310102b Exponents, SI Units, Prefixes and Scientific Notation

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1. The effective diameter of an electron is 0.000 000 000 000 2 cm. Express this in scientific notation. 2 x 10-13 cm

1. Convert the following quantities to numbers in scientific notation followed by the units.

* 1. 40 megavolts = 4 x 102 MV
  2. 1.0 microvolts = 0.1 x 101 μV
  3. 30 kilowatts = 3 x 101 kW
  4. 3.7 milliohms = 0.37 x 101 mΩ
  5. 560 nanoseconds = 5.6 x 102 ns

1. Convert the following quantities to numbers in scientific notation followed by the units.

* 1. 680 nanofarads = 0.68 x 103 nF

(b) 15.7 picojoules = 0.157 x 102 pJ

* 1. 0.027 microamperes = 2.7 x 10-2 μA
  2. 1470 milliseconds = 1.47 x 103 ms
  3. 0.039 megavolts = 3.9 x 10-2 MV

1. Perform the following mathematical operations. Express your answers in scientific notation.

* 1. (2 x 10^4) x (3 x 10^2) = 6 x 106
  2. (6 x 10^6) / (3 x 10^3) = 2 x 103

(c) (8 x 10^5) + (4 x 10^4) = 8.4 x 105 = 8 x 105

* 1. (7 x 10^3) - (5 x 10^4) = -4.3 x 104 = -4 x 104
  2. (1.9 x 10^-4)^3 = 6.859 x 10-12 = 6.9 x 10-12

1. Perform the following mathematical operations. Express your answers in scientific notation.

* 1. (42 x 10^-4) x (1.8 x 10^2) = 7.56 x 10-1 = 8 x 10-1
  2. (0.6 x 10^6) / (1.8 x 10^-3) = 3 x 108
  3. (74 x 10-5) + (19 x 10^-4) = 3 x 10-3
  4. (-5.2 x 10^3) - (-4.8 x 10^4) = 4.3 x 103
  5. (-7.3 x 10^3)^3 = -3.9 x 1011

1. Convert the following quantities to quantities with prefixes, and in engineering notation.

* 1. 50 x 10^4 Ω = 500 x 106 mΩ
  2. 3000 x 10^-6 A = 3 x 10-6 kA
  3. 0.000257 C = 257 x 10-3 mC

(d) 1 120 000 J = 1.12 x 103 kJ

(e) 470 x 10^-13 F = 47 x 10-3 nF

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1. Convert the following quantities to quantities with prefixes, and in engineering notation.

* 1. 180 x 10^5 Ω = 18 x 103 kΩ
  2. 142 x 10^-5 A = 14.2 x 10-3 kA
  3. 0.00185 W = 1.85 x 10-6 kW
  4. 45600 x 10^0 J = 45.6 x 106 mJ
  5. 38.2 x 10^-11 F = 382 x 10-9 mF

1. Complete the missing items in the following table.

* 1. 1 x 10^3 \_\_kilo\_\_\_\_\_ \_k\_\_\_\_\_\_\_
  2. 1 x 10-12 pico \_\_p\_\_\_\_\_\_\_
  3. 1x10-6\_\_\_\_ \_micro\_\_\_\_\_ µ
  4. 1 x 10^9 \_\_giga\_\_\_\_ \_\_G\_\_\_\_\_\_\_
  5. 1 x 10-3\_ \_\_milli\_\_\_\_ m
  6. 1 x 10-9\_\_\_ nano \_\_\_\_\_\_\_n\_\_\_
  7. 1x 106\_\_\_\_ \_mega\_\_\_\_\_ M

1. Express the following quantities in engineering notation using correct prefixes and symbols.

* 1. 4 720 kilohertz = 4.72 x 103 kHz
  2. 0.00137 amperes = 1.37 x 10-3 A
  3. 185 000 watts = 185.0 x 103 W
  4. 0.000 000 0953 seconds = 95.3 x 10-9 s
  5. 0.276 microjoules = 276 x 10-3 μJ

1. Express the following quantities in engineering notation using correct prefixes and symbols.

* 1. 247 kilowatts = 0.247 x 103 kW
  2. 1180 microamperes = 1.18 x 103 μA
  3. 1.76 coulombs = 0.00176 x 103 C
  4. 0.000 000 824 farads = 824 x 10-9 F
  5. 8 025 nanosiemens = 8.025 x 103 nS

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