Foundations for College
University of North Georgia
Fall 2016
Exam #1 Study Plan

The following is a general outline of topics and concepts which **may** be covered on Exam #1.

Sets

- Definition of a set: what makes something a "member" of a set.
- Notation: how are sets described or communicated?
- Knowing the mathematical sets developed in class, for example, given a specific example knowing in which set(s) the example is a member of – <u>See prior quizzes for examples and review.</u>
- Be able to define and use the ***Fundamental Theorem of Arithmetic*** (**CORI).**
- Able to explain, in words or example, what is meant by the set of ***Real Numbers.***

Algebra Power Tools

- Know all **seven tools** by "proper" name, their distinguishing features, and their specific formula as in: the ***Associative Tool*** – *applies only to addition and/or multiplication where the result is unchanged when the association of elements that are being added or multiplied is changed* $a + (b + c) = (a + b) + c \text{ or } a \cdot (b \cdot c) = (a \cdot b) \cdot c$
- You should be able to distinguish a ***Tool*** when it is being used to generate a line from a prior line: $-6x + 5 - 4x = 20 \; Start$
  $$-10x + 5 = 20 \; Communative \; and \; associative(combine \; Like \; terms)$$
  $$-10x = 15 \; Additive \; Inverse$$
  $$x = -\frac{3}{2} \; Multiplicative \; Inverse$$
- Know what action results in the *Additive or Multiplicative Identity,* that is $something + something = 0 \; and \; something \cdot something = 1.$
- Be able to give a valid example of each tool.

Fractions

- Conversion of fractions from different forms – see 1.1 Number Systems (**CORI**) and assignment.
- Be able to define a ***Prime Number*** and "de-compose" a ***composite number*** into a product of its ***Primes*** using a ***Factor Tree.***
- Be able to "divide out" the **"ONES"!**
- Know the ***Fundamental Principle of Fractions***: its formula and how it used to reduce (simplify) fractions or to create equivalent fractions with a different denominator.

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- Be able to perform **all** operations on fractions to simplify. Always reduce a fraction to simplest terms by dividing out **"ones"**.

Operations using Integers - $\mathbb{Z}$

- Addition, Subtraction (in terms of addition), Multiplication, and Division (in terms of multiplication).
- How the operations are related to the *Additive* and *Multiplicative Inverse Tools*.
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Mathematical Notations and Definitions

- You should know and be able to use **all** the mathematical notations we have discussed and used thus far in class, i.e. *Absolute Value*.
- You should be able to define all the terms we have used and to give an example.

Order of Operations

- Be able to use the Order of Operations correctly to simplify an expression.
- Be able to **"SHOW"** what Order you are using as you move through the process of simplifying an expression.

Solving Simple Algebraic Equations

- You should be able to solve and "check" all the equations on both handouts used in class.
- Be able to determine the correct *Least Common Denominator (LCD)* and use it to clear fractions prior to solving an equation containing fractions. This also applies to using a power of 10 to clear decimals.
- You should be able to distinguish between results such as $-5 = -5 \; or \; 16 \neq 9$ and understand what these results mean.
- You should be able to "substitute" your result back into an equation to determine if that value is correct, i.e. *"checking"*. In particular, you should be able check an equation when the substitute is a fraction!

When Taking the Exam

- Show all work on exam! I will not look at or use your scratch work in determining your score!
- Your work should be neat and clearly written. I must be able to understand your "flow" through a problem. If I cannot understand your work you will miss the entire problem.
- Given time, try to check your answers.

GOOD LUCK!

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