Pre-Algebra
Spiral Set B **ANSWER KEY**

Multiple Choice: Circle the letter of the correct answer. Show all necessary work in the space provided.

1. Doug earns $10.50 per hour working at a restaurant. On Friday he spent $1\frac{3}{4}$ hours cleaning, $2\frac{1}{3}$ hours doing paperwork, and $1\frac{5}{12}$ hours serving customers. What were Doug's total earnings?

A. $46.97 **B.** $47.25

C. $53.00 **D.** $57.75

1st: Find the total number of hours worked.

$1\frac{3}{4}+2\frac{1}{3}+1\frac{5}{12}$

$1\frac{9}{12}+2\frac{4}{12}+1\frac{5}{12}=4\frac{18}{12}=4\frac{6}{4}$

2nd: Multiply total hours worked by earnings per hour to find total earnings.

$4\frac{6}{4}\times 10.50$

$\frac{22}{4}\times\frac{21}{2}$

$\frac{11}{4}\times\frac{21}{1}=\frac{231}{4}=57\frac{3}{4}=\$57.75$

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2. How can $8^3 \bullet 8^{-6}$ be written using a single exponent?

A. 8^{-3} **B.** 8^3 **C.** 8^9 **D.** 8^{-18}

$8^{3+(-6)}$

8^{-3}

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3. Which of the following expressions represents an ***irrational*** number?

$\sqrt{121}$ $\sqrt{7}-\sqrt{7}$ $\frac{\sqrt{8}}{\sqrt{8}}$ $\sqrt{150}$

11 1 1

Irrational (≈ 12)
Non-terminating, non-repeating decimal
This number lies in between 12 and 13 ($\sqrt{144}$ *and* $\sqrt{169}$)

A. $\sqrt{121}$ **B.** $\sqrt{7}-\sqrt{7}$

C. $\frac{\sqrt{8}}{\sqrt{8}}$ **D.** $\sqrt{150}$

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4. Simplify the following numerical expression: $2^4 - 20 + |-3|$

A. -15 **B.** -1

C. -9 **D.** -7

PEMDAS
$2^4 - 20 + |-3|$
$2^4 - 20 + 3$ *Take the absolute value of -3*
$16 - 20 + 3$ *Evaluate the exponent*
$16 + (-20) + 3$ *Add (KCO)*
$19 + (-20)$ *Add positive numbers (16 + 3)*
-1

5. Which value is ***not*** equivalent to $\frac{1}{1000}$?

A. 10^{-3}

$\frac{1}{10^3} = \frac{1}{1000}$

B. 0.001

$one - thousandth\ \frac{1}{1000}$

C. $\frac{10^{-9}}{10^{-6}}$

$10^{-9-(-6)}$

10^{-9+6}

$10^{-3} = \frac{1}{10^3} = \frac{1}{1000}$

D. $\frac{1}{10^{-3}}$

$\frac{1}{\frac{1}{10^3}} = \frac{1}{\frac{1}{1000}} = 1 \div \frac{1}{1000}$

$1 \div \frac{1}{1000}$

Keep, Change, Flip

1×1000

1000

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6. Which of the following statements about the number 0 is ***false***?

A. 0 is a whole number

B. 0 is a natural number *Natural numbers are counting numbers and when we count, we begin with 1.*

C. 0 is a rational number

D. 0 is an integer

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7. Which of the following values will fall between 11 and 12 on a number line?

A. $\sqrt{12}$

$\sqrt{9}\ \ \sqrt{12}\ \ \sqrt{16}$

$3\ \ 3.\_\_\ \ 4$

B. $\sqrt{11} + 0.5$

$\sqrt{9}\ \ \sqrt{11}\ \ \sqrt{16}$

$3\ \ 3.\_\_\ \ 4$

3.____ + 0.5 ≠ a number between 11 and 12

C. $\sqrt{132}$

$\sqrt{121}\ \ \sqrt{132}\ \ \sqrt{144}$

$11\ \ 11.\_\_\ \ 12$

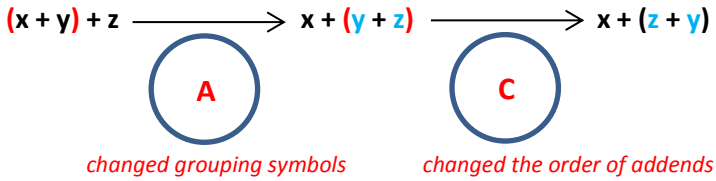
D. $\sqrt{156}$

$\sqrt{144}\ \ \sqrt{156}\ \ \sqrt{169}$

$12\ \ 12.\_\_\ \ 13$

Extended Response: **Show all necessary work.**

8. The following flow diagram shows that the expression **(x + y) + z** is equivalent to the expression **x + (z + y)**. State the property that was used to justify each step. Use the letter **A** for the associative property and the letter **C** for commutative property.



9. The table below shows four transactions (*in dollars*) for a bank account. Positive numbers represent deposits and negative numbers represent withdrawals. The balance of the account prior to the transactions is $75.50. What is the balance of the account after the transactions?

Transactions	
Date	**Amount**
11/4	60.68
11/4	−25.16
11/7	−82.05
11/11	55.95

1st: Sum the transactions

Deposits: 60.68 + 55.95 = 116.63

Withdrawals: 25.16 + 82.05 = 107.21 = − 107.21

116.63 + (-107.21) *Take the difference*

116.63 − 107.21 = 9.42

Since more money was deposited than withdrawn, the final result of all the transactions is an increase in the account of $9.42.

2nd: Determine the new balance

75.50 + 9.42 = 84.92

The new balance in the account is $84.92

10. What is the value of $\left(-\frac{1}{4}-\frac{1}{2}\right) \div -\frac{4}{7}$?

K C O

$\left(\frac{-1}{4}+\frac{-1}{2}\right) \div \frac{-4}{7}$

$\left(\frac{-1}{4}+\frac{-2}{4}\right) \div \frac{-4}{7}$

$\frac{-3}{4} \div \frac{-4}{7}$

K C F

$\frac{-3}{4} \times \frac{-7}{4}$

$\mathbf{\frac{21}{16}}$ ***or*** $\mathbf{1\frac{5}{16}}$