Course Objectives/Course Outline
Spokane Community College

Course Title: Developmental Math
Prefix and Course Number: MATH 21

Course Learning Outcomes:
By the end of this course, a student should be able to:

- Demonstrate understanding of the place value, system of whole numbers and decimals by reading and writing word names for numerals and numerals for word names.
- Identify properties of real numbers for addition, multiplication and exponents.
- Estimate answers to problems involving whole numbers and decimals.
- Arrange two or more decimals according to their size.
- Perform operations (addition, subtraction, multiplication, division, raising to powers) for whole numbers, decimals, fractions and integers.
- Reduce fractions to lowest terms and write equivalent fractions with higher terms.
- Write improper fractions as mixed or whole numbers and mixed numbers and whole numbers as improper fractions.
- Apply the order of operations to whole numbers, fractions, decimals and integers.
- Write ratios or rates as fractions.
- Simplify ratios and rates involving fractions or decimals.
- Solve proportions.
- Set up correct proportions for word problems.
- Convert between percent, decimals and fractions.
- Graph positive and negative integers on the number line.
- Find the opposite and the absolute value of a given real number.
- Simplify algebraic expressions by using the distributive property and combining like terms.
- Solve linear equations.
- Solve word problems involving whole numbers, decimals, fractions, ratio & proportion and percent.

Course Outline:

I. Whole Numbers
   A. Show understanding of the place value system by writing word names for numerals and numerals for word names.
   B. Round off whole numbers to the indicated place.
   C. Identify and use the properties of addition and multiplication.
   D. Find the value of a number raised to a power.
   E. Find the indicated root of a number.
   F. Simplify expression involving addition, subtraction, multiplication, division and/or powers and roots using the rules for order of operation.
   G. Identify prime and composite numbers and prime factor a number.

II. Applications of Arithmetic
   A. Solve word problems involving whole numbers.
   B. Estimate answers to word problems involving whole numbers.
   C. Solve word problems involving averages.
   D. Evaluate formulas.
   E. Solve word problems involving perimeters and areas of common

geometric figures.

F. Read and interpret bar graphs. •

III. Fractions

A. Reduce fractions to lowest terms.
B. Form equivalent fractions.
C. Write improper fractions as mixed numbers or whole numbers.
D. Write mixed numbers and whole numbers as improper fractions.
E. Find the product of two or more fractions, mixed numbers and/or whole numbers.
F. Find the quotient of two fractions, mixed numbers, and/or whole numbers.
G. Find the sum of two or more fractions, mixed numbers and/or whole numbers.
H. Find the difference of two fractions, mixed numbers and/or whole numbers.
I. Simplify complex fractions.
J. Raise a fraction to the indicated power.
K. Find the square root of a fraction.
L. Simplify expressions involving fractions using the rules for order of operation.
M. Arrange two or more fractions in order according to size.
N. Solve word problems involving fractions.

IV. Decimals

A. Show understanding of the place value system by writing the decimal for the word name and the word name for the decimal.
B. Round off decimals to the indicated place.
C. Find the sum of two or more numbers written as decimals.
D. Find the difference of two numbers written as decimals.
E. Find the product of two numbers written as decimals.
F. Find the quotient of two numbers written as decimals.
G. Simplify expressions involving decimals using the rules for order of operation.
H. Write a fraction or mixed number as an exact decimal or an approximate decimal rounded to the indicated place.
I. Write a decimal as a fraction or mixed number.
J. Write a complex decimal as a fraction or mixed number.
K. Simplify expressions involving both common fractions and decimals.
L. Arrange two or more decimals in order according to the size.
M. Read and interpret line graphs and area graphs. •

V. Ratios, Rates, and Proportion

A. Express ratios or rates as fractions.
B. Simplify ratios involving whole number terms.
C. Simplify ratios involving terms that are fractions and/or decimals.
D. Use unit fractions to solve word problems.
E. Solve a proportion when a term is missing.
F. Solve proportions involving terms that are fractions and/or decimals.
G. Use proportions to solve word problems.

VI. Percent

A. Convert percents to decimals and fractions.
B. Convert decimals and fractions to percents.
C. Find a fractional part of a number.
D. Solve the three types of percent problems using the percent proportion.
E. Solve word problems involving percents.
F. Read and interpret circle graphs. •

VII. Integers

A. Graph positive and negative integers on the number line.
B. Arrange two or more integers in order according to size.
C. Determine the opposite of an integer.
D. Determine the absolute value of an integer.
E. Find the sum of two or more integers.
F. Find the difference of two integers.
G. Find the product of two integers.
H. Find the quotient of two integers.
I. Find the value of an integer raised to a power.
J. Simplify expressions involving integers using the rules for order of operation.
K. Simplify expressions involving real numbers using the rule for order of operation.
L. Solve word problems involving integers.

VIII. Algebraic Expressions and Equations

A. Simplify algebraic expressions by combining like terms.
B. Simplify algebraic expressions by using the distributive property to eliminate parentheses.
C. Determine if a number is a solution to an equation.
D. Solve linear equations using the Addition Property of Equality.
E. Solve linear equations using the Multiplicative Property of Equality.
F. Solve linear equations using a multi-step process.

●Optional