Indices

Standard form

$x \times 10^n$ where $1 \le x \le 10$

$x \times 10^n$

If n is positive then the number is big, and if n is negative the number is small

Indices rules

1. $x \times 10^n \times y \times 10^m = xy \times 10^{(n+m)}$

2. $\dfrac{x \times 10^n}{y \times 10^m} = \dfrac{x}{y} \times 10^{(n-m)}$

3. $\left(x \times 10^n\right)^m = x^m \times 10^{nm}$

4. $x^1 = x$

5. $x^0 = 1$

6. $10^n = 1 \times 10^n$

7. $1^n = 1$

8. $x^{\frac{n}{m}} = \left(x^{\frac{1}{m}}\right)^n = \left(\sqrt[m]{x}\right)^n$

9. $x^{\frac{1}{2}} = \sqrt[2]{x} = \sqrt{x}$

10. $x^{\frac{1}{n}} = \sqrt[n]{x}$

Simplifying

$3x^3 + 2x^2$ cannot be simplified because the powers of x are different.

$3x^3 + 2x^3 = 5x^3$ is correct because the powers are the same