**Lesson 1: Physical Quantities and Units**

**Basic SI units: These are the only 7 Basic Units. We don’t use Candela in this course, but I have left it in the notes to make them complete.**

|  |  |  |
| --- | --- | --- |
| Quantity | Unit | |
| Name | Symbol |
| Mass | kilogram | kg |
| Length | metre | m |
| Time | second | s |
| Electric Current | Amp | A |
| Temperature | Kelvin | K |
| Amount of substance | Mole | mol |
| Luminous intensity | Candela | cd |

**Derived SI units:**

Derived units are obtained from the basic units by multiplication or division.

|  |  |  |
| --- | --- | --- |
| Quantity | Unit | |
| Name | Symbol |
| volume | cubic metre | m3 |
| density | kilogram per unit metre | kgm-3 |
| velocity | metres per second | ms-1 |
| acceleration | metres per second squared | ms-2 |
| momentum | kilogram metres per second | kg ms-1 |

Some derived units are given special names

|  |  |  |  |
| --- | --- | --- | --- |
| Quantity | Unit | | |
| Name | Symbol | Expressed as basic |
| Force | Newton | N | kgms-2 |
| Energy | Joule | J | kgm2s-2 |
| Electrical Resistance | Ohm | Ω |  |

See <http://www.simetric.co.uk/siderived.htm> for more examples of derived units

Numerical Prefixes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| When using Big Numbers | | |  | When using Small Numbers | | |
| Multiple | Prefix | Symbol | Multiple | Prefix | Symbol |
| 103 | kilo | k | 10-3 | milli | m |
| 106 | mega | M | 10-6 | micro | µ |
| 109 | giga | G | 10-9 | nano | n |
| 1012 | tera | T | 10-12 | pico | p |