

BELLEFONTE AREA SCHOOL DISTRICT
GRADE 1 MATHEMATICS LEARNING OBJECTIVES

2.1 Numbers, Number Systems and Number Relationships

By the end of the school year, first grade students should be able to:

1. Demonstrate an understanding of the use of numbers by:

- Counting on by 1s, 2s, 5s, and 10s past 100.
- Counting back by 1s from any number less than 100.
- Counting collections of objects accurately and reliably; estimating the number of objects in a collection.
- Reading, writing, and modeling with manipulatives whole numbers up to 1,000; identifying places and the values of digits.
- Using manipulatives and drawings to model halves, thirds, and fourths as equal parts of a region or a collection, describing the model.
- Using manipulatives to identify and model odd and even numbers.

2. Demonstrate an understanding of ways to represent numbers by:

- Using manipulatives, drawings, tally marks, and numerical expressions involving addition and subtraction of 1- or 2-digit numbers to give equivalent names for whole numbers up to 100.

3. Demonstrate an understanding of number relationships by:

- Comparing and ordering whole numbers up to 1,000.

2.2 Computation and Estimation

By the end of the school year, first grade students should be able to:

1. Compute accurately by:

- Demonstrating proficiency with $+/- 0$, $+/- 1$, doubles, and sum-equals-ten addition and subtraction facts such as $6 + 4 = 10$ and $10 - 7 = 3$.
- Using manipulatives, number grids, tally marks, mental arithmetic, and calculators to solve problems involving the addition and subtraction of 1-digit whole numbers with 1- or 2-digit whole numbers; calculating and comparing the values of combinations of coins.

2. Make reasonable estimates by:

- Estimating the reasonableness of answers to basic fact problems (i.e. Is $7 + 8$ more or less than 10?).

3. Demonstrate an understanding of the meanings of operations by:

- Identifying change-to-more, change-to-less, comparison, and parts-and-total situations.

2.3 Measurement and Estimation

By the end of the school year, first grade students should be able to:

1. Measure accurately by:

- Using nonstandard tools and techniques to estimate and compare weight and length; measuring length with standard measuring tools.
- Knowing and comparing the value of pennies, nickels, dimes, quarters, and dollar bills; making exchanges between coins.

2. Use reference frames (i.e. clocks, thermometers) by:

- Identifying a thermometer as a tool for measuring temperature.
- Reading temperatures on Fahrenheit and Celsius thermometers to the nearest 10° .
- Using a calendar to identify days, weeks, months, and dates.
- Telling and showing time to the nearest half and quarter hour on analog clock.

2.6 Statistics and Data Analysis & 2.7 Probability and Predictions

By the end of the school year, first grade students should be able to:

1. Select and create graphs using data by:

- Collecting and organizing data to create tally charts, tables, bar graphs, and line plots.

2. Analyze and interpret data by:

- Using graphs to answer simple questions and draw conclusions; finding the maximum and minimum of a data set.

3. Demonstrate an understanding of probability by:

- Describing events using basic probability terms (e.g. certain, likely, unlikely, impossible).

2.8 Algebra and Functions, 2.10 Trigonometry, & 2.11 Calculus

By the end of the school year, first grade students should be able to:

1. Demonstrate an understanding of patterns and functions by:

- Extending, describing and creating numeric, visual, and concrete patterns.

2. Use symbols to represent and analyze situations by:

- Reading, writing and explaining expressions and number sentences using the symbols $+$, $-$, $=$, $>$, and $<$.
- Solving equations involving $+$ and $-$.
- Applying the Commutative Property of Addition and Additive Identity to basic addition fact problems.

2.9 Geometry

By the end of the school year, first grade students should be able to:

1. Demonstrate an understanding of 2- and 3- dimensional shapes by:

- Identifying and describing plane and solid figures (e.g. circles, triangles, squares, rectangles, spheres, cylinders, rectangular prisms, pyramids, cones, and cubes).

2. Apply transformations and symmetry by:

- Identifying shapes having line symmetry.
- Completing line-symmetric shapes or designs.