

Name: _____

Date:

Course: _____

Nyack College

College Mathematics

Final Exam

A. Directions: Find all natural number factors of each number and also represent each as a product of its prime factors (i.e. prime factorization). Make sure to SHOW ALL WORK.

(1) 144

(2) 1024

(3) 1,560

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(4) 1,716

B. Directions: Find the LCM and GCF using the prime factorization method. Make sure to SHOW ALL WORK.

(5) 10 *and* 15

(6) 24 *and* 112

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(7) 12, 44, and 120

C. Directions: List the following numbers from least and to greatest. SHOW ALL WORK.

(8) $\{2, 3, -8, -\frac{30}{4}, 4.5, \frac{30}{5}, 205\%\}$

(9) $\{0.25, 12, -3.25, -2, \frac{1}{4}, 4.5, \frac{30}{5}, 25\%, \frac{60}{6}, 11, -11\}$

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(10) $\{1.02, 3.75, 3\frac{3}{4}, \frac{30}{8}, 0.5, \frac{30}{5}, 105\%\}$

**D. Directions: Perform the indicated operations, using the order of operations as necessary.
SHOW ALL WORK.**

(11) $-2 - 15$

(12) $19 - (-121)$

(13) $(-6) - 12$

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(14) $(-3) + (-12) + 9$

(15) $2[4 + (12 - 9)] \div 7$

(16) $\frac{(-9) - (-(-12)) + 6}{6 \div 3}$

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- E. Directions: Complete the following table. Fill in the missing blanks by converting decimals, fractions, and percentages. All fractions must be proper fractions and reduced in order to get full credit.

<u>Percents</u>	<u>Decimals</u>	<u>Fractions</u>
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35%	→ 17. _____	→ 18. _____
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19. _____	→ 20. _____	→ $\frac{2}{5}$
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21. _____	→ 1.15	→ 22. _____
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- F. Directions: Solve each equation. Make sure to SHOW ALL WORK.

(23) $3x + 12 - x = -2x - 16$

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$$(24) \quad 5(x + 15) = 10(x - 25)$$

$$(25) \quad 8(x - 2) + 2(x - 3) = 18$$

$$(26) \quad -[4x - (5x + 2)] = 8(1 - x)$$

$$(27) \quad \frac{3x}{4} + \frac{5x}{2} = 52$$

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G. Directions: Find each sum or difference. Make sure to SHOW ALL WORK.

$$(28) \quad (4x^2 - 2x + 10) + (-2x^2 + 4x - 2)$$

$$(29) \quad (12 - 6x + 7) - (-2x^2 + 3x - 2)$$

$$(30) \quad (12x^2 - 8x + 6) - (3x^2 - 2x + 4)$$

$$(31) \quad 5(3x^2 - 3x + 11) - 5(6x^2 - x + 10)$$

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H. Directions: C. Find each product. SHOW ALL WORK.

(32) $(x - 4)(x + 4)$

(33) $(x + 4)(12x^3 - 3x^2 + x + 1)$

(34) $(x + 3)^2(y + 7)^2$

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- I. **Directions: Write the equation for line (in slope-y-intercept and standard forms) for the following points (SHOW ALL WORK):**

(35) $(10, 4)$ and $(-3, 1)$

(36) $(-12, 4)$ and $(1, -9)$

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J. Directions: Factor each polynomial. SHOW ALL WORK.

(37) $x^2 + 15x - 54$

(38) $x^2 - 12x + 27$

(39) $x^2 - 256$

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K. **Directions: Solve each system by elimination. SHOW ALL WORK.**

(40)

$$2x - 5y = 11$$

$$3x + 7y = 8$$

(41)

$$3x + 4y = -6$$

$$5x + 3y = 1$$

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L. **Directions: Solve each system by substitution. SHOW ALL WORK.**

(42)

$$4x + y = 6$$

$$y = 2x$$

(43)

$$3x - 4y = -22$$

$$-3x + y = 0$$