Portland Community College

MATH 95

Intermediate Algebra

MTH 63 or MTH 65 or MTH 70
or Asset Test Placement

ARE YOU PREPARED?

✓ This mini quiz is meant to serve only as an indicator of a few of the math skills that you are expected to know at the beginning of this course. Do not use these problems as a study guide thinking that they will adequately prepare you for the course.

✓ These example problems are merely representative of some of the most important concepts that are taught in the prerequisite courses.

✓ The course will offer little or no time for any type of review; it assumes that you are prepared to do the work the first day of class.
Below are some of the major topics that are covered in MATH 95:

1. Applications and Modeling
   A. Linear functions
   B. Quadratic functions
   C. Exponential functions

2. Graphing
   A. Linear functions
   B. Quadratic functions
   C. Exponential functions

3. Solve equations and inequalities
   A. Symbolically
   B. Numerically
   C. Graphically

4. Function concepts
   A. Domain
   B. Range
   C. Inverses
   D. Compositions
   E. Transformations

To be successful studying the topics covered in this course, students should be appropriately prepared by: #1 Taking the prerequisite math course within the last three years with a passing grade of A or B, or within the last one year with a passing grade of C, or #2 placing into the course by the ASSET placement test.
Below is a sample of some skills you should have BEFORE entering MATH 95.

Without using a calculator except where indicated

1. Work with positive and negative real numbers, and the order of operations.
   Simplify $-5 + (-4)(-3) - 3^2$

2. Simplify expressions:
   a) $3(2x^2 - 3xy + y) - (y - x^2 + 2xy)$
   b) $\frac{12a^5b^-2}{8a^-3b^7}$

3. Expand and collect like terms:
   a) $(3x - 5)(6x + 7)$
   b) $(2x - 3)^2$

4. Factor:
   a) $x^2 - 5x - 14$
   b) $6a^2b^3 - 3a^2b$

5. Solve for x:
   a) $3x - (x + 4) - 5 = 5(x - 4) - 4$
   b) $3x - 5y + 6 = 0$
   c) $x^2 - 5x - 14 = 0$

6. Evaluate expressions:
   If $x = -3$, evaluate $x^2 - 2x - 1$

7. Graph by HAND and on your GRAPHING CALCULATOR*
   a) $4x + 3y = -12$
   b) $y = x^2 - 5x - 14$

8. Find the equation of the line passing through 2 given points:
   $(2,-1) \quad (-1,-7)$

9. Solve a system of equations by all of the following methods: substitution, elimination by addition (linear combinations), and graphically.
   Given:  \[
   \begin{cases}  
   2x + y = -3 \\
   3x + 4y = -2
   \end{cases}
   \]

10. Solve a first degree inequality in one variable:
    Given: $8 - 5x \geq 3x + 9$, solve for $x$
ANSWERS

1. -2
2. a) \(7x^2 - 11xy + 2y\)
   b) \(\frac{3a^8}{2b^9}\)

3. a) \(18x^2 - 9x - 35\)
   b) \(4x^2 - 12x + 9\)

4. a) \((x - 7)(x + 2)\)
   b) \(3a^2b(2b^2 - 1)\)

5. a) \(x = 5\)
   b) \(x = \frac{5y - 6}{3}\)
   c) \(x = 7, y = -2\)

6. 14

7. a)
   b)

   Figure 1: \(4x + 3y = -12\)

   Figure 2: \(y = x^2 - 5x - 14\)

8. \(y = 2x - 5\)

9. \(x = -2, y = 1\)

10. \(x \leq -\frac{1}{8} \quad \text{or} \quad -\frac{1}{8} \geq x\)

* Students with no graphing calculator experience should enroll concurrently in Math 93.

How many of these problems can you miss and still succeed in MATH 95?

Ideally, NONE.

These problems are just a sample of the larger number of skills that you should be familiar with BEFORE taking this course.

If some of these ideas are not familiar to you, you should consider enrolling in one of the prerequisite courses (MATH 65 or MATH 70).