

# 8.4 Scientific Notation

<http://www.youtube.com/watch?v=HtXTKrigYqk&feature=related>

## 8.4 Use Scientific Notation

- exponent  
+ exponent

Scientific Notation – used to express large or small numbers in a compact form.

**KEY CONCEPT** For Your Notebook

**Scientific Notation**

A number is written in **scientific notation** when it is of the form  $c \times 10^n$  where  $1 \leq c < 10$  and  $n$  is an integer.

Number	Standard form	Scientific notation
Two million	2,000,000	$2 \times 10^6$
Five thousandths	0.005	$5 \times 10^{-3}$

-10

Express each number in scientific notation:

1.  $875,000 = 8.75 \times 10^5$
2.  $3,022,000,000 = 3.022 \times 10^9$
3.  $0.000672 = 6.72 \times 10^{-4}$
4.  $0.00000125 = 1.25 \times 10^{-6}$

Express each number in standard(decimal) form:

5.  $3.67 \times 10^4$     36700    36,700
6.  $4.103 \times 10^{-5}$     00004103    .00004103
7.  $3.677 \times 10^{11}$     367700000000    367,700,000,000
8.  $4.36 \times 10^{-7}$     .000000436

Compare using  $<$ ,  $>$  or  $=$ .

9.  $2.203 \times 10^{-4}$   $>$   $0.0000203$

0002203  
.0002203

10.  $(4.4 \times 10^3)(1.5 \times 10^{-7})$     11.  $(5.44 \times 10^{-5}) / (6.8 \times 10^{-2})$     12.  $(8 \times 10^2)^4$

$(4.4 \times 1.5) \times (10^3 \times 10^{-7})$      $\frac{5.44}{6.8} \times \frac{10^{-5}}{10^{-2}}$      $(8 \times 10^2)^4$

$6.6 \times 10^{-4} \checkmark$      $.8 \times 10^{-3}$      $8^4 \times 10^8$

↑    ↑    ↑    ↑    ↑

-10    -10    -10    -10    -10

$8 \times 10^{-1} \times 10^{-3}$      $8 \times 10^{-4}$      $4,096 \times 10^8$

$8 \times 10^{-4}$      $4.096 \times 10^3 \times 10^5$      $4.096 \times 10^8$