**10 Review - Scientific Notation**          Name _____

**Definition:**

Notice that **whole numbers have a** _____ **exponent** when written in scientific

notation, and **decimals have a** _____ **exponent** in scientific notation.

**Negative exponents** make numbers_____, not negative.

Write the following numbers in scientific notation:

**1.** 378,000          **2.** 4,900          **3.** 0.00037          **4.** 4.95          **5.** 0.562

Write the numbers in standard form:

**6.** $5.34 \times 10^3$          **7.** $7.8 \times 10^0$          **8.** $3.44 \times 10^{-3}$          **9.** $4.9 \times 10^{-1}$          **10.** $5.3 \times 10^4$

You can also **multiply and divide** with numbers in scientific notation.
- **Multiply in scientific notation**: multiply the number factors, and _____ the exponents on the powers of 10.
- **Divide in scientific notation**: divide the number factors, and _____ the exponents on the powers of 10.
- Check that your answer is in scientific notation, **rewrite** it if it's not!

11.  $(4 \times 10^7)(22 \times 10^8)$          12.  $(3 \times 10^{-3})(4.2 \times 10^6)$

13.  $(6 \times 10^5)(3.5 \times 10^{-2})$          14.  $(9 \times 10^{-4})(16 \times 10^6)$

15.  $(5 \times 10^{-2})(2.9 \times 10^{-3})$          16.  $\dfrac{7.5 \times 10^6}{3.0 \times 10^2}$

17.  $\dfrac{8.5 \times 10^8}{1.7 \times 10^{-3}}$          18.  $\dfrac{6.8 \times 10^{-6}}{3.4 \times 10^9}$

Negative numbers with an exponent:

$(-5)^2 = (-5)(-5) =$ _____     $(-5)^3 = (-5)(-5)(-5) =$ _____     $(-5)^4 =$ _____ $=$ _____

Can you come up with a rule about when you get negative or positive?

Use order of operations to evaluate the following:

1. $-4^2$                     2. $(-4)^2$                     3. $6(7)^2$                     4. $(4 \cdot 8)^2$

Rewrite in exponent form:

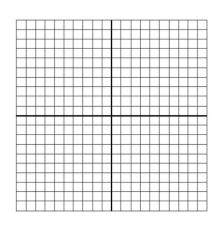5. $wx^3 \cdot w^4x$          6. $(x^3yz^2)^4$          7. $8ab^2(2a^2)^3$          8. $-6x^3y \cdot 8xy^4$

9. $\dfrac{xyz^4}{xy^5z^2}$          10. $\dfrac{7^4}{7^6}$          11. $9^{-2}$          12. $3^{-3} \cdot 3^5$

13. Graph:   $y = -\dfrac{1}{3}x + 4$          $y - x = -4$   (isolate y!)

$m =$ _____          $m =$ _____
$b =$ _____          $b =$ _____

solution _____

14.  Find the rate of change and the equation:

a.

| x | −4 | −1 | 1 | 5 |
|---|----|----|---|---|
| y | −21 | -6 | 4 | 24 |

b.



_____          _____

_____          _____