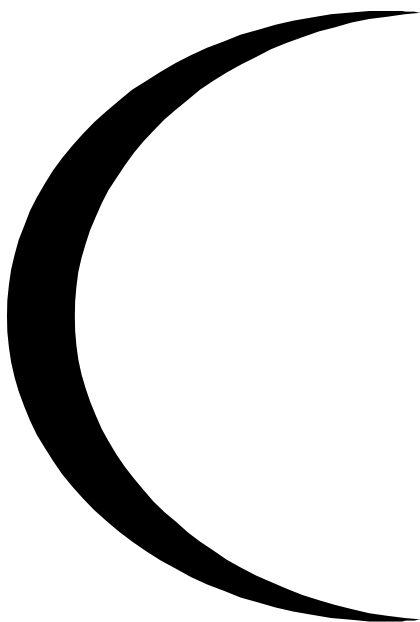
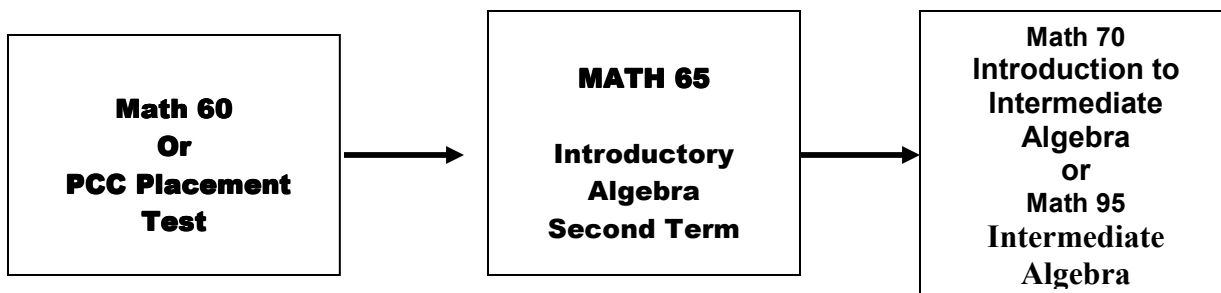




**Portland Community College**

# **MATH 65**

**Introductory Algebra II**



## **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 covered in MATH 65**

1. Systems of linear equations in two variables
  - a. Graphing method
  - b. Substitution method
  - c. Addition method
  - d. Applications
2. Working with algebraic expressions
  - a. Add, subtract, multiply, and divide by a monomial
  - b. Factoring polynomials
3. Solving quadratic equations
  - a. Square Root Property (includes – simplify and approximate numeric square roots)
  - b. Factoring Property
  - c. Quadratic Formula
  - d. Graphing (includes – interpret vertex, axis of symmetry and vertical/horizontal intercepts)
  - e. Applications
4. Relations and functions
  - a. Function notation
  - b. Evaluate

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 small sample of some skills you should have **BEFORE** entering MATH 65

You **MAY NOT** use a calculator

a) Perform the indicated operations:

$$18 \div 2(-3) - (-2)^3 - 5$$

c) Simplify:

$$(12x^2 - 4x + 1) - 3(2x^2 - 5x + 3)$$

e) Solve for x:

$$\frac{x}{2} - \frac{1}{10} = \frac{x}{5} + \frac{1}{2}$$

f) Solve for W:

$$P = 2L + 2W$$

i) Given two points on a line, find the slope and indicate whether the line rises, falls, is horizontal, or is vertical.

$$(-3, 4) \text{ and } (-5, -2)$$

k) Given the slope,  $-2$ , and a point passing through  $(-1, 4)$ , write an equation in the point-slope form and slope-intercept form.

b) Evaluate  $7x - x^2$ , when  $x = -2$

d) Solve for x:

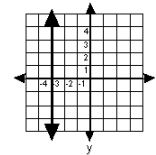
$$5(x - 2) = 3 - 6(x - 7)$$

f) Solve for x and graph on a number line.

$$2 - 6x \geq 2(5 - x)$$

h) Find the slope and the y-intercept of the line when  $2x - y = 6$

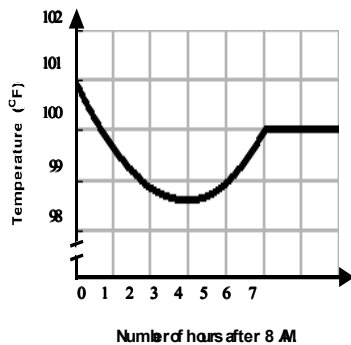
j) Write an equation for the following graph.



l) Graph the inequality on a rectangular coordinate system.

$$y < \frac{4}{2}x - 1$$

This is a graph of Frank's body temperature from 8 a.m. to 3 p.m. Let  $x$  represent the number of hours after 8 a.m. and  $y$  equal Frank's temperature (in  $^{\circ}\text{F}$ ) at time  $x$ .



m)

What is the y-intercept? What does this mean about Frank's temperature at 8 a.m.?

n)

During which period of time is Frank's temperature decreasing?

o)

Estimate Frank's minimum temperature during the time period shown. How many hours after 8 a.m. does this occur? At what time does this occur?

p) How many grams of an alloy that is 80% gold should be melted with 40 grams of an alloy that is 50% gold to produce an alloy that is 70% gold?

q) Vikki has \$200 to spend on clothing. She buys a skirt for \$68. She would like to buy some sweaters that sell for \$15.50 each. How many sweaters can she buy and stay within her budget?

r) The pressure of water on an object below the surface is proportional to its distance below the surface. If a submarine experiences a pressure of 25 pounds per square inch 60 feet below the surface, how much pressure will it experience 330 feet below the surface?

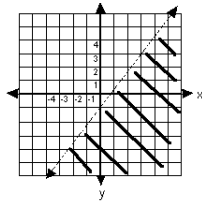
## ANSWERS

a)  $-24$     b)  $-18$     c)  $6x^2 + 11x - 8$     d)  $x = 5$     e)  $x = 2$     f)  $x \leq -2$

g)  $w = \frac{P - 2L}{2}$     h) Slope = 2, y-intercept =  $(0, -6)$     i) Slope = 3, rises

j)  $x = -3$     k) Point-slope form:  $y - 4 = -2(x + 1)$  and slope-intercept form:  $y = -2x + 2$

l)  $y < \frac{4}{3}x - 1$



m) The y-intercept is  $(0, 101)$ . At 8:00 a.m. Frank's body temperature is at  $101^\circ \text{F}$ .

n) Frank's temperature is decreasing during the time from 8:00 a.m. to 11:00 a.m.

o) Frank's minimum temperature is  $\approx 98.6^\circ \text{F}$ . This occurs about 3 hours afterwards and the time would be 11:00 a.m.

p) Eighty grams of an alloy that is 80% gold should be melted with 40 grams of an alloy that is 50% gold to produce an alloy that is 70% gold.

q) Vikki can buy at most eight sweaters.

r) A submarine will experience a pressure of 137.5 pounds per square inch 330 feet below the surface.

How many of these problems can you miss and still succeed in MATH 65? Ideally, NONE.

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

If some of these ideas are not familiar to you, you should consider enrolling in the previous course (MTH 60 or ALC 62)