

Exercise

Write these numbers in scientific notation.

$$240000 = \underline{2.4 \times 10^5} \quad 9808000 = \underline{9.808 \times 10^6}$$
$$5550 = \underline{5.55 \times 10^3} \quad 0.091 = \underline{9.1 \times 10^{-2}}$$

Write these numbers in regular notation.

$$5.5 \times 10^{-7} = \underline{0.00000055} \quad 7.1 \times 10^{10} = \underline{71000000000}$$
$$5.43 \times 10^3 = \underline{5430} \quad 1.0 \times 10^3 = \underline{1000}$$

C. Rules for working with numbers in scientific notation.

Rule 1: When multiplying, the exponents are added (the base must be the same).

example: $10^2 \times 10^5 = 10^7$

Try these:

$$10^3 \times 10^5 = \underline{10^8} \quad 10^{-3} \times 10^{-5} = \underline{10^{-8}}$$
$$10^{-3} \times 10^5 = \underline{10^2} \quad (8.0 \times 10^5)(1.2 \times 10^8) = \underline{9.6 \times 10^{13}}$$

Rule 2: When dividing, exponents are subtracted (the base must be the same).

example: $\frac{10^5}{10^3} = 10^2$

Try these:

$$\frac{10^3}{10^5} = \underline{10^{-2}} \quad \frac{10^{-3}}{10^{-5}} = \underline{10^2}$$
$$\frac{10^{-3}}{10^5} = \underline{10^{-8}} \quad \frac{12 \times 10^8}{6.0 \times 10^5} = \underline{2.0 \times 10^3}$$

Rule 3: Exponents raised to another exponent are multiplied.

$$(10^2)^3 = 10^{2 \times 3} = 10^6$$

examples:

$$(3 \times 10^8)^2 = 3 \times 10^{16}$$