

Name: _____ Date: _____ Period: _____

Scientific Notation

Scientific notation provides a place to hold the zeroes that come after a whole number or before a fraction. The number 100,000,000 for example, takes up a lot of room and takes time to write out, while 10^8 is much more efficient.

3.45×10^{-2}

Though we think of zero as having no value, zeroes can make a number much bigger or smaller. Think about the difference between 10 dollars and 100 dollars. Even one zero can make a big difference in the value of the number. In the same way, 0.1 (one-tenth) of the US military budget is much more than 0.01 (one-hundredth) of the budget.

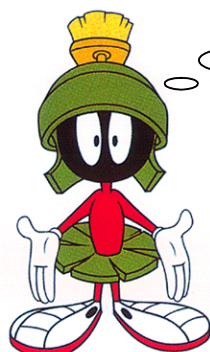


The small number to the right of the 10 in scientific notation is called the exponent. Note that a negative exponent indicates that the number is a fraction (less than one).

The line below shows the equivalent values of decimal notation (the way we write numbers usually, like "1,000 dollars") and scientific notation (10^3 dollars). For numbers smaller than one, the fraction is given as well.

	smaller		bigger			
Fraction	1/100	1/10				
Decimal notation	0.01	0.1	1	10	100	1,000
Scientific notation	10^{-2}	10^{-1}	10^0	10^1	10^2	10^3

Teach me about this...this thing called scientific notation!



Practice with Scientific Notation

Write out the decimal equivalent (regular form) of the following numbers that are in scientific notation.

Section A: Model: $10^1 = 10$

1) $10^2 =$ _____ 4) $10^{-2} =$ _____

2) $10^4 =$ _____ 5) $10^{-5} =$ _____

3) $10^7 =$ _____ 6) $100 =$ _____

Section B: Model: $2 \times 10^2 = 200$

7) $3 \times 10^2 =$ _____ 10) $6 \times 10^{-3} =$ _____

8) $7 \times 10^4 =$ _____ 11) $900 \times 10^{-2} =$ _____

9) $2.4 \times 10^3 =$ _____ 12) $4 \times 10^{-6} =$ _____

Section C: Now convert from decimal form into scientific notation.

Model: $1,000 = 10^3$

13) $10 =$ _____ 16) $0.1 =$ _____

14) $100 =$ _____ 17) $0.0001 =$ _____

15) $100,000,000 =$ _____ 18) $1 =$ _____

Section D: Model: $2,000 = 2 \times 10^3$

19) $400 =$ _____ 22) $0.005 =$ _____

20) $60,000 =$ _____ 23) $0.0034 =$ _____

21) $750,000 =$ _____ 24) $0.06457 =$ _____