mathematical knowledge through problem solving;
- \* solve problems that arise in mathematics and in other contexts;
- \* apply and adapt a variety of appropriate strategies to solve problems;
- \* monitor and reflect on the process of mathematical problem solving.

### Reasoning and Proof Standard for Grades Pre-K–2

Instructional programs from prekindergarten through grade 12 should enable all students to—

- \* recognize reasoning and proof as fundamental aspects of mathematics;
- \* make and investigate mathematical conjectures;
- \* develop and evaluate mathematical arguments and proofs;
- \* select and use various types of reasoning and methods of proof.

### Communication Standard for Grades Pre-K–2

Instructional programs from prekindergarten through grade 12 should enable all students to—

- \* organize and consolidate their mathematical thinking through communication;
- \* communicate their mathematical thinking coherently and clearly to peers, teachers, and others;
- \* analyze and evaluate the mathematical thinking and strategies of others;
- \* use the language of mathematics to express mathematical ideas precisely.

### Connections Standard for Grades Pre-K–2

Instructional programs from prekindergarten through grade 12 should enable all students to—

- \* recognize and use connections among mathematical ideas;
- \* understand how mathematical ideas interconnect and build on one another to produce a coherent whole;
- \* recognize and apply mathematics in contexts outside of mathematics.

### Representation Standard for Grades Pre-K–2

Instructional programs from prekindergarten through grade 12 should enable all students to—

- \* create and use representations to organize, record, and communicate mathematical ideas;
- \* select, apply, and translate among mathematical representations to solve problems;
- \* use representations to model and interpret physical, social, and mathematical phenomena.

### **Performance Indicators:**

#### 1. Mathematical Reasoning

- use models, facts, and relationships to draw conclusions about mathematics and explain their thinking
- use patterns and relationships to analyze mathematical situations
- justify their answers and solution processes
- use logical reasoning to reach simple conclusions

#### 2. Numbers and Numeration

- use whole numbers and fractions to identify locations, quantify groups of objects, and measure distances
- use concrete materials to model numbers and number relationships for whole numbers and common fractions, including decimal fractions
- relate counting to grouping and to place-value
- recognize the order of whole numbers and commonly used fractions and decimals
- demonstrate the concept of percent through problems related to actual situations

#### 3. Operations

- add, subtract, multiply, and divide whole numbers
- develop strategies for selecting the appropriate computational and operational method in problem-solving situations
- know single digit addition, subtraction, multiplication, and division facts
- understand the commutative and associative properties

#### 4. Modeling/Multiple Representation

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

#### 5. Measurement

- understand that measurement is approximate, never exact

- select appropriate standard and nonstandard measurement tools in measurement activities
- understand the attributes of area, length, capacity, weight, volume, time, temperature, and angle
- estimate and find measures such as length, perimeter, area, and volume using both nonstandard and standard units
- collect and display data
- use statistical methods such as graphs, tables, and charts to interpret data

6. Uncertainty

- make estimates to compare to actual results of both formal and informal measurement
- make estimates to compare to actual results of computations
- recognize situations where only an estimate is required
- develop a wide variety of estimation skills and strategies
- determine the reasonableness of results
- predict experimental probabilities
- make predictions using unbiased random samples
- determine probabilities of simple events

7. Patterns/Functions

- recognize, describe, extend, and create a wide variety of patterns
- represent and describe mathematical relationships
- explore and express relationships using variables and open sentences
- solve for an unknown using manipulative materials
- use a variety of manipulative materials and technologies to explore patterns
- interpret graphs
- explore and develop relationships among two- and three-dimensional geometric shapes
- discover patterns in nature, art, music, and literature

<b>Assessment:</b>	<b>Acceptable Performance Level</b>
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)	

**Scope:**

Understand Addition and Subtraction  
 Addition and Subtraction Strategies  
 Place Value and Graphing  
 Money  
 Telling Time  
 Exploring 2-Digit Addition and Subtraction  
 Adding 2-Digit Numbers  
 Subtracting 2-Digit Numbers  
 Geometry and Fractions

Measurement

Numbers to 1,000-Adding and Subtracting

Exploring Multiplication and Division

**Sequence:**

Scope and Sequence

Numeration and Number Theory

-Count and understand numbers to 1,000

-Skip Count by 2,3,5,4,10's

-Ordinal numbers to twentieth

-Place value: whole numbers, tens/ones, hundreds/tens/ones

-Compare and order whole numbers using greater than and less than to 1,000

-Compare fractions

-Round whole numbers

-Even and odd numbers

Whole Number Computation: Addition

-Meaning of addition: count on to add, sentences

-Properties: order, zero

-Basic facts to 18, add with doubles, add three numbers

-Fact families

-Missing addends

-Add 2,3 digit numbers

-Add money amounts

-Mental math strategies

-Estimate sums

-Write/solve number sentences

Whole Number Computation: Subtraction

-Meaning of subtraction: count back to subtract, sentences, number line

-Properties: zero

-Basic facts to 18

-Fact families

-Missing addends

-Subtract 2,3 digit numbers

-Subtract money amounts

-Mental math strategies

-Estimate differences

-Write/solve number sentences

Whole Number Computation: Multiplication

-Meaning of multiplication, sentences

Fractions and Mixed Numbers

-Meanings of fractions: halves, fourths, thirds, sixths, parts of a set, parts of a whole

Geometry:

-Patterns

-Identify 2,3-dimensional shapes

-Congruence

-Symmetry

Measurement, Time, Money:

Measurement:

-Estimate and measure length, nonstandard units, metric/customary units

-Estimate and measure capacity, nonstandard units, metric/customary units

-Estimate and measure mass/weight, nonstandard units, metric/customary units

-Temperature: Celsius, Fahrenheit

-Perimeter

-Area

Time:

-Read a calendar

-Estimate and tell time: hour, half hour, quarter hour

-Find elapsed time

Money:

-Find values of coins and bills: penny, nickel, dime, quarter, half dollar, dollars and cents

-Compare and order

-Estimate and compute with money amounts: add/subtract

Problem Solving:

-Use problem-solving process

-Use/find a patterns

-Use/make a table

-Use-draw a picture/diagram

-Use logical reasoning

-Interpret data

-Guess, test, and revise

-Use estimation

-Choose a strategy

-Write a number sentence

-Check for reasonable answers

-Choose the operation

-Choose the method

-Solve multistep problems

-Identify extra information

-Solve a similar/simpler problem

Mathematical Reasoning:

-Decision making

-Critical thinking

Estimation:

Strategies:

-Rounding

Numbers/Operations:

-Whole numbers, sums and differences

-Money, sums and differences

Measurement:

-Length, capacity, mass/weight

-Time

-Temperature

-Perimeter, area, volume

Problem Solving:

-Check for reasonableness

Mental Math:

Basic Addition/Subtraction Fact Strategies:

-Use patterns

-Count on/back

-Use doubles

-Use doubles plus 1

-Make 10

-Skip count

-Add/subtract 9

-Use related facts

-Use fact families

-Use properties

Computation Strategies:

-Use patterns

-Count on/count back

Patterns, Relationships, Functions:

Patterns:

-Number patterns: repeating patterns, computation patterns, skip-counting patterns, even/odd number patterns

-Geometric/spatial patterns

Relationships:

-Sorting and classifying

Geometric relationships, shapes, graphing ordered pairs

Algebra:

Expressions, Equations, Inequalities:

-Inverse operations

Properties

-Write/solve number sentences

-Inequalities, use greater than/ less than symbols

Coordinate Graphing

-Locate points on a number line

Statistics and Graphing

-Gather and Collect Data:

-Collect data

-Conduct a survey

-Tally

Organize and Represent Data:



- Sort and order data
- Make a list
- Make a table/graph
- Pictographs
- Line plots
- Bar graphs
- Analyze Data and Draw Conclusions
- Read and interpret data
- Make predictions and generalizations
- Probability
- Meaning:
- Conduct an experiment/simulation
- Predict outcomes

**Methodology:** Best Practices  
manipulatives