

First Name: _____

Last Name: _____

L46 – Cumulative Review Worksheet

Part 1: Chapter 4 Radicals (Number Competency)

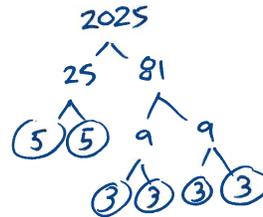
Use the following information to answer Q1-Q2:

The number **2025** can be prime factored to determine if it is a perfect square, a perfect cube, both, or neither.

Q1: The number 2025 can be prime factored to the form $a^b c^d$, where a , b , c , and d are __, __, __, and __.

(Record your **four digit** answer in the Numerical Response boxes below)

3	4	5	2
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$$2025 = 3^4 \cdot 5^2$$

$$a^b \cdot c^d$$

$a = 3$
 $b = 4$
 $c = 5$
 $d = 2$

Q2: The number 2025 is

- a. A perfect square
- b. A perfect cube
- c. Both
- d. Neither

Q3: The expression $\frac{10x^4y^{-6}z^5}{25x^3z^{-3}}$ can be simplified to the form $\frac{2x^a z^c}{5y^b}$, where a , b , and c are __, __, and __.

(Record your **three digit** answer in the Numerical Response boxes below)

1	6	8	
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$$\frac{2x^1 z^8}{5y^6}$$

$a = 1$
 $b = 6$
 $c = 8$

KEY

Q4: The expression $\frac{\left(\frac{1}{x^2}\right)^{\frac{4}{3}}}{x^{\frac{1}{4}}}$ can be written as $x^{\frac{ab}{cd}}$, where a , b , c , and d are __, __, __, and __.

(Record your **four digit** answer in the Numerical Response boxes below)

1 1 1 2

$$\frac{x^{\frac{4}{6}}}{x^{-\frac{1}{4}}} = x^{\frac{4}{6}} \cdot x^{\frac{1}{4}} = x^{\frac{2}{3}} \cdot x^{\frac{1}{4}} = x^{\frac{8}{12}} \cdot x^{\frac{3}{12}} = x^{\frac{11}{12}} = x^{\frac{ab}{cd}}$$

$$\begin{aligned} a &= 1 \\ b &= 1 \\ c &= 1 \\ d &= 2 \end{aligned}$$

Use the following information to answer Q5:

As a New Year's resolution, Bob decides he is going to do 1 sit-up on "Day 0" of his workout journey, and double this amount every day.

Q5: How many situps does Bob do on Day 10?

(Record your **four digit** answer in the Numerical Response boxes below)

1 0 2 4

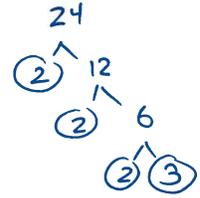
$$\begin{aligned} y &= a(b)^{x/t} \\ y &= 1(2)^{10} \\ y &= 1024 \end{aligned}$$

Q6: The entire radical $\sqrt[3]{24x^5y^2z^6}$ can be written as a mixed radical in the form $2xz^a\sqrt[3]{3x^by^c}$, where a , b , and c are __, __, and __.

(Record your **three digit** answer in the Numerical Response boxes below)

2	2	2	
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$$\begin{aligned} \sqrt[3]{24x^5y^2z^6} &= \sqrt[3]{2^3 \cdot 3 \cdot x^3 \cdot x^2 \cdot y^2 \cdot z^3 \cdot z^3} \\ &= 2 \cdot z \cdot z \cdot \sqrt[3]{3x^2y^2} \\ &= 2xz^2 \sqrt[3]{3x^2y^2} \\ &= 2xz^a \sqrt[3]{3x^by^c} \end{aligned}$$



$$\begin{aligned} a &= 2 \\ b &= 2 \\ c &= 2 \end{aligned}$$

Q7: The mixed radical $5x^2\sqrt{3x}$ can be written as an entire radical in the form $\sqrt{abx^c}$, where a , b , and c are __, __, and __.

(Record your **three digit** answer in the Numerical Response boxes below)

7	5	5	
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$$\begin{aligned} &= \sqrt{(5x^2)^2} \cdot \sqrt{3x} \\ &= \sqrt{25x^4} \cdot \sqrt{3x} \\ &= \sqrt{75x^5} = \sqrt{abx^c} \end{aligned}$$

$$\begin{aligned} a &= 7 \\ b &= 5 \\ c &= 5 \end{aligned}$$

Q8: The expression $5^{\frac{1}{2}}x^2\sqrt[3]{5x^2}$ can be written as a simplified power in the form $5^{\frac{a}{b}}x^{\frac{c}{d}}$, where a , b , c , and d are __, __, __, and __.

(Record your **four digit** answer in the Numerical Response boxes below)

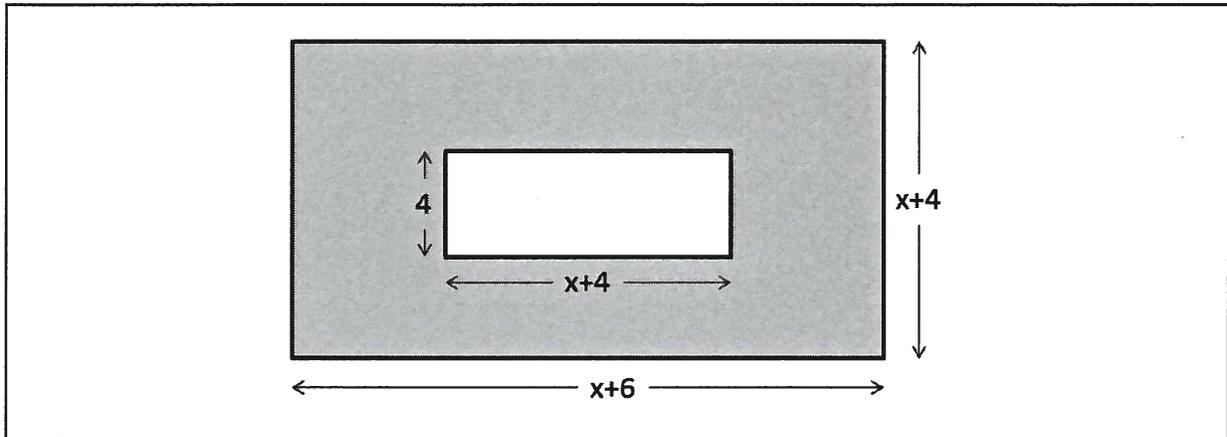
5	6	8	3
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$$\begin{aligned} &= 5^{\frac{1}{2}} \cdot x^2 \cdot 5^{\frac{1}{3}} \cdot x^{\frac{2}{3}} \\ &= 5^{\frac{1}{2} + \frac{1}{3}} \cdot x^{2 + \frac{2}{3}} \\ &= 5^{\frac{5}{6}} \cdot x^{\frac{8}{3}} \\ &= 5^{\frac{a}{b}} \cdot x^{\frac{c}{d}} \end{aligned}$$

$$\begin{aligned} a &= 5 \\ b &= 6 \\ c &= 8 \\ d &= 3 \end{aligned}$$

Part 2: Chapter 5 Polynomials (Algebra Competency)

Use the following information to answer Q9-Q12:



Q9: The perimeter of the larger rectangle is $ax + bc$, where a , b , and c is __, __, and __.

(Record your three digit answer in the Numerical Response boxes below)

4	2	0	
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$$\begin{aligned}
 P &= L + w + L + w \\
 &= (x+6) + (x+4) + (x+6) + (x+4) \\
 &= 4x + 20 \\
 &= ax + bc \quad \begin{array}{l} a=4 \\ b=2 \\ c=0 \end{array}
 \end{aligned}$$

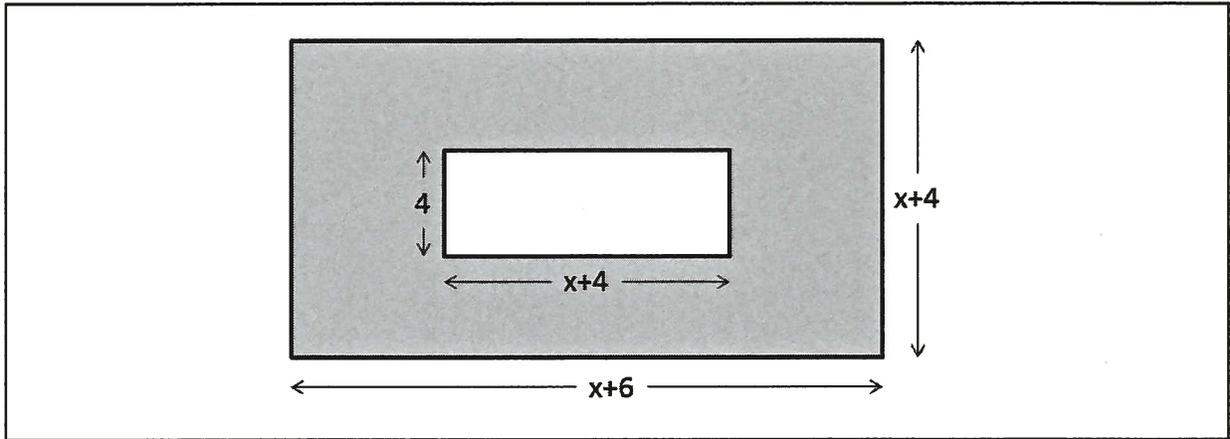
Q10: The area of the larger rectangle is $x^2 + dex + fg$, where d , e , f , and g are __, __, __, and __.

(Record your four digit answer in the Numerical Response boxes below)

1	0	2	4
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$$\begin{aligned}
 A &= (L)(w) \\
 &= (x+4)(x+6) \\
 &= x^2 + 6x + 4x + 24 \\
 &= x^2 + 10x + 24 \\
 &= x^2 + dex + fg \quad \begin{array}{l} d=1 \\ e=0 \\ f=2 \\ g=4 \end{array}
 \end{aligned}$$

Use the following information to answer Q9-Q12:



Q11: The area of the smaller rectangle is $hx + ij$, where h , i , and j are ____, ____, and ____.

(Record your **three digit** answer in the Numerical Response boxes below)

4	1	6	
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$$\begin{aligned}
 A &= Lw \\
 &= (4)(x+4) \\
 &= 4x + 16 \\
 &= hx + ij
 \end{aligned}
 \quad
 \begin{aligned}
 h &= 4 \\
 i &= 1 \\
 j &= 6
 \end{aligned}$$

Q12: The area of the shaded region, in factored form, is $(x + a)(x + b)$, where a and b are ____ and ____.

(Record your **two digit** answer in the Numerical Response boxes below)

2	4		
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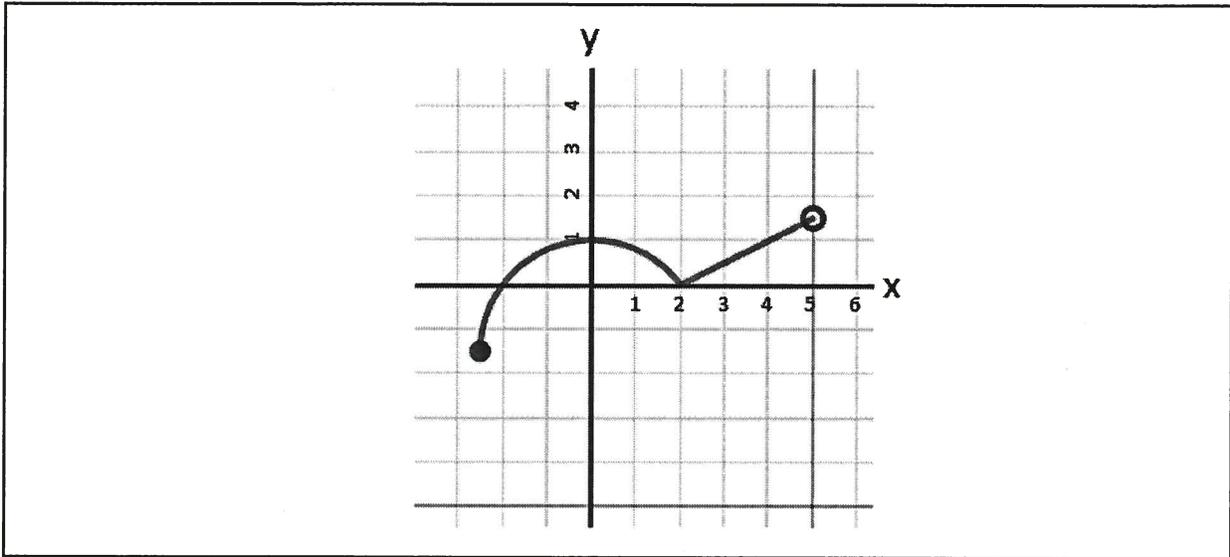
or

4	2	1	
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$$\begin{aligned}
 \text{Area} &= (\text{Big Area}) - (\text{Small Area}) \\
 &= (x^2 + 10x + 24) - (4x + 16) \\
 &= x^2 + 10x + 24 - 4x - 16 \\
 &= x^2 + 6x + 8 \\
 &= (x + 2)(x + 4)
 \end{aligned}
 \quad
 \begin{aligned}
 \square + \square &= 6 && 1, 8 \\
 \square \times \square &= 8 && 2, 4
 \end{aligned}$$

Part 3: Chapter 6 Linear Relations (Algebra and Graphing Competencies)

Use the following information to answer Q13-Q14:



Q13: (Short Answer) Write the **Domain** in Set Notation. (1 mark)

$$\{x \mid -2.5 \leq x < 5, x \in \mathbb{R}\}$$

Q14: (Short Answer) Write the **Range** in Interval Notation. (1 mark)

$$[-1.5, 1.5)$$

Q15: (Long Answer) A line connects the points $(-4, 6)$ and $(5, 4)$. Calculate the slope of the line. (2 marks)

$$x_1 \quad y_1 \quad x_2 \quad y_2$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - 6}{5 - (-4)} = \boxed{\frac{-2}{9}}$$

Use the following information to answer Q16-Q18:

$f(x) = x^2 - 1$	$g(x) = -3x + 2$
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Q16: $f(4) =$

(Record your two digit answer in the Numerical Response boxes below)

1	5		
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$$\begin{aligned}
 f(x) &= x^2 - 1 \\
 f(4) &= (4)^2 - 1 \\
 &= 16 - 1 \\
 &= 15
 \end{aligned}$$

Q17: $g(-5) =$

(Record your two digit answer in the Numerical Response boxes below)

1	7		
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$$\begin{aligned}
 g(x) &= -3(x) + 2 \\
 g(-5) &= -3(-5) + 2 \\
 &= 15 + 2 \\
 &= 17
 \end{aligned}$$

Q18: (Long Answer) If $g(x) = 8$, $x = ?$ (2 marks)

$$\begin{aligned}
 g(x) &= -3x + 2 \\
 8 &= -3x + 2 \\
 -2 &\quad -2 \\
 6 &= -3x \\
 \div (-3) &\quad \div (-3) \\
 \boxed{-2 = x}
 \end{aligned}$$