

Foundations for College Algebra
Spring 2017 - M. Goodroe
Exam #1

Name: Key Date: _____

SHOW ALL WORK NEATLY ON THE EXAM! ONLY WORK ON THIS EXAM WILL BE GRADED. DO NOT USE DECIMAL REPRESENTATIONS FOR FRACTIONS. TEN POINTS WILL BE DEDUCTED IF YOUR WORK IS NOT NEAT AND CLEARLY PRESENTED. GOOD LUCK!

Simplify.

$$1) -|-24| = \boxed{-24}$$

$$\begin{aligned} 2) -(-|(-2)|) &= -(-|-2|) \\ &= -(-2) \\ &= \boxed{2} \end{aligned}$$

3) State the set of *Rational Numbers*. $\mathbb{Q} = \left\{ \frac{a}{b} \mid a \text{ and } b \in \mathbb{Z} \text{ and } b \neq 0 \right\}$

4) The sum of a positive number and a negative number is always a negative number. **True or False?**

False e.g. $5 + (-3) = 2$

5) a.) The sum of zero and a positive number is always a positive number. **True or False**

True e.g. $0 + 9 = 9$

b.) What is the name given to zero when used in the way above in 5a?

Additive Identity

Perform the indicated operation and simplify.

$$6) 1 + (-18) - 2 - (-15) + (-15)$$

$$\begin{aligned} 1 + (-18) - 2 + 15 + (-15) & \\ -17 - 2 + 15 + (-15) & \\ -19 + 15 + (-15) & \\ -4 + (-15) & \end{aligned} \quad \Bigg| \quad \boxed{-19}$$

$$7) \frac{16(-1) - (-6)(-7)}{2[-16 \div (-4 - 4)]} = \frac{-16 - (-6)(-7)}{2[-16 \div (-8)]} = \frac{-16 + 6(-7)}{2[2]} = \frac{-16 + (-42)}{4}$$

$$= \frac{-58}{4}$$

$$8) \frac{1}{5} + \frac{2}{7} = \frac{7 + 10}{35} = \boxed{\frac{17}{35}}$$

$$= \boxed{-\frac{29}{2}}$$

$$9) \frac{6}{5} - \frac{3}{2} + \frac{3}{8} = \frac{12 - 15}{10} + \frac{3}{8} \quad \Bigg| \quad = \frac{-24 + 30}{80} \quad \Bigg| \quad = \boxed{\frac{3}{40}}$$

$$= \frac{-3}{10} + \frac{3}{8} \quad \Bigg| \quad = \frac{6}{80}$$

$$10) \frac{\frac{4}{3} - \frac{6}{7}}{\frac{3}{4} - \frac{5}{6}} = \frac{\frac{28 - 18}{21}}{\frac{18 - 20}{24}} = \frac{\frac{10}{21} \cdot C}{-\frac{2}{24} \cdot F} = \frac{\frac{10}{21} \cdot -}{-\frac{12}{1} \cdot -}$$

$$= \frac{120}{21}$$

$$= \boxed{-\frac{40}{7}}$$

Show that $n = -\frac{28}{9}$ is a solution to the below equation.

$$11) 6n = 8(3n + 7)$$

$$6\left(-\frac{28}{9}\right) = 8\left(3\left(-\frac{28}{9}\right) + 7\right)$$

$$-\frac{56}{3} = 8\left(-\frac{28}{3} + 7\right)$$

$$= 8\left(\frac{-28 + 21}{3}\right)$$

$$= 8\left(-\frac{7}{3}\right)$$

$$-\frac{56}{3} = -\frac{56}{3} \quad \checkmark$$

Solve the equation and state the *Algebra Power Tools* used.

$$12) 3x + 6(2x - 3) = 4 - 7x$$

$$3x + 12x - 18 = 4 - 7x \quad \text{Dist.}$$

$$15x - 18 = 4 - 7x \quad \text{Assoc.}$$

$$22x = 22 \quad \text{A. I.}$$

$$\boxed{x = 1} \quad \text{M. I.}$$

Solve the equation and state the *Algebra Power Tools* used.

$$13) \frac{5(y - 4)}{3} = 2y - 2$$

$$\frac{5y - 20}{3} = 2y - 2 \quad \text{Dist.}$$

$$5y - 20 = 6y - 6 \quad \text{Dist. ICD}$$

$$\boxed{-14 = y} \quad \text{A. I.}$$

Solve the formula for the specified variable and state the Algebra Power Tools used.

14) $A = P + PRT$ for R

$$\frac{A - P}{PT} = \frac{PRT}{PT} \quad \text{A. I.}$$

$$\boxed{\frac{A - P}{PT} = R} \quad \text{M. I.}$$

15) $\Delta(\odot - \square H) - \bullet(B + \circ) = \frac{H}{M}$ for H

$$M(\Delta\odot - \Delta\square H - \bullet B - \bullet\circ) = \frac{H}{M} \quad \text{Dist.}$$

$$M\Delta\odot - M\Delta\square H - M\bullet B - M\bullet\circ = H \quad \text{Distrib. LCD}$$

$$M\Delta\odot - M\bullet B - M\bullet\circ = H + M\Delta\square H \quad \text{A. I.}$$

$$M\Delta\odot - M\bullet B - M\bullet\circ = H(1 + M\Delta\square) \quad \text{Dist.}$$

$$\boxed{\frac{M\Delta\odot - M\bullet B - M\bullet\circ}{(1 + M\Delta\square)} = H} \quad \text{M. I.}$$

Use the chart below to place a check mark indicating which sets the item on the left is a member of.

	N	W	Z	Q	Q'	R
0.6				✓	✓	
16) $\frac{7}{5}$				✓	✓	
-22		✓	✓		✓	
π					✓	✓

Answer Key

Testname: EXAM1A(02-16-2017)

1) -24

2) 2

3)

4) False

5) True

6) -19

7) -14.5

8) $\frac{17}{35}$

9) $\frac{3}{40}$

10) $-\frac{40}{7}$

11) $-\frac{28}{9}$

12) 1

13) -14

14) $R = \frac{A - P}{PT}$

15)

16)

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Simplify.

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Solve the formula for the specified variable and state the *Algebra Power Tools* used.

3) $A = P + PRT$ for R

$$\frac{A - P}{PT} = \frac{PRT}{PT} \quad A.S.$$

$$\boxed{\frac{A - P}{PT} = R} \quad M.S.$$

4) $\Delta(\ominus - \square H) - \bullet(B + \circ) = \frac{H}{M}$ for H

$$\Delta\ominus - \Delta\square H - \bullet B - \bullet\circ = \frac{H}{M} \quad \text{Dist.}$$

$$M\Delta\ominus - M\Delta\square H - M\bullet B - M\bullet\circ = H \quad \text{Dist. LCD}$$

$$M\Delta\ominus - M\bullet B - M\bullet\circ = H + M\Delta\square H \quad A.S.$$

$$= H(1 + M\Delta\square) \quad \text{Dist.}$$

$$\boxed{\frac{M\Delta\ominus - M\bullet B - M\bullet\circ}{(1 + M\Delta\square)} = H} \quad M.S.$$

Perform the indicated operation and simplify.

$$\begin{aligned}
 & \frac{\frac{4}{3} - \frac{6}{7}}{\frac{3}{4} - \frac{5}{6}} = \frac{\frac{28 - 18}{21}}{\frac{18 - 20}{24}} = \frac{\frac{10}{21} \cdot \frac{24}{24}}{\frac{-2}{24}} = \frac{10}{21} \cdot \frac{12}{1} \\
 & = -\frac{120}{21} \\
 & = \boxed{-\frac{40}{7}}
 \end{aligned}$$

$$\begin{aligned}
 6) & 1 + (-18) - 2 - (-15) + (-15) \\
 & 1 + (-18) - 2 + 15 + (-15) \\
 & -17 - 2 + 15 + (-15) \\
 & -19 + 15 + (-15) \\
 & -4 + (-15) \\
 & \boxed{-19}
 \end{aligned}$$

$$\begin{aligned}
 7) & \frac{6}{5} - \frac{3}{2} + \frac{3}{8} \\
 & \frac{12 - 15}{10} + \frac{3}{8} \quad \left| \quad \frac{-24 + 30}{80} \quad \left| \quad \boxed{\frac{3}{40}} \right. \\
 & -\frac{3}{10} + \frac{3}{8} \quad \left| \quad \frac{6}{80}
 \end{aligned}$$

8) State the set of *Rational Numbers*.

Solve the equation and state the *Algebra Power Tools* used.

9) $3x + 6(2x - 3) = 4 - 7x$

$$\begin{aligned}
 3x + 12x - 18 &= 4 - 7x && \text{Dist.} \\
 15x - 18 &= 4 - 7x && \text{Assoc.} \\
 22x &= 22 && \text{A.S.} \\
 \boxed{x = 1} &&& \text{M.S.}
 \end{aligned}$$

Show that $n = -\frac{28}{9}$ is a solution to the below equation.

$$10) 6n = 8(3n + 7)$$

$$6\left(-\frac{28}{9}\right) = 8\left(3\left(-\frac{28}{9}\right) + 7\right)$$

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$$= 8\left(\frac{-28 + 21}{3}\right)$$

$$= 8\left(-\frac{7}{3}\right)$$

$$-\frac{56}{3} = -\frac{56}{3} \quad \checkmark$$

Solve the equation and state the *Algebra Power Tools* used.

$$11) \frac{5(y-4)}{3} = 2y - 2$$

$$\frac{5y-20}{3} = 2y-2 \quad \text{Dist.}$$

$$5y-20 = 6y-6 \quad \text{Dist. LCD}$$

$$\boxed{-14 = y} \quad \text{A. A.}$$

Simplify.

$$12) \frac{16(-1) - (-6)(-7)}{2[-16 \div (-4 - 4)]} = \frac{-16 - (-6)(-7)}{2[-16 \div (-8)]} = \frac{-16 + 6(-7)}{2[2]} = \frac{-16 - 42}{4}$$

$$= \frac{-58}{4}$$

$$= \boxed{-\frac{29}{2}}$$

Simplify.

$$13) \frac{1}{5} + \frac{2}{7} = \frac{7 + 10}{35} = \boxed{\frac{17}{35}}$$

14) a.) The sum of zero and a positive number is always a positive number. **True or False**

True e.g. $0 + 3 = 3$

b.) What is the name given to zero when used in the way above in 14a?

Additive Identity

Use the chart below to place a check mark indicating which sets the item on the left is a member of.

	N	W	Z	Q	Q'	R
$\frac{9}{2}$				✓		✓
$-\pi$				✓		✓
0.7						
-5^2			✓	✓		✓

16) The sum of a positive number and a negative number is always a negative number. **True or False?**

False e.g. $10 + (-2) = 8$

Answer Key

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1) -24

2) 2

3) $R = \frac{A - P}{PT}$

4)

5) $-\frac{40}{7}$

6) -19

7) $\frac{3}{40}$

8)

9) 1

10) $-\frac{28}{9}$

11) -14

12) -14.5

13) $\frac{17}{35}$

14) True

15)

16) False