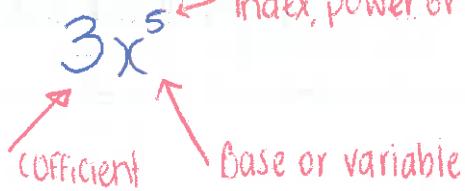


Index rules

Remember an index is also called a power or exponent



1. Multiplication rule.

$$\text{eg 1. } x^4 \times x^6 = x \cdot x \cdot x \cdot x \times (x \cdot x \cdot x \cdot x) \cdot x$$

$$= x^{10}$$

$$\text{eg 2. } -3x^5y^7x^7y^3 = -3x^7x^5x^7yy^3$$

$$= -21x^{5+7+7}y^{1+3}$$

$$= -21x^{19}y^4$$

In algebra this means times

If there is no power written, it is the same as the power of one.

Rule is...

If the bases are the same,
we can add the powers.

$$\text{Ex: } x^a \cdot x^b = x^{a+b}$$

2. Division rule.

$$\text{eg 1: } \frac{p^5}{p^2} = \frac{p \cdot p \cdot p \cdot p \cdot p}{p \cdot p}$$

anything
its self = 1

$$\frac{p^5}{p^2} = p^{5-2}$$

$$= p^3$$

$$\text{eg 2: } 12x^{15} \div 6x^7$$

Fraction line means divided.

$$= \frac{12}{6} \frac{x^{15}}{x^7}$$

or

$$12 \div 6 x^{15} \div x^7$$

$$= 2x^{15-7}$$

$$= 2x^8$$

Rule is

$$x^a \div x^b = x^{a-b}$$

Key idea of
introduction terms,
notation from the
very beginning

4/ 9 student's notes.