

$$\boxed{60/60 = 100}$$

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

Name: Key Date: February 26, 2016

For full credit ALL work must be shown NEATLY on the exam. Ten points will be deducted off the top for "messy" work! Any "valid" checks are worth an additional point per question.

FOLLOW DIRECTIONS!

1. Which is larger: $-20 - (-20)$ or $-20 - 20$, why?

$$-20 + 20 \quad -20 + (-20)$$

$$0 \quad \text{or} \quad -40$$

$$0 > -40$$

0 is larger

2. True or False? Support your answer for full credit by describing the "meaning" of exponents.

$$-7^2 = 49$$

False

$$-7^2 = (-1) \cdot 7^2$$

$$= (-1) \cdot \boxed{7 \cdot 7}$$

$$= -7 \cdot 7$$

$$= -49$$

meaning of exponents

3. Find the sum of the following:

$$-3 + (-10) + 2 - 22 + |-15 - 3| - 5 + 2$$

$$-3 + (-10) + 2 - 22 + |-18| - 5 + 2$$

$$-3 + (-10) + 2 - 22 + 18 - 5 + 2$$

$$-13 + 2 - 22 + 18 - 5 + 2$$

$$-11 - 22 + 18 - 5 + 2$$

$$-33 + 18 - 5 + 2$$

$$-15 - 5 + 2$$

$$-20 + 2$$

$$\boxed{-18}$$

4. Simply

$$|-18 - 19| - 2^2$$

$$|-37| - 2^2$$

$$37 - 4$$

$$\boxed{33}$$

5. The formula $F = \frac{9}{5}C + 32$ changes Celsius temperature to Fahrenheit temperature. Solve the equation for Celsius and find the temperature if Fahrenheit is 43 degrees.

$$\begin{aligned}
 F &= \frac{9}{5}C + 32 \\
 5F &= 9C + 160 \\
 5F - 160 &= 9C
 \end{aligned}$$

$$\frac{5F - 160}{9} = C$$

$$\frac{5(43) - 160}{9} = C$$

$$\frac{215 - 160}{9} = C$$

$$\frac{55}{9} = C$$

$$6.\bar{1} = C$$

$$6^\circ \text{ Celsius}$$

6. Simply

$$\begin{aligned}
 \frac{\frac{2}{3x} - \frac{1}{5}}{-\frac{5}{x^2}} &= \frac{\frac{10 - 3x}{15x}}{-\frac{5}{x^2}} = \frac{10 - 3x}{15x} \cdot \frac{x^2}{5} = \frac{(10 - 3x)}{15} \cdot \frac{x}{5} \\
 &= -\frac{10x - 3x^2}{75}
 \end{aligned}$$

7. 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.

$$3(-4x + 5) - 2x = 8$$

- a.) $-12x + 15 - 2x = 8$ Distributive
- b.) $-14x + 15 = 8$ Assoc./Comm.
- c.) $-14x = -7$ Additive Inverse
- d.) $x = \frac{1}{2}$ Multiplicative Inverse

8. Use **Order of Operations** to simplify and replace “ ? ” with $<$, $>$, \leq , or \geq to make a true statement.

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

$$(12 - 27) - 60 \quad - (100 \div 25)^2 - 72 \div 36$$

$$-15 - 60 \quad - (4)^2 - 72 \div 36$$

$$-75 \quad -16 - 72 \div 36$$

$$-16 - 2$$

$$\boxed{-75 < -18}$$

9. Solve

$$\text{Solve } \left(\frac{x}{5} - \frac{9}{2} = -\frac{5}{3} \right) \quad \text{LCD: } 30$$

$$6x - 135 = -50$$

$$6x = 85$$

$$\boxed{x = \frac{85}{6}}$$

CR

$$\frac{\frac{85}{6}}{5} - \frac{9}{2} = -\frac{5}{3} \quad \left| \quad -\frac{10}{6} = -\frac{5}{3} \right.$$

$$\frac{17}{6} - \frac{9}{2} = -\frac{5}{3} \quad \left| \quad -\frac{5}{3} = -\frac{5}{3} \checkmark \right.$$

$$\frac{17}{6} - \frac{9}{2} = -\frac{5}{3}$$

$$\frac{17-27}{6} = -\frac{5}{3}$$

10. Solve

$$4x - 9(6 - 2x) = 2(5x + 7)$$

$$4x - 54 + 18x = 10x + 14$$

$$22x - 54 = 10x + 14$$

$$12x = 68$$

$$x = \frac{68}{12}$$

$$\boxed{x = \frac{17}{3}}$$

CR

$$4\left(\frac{17}{3}\right) - 9\left(6 - 2\left(\frac{17}{3}\right)\right) = 2\left(5\left(\frac{17}{3}\right) + 7\right)$$

$$\frac{68}{3} - 9\left(6 - \frac{34}{3}\right) = 2\left(\frac{85}{3} + 7\right)$$

$$\frac{68}{3} - 9\left(\frac{18-34}{3}\right) = 2\left(\frac{85+21}{3}\right)$$

$$\frac{68}{3} - 9\left(-\frac{16}{3}\right) = 2\left(\frac{106}{3}\right)$$

$$\frac{68}{3} + \frac{48}{1} = \frac{212}{3}$$

11. Rewrite the following using the **Distributive Tool**: $aby - 3b + 5xby - b^2$

$$\boxed{b(ay - 3 + 5xy - b)}$$

$$\frac{68+144}{3}$$

$$\frac{212}{3} = \frac{212}{3} \checkmark$$

12. Is $x = -\frac{2}{3}$ and $-\frac{26}{33} = \frac{13}{11}x$ equivalent equations? Support your answer by showing your

Algebra.

Case 1

$$33 \left(-\frac{26}{33} = \frac{13}{11}x \right)$$

$$-26 = 39x$$

$$\frac{-26}{39} = x$$

$$-\frac{2}{3} = x \quad \checkmark$$

Case 2

$$-\frac{26}{33} = \frac{13}{11} \cdot -\frac{2}{3}$$

$$-\frac{26}{33} = -\frac{26}{33} \quad \checkmark$$

yes they are equivalent

13. If two numbers are added and the result is zero, what Algebra Power Tool is being used?

Additive Inverse

$$-6 + 6 = 0$$

Solve the following equation by using and stating the "correct" Algebraic Power Tool for each new line you write as done in class. Hint: pay close attention to what tool you select!

14. $\phi(\forall + \odot) - ! = \infty$, for \forall

$$\phi \forall + \phi \odot - ! = \infty \quad \text{Dist}$$

$$\phi \forall = \infty - \phi \odot + ! \quad \text{A. A.}$$

$$\forall = \frac{\infty - \phi \odot + !}{\phi} \quad \text{M. A.}$$

15. True or False: does $\frac{3x+9}{3}$ simplify to $x+3$? Support your answer.

$$\frac{3(x+3)}{3} = x+3$$

yes