Created by Mikayla Taylor Warmup 1/ $(200 + 43) - (((56 + 23) \times 2 \div$

- 1. Draw step 5. How many squares would be in this step?
- 2. Calculate the number of squares in step 40.



Simplify: $e^{0}w^{1}u^{-2}h^{3}p^{-5}t^{6}s^{7}$ a^{-4}

Return Midterm Corrections & Extension

- X = incorrect answer
 1/2 = so-so/incomplete answer
- Corrections people: take a couple minutes to look over it
- Extension people: Please read the key. This shows the errors I had in mind when I made the quiz.

Plan:

Rest of this week: Scientific notation Next week: Calculations & Story Problems using Scientific notation

Test at the end of next week

Table of Contents (2nd Semester)

- p. 1 Exponent Basics (1.2)
- p. 2 Multiplying and Dividing Powers (1.3)
- p. 3 Power to a Power (1.4)
- p. 4 Zero & Negative Exponents (1.5)
- p. 5 Scientific Notation (1.6)

Scientific Notation

5

Objectives:

- Review scientific notation
- Understand mathematically WHY scientific notation works the way it does

POP QUIZ (not graded)

- 1. 4 x 10
- 2. 68 x 100
- 3. 3.2 × 10
- **4**. 3.2 x 100
- 5. 9.251 x 10
- **6**. 97 ÷ 10
- 7. 3 ÷ 10

- 8. 0.2 ÷ 10
- **9**. 52.5 ÷ 10
- 10. 7 ÷ 100

Answers

1.	4 x 10	4
2.	68 x 100	ł
3.	3.2 × 10	3
4.	3.2 × 100	3
5.	9.251 x 10	9
6.	97 ÷ 10	9
7.	3 ÷ 10	•
8.	0.2 ÷ 10	•
9.	52.5 ÷ 10	Į
10.	7 ÷ 100	•

40 6800 32 320 92.51 9.7 .3 .02 5.25 .07

What is the weight of the earth?

• Let's google "Weight of the earth"

Some really big numbers...

• We don't want to have to always write these big numbers out.

• Shorter way of writing 2,660,000,000?

Scientific Notation

a x 10^b

"a" <u>MUST</u> be a number between 1 and 10
"b" must be an <u>integer</u> (non-decimal)

Converting from Scientific to Standard Notation <u>Scientific Notation → Standard Notation</u> 1. 9 x 10⁴ 90,000

- 2. **3.45** x 10⁶ **3,450,000**
- 3. **9.1234** x 10² **912.34**
- 4. <u>(leave 2 more blanks for later)</u>

5.

Writing Numbers in Scientific Notation

<u>Standard Notation → Scientific Notation:</u>

- 1.
 8,000,000
 8 x 10⁶

 2.
 75,000
 7.5 x 10⁴

 3.
 14005
 1.4005 x 10⁴
- 4. (leave 2 more blanks for later)

5.

COPY:

WHY SCIENTIFIC NOTATION WORKS

- o 8.2×10^4 means to take 8.2 and multiply it by 10 four times.
- When you multiply anything by ten, you can move the decimal to the right.

ADVICE FOR UNDERSTANDING THIS:

• Scientific notation is ALL about multiplying and dividing by 10. "Moving the decimal" is only a trick

o"1.27 x 10⁶" does not mean to put 6 zeroes.

• How many zeroes will it have?

Which number is bigger... 9 x 10⁵ 900,000

20,000,000

Or

2 x 10⁸?

Which number is bigger... 8.7654321 x 10³ 8,765.4321

1.23456 x 10⁴? 12,345.6

Or



Which number is bigger... 2.4 x 10³ 2400

8 x 10³?

8000)

• The size of big numbers is largely determined by how many digits it has.

- Every time you multiply by 10, you add a digit to a number.
- As long as your "a" number is between 1 and 10, the **exponent** will <u>always</u> tell you which number is bigger!

Which number is bigger?