

Name _____
Date _____

MTH 104 – Intermediate Algebra
Class #2

Chapter 1.5 Rules of Exponents

Complete the Following Table

1	2(1)	_____	1^2	_____	6	2(6)	_____	6^2	_____
2	2(2)	_____	2^2	_____	7	2(7)	_____	7^2	_____
3	2(3)	_____	3^2	_____	8	2(8)	_____	8^2	_____
4	2(4)	_____	4^2	_____	9	2(9)	_____	9^2	_____
5	2(5)	_____	5^2	_____	10	2(10)	_____	10^2	_____

11	2(11)	_____	11^2	_____	16	2(16)	_____	16^2	_____
12	2(12)	_____	12^2	_____	17	2(17)	_____	17^2	_____
13	2(13)	_____	13^2	_____	18	2(18)	_____	18^2	_____
14	2(14)	_____	14^2	_____	19	2(19)	_____	19^2	_____
15	2(15)	_____	15^2	_____	20	2(20)	_____	20^2	_____

21	2(21)	_____	21^2	_____
22	2(22)	_____	22^2	_____
23	2(23)	_____	23^2	_____
24	2(24)	_____	24^2	_____
25	2(25)	_____	25^2	_____



Numbers to the Third Power (Perfect Cubes)

- | | | | | | |
|----|-------|-------|-----|--------|-------|
| 1. | 1^3 | _____ | 6. | 6^3 | _____ |
| 2. | 2^3 | _____ | 7. | 7^3 | _____ |
| 3. | 3^3 | _____ | 8. | 8^3 | _____ |
| 4. | 4^3 | _____ | 9. | 9^3 | _____ |
| 5. | 5^3 | _____ | 10. | 10^3 | _____ |

From Class #1: Section 1.4

Chapter 1.4 Order of Operations.

Also Known As: _____

P _____

E _____

MD _____

AS _____

1. Perfect Squares Notation:

a. $(-5)^2$ _____

b. -5^2 _____

2. Algebraic Expression Simplification.

a. Evaluate $-x^2$ when $x = -3$ and $x = +3$

1. Evaluate: $-5^2 + (-5)^2 - 4^3 + (-4)^3$

5. Evaluate: $8 + 3 \cdot 5^2 - 7$

6. Evaluate: $10 + \{6 - [4(5 - 2)]\}^2$

7. Evaluate: $\frac{6 \div \frac{1}{2} + 5|3 - 7|}{1 + (3 - 5) \div 2}$

8. Evaluate: $-x^3 - xy - y^2$, when $x = -2$ and $y = 5$

Section 2. Some Famous Powers.

- | | | |
|-------|-------|--|
| 2^4 | _____ | Other Known Rules of Exponents: |
| 2^5 | _____ | 2. Any Number to the first power (5^1) = _____ |
| 3^4 | _____ | 3. Any Number to the zero power (17^0) = _____ |
| 5^4 | _____ | 4. 0^0 is _____ |

Section 3. Perfect Square Fractions and Decimals.

Notes and Comments.

- | | | | |
|-----------------------|-------|----------------------------|-------|
| 1. $(.05)^2$ | _____ | 6. $\sqrt{\frac{9}{4}}$ | _____ |
| 2. $(1.2)^2$ | _____ | 7. $\sqrt{0.0049}$ | _____ |
| 3. $(.025)^2$ | _____ | 8. $\sqrt{2.56}$ | _____ |
| 4. $(\frac{2}{7})^2$ | _____ | 9. $\sqrt{\frac{100}{81}}$ | _____ |
| 5. $(1\frac{2}{3})^2$ | _____ | 10. $\sqrt{0.000576}$ | _____ |

Section 4. Perfect Square Monomials.

Notes and Comments.

- | | | | |
|-------------------------|-------|------------------------------------|-------|
| 1. $(x^3)^2$ | _____ | 5. $\sqrt{16a^4b^6}$ | _____ |
| 2. $(a^3b^5)^2$ | _____ | 6. $\sqrt{81b^6d^{10}}$ | _____ |
| 3. $(5a^3b)^2$ | _____ | 7. $\sqrt{4a^{12}c^2}$ | _____ |
| 4. $(-\frac{1}{3}ab)^2$ | _____ | 8. $\sqrt{\frac{16}{25}a^4b^{16}}$ | _____ |

Section 4. Rules for Exponential Expressions

1. The Product Rule – Multiplication of Different Powers of the Same Base: _____
- | | | | |
|-----------------------|-------|--------------------|-------|
| 2. a. $x^2 \cdot x^3$ | _____ | c. $d^2 \cdot d^5$ | _____ |
| b. $2^3 \cdot 2^4$ | _____ | d. $h \cdot h^6$ | _____ |

3. The Quotient Rule – Division of Different Powers of the Same Base: _____

4. a. $\frac{x^7}{x^3}$ _____ c. $\frac{5^4}{5^2}$ _____

b. $\frac{x^5}{x^5}$ _____ d. $\frac{y^2}{y^5}$ _____

5. The Negative Exponent Rule: _____

6. a. 5^{-2} _____ c. $7a^{-4}$ _____

b. $\frac{1}{c^{-4}}$ _____ d. $\frac{x^{-2}}{y^{-3}}$ _____

7. Evaluate the Expressions:

a. $\left(\frac{3}{4}\right)^{-2}$ _____ b. $\left(-\frac{3}{4}\right)^{-2}$ _____

c. $-\left(\frac{3}{4}\right)^{-2}$ _____ d. $-\left(-\frac{3}{4}\right)^{-2}$ _____

8. Write the following without using negative exponents.

a. $\frac{3xz^2}{y^{-3}}$ _____ b. $-3^3 x^2 y^{-3}$ _____

9. The Zero Exponent Rule: _____

a. 200^0 _____ c. $7y^0$ _____

b. $-y^0$ _____ d. $-(9x + 7y)^0$ _____

10. The Power Rule – Raising a Power to a Power: _____

a. $(x^3)^2$ _____ d. $(4^2)^3$ _____

b. $(3ab^3)^2$ _____ e. $\left(\frac{2}{5}a^2b^3\right)^2$ _____

11. Simplifying Expressions:

a. $\frac{y^{5m-1}}{y^{2m+5}}$ _____

b. $d^{-4x+7} \cdot d^{5x-6}$ _____

c. $\left(\frac{6x^2y^4}{2x^2y}\right)^2$ _____

f. $\left(\frac{3x^4y^{-2}}{6x^3yz^{-1}}\right)^{-3}$ _____

Chapter 1.6 Scientific Notation.

Any Number in Scientific Notation: _____

1. A VERY LARGE or very small number, written in Scientific Notation.

a. 4,506,000 _____

b. 0.000754 _____

c. 2,450,000,000 _____

2. Write the following in Proper Scientific Notation.

a. 45.67×10^4 _____

b. 0.0255×10^5 _____

c. 743.3×10^{-4} _____

d. 0.0056×10^{-8} _____

3. Multiplication and Division of Numbers in Scientific Notation.

a. $(4.25 \times 10^4)(5.61 \times 10^7)$

b. $(0.63 \times 10^{-4})(18.0 \times 10^8)$

c. $\frac{1.65 \times 10^3}{4.25 \times 10^5}$

d. $\frac{0.0000282}{0.00141}$

4. Addition and Subtraction of Scientific Notation.

a. $(5.24 \times 10^5) + (4.5 \times 10^{-3})$

b. $(9.12 \times 10^{-5}) - (4.5 \times 10^{-3})$

Section	Page	Problems
1.4	TBD	41, 45, 59, 69, 73, 81, 93, 97, 101, 103
1.5	47 → 59	33, 49, 59, 67, 71, 75, 91, 111, 127
1.6	57 → 59	5, 13, 19, 25, 37, 39, 57, 59, 69