MOHAWK VALLEY COMMUNITY COLLEGE

 UTICA and ROME, NEW YORK

COURSE OUTLINE

MA090

ESSENTIAL MATH SKILLS

Prepared December 2013

Reviewed May 2016

Reviewed June 2018

COURSE OUTLINE

Title: Essential Math Skills

Catalog Number: MA090

Contact Hours: 3

Practicum Hours: 0

Credit Hours: 0

Prerequisite: An appropriate placement test score or MA089 Arithmetic.

Catalog

Description: This course is for students enrolled in non-STEM programs who, according to placement test results, need preparation for subsequent mathematics courses. It develops problem solving skills with an emphasis placed on applications. Topics include arithmetic computations, measurement, geometry, percentage, ratio and proportion, linear equations, and an introduction to graphing lines. Prerequisite: An appropriate placement test result or MA089 Arithmetic.

**Major Topics:**

For each of the following topics the student will:

**Topic 1. Whole Numbers**

1.1 Perform basic operations with whole numbers.

1.2 Express whole numbers in words and write whole numbers in standard form, given the verbal form.

1.3 Round given whole numbers to specified place values.

1.4 Simplify and/or evaluate arithmetic and variable expressions, including exponential form, involving whole numbers using order of operations.

**Topic 2. Integers**

2.1 Locate integer values on a real number line and use order relations to compare given integers.

2.2 Add, subtract, multiply and divide integers.

2.3 Simplify and/or evaluate variable expressions involving verbal and/or symbolic expressions for the operations on integers.

2.4 Simplify and/or evaluate expressions, including exponential form and additive inverse, involving integers using order of operations.

**Topic 3. Rational Numbers**

3.1 Simplify fractions and convert improper fractions to integers or mixed numbers.

3.2 Use order relations to compare given fractions.

3.3 Determine the prime factorization of given composite numbers.

3.4 Determine a common denominator for given fractions.

3.5 Add, subtract, multiply and divide given fractions.

**Topic 4. Decimals:**

4.1 Identify place values of digits within given decimals, and round given decimal numbers to specified place values.

4.2 Perform basic operations on decimals.

4.3 Convert given fractional expressions to decimals, and convert given decimals to fractional expressions.

4.4 Use order relations to compare given decimals.

4.5 Approximate the (principal) square root of a given number with the aid of a calculator.

4.6 Evaluate variable expressions involving verbal and/or symbolic expressions for the operations on decimals.

4.7 Convert numbers between standard notation and scientific notation.

**Topic 5. Measurements and Geometry**

5.1 Convert, using conversion factors (unit fractions), measurements of length and time in the U.S. System.

5.2 Convert, using conversion factors (unit fractions), measurements of length, capacity and mass in the Metric System of measurement including micro.

5.3 Convert, using provided conversion factors (rates), between U.S. Units and metric units of length.

5.4 Given a circle, identify the radius and diameter.

5.5 Determine the perimeter of a plane geometric figure.

5.6 Calculate the area of rectangles and triangles.

5.7 Calculate the area of a plane geometric figure given the areas of its regions.

**Topic 6. Ratio, Proportion, and Percent**

6.1 Write ratios as fractions and simplify.

6.2 Write rates as fractions and find unit rates.

6.3 Write and solve proportions.

6.4 Solve application problems which use proportions.

6.5 Perform conversions between percents and fractions and between decimals and percents.

6.6 Use either the basic percent equation (percent X base = amount) or the percent proportion to solve equations and application problems.

**Topic 7. Algebraic Expressions and Linear Equations**

7.1 Simplify algebraic expressions using the operations of addition and subtraction and distribution of a constant over an expression.

7.2 Evaluate algebraic expressions.

7.3 Evaluate a formula in which the desired variable is isolated.

7.4 Determine solutions to first degree equations (of form ax+b=c) by applying the addition and multiplication properties of equations.

**Topic 8. Lines**

8.1 Graph ordered pairs on a rectangular coordinate system.

8.2 Determine solutions of given linear equations in two variables.

8.3 Graph solutions of given linear equations in two variables on a rectangular coordinate system.

 Teaching Guide

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