

Standard form

We tend to write very large or very small numbers with a "powers of ten" multiplier instead of umpteen zeros.

So $1250 = 1.25 \times 10^3$ (where $10^3 = 10 \times 10 \times 10 = 1000$). The "3" means "move the decimal point 3 places to the right, so 1.25 become 1250, then lose the 10^3 multiplier".

Similarly 0.019 becomes 1.9×10^{-2} (where $10^{-2} = 0.01$), the -2 moves the decimal point 2 places to the left.

The rule is that the first number ends up being **between 1 and 10**.

Remember your powers of 10:

10^3	10^2	10^1	10^0	10^{-1}	10^{-2}	10^{-3}
1000	100	10	1	0.1	0.01	0.001

e.g. for 1.9×10^{-2} we think $1.9 \times 0.01 = 0.019$

e.g. for 2.07×10^3 we think $2.07 \times 1000 = 2070$

Measurements with metric units are very easy to change into standard form e.g.

$$5 \text{ kg} = 5 \times 10^3 \text{ g}$$

$$7 \text{ cm} = 7 \times 10^{-2} \text{ m}$$

Note:

A number in standard form should be written with the number part ≥ 1 **but** < 10 .

For instance,

1.25×10^3 , 12.5×10^2 and 125×10^1 are all = 1250 but only the first gets you the marks for a "standard form" answer.