Foundations for College Algebra - MTWF
University of North Georgia
Fall 2015
Exam #1

Name: Key Date: September 25, 2015

Show all work and doing "correct" checks are worth an additional point. All questions are worth four points.

1. By the ***Ordering of Whole Numbers***: $a < b$ or $b > a$ on a number line, we understand the value of number to the right of another number to be quantitatively larger than the number to the left. Explain what determines that "b" is actually larger than "a".

See 1.1 pg 2

From zero on the number line we can mark out one unit and call it "a". From "a" we use the same unit as before to mark out a second point called "b". Thus "b" is more units from zero than "a".

2. When comparing any two whole numbers, list the three possible outcomes.

① $a < b$
② $a > b$
③ $a = b$

See 1.1 pg 4

3. Use the Distributive Tool to rewrite the following: $8x - 6$.

$$8x - 6 = 2 \cdot 4x - 2 \cdot 3$$
$$= \boxed{2(4x - 3)}$$

4. Rewrite the number 203, 405 in expanded notation.

$$2 \cdot 100,000 + 0 \cdot 10,000 + 3 \cdot 1000 + 4 \cdot 100 + 0 \cdot 10 + 5 \cdot 1$$

5. List the ***Order of Operations.***

(1) Simplify grouping symbols.
(2) Evaluate exponents.
(3) Multiplication or division, which comes first, from left to right.
(4) Addition or subtraction, which comes first, from left to right.

6. Simplify

$|-5|^2 - 2(3 - |-12 + 3|) - (-2)$

$5^2 - 2(3 - |-9|) + 2$

$25 - 2(3 - 9) + 2$

$25 - 2(-6) + 2$

$25 + 12 + 2$

$37 + 2$

$\boxed{39}$

7. True or False? Support your answer for full credit. See 2.5 Exp #1

$-6^2 = 36$ $\boxed{\text{False}}$

$-6^2 = (-1) \cdot 6^2$
$= (-1) \cdot 6 \cdot 6$
$= (-6) \cdot (6) = -36$

8. If the product of two *Integers* is zero, what **must** be true? Give an example. See 2.4 pg 139-40

$ab = 0$

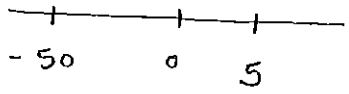
(1) $a = 0$ e.g. $2 \cdot 0 = 0$

(2) $b = 0$ $0 \cdot (-6) = 0$

(3) a & $b = 0$ $0 \cdot 0 = 0$

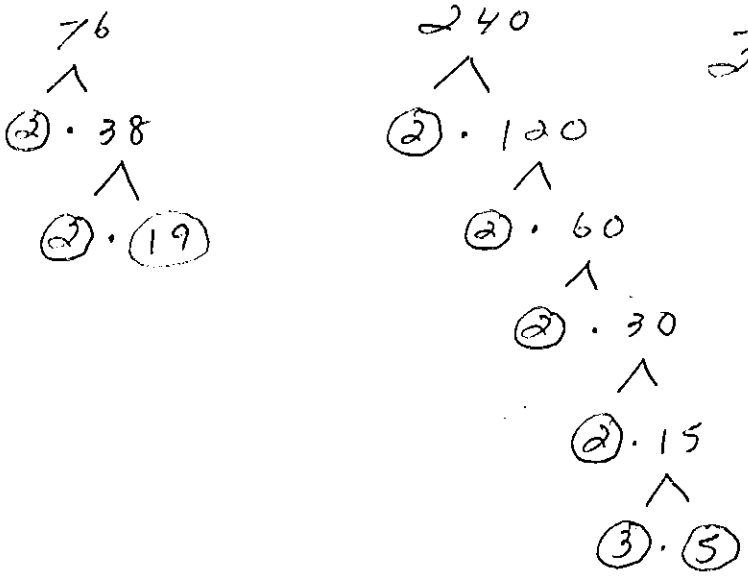
9. Which is larger on the number line: $-|-50|$ *or* $-(-5)$? Show why.

$-50 < 5$



5 is larger than -50

10. Simplify the fraction $\frac{76}{240}$ by writing the numerator and denominator as a product of **primes** and dividing out the "ones".



$$\frac{76}{240} = \frac{\boxed{2}\cdot\boxed{2}\cdot 19}{\boxed{2}\cdot\boxed{2}\cdot 2\cdot 2\cdot 3\cdot 5} \quad (1\ \ 1)$$

$$= \frac{19}{60}$$

11. Below is an equation which is being solved for "x" . For each line **(a, b, c, & d)** an ***Algebra Power Tool*** was used from the line above it. Determine and then state what ***Tool*** was used to generate the result of each line.

$\boxed{3(-4x+5)-2x=8}$

a.) $-12x+15-2x=8$ Dist & A. Id

b.) $-14x+15=8$ Assoc/Comm & A. Id

c.) $-14x=-7$ A. I & A. Id

d.) $x=\frac{1}{2}$ M. I.

12. Use ***Order of Operations*** to simply and replace " ? " with $<, >, \leq, or \geq$ to make a true statement.

$(12 - 3^3) - 12 \cdot 5 \quad ? \quad -(100 \div 5^2)^2 - 72 \div (-6)^2$

$(12 - 27) - 12 \cdot 5 \quad -(100 \div 25)^2 - 72 \div 36$

$(-15) - 12 \cdot 5 \quad -(4)^2 - 72 \div 36$

$(-15) - 60 \quad -16 - 72 \div 36$

$|-75| \quad -16 - 2$

$< \quad |-18|$

13. Simplify the fraction

$$\frac{\frac{2}{7} - \frac{3}{5}}{\frac{8}{3} + 8} = \frac{\frac{10 - 21}{35}}{\frac{8 + 24}{3}} = \frac{\frac{-11}{35}}{\frac{32}{3}} = -\frac{11}{35} \cdot \frac{3}{32}$$

$$= \boxed{-\frac{33}{1120}}$$

14. List, in correct order from smallest to largest, the three numerical sets we have been studying and using in class and give their set representations, i.e. $S = \{something\}$.

① Natural $= \{1, 2, 3, \ldots\}$

② Whole $= \{0, 1, 2, 3, \ldots\}$

③ Integers $= \{\ldots, -2, -1, 0, 1, 2, \ldots\}$