

Scientific Notation - Lesson 2

Scientific Notation with a Calculator

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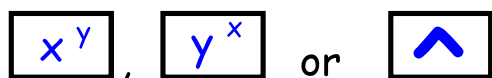
- Perform calculations using scientific notation.

SC

- Use a calculator properly.
- Change between scientific notation and expanded form.

How to type a number in scientific notation into the calculator

Look for the button marked :



may have to
press **shift**
or **2nd F**



one of these buttons



Check : 3 2 = 9 (3² = 9)

Check : 5 3 = 125 (5³ = 125)

Example 1

Calculate $(3.4 \times 10^5) \times (9.7 \times 10^2)$, writing the answer in scientific notation and full decimal form.

Type :

(3 . 4 x 1 0 x^y 5)

x

(9 . 7 x 1 0 x^y 2)

=

329 800 000 and 3.298×10^8

Example 2

Calculate $(6.4 \times 10^8) \div (8 \times 10^{-5})$, writing the answer in scientific notation and full decimal form.

Type :

(6 . 4 x 1 0 x^y 8)

÷

(8 x 1 0 x^y (-) 5)

=

8 000 000 000 000 and 8×10^{12}

Example 3

The power (P) in an electrical circuit is given by,

$$P = \frac{V^2}{R}$$

Calculate the power when $V = 3 \times 10^2$ and $R = 8.7 \times 10^4$, writing the answer in scientific notation and full decimal form, correct to 3 d.p. .

$$P = \frac{V^2}{R}$$

$$P = \frac{(3 \times 10^2)^2}{(8.7 \times 10^4)}$$

Type :

(3 x 1 0 ^{x^y} 2) ^{x^y} 2

÷

(8 . 7 x 1 0 ^{x^y} 4)

=

$$P = 1.0344\dots$$

3 | d.p.
↓

$$P = 1.034 = 1.034 \times 10^0$$

Work these out in **scientific notation** and **full decimal form** :

a $4 \times (5 \times 10^7)$

b $3 \times (4.1 \times 10^6)$

c $3.5 \times (3.82 \times 10^{-3})$

d $(9 \times 10^4) \div 5$

e $(6.4 \times 10^{-3}) \div 8$

f $3.2 \div (4 \times 10^{-4})$

g $(5 \times 10^3) \times (8 \times 10^6)$

h $(3.5 \times 10^5) \times (2.1 \times 10^{-2})$

i $(9.6 \times 10^2) \times (3 \times 10^{-4})$

j $(2.1 \times 10^6) \div (7 \times 10^2)$

k $(2.4 \times 10^0) \div (1 \times 10^{-3})$

l $(8.4 \times 10^3) \div (1.2 \times 10^{-1})$

Answers

a $4 \times (5 \times 10^7)$
 2×10^8 200 000 000

g $(5 \times 10^3) \times (8 \times 10^6)$
 4×10^{10} 40 000 000 000

b $3 \times (4.1 \times 10^6)$
 1.23×10^7 12 300 000

h $(3.5 \times 10^5) \times (2.1 \times 10^{-2})$
 7.35×10^3 7 350

c $3.5 \times (3.82 \times 10^{-3})$
 1.337×10^{-2} 0.013 37

i $(9.6 \times 10^2) \times (3 \times 10^{-4})$
 2.88×10^{-1} 0.288

d $(9 \times 10^4) \div 5$
 1.8×10^4 18 000

j $(2.1 \times 10^6) \div (7 \times 10^2)$
 3×10^3 3 000

e $(6.4 \times 10^{-3}) \div 8$
 8×10^{-4} 0.000 8

k $(2.4 \times 10^0) \div (1 \times 10^{-3})$
 2.4×10^3 2 400

f $3.2 \div (4 \times 10^{-4})$
 8×10^3 8 000

l $(8.4 \times 10^3) \div (1.2 \times 10^{-1})$
 7×10^4 70 000