

First Name: _____

Last Name: _____

1.09 - EQ - Exponents and Radicals Review

/ 8 marks

PART 1 - Multiple Choice and Numerical Response

Q1: What is the cube root of 25?

$$\sqrt[3]{25} = 2.924\dots$$

$$\approx 2.92$$

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

2	.	9	2
---	---	---	---

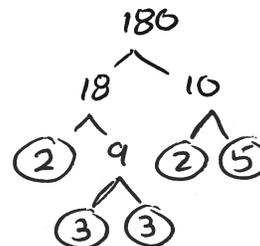
Use the following information to answer Q2-Q3:

The number 180 can be prime factored to determine if it is a perfect square, perfect cube, both, or neither.

Q2: When prime factored, 180 can be written as $2^a 3^b 5^c$, where the exponents **a**, **b** and **c** are __, __, and __.

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

2	2	1	
---	---	---	--



$$180 = 2^2 \cdot 3^2 \cdot 5$$

$$\text{So } a=2, b=2, c=1$$

Q3: The number 180 is

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

Q4: The expression $\frac{5x^3y^5z^{-4}}{15x^{-2}y^7z^3}$ simplifies to $\frac{x^a}{3y^bz^c}$, where **a**, **b**, and **c** are __, __, and __.

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

5	2	7	
---	---	---	--

$$\frac{5x^3y^5z^{-4}}{15x^{-2}y^7z^3} = \frac{5x^3y^5x^2}{15y^7z^3z^4} = \frac{5x^5y^5}{15y^7z^7}$$

$$= \frac{x^5}{3y^2z^7}$$

$$\text{So } a=5, b=2, c=7$$

PART 2 – Long Answer

Use the following information to answer Q5-Q7:

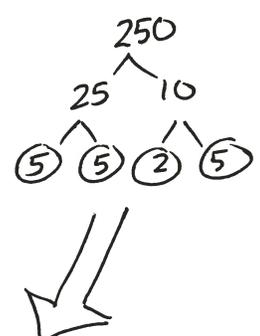
$$5x^2y^4 \sqrt[3]{2x^2y}$$

Q5: (Long Answer) Write the mixed radical as an entire radical. (2 marks)

$$\sqrt[3]{(5x^2y^4)^3} \cdot \sqrt[3]{2x^2y}$$

$$\sqrt[3]{125x^6y^{12}} \cdot \sqrt[3]{2x^2y}$$

$$\sqrt[3]{250x^8y^{13}}$$



Q6: (Long Answer) Write the mixed radical as a simplified power. (2 marks)

Method #1

$$5x^2y^4(2x^2y)^{1/3}$$

$$5x^2y^4 \cdot 2^{1/3} x^{2/3} y^{1/3}$$

$$2^{1/3} \cdot 5 \cdot x^{2+2/3} \cdot y^{4+1/3}$$

$$2^{1/3} \cdot 5 \cdot x^{8/3} \cdot y^{13/3}$$

Method #2

$$\sqrt[3]{250x^8y^{13}} = (250x^8y^{13})^{1/3}$$

$$= (2 \cdot 5^3 \cdot x^8 \cdot y^{13})^{1/3}$$

$$= 2^{1/3} \cdot 5 \cdot x^{8/3} \cdot y^{13/3}$$