**Scientific Notation Worksheet**

When numbers written in such notation are multiplied, the first factors are multiplied, and the exponents are added.

For example (2 x 104) (3 x 105) = 6 x 109

When such numbers are divided, the first factors are divided and the exponents of the 10 in the denominator is subtracted from the exponent of the 10 in the numerator.

For example 8 x 107 = 4 x 104

2 x 103

1. **Convert** the following measured quantities from ordinary notation to scientific notation

|  |  |  |
| --- | --- | --- |
|  | Ordinary notation | Scientific Notation |
| Mean wavelength of sodium light | 0.000 000 5893 meters |  |
| Speed of light in a vacuum | 299 793 000 m/s |  |
| Half-life of Uranium-235 | 710 000 000 years |  |
| Atomic mass unit | 0.000 000 000 000 000 000 000 001 660 531 g |  |
| Avogadro’s number | 602 300 000 000 000 000 000 000 |  |
| Melting point of Tungsten | 3410oC |  |

2. **Convert** each of the following measured quantities form scientific notation to ordinary notation.

|  |  |  |
| --- | --- | --- |
|  | Scientific Notation | Ordinary notation (expand) |
| Mass of an election | 9.109 x 10-31 kg |  |
| Temperature at which atomic fusion occurs | 1.5 x 107 oC |  |
| Lowest possible temperature | -2.73 x 102 oC |  |
| Diameter of the Andromeda Galaxy | 1.9 x 1015 km |  |
| Radius of a hydrogen energy level | 5.3 x 10-11 m |  |
| Charge of a proton | 1.6 x 10-19 coulomb |  |

1. Express each of the following numbers in scientific notation
   1. 2370
   2. 0.03
   3. 0.000 000 000 000 274
   4. 985 000 000 000 000 000 000
   5. 15.045
   6. 6003
   7. 0.000 045
   8. 0.000 000 007 07
2. Express each of the following in ordinary notation
   1. 5.63 x 10-3
   2. 6.7 x 105
   3. 1.01 x 103
   4. 9.899 x 10-8
   5. 2 x 106
   6. 7.85 x 10-2
   7. 3.444 x 1010
   8. 2.0002 x 10-4
3. Perform the indicated operations
   1. 103 x 106 =
   2. 10-2 x 105 =
   3. 107 =

103

* 1. 102 =

108

* 1. 102 =

10-5

* 1. 10-1 x 1010 =

1. Perform the indicated operations. Convert all the answers to scientific notation, *showing the correct number of significant digits*
   1. (5.4 x 102 ) (2.5 x 109) =
   2. (1.2 x 10-5) (5.4 x 106) =
   3. (3.3 x 10-7) (6.6 x 10-7) =
   4. (2.56 x 103) (1.00 x 10-1) =
   5. 7.25 (5.5 x 1012) =
   6. (1.5 x 107) =

(4.5 x 105)

* 1. (9.6 x 102) =

(3.2 x 108)

* 1. (8.05 x 10-9) =

(5 x 10-4)

* 1. 4.5 =

(1.38 x 10-3)

* 1. (2.75 x 106) =

2.5

* 1. (3.2 x 105) + (4.5 x 105) =
  2. (9.2 x 10-3) – (5.6 x 10-3) =
  3. (4.33 x 102) + (8.3 x 10-5) =
  4. (6.81 x 10-6) – (8.3 x 10-5) =
  5. (5.8 x 104) – (6.42 x 104) =
  6. (2.75 x 107) + (5.5 x 108) = 57.75 x 107 =
  7. (1.9 x 10-3) – (1.5 x 10-4) = 17.4 x 10-4 =
  8. (4.3 x 104) – (8.5 x 103) = =
  9. (8.7 x 103) + (7.9 x 102) = =
  10. (6.25 x 104) – (3.5 x 103) = =