

# MATHEMATICS

## Level 4.0 - 5.9 • (Intermediate)

Student: _____	ID # _____	Entry Date: _____
Institution: _____	Date Achieved: _____	
Site: _____	Instructor(s): _____	

**PLEASE CHECK CORRESPONDING BOX AS EACH STANDARD IS ACHIEVED.**

### STANDARD 19

**The student shows awareness of ways whole numbers are represented and used in the real world.**

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

Benchmarks:

- 19.1 Naming whole numbers combining up to 7-digit numeration (millions, thousands, hundreds, tens, ones);
- 19.2 Using number periods such as ones, thousands, and millions;
- 19.3 Associating verbal names, written word names, and standard numerals with whole numbers;
- 19.4 Understanding the relative size of whole numbers;
- 19.5 Identifying concrete and symbolic representations of whole numbers in real-world situations;
- 19.6 Using expanded notation to show that whole numbers can be represented in a variety of equivalent forms.

### STANDARD 20

**The student demonstrates proficiency in adding and subtracting whole numbers.**

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

Benchmarks:

- 20.1 Adding a 1-, 2-, or 3-digit number to a 3-digit number with and without regrouping, given in both vertical and horizontal notation;
- 20.2 Adding three or four 3-digit numbers with and without regrouping, given in both vertical and horizontal notation;
- 20.3 Adding three or four 4-digit numbers with and without regrouping, given in both vertical and horizontal notation;
- 20.4 Subtracting two 3-digit numbers with and without regrouping, given in both vertical and horizontal notation;
- 20.5 Subtracting two 4-digit numbers with and without regrouping, given in both vertical and horizontal notation;
- 20.6 Subtracting two 5-digit numbers with and without regrouping, given in both vertical and horizontal notation;
- 20.7 Borrowing where the minuend is a digit followed by three zeros and regrouping is necessary (for example: 6000 - 495).

### STANDARD 21

**The student multiplies whole numbers.**

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

Benchmarks:

- 21.1 Multiplying a 2-digit number by a 2-digit number;
- 21.2 Multiplying a 3-digit number by a 1-, 2-, or 3-digit number;
- 21.3 Multiplying a 4-digit number by a 1-, 2-, or 3-digit number;
- 21.4 Multiplying a 5-digit number by a 1-, 2-, or 3-digit number;
- 21.5 Demonstrating proof method for multiplication (for example:  $64 \times 27 = 27 \times 64$ ).

### STANDARD 22

**The student divides whole numbers.**

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

Benchmarks:

- 22.1 Dividing 3-, 4-, or 5-digit numbers by a 1-digit number with and without remainders;
- 22.2 Dividing 3-, 4-, or 5-digit numbers by a 2-digit number with and without remainders;
- 22.3 Dividing by a 3-digit number with or without remainders;
- 22.4 Dividing from fractional notation (for example:  $728/14$ );
- 22.5 Proving long-division problems.

### STANDARD 23

**The student demonstrates proficiency in number sense, concepts, and operations involving fractions.**

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

Benchmarks:

- 23.1 Associating verbal names, written word names, and standard numerals with commonly used fractions (for example:  $1/2$ ,  $1/4$ ,  $1/3$ ,  $3/4$ ,  $2/3$ );
- 23.2 Understanding the relative size of commonly used fractions;
- 23.3 Identifying concrete and symbolic representations of commonly used fractions in real-world situations;
- 23.4 Writing numbers as fractions;
- 23.5 Understanding the concept of numerators and denominators;
- 23.6 Identifying proper, improper, and mixed fractions;
- 23.7 Converting from mixed to improper fractions;
- 23.8 Converting from improper to mixed fractions;
- 23.9 Reducing common fractions;
- 23.10 Converting fractions to an equivalent fraction;
- 23.11 Adding fractions with common denominators;
- 23.12 Subtracting fractions with common denominators;
- 23.13 Multiplying proper fractions;
- 23.14 Multiplying proper fractions by whole numbers.

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## STANDARD 24

- The student demonstrates proficiency with number sense, concepts, and operations involving decimals.

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

**Benchmarks:**

- 24.1 Associating verbal names, written word names, and standard numerals with decimals, including tenths, hundredths, and thousandths;
- 24.2 Understanding the relative size of decimals;
- 24.3 Identifying concrete and symbolic representations of decimals in real-world situations;
- 24.4 Understanding that decimals can be represented in other equivalent forms;
- 24.5 Converting common fractions to decimals;
- 24.6 Converting decimals to common fractions;
- 24.7 Adding decimals;
- 24.8 Subtracting decimals;
- 24.9 Selecting the appropriate operation to solve specific problems involving decimals;
- 24.10 Understanding the relationship between money and decimals;
- 24.11 Solving real-world problems involving decimals.

## STANDARD 25

- The student uses estimation to problem solve and compute.

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

**Benchmarks:**

- 25.1 Using and justifying different estimation strategies in a real-world problem situation and determining the reasonableness of results of calculations;
- 25.2 Solving real-world problems by estimating measurements including length, time, weight, temperature, money, perimeter, area, and volume and comparing the results to actual measurements;
- 25.3 Rounding a whole number less than one million to any designated place;
- 25.4 Rounding fractions and mixed numbers to the nearest whole numbers;
- 25.5 Using rounding techniques to estimate the solution to a real-world addition or subtraction measurement problem, then determining the actual result.

## STANDARD 26

- The student understands theories related to numbers.

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

**Benchmarks:**

- 26.1 Understanding and applying basic number theory concepts, including primes, composites, factors, and multiples;
- 26.2 Understanding communicative and associative properties (for example:  $6 \times 2 = 2 \times 6$ ;  $1 + 3 + 4 = 3 + 1 + 4$ ).

## STANDARD 27

- The student demonstrates proficiency in measuring quantities and solving problems related to measurement.

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

**Benchmarks:**

- 27.1 Writing abbreviations for length, weight, and capacity measurements in the U.S. system;
- 27.2 Identifying equal measures defined in different units;
- 27.3 Measuring to the nearest  $\frac{1}{4}$  inch on a 12-inch ruler;
- 27.4 Solving measurement problems in the U.S. system using addition or subtraction with no conversion;
- 27.5 Determining temperature using Fahrenheit or Celsius thermometer;
- 27.6 Determining capacity by measuring quantities in teaspoons, tablespoons, cups, pints, quarts, gallons, and liters;
- 27.7 Recognizing, using, measuring, and interpreting linear dimensions and geometric shapes;
- 27.8 Using and interpreting measurement instruments, such as rules, scales, gauges, and dials;
- 27.9 Interpreting diagrams, illustrations, and scale drawings;
- 27.10 Interpreting spatial relationships (for example: above, below, nearer, farther, equidistant);
- 27.11 Interpreting recipes;
- 27.12 Converting equivalent measurements (for example: cups to quarts);
- 27.13 Identifying product containers;
- 27.14 Interpreting weight and volume;
- 27.15 Interpreting temperature.

## STANDARD 28

- The student demonstrates proficiency in solving problems involving geometry.

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

**Benchmarks:**

- 28.1 Understanding the concepts of spatial relationships, symmetry, reflections, congruency, and similarity;
- 28.2 Predicting, illustrating, and verifying which figures could result from a flip, slide, or turn of a given figure;
- 28.3 Drawing and/or modeling two- and three-dimensional shapes (such as cube, sphere, cone, cylinder, rectangular solid) from a verbal description;
- 28.4 Recognizing and applying geometric formulas for perimeter and area of squares, rectangles, triangles, cubes, and rectangular solids;
- 28.5 Representing and applying a variety of strategies and geometric properties and formulas for two- and three-dimensional shapes to solve real-world and mathematical problems;
- 28.6 Using real-life experiences and physical materials to describe, classify, compare, and sort geometric figures according to the number of faces, edges, bases, and corners, including squares, rectangles, triangles, circles, cubes, rectangular solids.

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## STANDARD 29

- The student demonstrates proficiency in solving problems involving algebra.

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

### Benchmarks:

- 29.1 Constructing a rectangular coordinate system showing positive and negative  $x$  and  $y$  values to 7;
- 29.2 Describing a variety of patterns and relationships through models, such as manipulatives, tables, graphs, and rules;
- 29.3 Translating a problem from words into a number symbol sentence (for example: six plus one equals seven to  $6 + 1 = 7$ );
- 29.4 Recognizing simple algebraic formulas (for example:  $1 + 3 = x$ );
- 29.5 Recognizing simple consumer formulas (for example: units times price = cost).

## STANDARD 30

- The student interprets data from graphs, charts, and maps.

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

### Benchmarks:

- 30.1 Solving problems by generating, collecting, organizing, displaying, and analyzing data using bar graphs, circle graphs, line graphs, pictographs, charts;
- 30.2 Interpreting data in charts, tables, plots, graphs, and maps;
- 30.3 Understanding and finding averages (means);
- 30.4 Locating a point on a highway map.

## STANDARD 31

- The student calculates differences to solve problems encountered in daily living.

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

### Benchmarks:

- 31.1 Calculating reported differences (for example: minutes spent working on two jobs);
- 31.2 Calculating differences between two hourly wages;
- 31.3 Determining the net cost of groceries after deducting the value of coupons;
- 31.4 Calculating difference between figures from a summarizing table;
- 31.5 Using hourly and daily wage rates, calculating the difference in earnings;
- 31.6 Determining the difference between lengths of business hours on week days and week ends;
- 31.7 Calculating the savings between two specific subscription rates;
- 31.8 Calculating the amount of increase using figures from a bar graph;
- 31.9 Determining daily earnings based on hourly rate and number of hours worked;
- 31.10 Using figures from a comparison table, calculating increases;
- 31.11 Totaling the amount of fines accrued for several driving violations.

## STANDARD 32

- The student applies arithmetic operations to information contained in printed materials.

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

### Benchmarks:

- 32.1 Using an order form to determine the total cost of a purchase;
- 32.2 Determining the total for an order after calculating the cost of two items and sales tax (using a tax table);
- 32.3 Determining the total cost of multiple items ordered from a menu, including one item having multiple quantities;
- 32.4 Calculating net value (for example: deducting coupon value from total purchase);
- 32.5 Using an advertisement, determining the total cost of several items in different quantities;
- 32.6 Calculating the savings between two specific subscription rates.

## STANDARD 33

- The student demonstrates proficiency in consumer math skills.

Date: \_\_\_\_\_ Instructor: \_\_\_\_\_

### Benchmarks:

- 33.1 Identifying needs and wants;
- 33.2 Developing a personal budget for a set income;
- 33.3 Interpreting bills;
- 33.4 Planning for major purchases (for example: car, refrigerator);
- 33.5 Interpreting information or directions to locate consumer goods (for example: newspaper ads, yellow pages);
- 33.6 Identifying and using methods to purchase goods and services, including catalogs, order forms, and related information;
- 33.7 Interpreting advertisements, labels, charts, letters, articles, price tags, or other information in selecting goods and services;
- 33.8 Writing personal checks or money orders to purchase goods and services;
- 33.9 Interpreting bank statements and computer-generated banking receipts;
- 33.10 Completing a deposit and withdrawal form.

### LITERACY COMPLETION POINT C