

# ALEKS<sup>®</sup> Course Syllabus

<b>Course Name:</b> Math 00020 - 010 SUM1 SUM16	<b>Course Code:</b> NJ4WK-3WRTE
<b>ALEKS Course:</b> Pre-Algebra	<b>Instructor:</b> Inst. Kellermann
<b>Course Dates:</b> Begin: 08/15/2014 End: 08/15/2015	<b>Course Content:</b> 191 topics
<b>Textbook:</b> Miller/O'Neill/Hyde: Prealgebra, 1st Ed. (McGraw Hill, Paperback) - ALEKS 360	

## Chapter 1 - Whole Numbers (53 topics, no due date)

### Section 1.2 (5 topics)

- Whole number place value: Problem type 1
- Whole number place value: Problem type 2
- Numeral translation: Problem type 1
- Numeral translation: Problem type 2
- Introduction to inequalities

### Section 1.3 (15 topics)

- One-digit addition with carry
- Addition of 3 or 4 one-digit numbers
- Addition without carry
- Adding a 2-digit number and a 1-digit number with carry
- Addition with carry
- Addition with carry to the hundreds place
- Addition of large numbers
- Subtracting a 1-digit number from a 2-digit number
- Subtraction without borrowing
- Adding or subtracting 10, 100, or 1000
- Subtraction with borrowing
- Subtraction with multiple regrouping steps
- Subtraction and regrouping with zeros
- Word problem with addition or subtraction of whole numbers
- Introduction to properties of addition

### Section 1.4 (4 topics)

- Rounding to tens or hundreds
- Rounding to hundreds or thousands
- Rounding to thousands, ten thousands, or hundred thousands
- Estimating a sum of whole numbers

### Section 1.5 (9 topics)

- Multiplication as repeated addition
- One-digit multiplication
- Multiplication by 10, 100, and 1000
- Multiplication without carry
- Multiplication with carry
- Multiplication with trailing zeros: Problem type 1
- Introduction to multiplication of large numbers
- Multiplication of large numbers
- Introduction to properties of multiplication

### Section 1.6 (7 topics)

- Division facts
- Division without carry
- Division with carry

- Quotient and remainder: Problem type 1
- Quotient and remainder: Problem type 2
- Quotient and remainder: Problem type 3
- Division involving quotients with intermediate zeros

*Section 1.7* (11 topics)

- Writing expressions using exponents
- Introduction to exponents
- Power of 10: Positive exponent
- Introduction to parentheses
- Introduction to order of operations
- Order of operations with whole numbers
- Order of operations with whole numbers and grouping symbols
- Order of operations with whole numbers and exponents: Basic
- Evaluating an algebraic expression: Whole number addition or subtraction
- Evaluating an algebraic expression: Whole number multiplication or division
- Evaluating an algebraic expression: Whole numbers with two operations

*Section 1.8* (1 topic)

- Solving a word problem on proportions using a unit rate

*Chapter 1 Supplementary Topics* (1 topic)

- Understanding the distributive property

**Chapter 2 - Integers and Algebraic Expressions** (18 topics, no due date)

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*Section 2.1* (4 topics)

- Plotting integers on a number line
- Writing a signed number for a real-world situation
- Ordering integers
- Absolute value of a number

*Section 2.2* (2 topics)

- Integer addition: Problem type 1
- Integer addition: Problem type 2

*Section 2.3* (4 topics)

- Integer subtraction: Problem type 1
- Integer subtraction: Problem type 2
- Integer subtraction: Problem type 3
- Word problem with addition or subtraction of integers

*Section 2.4* (4 topics)

- Integer multiplication and division
- Multiplication of 3 or 4 integers
- Exponents and integers: Problem type 1
- Exponents and integers: Problem type 2

*Section 2.5* (4 topics)

- Operations with absolute value: Problem type 2
- Order of operations with integers
- Order of operations with integers and exponents
- Evaluating a linear expression: Integer multiplication with addition or subtraction

**Chapter 3 - Solving Equations** (16 topics, no due date)

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*Section 3.1* (6 topics)

- Distributive property: Whole number coefficients
- Distributive property: Integer coefficients
- Combining like terms: Whole number coefficients
- Combining like terms: Integer coefficients
- Using distribution and combining like terms to simplify: Univariate

- Using distribution with double negation and combining like terms to simplify: Multivariate

*Section 3.2* (2 topics)

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

*Section 3.3* (2 topics)

- Multiplicative property of equality with whole numbers
- Multiplicative property of equality with integers

*Section 3.4* (5 topics)

- Using two steps to solve an equation with whole numbers
- Additive property of equality with a negative coefficient
- Solving a two-step equation with integers
- Solving a linear equation with several occurrences of the variable: Variables on the same side and distribution
- Solving a linear equation with several occurrences of the variable: Variables on both sides and distribution

*Section 3.5* (1 topic)

- Writing a one-step expression for a real-world situation

**Chapter 4 - Fractions and Mixed Numbers** (47 topics, no due date)

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*Section 4.1* (6 topics)

- Introduction to fractions
- Fractional position on a number line
- Plotting fractions on a number line
- Writing a mixed number and an improper fraction for a shaded region
- Writing an improper fraction as a mixed number
- Writing a mixed number as an improper fraction

*Section 4.2* (8 topics)

- Divisibility rules for 2, 5, and 10
- Divisibility rules for 3 and 9
- Factors
- Prime numbers
- Prime factorization
- Understanding equivalent fractions
- Introduction to simplifying a fraction
- Simplifying a fraction

*Section 4.3* (9 topics)

- Product of a unit fraction and a whole number
- Product of a fraction and a whole number: Problem type 1
- Introduction to fraction multiplication
- Fraction multiplication
- Signed fraction multiplication: Basic
- Signed fraction multiplication: Advanced
- The reciprocal of a number
- Division involving a whole number and a fraction
- Fraction division

*Section 4.4* (6 topics)

- Least common multiple of 2 numbers
- Equivalent fractions
- Ordering fractions with the same denominator
- Ordering fractions with the same numerator
- Using a common denominator to order fractions
- Finding the LCD of two fractions

*Section 4.5* (5 topics)

- Addition or subtraction of fractions with the same denominator
- Addition or subtraction of unit fractions

- Introduction to addition or subtraction of fractions with different denominators
- Addition or subtraction of fractions with different denominators
- Signed fraction addition or subtraction: Basic

*Section 4.6* (7 topics)

- Addition or subtraction of mixed numbers with the same denominator
- Addition of mixed numbers with the same denominator and carry
- Subtraction of mixed numbers with the same denominator and borrowing
- Addition of mixed numbers with different denominators and carry
- Subtraction of mixed numbers with different denominators and borrowing
- Mixed number multiplication
- Mixed number division

*Section 4.7* (5 topics)

- Exponents and signed fractions
- Order of operations with fractions: Problem type 1
- Order of operations with fractions: Problem type 2
- Complex fraction without variables: Problem type 1
- Complex fraction without variables: Problem type 2

*Chapter 4 Supplementary Topics* (1 topic)

- Signed fraction addition or subtraction: Advanced

**Chapter 5 - Decimals** (30 topics, no due date)

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*Section 5.1* (8 topics)

- Decimal place value: Tenths and hundredths
- Decimal place value: Hundreds to ten thousandths
- Introduction to ordering decimals
- Ordering decimals
- Rounding decimals
- Converting a decimal to a proper fraction without simplifying: Basic
- Converting a decimal to a proper fraction without simplifying: Advanced
- Converting a decimal to a proper fraction in simplest form: Advanced

*Section 5.2* (7 topics)

- Addition of aligned decimals
- Decimal addition with 3 numbers
- Subtraction of aligned decimals
- Decimal subtraction: Basic
- Decimal subtraction: Advanced
- Signed decimal addition and subtraction
- Signed decimal addition and subtraction with 3 numbers

*Section 5.3* (4 topics)

- Multiplication of a decimal by a whole number
- Decimal multiplication: Problem type 1
- Decimal multiplication: Problem type 2
- Multiplication of a decimal by a power of ten

*Section 5.4* (2 topics)

- Division of a decimal by a whole number
- Division of a decimal by a 2-digit decimal

*Section 5.5* (10 topics\*)

- Ordering decimals
- Converting a fraction with a denominator of 10 or 100 to a decimal
- Converting a fraction with a denominator of 100 or 1000 to a decimal
- Converting a fraction to a terminating decimal: Basic
- Converting a fraction to a terminating decimal: Advanced
- Converting a fraction to a repeating decimal: Basic
- Converting a fraction to a repeating decimal: Advanced

- Converting a mixed number to a terminating decimal: Basic
- Converting a mixed number to a terminating decimal: Advanced
- Identifying numbers as integers or non-integers

(\*) Some topics in this section are also covered in a previous section of this Objective. Topics are only counted once towards the total number of topics for this Objective.

## Chapter 6 - Ratio and Proportion (5 topics, no due date)

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### Section 6.1 (1 topic)

- Writing ratios for real-world situations

### Section 6.2 (1 topic)

- Word problem on unit rates associated with ratios of whole numbers: Decimal answers

### Section 6.3 (1 topic)

- Solving a proportion of the form  $x/a = b/c$

### Section 6.4 (2 topics)

- Solving a word problem on proportions using a unit rate
- Word problem on proportions: Problem type 1

## Chapter 7 - Percents (11 topics, no due date)

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### Section 7.1 (4 topics)

- Finding the percentage of a grid that is shaded
- Converting between percentages and decimals
- Converting a percentage to a fraction in simplest form
- Converting a fraction to a percentage: Denominator of 20, 25, or 50

### Section 7.2 (1 topic)

- Writing a ratio as a percentage without a calculator

### Section 7.3 (3 topics)

- Finding a percentage of a whole number without a calculator: Basic
- Applying the percent equation: Problem type 1
- Applying the percent equation: Problem type 2

### Section 7.4 (3 topics)

- Finding the sale price without a calculator given the original price and percent discount
- Finding the original price given the sale price and percent discount
- Finding the percentage increase or decrease: Advanced

## Chapter 8 - Measurement and Geometry (12 topics, no due date)

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### Section 8.1 (5 topics)

- Choosing U.S. Customary measurement units
- U.S. Customary unit conversion with whole number values
- Conversions involving measurements in feet and inches
- Adding measurements in feet and inches
- U.S. Customary unit conversion with whole number values: Two-step conversion

### Section 8.2 (5 topics)

- Choosing metric measurement units
- Metric distance conversion with whole number values
- Metric mass or capacity conversion with whole number values
- Metric distance conversion with decimal values
- Metric conversion with decimal values: Two-step problem

### Section 8.3 (2 topics)

- Converting between temperatures in Fahrenheit and Celsius
- Converting between metric and U.S. Customary unit systems