Florida Adult Basic Education

Mathematics - Level 4

Number Sense and Operations MA.L4.NSO

1a Extend knowledge of numbers to negative numbers and develop an understanding of absolute value. MA.L4.NSO.1A

1. Extend previous understanding of numbers to define rational numbers. Plot, order, and compare rational numbers. MA.L4.NSO.1A.1
2. Given a mathematical or real-world context, represent quantities that have opposite directions using rational numbers. Compare them on a number line and explain the meaning of zero within its context. MA.L4.NSO.1A.2
3. Given a mathematical or real-world context, interpret the absolute value of a number as the distance from zero on a number line. Find the absolute value of rational numbers. MA.L4.NSO.1A.3
4. Solve mathematical and real-world problems involving absolute value, including the comparison of absolute value. MA.L4.NSO.1A.4

1b Rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals and percentages to solve mathematical and real-world problems. MA.L4.NSO.1B

1. Rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals, and percentages to solve mathematical and real-world problems. MA.L4.NSO.1B.1

1c Solve problems involving rational numbers, including numbers in scientific notation, and extend the understanding of rational numbers to irrational numbers. MA.L4.NSO.1C

1. Extend previous understanding of rational numbers to define irrational numbers within the real number system. Locate an approximate value of a numerical expression involving irrational numbers on a number line. MA.L4.NSO.1C.1
2. Plot, order, and compare rational and irrational numbers, represented in various forms. MA.L4.NSO.1C.2
3. Extend previous understanding of the Laws of Exponents to include integer exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to integer exponents and rational number bases, with procedural fluency with variables on both sides. MA.L4.NSO.1C.3
4. Add, subtract, multiply, and divide numbers expressed in scientific notation with procedural fluency. MA.L4.NSO.1C.4

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5 Solve real-world problems involving operations with numbers expressed in scientific notation. MA.L4.NSO.1C.5

6 Solve multi-step mathematical and real-world problems involving the order of operations with rational numbers, including exponents and radicals. MA.L4.NSO.1C.6

2 Add, subtract, multiply and divide rational numbers. MA.L4.NSO.2

1 Solve mathematical problems using multi-step order of operations with rational numbers including grouping symbols, whole-number exponents, and absolute value. MA.L4.NSO.2.1

2 Add, subtract, multiply, and divide rational numbers with procedural fluency. MA.L4.NSO.2.2

3 Solve real-world problems involving any of the four operations with rational numbers. MA.L4.NSO.2.3

3 Apply properties of operations to rewrite numbers in equivalent forms. MA.L4.NSO.3

1 Evaluate positive rational numbers and integers with natural number exponents. MA.L4.NSO.3.1

2 Rewrite positive rational numbers in different but equivalent forms including fractions, terminating decimals, and percentages. MA.L4.NSO.3.2

Fractions MA.L4.FR

Not. Not a focus standard at this level NOT

Algebraic Reasoning MA.L4.AR

1a Apply previous understanding of arithmetic expressions to algebraic expressions. MA.L4.AR.1A

1 Given a mathematical or real-world context, translate written descriptions into algebraic expressions and translate algebraic expressions into written descriptions. MA.L4.AR.1A.1

2 Translate a real-world written description into an algebraic inequality in the form of ?? > ??, ?? < ??, ?? ? ?? or ?? ? ??. Represent the inequality on a number line. MA.L4.AR.1A.2

3 Evaluate algebraic expressions using substitution and order of operations. MA.L4.AR.1A.3

4 Apply the properties of operations to generate equivalent algebraic expressions with integer coefficients. MA.L4.AR.1A.4

1b Rewrite algebraic expressions in equivalent forms. MA.L4.AR.1B

1 Apply properties of operations to add and subtract linear expressions with rational coefficients. MA.L4.AR.1B.1

2 Determine whether two linear expressions are equivalent. MA.L4.AR.1B.2

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Generate equivalent algebraic expressions. MA.L4.AR.1C

1 Apply the Laws of Exponents to generate equivalent algebraic expressions, limited to integer exponents and monomial bases. MA.L4.AR.1C.1

2 Apply properties of operations to multiply two linear expressions with rational coefficients. MA.L4.AR.1C.2

3 Rewrite the sum of two algebraic expressions having a common monomial factor as a common factor multiplied by the sum of two algebraic expressions. MA.L4.AR.1C.3

2a Develop an understanding for solving equations and inequalities. Write and solve one-step equations in one variable. MA.L4.AR.2A

1 Given an equation or inequality and a specified set of integer values, determine which values make the equation or inequality true or false. MA.L4.AR.2A.1

2 Write and solve one-step equations in one variable within a mathematical or real-world context using addition and subtraction, where all terms and solutions are integers. MA.L4.AR.2A.2

3 Write and solve one-step equations in one variable within a mathematical or real-world context using multiplication and division, where all terms and solutions are integers. MA.L4.AR.2A.3

4 Determine the unknown decimal or fraction in an equation involving any of the four operations, relating three numbers, with the unknown in any position. MA.L4.AR.2A.4

2b Write and solve equations and inequalities in one variable. MA.L4.AR.2B

1 Write and solve one-step inequalities in one variable within a mathematical context and represent solutions algebraically or graphically. MA.L4.AR.2B.1

2 Write and solve two-step equations in one variable within a mathematical or real-world context, where all terms are rational numbers. MA.L4.AR.2B.2

2c Solve multi-step one-variable equations and inequalities. MA.L4.AR.2C

1 Solve multi-step linear equations in one variable, with rational number coefficients. Include equations with variables on both sides. MA.L4.AR.2C.1

2 Solve two-step linear inequalities in one variable and represent solutions algebraically and graphically. MA.L4.AR.2C.2

3 Given an equation in the form of ??^2 = ?? and ??^3 = ??, where ?? is a whole number and ?? is an integer, determine the real solutions. MA.L4.AR.2C.3

3a Understand ratio and unit rate concepts and use them to solve problems. MA.L4.AR.3A

1 Given a real-world context, write and interpret ratios to show the relative sizes of two quantities using appropriate notation: ?? / ??, ?? to ??, or ??: ?? where ?? ? 0. MA.L4.AR.3A.1

2 Given a real-world context, determine a rate for a ratio of quantities with different units. Calculate and interpret the corresponding unit rate. MA.L4.AR.3A.2

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3 Extend previous understanding of fractions and numerical patterns to generate or complete a two- or three-column table to display equivalent part-to-part ratios and part-to-part-to-whole ratios. MA.L4.AR.3A.3

4 Apply ratio relationships to solve mathematical and real-world problems involving percentages using the relationship between two quantities. MA.L4.AR.3A.4

5 Solve mathematical and real-world problems involving ratios, rates, and unit rates, including comparisons, mixtures, ratios of lengths, and conversions within the same measurement system. MA.L4.AR.3A.5

3b Use percentages and proportional reasoning to solve problems. MA.L4.AR.3B

1 Apply previous understanding of percentages and ratios to solve multi-step real world percent problems. MA.L4.AR.3B.1

2 Apply previous understanding of ratios to solve real-world problems involving proportions. MA.L4.AR.3B.2

3 Solve mathematical and real-world problems involving the conversion of units across different measurement systems. MA.L4.AR.3B.3

3c Extend understanding of proportional relationships to two-variable linear equations. MA.L4.AR.3C

1 Determine if a linear relationship is also a proportional relationship. MA.L4.AR.3C.1

2 Given a table, graph, or written description of a linear relationship, determine the slope. MA.L4.AR.3C.2

3 Given a table, graph, or written description of a linear relationship, write an equation in slope-intercept form. MA.L4.AR.3C.3

4 Given a mathematical or real-world context, graph a two-variable linear equation from a written description, a table, or an equation in slope-intercept form. MA.L4.AR.3C.4

5 Given a real-world context, determine and interpret the slope and ??-intercept of a two-variable linear equation from a written description, a table, a graph, or an equation in slope-intercept form. MA.L4.AR.3C.5

4 Develop an understanding of two-variable systems of equations. MA.L4.AR.4

1 Given a system of two linear equations and a specified set of possible solutions, determine which ordered pairs satisfy the system of linear equations. MA.L4.AR.4.1

2 Given a system of two linear equations represented graphically on the same coordinate plane, determine whether there is one solution, no solution, or infinitely many solutions. MA.L4.AR.4.2

3 Given a mathematical or real-world context, solve systems of two linear equations by graphing. MA.L4.AR.4.3

Fu Skip to main content **)efine, evaluate and compare functions.** MA.L4.F.1

1 Given a set of ordered pairs, a table, a graph, or mapping diagram, determine whether the relationship is a function. Identify the domain and range of the relation. MA.L4.F.1.1

2 Given a function defined by a graph or an equation, determine whether the function is a linear function. Given an input-output table, determine whether it could represent a linear function. MA.L4.F.1.2

3 Analyze a real-world written description or graphical representation of a functional relationship between two quantities and identify where the function is increasing, decreasing, or constant. MA.L4.F.1.3

Geometric Reasoning MA.L4.GR

1a Model and solve problems involving two-dimensional figures including applying previous understandings of the coordinate plane. MA.L4.GR.1A

1 Extend previous understanding of the coordinate plane to plot rational number ordered pairs in all four quadrants and on both axes. Identify the ??- or ??-axis as the line of reflection when two ordered pairs have an opposite ??- or ??-coordinate. MA.L4.GR.1A.1

2 Find distances between ordered pairs, limited to the same ??-coordinate or the same ??-coordinate, represented on the coordinate plane. MA.L4.GR.1A.2

3 Derive a formula for the area of a right triangle using a rectangle. Apply a formula to find the area of a triangle. MA.L4.GR.1A.3

4 Solve mathematical and real-world problems involving the area of quadrilaterals and composite figures by decomposing them into triangles or rectangles. MA.L4.GR.1A.4

1b Solve problems involving two-dimensional figures, including circles. MA.L4.GR.1B

1 Apply formulas to find the areas of trapezoids, parallelograms, and rhombi. MA.L4.GR.1B.1

2 Solve mathematical or real-world problems involving the area of polygons or composite figures by decomposing them into triangles or quadrilaterals. MA.L4.GR.1B.2

3 Explore the proportional relationship between circumferences and diameters of circles. Apply a formula for the circumference of a circle to solve mathematical and real-world problems. MA.L4.GR.1B.3

4 Explore and apply a formula to find the area of a circle to solve mathematical and real-world problems MA.L4.GR.1B.4

5 Solve mathematical and real-world problems involving dimensions and areas of geometric figures, including scale drawings and scale factors. MA.L4.GR.1B.5

1c Develop an understanding of the Pythagorean Theorem and angle relationships involving triangles. MA.L4.GR.1C

1 Apply the Pythagorean Theorem to solve mathematical and real-world problems involving unknown side lengths in right triangles. MA.L4.GR.1C.1

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2 Apply the Pythagorean Theorem to solve mathematical and real-world problems involving the distance between two points in a coordinate plane. MA.L4.GR.1C.2

3 Use the Triangle Inequality Theorem to determine if a triangle can be formed from a given set of sides. Use the converse of the Pythagorean Theorem to determine if a right triangle can be formed from a given set of sides. MA.L4.GR.1C.3

4 Solve mathematical problems involving the relationships between supplementary, complementary, vertical, or adjacent angles. MA.L4.GR.1C.4

5 Solve problems involving the relationships of interior and exterior angles of a triangle. MA.L4.GR.1C.5

6 Develop and use formulas for the sums of the interior angles of regular polygons by decomposing them into triangles. MA.L4.GR.1C.6

2a Model and solve problems involving three dimensional figures. MA.L4.GR.2A

1 Solve mathematical and real-world problems involving the volume of right rectangular prisms with positive rational number edge lengths using a visual model and a formula MA.L4.GR.2A.1

2 Given a mathematical or real-world context, find the surface area of right rectangular prisms and right rectangular pyramids using the figure's net. MA.L4.GR.2A.2

2b Solve problems involving three-dimensional figures, including right circular cylinders. MA.L4.GR.2B

1 Given a mathematical or real-world context, find the surface area of a right circular cylinder using the figure's net. MA.L4.GR.2B.1

2 Solve real-world problems involving surface area of right circular cylinders. MA.L4.GR.2B.2

3 Solve mathematical and real-world problems involving volume of right circular cylinders. MA.L4.GR.2B.3

2c Understand similarity and congruence using models and transformations. MA.L4.GR.2C

1 Given a preimage and image generated by a single transformation, identify the transformation that describes the relationship. MA.L4.GR.2C.1

2 Given a preimage and image generated by a single dilation, identify the scale factor that describes the relationship. MA.L4.GR.2C.2

3 Describe and apply the effect of a single transformation on two-dimensional figures using coordinates and the coordinate plane. MA.L4.GR.2C.3

4 Solve mathematical and real-world problems involving proportional relationships between similar triangles. MA.L4.GR.2C.4

Data and Pr

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1a Summarize statistical distributions graphically and numerically. MA.L4.DP.1A

1 Given a numerical data set within a real-world context, find and interpret mean, median, mode, and range. MA.L4.DP.1A.1

2 Given a box plot within a real-world context, determine the minimum, the lower quartile, the median, the upper quartile, and the maximum. Use this summary of the data to describe the spread and distribution of the data. MA.L4.DP.1A.2

3 Given a histogram or line plot within a real-world context, qualitatively describe and interpret the spread and distribution of the data, including any symmetry, skewness, gaps, clusters, outliers, and the range. MA.L4.DP.1A.3

1b Represent and interpret numerical and categorical data. MA.L4.DP.1B

1 Interpret data and find the mean, mode, median, or range of a data set. MA.L4.DP.1B.1

2 Interpret numerical data, with whole-number values, represented with tables or line plots by determining the mean, mode, median, or range. MA.L4.DP.1B.2

3 Determine an appropriate measure of center or measure of variation to summarize numerical data, represented numerically or graphically, taking into consideration the context and any outliers. MA.L4.DP.1B.3

4 Given two numerical or graphical representations of data, use the measure(s) of center and measure(s) of variability to make comparisons, interpret results, and draw conclusions about the two populations. MA.L4.DP.1B.4

5 Given categorical data from a random sample, use proportional relationships to make predictions about a population. MA.L4.DP.1B.5

6 Use proportional reasoning to construct, display, and interpret data in circle graphs. MA.L4.DP.1B.6

7 Given a real-world numerical or categorical data set, choose and create an appropriate graphical representation. MA.L4.DP.1B.7

1c Represent and investigate numerical bivariate data. MA.L4.DP.1C

1 Given a set of real-world bivariate numerical data, construct a scatter plot or a line graph as appropriate for the context. MA.L4.DP.1C.1

2 Given a scatter plot within a real-world context, describe patterns of association. MA.L4.DP.1C.2

3 Given a scatter plot with a linear association, informally fit a straight line. MA.L4.DP.1C.3

2a Develop an understanding of probability. Find and compare experimental and theoretical probabilities. MA.L4.DP.2A

1 Determine the sample space for a simple experiment. MA.L4.DP.2A.1

2 Given the probability of a chance event, interpret the likelihood of it occurring. Compare the probabilities of chance events. MA.L4.DP.2A.2

3 Find the theoretical probability of an event related to a simple experiment. MA.L4.DP.2A.3

4 Use a simulation of a simple experiment to find experimental probabilities and compare them to theoretical probabilities. MA.L4.DP.2A.4

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2b **Represent and find probabilities of repeated experiments.** MA.L4.DP.2B

1. Determine the sample space for a repeated experiment. MA.L4.DP.2B.1
2. Find the theoretical probability of an event related to a repeated experiment. MA.L4.DP.2B.2
3. Solve real-world problems involving probabilities related to single or repeated experiments, including making predictions based on theoretical probability. MA.L4.DP.2B.3