Check boxes of Edited Copy of 10022 Sp 11 – 258 Topics (was 259 topics in pilot)

Beginning Algebra, 3rd Ed. [open all | close all]

- [ ] Course Readiness and Additional Topics Appendix
  - [x] Course Readiness
    - [x] Multiplication of a decimal by a power of ten
    - [x] Multiplication of a decimal by a whole number
    - [x] Decimal multiplication: Problem type 1
    - [x] Division of a decimal by a power of ten
    - [x] Division of a decimal by a whole number
    - [x] Decimal division
    - [x] Word problem with one decimal operation: Problem type 1
    - [x] Word problem with one decimal operation: Problem type 2
    - [x] Word problem using decimal addition and multiplication
    - [x] Word problem using decimal subtraction and division
  - [x] Section A.1
    - [x] Decimal place value
    - [x] Rounding decimals
    - [x] Converting a decimal to a fraction
    - [x] Converting a fraction to a terminating decimal
    - [x] Converting a fraction to a repeating decimal
    - [x] Converting between percentages and decimals
    - [x] Converting a percentage to a fraction
    - [x] Converting a fraction to a percentage
    - [x] Percentage of a whole number
    - [x] Writing a ratio as a percentage
  - [ ] Section A.2
    - [ ] Mean of a data set
    - [ ] Mean and median of a data set
    - [ ] Weighted mean
    - [ ] Mode of a data set
  - [ ] Section A.3
    - [x] Supplementary and complementary angles
    - [x] Perimeter of a square or a rectangle
    - [x] Perimeter of a polygon

- [x] Area of a square or a rectangle
- [x] Area of a triangle
- [ ] Area of a piecewise rectangular figure
- [ ] Area of a parallelogram
- [ ] Area of a trapezoid
- [x] Circumference and area of a circle
- [ ] Area involving inscribed figures
- [ ] Volume of a cube or a rectangular prism
- [ ] Volume of a cylinder
- [x] Sum of the angle measures of a triangle

Course Readiness and Additional Topics Appendix Supplementary Topics

- [x] Average of two numbers
- [ ] Interpreting circle graphs or pie charts

-Set of Real Numbers

- [x] Section 1.1
  - [x] Factors
  - [x] Prime numbers
  - [x] Prime factorization
  - [x] Least common multiple
  - [x] Equivalent fractions
  - [x] Simplifying a fraction
  - [x] Addition or subtraction of fractions with the same denominator
  - [x] Addition or subtraction of fractions with different denominators
  - [x] The reciprocal of a number
  - [x] Product of a unit fraction and a whole number
  - [x] Product of a fraction and a whole number
  - [x] Introduction to fraction multiplication
  - [x] Fraction multiplication
  - [x] Division involving a whole number and a fraction
  - [x] Fraction division
  - [x] Writing an improper fraction as a mixed number
  - [x] Writing a mixed number as an improper fraction
  - [x] Addition of mixed numbers with same denominator and carry
  - [x] Subtraction of mixed numbers with same denominator and borrowing

- [x] Addition or subtraction of mixed numbers with different denominators
- [x] Mixed number multiplication: Problem type 1
- [x] Mixed number division
- [x] Section 1.2
  - [x] Ordering fractions
  - [x] Fractional position on a number line
  - [x] Plotting integers on a number line
  - [x] Plotting rational numbers on a number line
  - [x] Ordering integers
  - [x] Absolute value of a number
  - [x] Integers and rational numbers
  - [x] Rational and irrational numbers
- [ ] Section 1.3
  - [x] Introduction to exponents
  - [x] Writing expressions using exponents
  - [x] Order of operations: Problem type 1
  - [x] Order of operations: Problem type 2
  - [x] Order of operations with whole numbers and exponents
  - [x] Mixed arithmetic operations with fractions
  - [x] Perimeter of a square or a rectangle
  - [x] Area of a square or a rectangle
  - [ ] Area of a trapezoid
  - [ ] Volume of a cube or a rectangular prism
  - [x] Square root of a perfect square
  - [x] Writing a mathematical expression
  - [x] Translating sentences into two-step expressions
  - [x] Square root of a rational perfect square
- [x] Section 1.4
  - [x] Writing a signed number for a real-world situation
  - [x] Integer addition: Problem type 1
  - [x] Integer addition: Problem type 2
  - [x] Signed fraction addition: Advanced
  - [x] Signed decimal addition
- [x] Section 1.5

- Integer subtraction: Problem type 1
- Integer subtraction: Problem type 2
- Integer subtraction: Problem type 3
- Word problem with addition or subtraction of integers
- Simple addition and subtraction of signed fractions
- Operations with absolute value
- Section 1.6
  - Integer multiplication and division
  - Mixed arithmetic operations with integers
  - Signed fraction multiplication: Advanced
  - Exponents and integers: Problem type 1
  - Exponents and integers: Problem type 2
  - Exponents and signed fractions
  - Exponents and order of operations
  - Evaluation of a linear expression in two variables
  - Evaluation of a polynomial in one variable
- Section 1.7
  - Properties of addition
  - Properties of real numbers
  - Distributive property: Basic
  - Distributive property: Advanced
  - Combining like terms: Basic
  - Combining like terms: Advanced
  - Combining like terms in a quadratic expression
- Chapter 1 Supplementary Topics
  - Word problem with common multiples
  - Fractional part of a circle
  - Word problem with fractions
  - Converting a mixed number to a decimal
  - Ordering fractions with variables

2-Linear Equations and Inequalities

- Section 2.1
  - Additive property of equality with whole numbers
  - Additive property of equality with integers

- Additive property of equality with a negative coefficient
- Additive property of equality with decimals
- Multiplicative property of equality with whole numbers
- Multiplicative property of equality with signed fractions
- Multiplicative property of equality with integers
- Translating sentences into equations
- Section 2.2
  - Solving a two-step equation with integers
  - Solving a two-step equation with signed fractions
  - Solving a linear equation with several occurrences of the variable: Problem type 1
  - Solving a linear equation with several occurrences of the variable: Problem type 3
  - Solving a linear equation with several occurrences of the variable: Problem type 4
  - Solving equations with zero, one, or infinitely many solutions
- Section 2.3
  - Solving a linear equation with several occurrences of the variable: Problem type 2
  - Solving a linear equation with several occurrences of the variable: Problem type 5
- Section 2.4
  - Solving a word problem using a linear equation: Problem type 1
- Section 2.5
  - Percentage of a whole number
  - Applying the percent equation
  - Word problem on percentage: Problem type 1
  - Word problem on percentage: Problem type 2
  - Word problem on percentage: Problem type 3
  - Simple interest
  - Computations from circle graphs
- Section 2.6
  - Area of a triangle
  - Area of a parallelogram
  - Volume of a cylinder
  - Introduction to algebraic symbol manipulation
  - Algebraic symbol manipulation: Problem type 1
  - Algebraic symbol manipulation: Problem type 2
  - Vertical angles and linear pairs

- Angle measures of right or isosceles triangles with variables
- Finding the side length of a rectangle given its perimeter or area
- Perimeters and side lengths with variables
- Word problem involving area and perimeter of a rectangle
- Section 2.7
  - Solving a word problem using a linear equation: Problem type 3
  - Solving a value mixture problem using a linear equation
  - Solving a percent mixture problem using a linear equation
  - Solving a rate problem using a linear equation
  - Word problem on rates
- Section 2.8
  - Writing an inequality
  - Writing a compound inequality
  - Solving a linear inequality: Problem type 1
  - Solving a linear inequality: Problem type 2
  - Solving a linear inequality: Problem type 3
  - Solving a linear inequality: Problem type 4
  - Solving a linear inequality: Problem type 5
  - Solving a compound linear inequality: Problem type 1
  - Graphing a linear inequality on the number line
  - Graphing a compound linear inequality on the number line
  - Finding the value for a new score that will yield a given mean
  - Writing an inequality for a real-world situation
  - Word problem with linear inequalities: Problem type 1
  - Word problem with linear inequalities: Problem type 2
  - Set builder and interval notation
- Chapter 2 Supplementary Topics
  - Set builder notation
  - Union and intersection of finite sets
  - Additive property of equality with fractions
  - Using two steps to solve an equation with whole numbers
  - Solving an equation to find the value of an expression
  - Simple absolute value equation
  - Translating sentences into equations: Advanced
  - Solving a fraction word problem using a simple linear equation

- [x] Solving a word problem using a linear equation: Problem type 2
- [x] Solving a word problem using a linear equation: Problem type 4
- [ ] Solving a word problem with 3 unknowns using a linear equation
- [x] Converting between temperatures in Fahrenheit and Celsius
- [ ] Area between two rectangles
- [ ] Area involving rectangles and circles
- [ ] Area between two concentric circles
- [ ] Rate of filling of a solid
- [ ] Computing a percentage from a table of values
- [ ] Interpreting bar graphs
- [ ] Interpreting line graphs
- [x] Metric distance conversion with whole number values
- [x] Customary unit conversion with whole number values
- [x] Conversion between metric and customary unit systems
- [x] Converting between compound units: Basic
- [ ] Converting between compound units: Advanced

3-Graphing Linear Equations in Two Variables

- [x] Section 3.1
  - [x] Reading a point in the coordinate plane
  - [x] Plotting a point in the coordinate plane
- [x] Section 3.2
  - [x] Graphing a line given the x- and y-intercepts
  - [x] Graphing a line given its equation in slope-intercept form
  - [x] Graphing a line given its equation in standard form
  - [x] Graphing a vertical or horizontal line
  - [x] Solutions to a linear equation in two variables: Problem type 1
  - [x] Solutions to a linear equation in two variables: Problem type 2
  - [x] Y-intercept of a line
  - [x] Finding x- and y-intercepts of a line given the equation in standard form
- [x] Section 3.3
  - [x] Graphing a line through a given point with a given slope
  - [x] Finding slope given the graph of a line on a grid
  - [x] Finding slope given two points on the line
- [x] Section 3.4

- Graphing a line given its equation in standard form
- Y-intercept of a line
- Finding the slope of a line given its equation
- Slopes of parallel and perpendicular lines: Problem type 1
- Section 3.5
  - Writing an equation of a line given the y-intercept and a point
  - Writing the equation of a line given the slope and a point on the line
  - Writing the equation of the line through two given points
  - Writing the equations of vertical and horizontal lines through a given point
  - Slopes of parallel and perpendicular lines: Problem type 2
- Section 3.6
  - Writing equations and drawing graphs to fit a narrative
  - Application problem with a linear function: Problem type 1
  - Application problem with a linear function: Problem type 2
- Chapter 3 Supplementary Topics
  - Scatterplots and correlation
- 4-Systems of Linear Equations in Two Variables
- Section 4.1
  - Solutions to a linear equation in two variables: Problem type 2
  - Interpreting the graphs of two functions
  - Classifying systems of linear equations from graphs
  - Graphically solving a system of linear equations
- Section 4.2
  - Solving a simple system using substitution
- Section 4.3
  - Solving a system of linear equations
  - Solving a system that is inconsistent or consistent dependent
- Section 4.4
  - Solving a word problem using a system of linear equations: Problem type 1
  - Solving a word problem using a system of linear equations: Problem type 2
  - Solving a word problem using a system of linear equations: Problem type 3
  - Solving a word problem using a system of linear equations: Problem type 4 Necessary?
  - Solving a word problem using a system of linear equations: Problem type 5 Necessary?
- Section 4.5
  - Graphing a linear inequality in the plane: Problem type 1

- Graphing a linear inequality in the plane: Problem type 2
- Graphing a linear inequality in the plane: Problem type 3
- Graphing a system of linear inequalities

Chapter 4 Supplementary Topics

- Translating sentences into inequalities
- Solving a word problem using a system of linear inequalities

5-Polynomials and Properties of Exponents

- Section 5.1
  - Exponents and integers: Problem type 1
  - Exponents and integers: Problem type 2
  - Exponents and signed fractions
  - Product rule of exponents
  - Multiplying monomials
  - Quotients of expressions involving exponents
- Section 5.2
  - Introduction to the power rule of exponents
  - Power rule with positive exponents
  - Using the power and product rules to simplify expressions with positive exponents
- Section 5.3
  - Evaluating expressions with exponents of zero
  - Writing a positive number without a negative exponent
  - Writing a negative number without a negative exponent
  - Writing a simple algebraic expression without negative exponents
  - Product rule of exponents in a multivariate monomial
  - Quotient rule with negative exponents
  - Power rule with negative exponents: Problem type 1
  - Power rule with negative exponents: Problem type 2
  - Using the power, product, and quotient rules to simplify expressions with negative exponents
- Section 5.4
  - Scientific notation with positive exponent
  - Scientific notation with negative exponent
  - Multiplying and dividing numbers written in scientific notation
- Section 5.5
  - Simplifying a sum or difference of polynomials

- Simplifying a polynomial expression
- Degree and leading coefficient of a polynomial in one variable
- Degree of a multivariate polynomial
- Section 5.6
  - Multiplying monomials
  - Multiplying a monomial and a polynomial: Problem type 1
  - Multiplying a monomial and a polynomial: Problem type 2
  - Multiplying binomials: Problem type 1
  - Squaring a binomial
  - Multiplying binomials: Problem type 2
  - Multiplying binomials: Problem type 3
  - Multiplying polynomials
- Section 5.7
  - Dividing a polynomial by a monomial: Problem type 1
  - Dividing a polynomial by a monomial: Problem type 2
  - Polynomial long division: Problem type 1
  - Polynomial long division: Problem type 2
  - Polynomial long division: Problem type 3
- Chapter 5 Supplementary Topics
  - Solving a word problem using an exponential equation: Problem type 1
  - Ordering numbers with positive exponents
  - Ordering numbers with negative exponents
- 6-Factoring Polynomials
- Section 6.1
  - Greatest common factor
  - Introduction to the GCF of two monomials
  - Greatest common factor of two monomials
  - Factoring out a monomial from a polynomial: Problem type 1
  - Factoring out a monomial from a polynomial: Problem type 2
  - Factoring a multivariate polynomial by grouping: Problem type 1
  - Factoring a multivariate polynomial by grouping: Problem type 2
- Section 6.2
  - Factoring a quadratic with leading coefficient 1
- Section 6.4
  - Factoring a quadratic with leading coefficient greater than 1

- [x] Factoring a quadratic polynomial in two variables
- [x] Factoring a product of a quadratic trinomial and a monomial
- [x] Section 6.5
  - [x] Factoring a perfect square
  - [x] Factoring a difference of squares
  - [x] Factoring with repeated use of the difference of squares formula
- [ ] Section 6.6
  - [ ] Factoring a sum or difference of two cubes
- [ ] Section 6.7
  - [x] Solving equations written in factored form
  - [x] Finding the roots of a quadratic equation with leading coefficient 1
  - [x] Finding the roots of a quadratic equation with leading coefficient greater than 1
  - [ ] Solving a quadratic equation needing simplification
- [ ] Section 6.8
  - [ ] Solving a word problem using a quadratic equation with rational roots

- [ ] 7-Rational Expressions
  - [ ] Section 7.1
    - [ ] Simplifying a ratio of polynomials: Problem type 1
    - [ ] Domain of a rational function
  - [ ] Section 7.2
    - [ ] Multiplying rational expressions: Problem type 1
    - [ ] Multiplying rational expressions: Problem type 2
    - [ ] Dividing rational expressions: Problem type 1
    - [ ] Dividing rational expressions: Problem type 2
    - [ ] Complex fractions without variables: Problem type 1
  - [ ] Section 7.3
    - [ ] Introduction to the LCM of two monomials
    - [ ] Least common multiple of two monomials
  - [ ] Section 7.4
    - [ ] Adding rational expressions with common denominators
    - [ ] Adding rational expressions with different denominators: ax, bx
    - [ ] Adding rational expressions with different denominators: Multivariate
    - [ ] Adding rational expressions with different denominators: x+a, x+b
    - [ ] Adding rational expressions with different denominators: Quadratic

- Section 7.5
  - Complex fractions without variables: Problem type 2
  - Complex fraction: Problem type 1
  - Complex fraction: Problem type 3
  - Complex fraction: Problem type 4
- Section 7.6
  - Solving a rational equation that simplifies to a linear equation: Problem type 1
  - Solving a rational equation that simplifies to a linear equation: Problem type 2
  - Solving a rational equation that simplifies to a linear equation: Problem type 3
  - Solving a rational equation that simplifies to a linear equation: Problem type 4
  - Solving a rational equation that simplifies to a quadratic equation: Problem type 1
  - Solving a rational equation that simplifies to a quadratic equation: Problem type 2
  - Solving a rational equation that simplifies to a quadratic equation: Problem type 3
- Section 7.7
  - Simple word problem on proportions
  - Solving a proportion: Basic
  - Solving a proportion: Advanced
  - Word problem involving multiple rates
  - Word problem on proportions: Problem type 1
  - Word problem on proportions: Problem type 2
  - Solving a word problem using a rational equation
  - Similar polygons
  - Indirect measurement
- Section 7.8
  - Word problem on direct variation
  - Word problem on inverse variation
  - Word problem on combined variation
- Chapter 7 Supplementary Topics
  - Complex fraction: Problem type 2
  - Ratio of multivariate polynomials unchecked (10023 topic)
  - [x] Basic word problem on rates
  - Word problem on inverse proportions
- 8-Radicals
- [x] Section 8.1
  - [x] Square root of a perfect square

- Square root of a perfect square monomial
- Pythagorean Theorem
- Cube root of an integer
- Section 8.2
  - Square root of a rational perfect square
  - Square root simplification
  - Simplifying a radical expression: Problem type 1
  - Simplifying a radical expression: Problem type 2
  - Simplifying a higher radical: Problem type 1
  - Simplifying a higher radical: Problem type 2
- Section 8.3
  - Square root addition
  - Simplifying a sum of radical expressions
- Section 8.4
  - Square root multiplication
  - Simplifying a product of radical expressions using the distributive property
  - Special products with square roots: Conjugates and squaring
- Section 8.5
  - Rationalizing the denominator of a radical expression
  - Rationalizing the denominator of a radical expression using conjugates
- Section 8.6
  - Solving an equation with radicals: Problem type 1
  - Solving an equation with radicals: Problem type 2
  - Solving an equation with radicals: Problem type 3
  - Solving an equation with radicals: Problem type 4
- Section 8.7
  - Converting between radical form and exponent form
  - Rational exponents: Basic
  - Rational exponents: Negative exponents and fractional bases
  - Rational exponents: Products and quotients
  - Rational exponents: Powers of powers
- Chapter 8 Supplementary Topics
  - Distance between two points in the plane
  - Estimating a square root
  - Simplifying a product of radical expressions

9-Quadratic Equations, Complex Numbers, and Functions

- Section 9.1
  - Even root property
  - Solving an equation with exponent using the even-root property
- Section 9.2
  - Completing the square
  - Solving a quadratic equation by completing the square
- Section 9.3
  - Solving a quadratic equation using the quadratic formula
- Section 9.4
  - Using i to rewrite square roots of negative numbers
  - Simplifying a product or quotient involving roots of negative numbers
  - Adding and subtracting complex numbers
  - Multiplying complex numbers
  - Dividing complex numbers
  - Solving a quadratic equation with complex roots
- Section 9.5
  - Word problem using the maximum or minimum of a quadratic function
  - Finding the x-intercept(s) and the vertex of a parabola
  - Graphing a parabola: Problem type 1
  - Graphing a parabola: Problem type 2
  - Graphing a parabola: Problem type 3
- Section 9.6
  - [x] Function tables
  - [x] Introduction to functions: Notation and graphs
  - [x] Domain and range from ordered pairs
  - [x] Identifying functions from relations
  - [x] Vertical line test
  - Domain of a square root function
- Chapter 9 Supplementary Topics
  - Graphing an equation involving absolute value in the plane
  - Graphing a simple cubic function
  - Simplifying a power of i
  - Discriminant of a quadratic equation
  - Solving a word problem using a quadratic equation with irrational roots

- Compound interest
- Sum, difference, and product of two functions
- Composition of two functions: Basic
- Variable expressions as inputs of functions

Caution: You may have removed too many lower-level topics from the course; this is not usually recommended.

For students who have not yet mastered lower-level topics, learning/reviewing these topics is essential for success in learning more advanced topics that are central to the course. We recommend that you put some of these topics back into the course, even though they are only review for the core topics.

The ALEKS Assessment determines the exact topics each student already knows, doesn't know, and is ready to learn. Only those students who need to work on a given topic will be asked to do so. Students who have already mastered topics (including prerequisite topics) will not be prompted to learn them again.