Name _____   Date _____
Midterm Review - chapters 1 and 2   Math 8

Chapter 1 - Exponents

RULES: When multiplying powers with the same base - _____ the exponents.
When dividing powers with the same base - _____ the exponents.
When raising a power to another power - _____ the exponents.

When you have a negative exponent with a base take the reciprocal and change the exponent to a positive.

Example: $5^{-3} = \frac{1}{5^3}$

Simplify each expression. Write the expression using only a positive exponent, when necessary.

1. 7^0

2. 8^{-2}

3. $\frac{25x^{-3}}{5x^5}$

4. $(x^4)^3$

5. $3x \cdot 7x^2$

6. $\frac{5^3 \cdot 5^4}{5^2}$

Chapter 2 - Scientific Notation

Tell whether each number is written correctly in scientific notation. If it is NOT in scientific notation, state the reason.

1. 4.37×10^8 _____

2. 0.56×10^{-1} _____

3. 9.3×100^4 _____

Write each number in scientific notation.

4. 3,400

5. 12,500

6. 0.00088

Write the solution to each problem below. Be sure that your answer is in scientific notation.

7. $(2.37 \times 10^4) + (1.4 \times 10^5)$

8. $(9.6 \times 10^7) - (8.4 \times 10^6)$

9. $(2.16 \times 10^8) \div (2.4 \times 10^7)$

10. $(4 \times 10^6) \div (8 \times 10^3)$

11. In 2013 the Los Angeles Dodgers opening day payroll was about $\$2.16 \times 10^8$ and the Houston Astros opening day payroll was about $\$2.4 \times 10^7$. How much higher was the Dodgers' payroll?

12. In 2012, New York City (NYC) and Los Angeles (LA) has the highest populations of any cities in the United States. NYC's population was about 8.1×10^6 and LA's population was about 3.8×10^6.

   a)   Which city, NYC or LA has the highest population? Justify your answer.

   b) What is the population of these two cities combined?

13. The mass of Jupiter is approximately 6.82×10^{30} kilograms. The mass of Mars is approximately 3,690,000,000,000,000,000,000,000 kilograms. What is the difference between the approximate masses, in kilograms, of Jupiter and Mars? Express your answer in scientific notation.