**Midterm Practice and Review** Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Foundations of Math 1 Fall 2013 Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Directions:** Show all work on a separate page.

For questions 1 – 3, add.

**Add/Subtract Polynomials:**

Step 1: Distribute middle sign

(remember multiplication integer rules)

Step 2: Combine like terms

(same variable, same exponent)

Step 3: Simplify and write in Standard Form

1. 
2. 
3. 

For questions 4 – 7, subtract.

1. 
2. 
3. 
4. 

**Multiplication** **Rule of Exponents:**

Step 1: Add an exponent of “1” where necessary

Step 2: Multiply coefficients, and add exponents of common bases

Step 3: Simplify

Simplify the following expressions:

1. (a2b4)(a3b5)
2. (6x9y7z4)(2x3y5)(y6z8)
3. (-4a7b3c)(-4a8bc12)(-2ab2c2)
4. (½ x9y7z4)(-2x3y5)
5. (2p5q9r6) (⅜p8qr)(¾p2q3r4)

For questions 13-31, simplify the following.

**Power to Power** **Rule of Exponents:**

Step 1: Add an exponent of “1” where necessary

Step 2: Distribute (multiply) outside power to inside exponents

Step 3: Simplify

1. (x4)5
2. (m5n7)6
3. (x4y9z11)3
4. (a5bc7d9)4
5. (-3a3b7)3
6. (8m3n4)2
7. (-x11y10z6)4
8. (-6a3)2 (5a2)
9. (2x3y4)4 (5x7y3)
10. (3s5t8)3 (8st7)2 (s3t4)
11. 

**Zero** **and** **Negative Rules of Exponents:**

Step 1: Anything raised to a zero = 1

Step 2: Any negative **exponents** need to move

Step 3: Apply other rules of exponents

Step 4: Simplify

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 

**Division Rule of Exponents:**

Step 1: Simplify Integers (reduce coefficients)

Step 2: BATTLE THE EXPONENTS

(remember, the bigger exponent wins!)

Step 3: Simplify

1. Find the volume of a cube with a side length of 3x2y.
2. Find the area of a triangle with a base of 2x2 and a height of 4x + 2.

Multiply each of the following:

**Multiplying Binomials**

Step 1: Expand if squared (do not distribute the exponent)

Step 2: FOIL or Box

Step 3: Combine like terms (simplify)

1. (2x + 1)2
2. 3(x + 8)2 + 4
3. 5x2y (2x2y – 8x + 3xy)
4. (2x + 1)(x – 4)

**Order of Operations**

**PEMDAS**

Simplify the following:

1. 
2. 
3. –11.3(22.1)
4. 
5. 18.63 – 5.4

**Adding and Subtracting Fractions**

Step 1: Change step mixed numbers into improper fractions

Step 2:Find a common denominator

Step 3: Multiply the numerator and denominator by same number

Step 4: Add/subtract the numerators

Add or subtract the following fractions.

1. 
2. 
3. 
4. 

**Estimating Square Roots**

Step 1: Determine which two square roots the given number is between

Step 2: Estimate which square root it is closest to, to the nearest tenth.

**\*\*KNOW YOUR CUBE ROOTS AS WELL\*\***

1. 
2. 
3. 
4. 

Estimate the following square roots.

1. 
2. 
3. Compare:  \_\_\_\_\_ 7.4
4. Order from least to greatest: 6, and 

**Additional Notes/Practice Problems:**