8.2.1
①

Gr 8 Wiskunde / Mathematics

Eksponente / Exponents (1)

A) Eksponentwette / Laws of Exponents

1. $a^m \times a^n = a^{m+n}$
2. $a^m \div a^n = a^{m-n}$ / $\frac{a^m}{a^n} = a^{m-n}$
3. $(a^m)^n = a^{m \times n}$
4. $a^0 = 1$
5. $a^{-1} = \frac{1}{a}$
6. $\sqrt[n]{a^m} = a^{\frac{m}{n}}$

1. $a^m \times a^n = a^{m+n}$

- Grondtalle dieselfde! / Bases equal!

- "Die X draai as jy hom in die lug gooi en word 'n +"
- "The X turns and becomes a + when tossed in the air"

a) $2^2 \times 2^3$

$= 2^{2+3}$

$= 2^5$

1. Hou een grondtal (van elk) / Keep one base (of each)
2. Groepeer eksponente by een grondtal / Group all exponents at one base

Lang metode / Long method

$2^2 \times 2^3$

$= 2 \times 2 \times 2 \times 2 \times 2$

$= 2^5$

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(2)

b) $3^5 \times 2^3 \times 3^8 \times 2^4$
$= 3^{5+8} \times 2^{3+4}$
$= 3^{13} \times 2^7$

1. Hou een van elke grondtal
Keep one of each base
2. Groepeer eksp
Group exp.
3. Los in eksp vorm
Leave in exp form.

c) $2^4 \times 3^5 \times 5^2 \times 3^2 \times 2^5$
$= 2^{4+5} \times 3^{5+2} \times 5^2$
$= 2^9 \times 3^7 \times 5^2$

NB $2 = 2^1$
invisible 1

Oef / Ex 1

1) $3^2 \times 3^4$
2) $2^2 \times 2 \times 2^4$
3) $5^2 \times 3^4 \times 5^6$
4) $7 \times 7 \times 7 \times 7$
5) $3^{100} \times 2^{10} \times 3^2 \times 1$
6) $2^2 \times 3^4 \times 3^6 \times 2^{10} \times 3$
*7) $2^4 \times 3^4 \times 5^4$
8) $2 \times 2^2 \times 2^3 \times 3^2 \times 3 \times 7^4$

Memo: 1) 3^6 2) 2^7 3) $3^4 \times 5^8$ 4) 7^4 5) $2^{10} \times 3^{102}$
6) $2^{12} \times 3^{11}$ 7) $2^4 \times 3^4 \times 5^4$ 8) $2^6 \times 3^3 \times 7^4$

d) $x^4 \times y^2 \times x^2 \times y^3$
$= x^{4+2} \times y^{2+3}$
$= x^6 \times y^5$
of $x^6 y^5$

Alfabetletters = langs mekaar
Alphabet letters = next to each other

Wat van negatiewe eksponente?
What about negative exponents?

e) $3^4 \times a^2 \times 3^{-1} \times a^4 \times 3^2 \times a^{-3}$
$= 3^{4-1+2} \times a^{2+4-3}$
$= 3^5 \times a^3$
$= 3^5 a^3$