

Order of Binary Operations (BEDMAS)

AS

+ -

$$2+2+2+2+(-2) = 2+2+2+2-2 = 2+2+2 = 6$$

DM

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$$2+2+2 = 2 + \text{"3 times"} = 2 \times 3 = 2 \cdot 3 = (2)(3) \neq 23$$

E

^

$$(2)(2)(2)(2) = (2 \times) \text{"4 times"} = 2^4 = 2^4 = 16$$

$$\underbrace{(2)(2)(2)}_{2 \text{ times}} \underbrace{(2)(2)}_{3 \text{ times}} = 2^2 \cdot 2^3 = 2^{2+3} = 2^5$$

$$\text{rule } a^n a^m = a^{n+m}$$

$$\underbrace{[(2)(2)(2)]}_{3 \text{ times}} \underbrace{[(2)(2)(2)]}_{3 \text{ times}} = (2^3)^2 = 2^{3 \times 2} = 2^6$$

$$\text{rule } (a^n)^m = a^{nm}$$

B

()

$$(2+1)(6+7) = (3)(13) = 39$$

$$= 2(6+7) + 1(6+7) = 2 \cdot 6 + 2 \cdot 7 + 1 \cdot 6 + 1 \cdot 7 = 39.$$

F O I L

$$(2+1)(6+7+1) = (3)(14) = 42$$

$$= 2(6+7+1) + 1(6+7+1) = 2 \cdot 6 + 2 \cdot 7 + 2 \cdot 1 + 1 \cdot 6 + 1 \cdot 7 + 1 \cdot 1 = 42$$

Order of operations

Order of Operations version 2, BEDMAS

order of
complexity

order of
operations

acronym
BEDMAS

proof using letters
example with numbers

resulting rule



AS

add /
subtract

$$a+a+a+a = a+a+a+a$$

$$4+4+4+4 = 16$$

DM

divide /
multiply

$$a+a+a+a = 4a = (4)(a)$$

$$4+4+4+4 = (4)(4) = 16$$

$$a+b+a+b+a+b = (a+b) + (a+b) + (a+b) = 3(a+b)$$

$$4+7+4+7+4+7 = (4+7)+(4+7)+(4+7) = (3)(4+7) = 33$$

$$a+b+a+b+a+b = (a+a+a) + (b+b+b) = 3a + 3b$$

$$4+7+4+7+4+7 = (4+4+4)+(7+7+7) = (3)(4) + (3)(7) = 33$$

$$ca + cb = c(a+b)$$

E

exponents

$$aaaaaa = (a)(a)(a)(a)(a)(a) = a^6 = a^6$$

$$(2)(2)(2)(2)(2)(2) = 2^6 = 64$$

$$aaaaaa = (aa)(aaaa) = a^2a^4 = a^6$$

$$(2)(2)(2)(2)(2)(2) = (2^2)(2^4) = (4)(16) = 64$$

$$aaaaaa = (aa)(aa)(aa) = (aa)^3 = (a^2)^3 = a^6$$

$$(2)(2)(2)(2)(2)(2) = ((2)(2))^3 = (2^2)^3 = 4^3 = 64$$

$$ababab = (ab)(ab)(ab) = (ab)^3$$

$$(2)(5)(2)(5)(2)(5) = ((2)(5))^3 = (10)^3 = 1000$$

$$ababab = (aaa)(bbb) = a^3b^3$$

$$(2)(5)(2)(5)(2)(5) = (2^3)(5^3) = (8)(125) = 1000$$

$$a^na^m = a^{n+m}$$

$$(a^n)^m = a^{nm}$$

$$(ab)^n = a^nb^n$$

B

brackets

() containers (or cages) that hold stuff

$$a + (\text{stuff}) = a + \text{stuff}$$

$$a - (\text{stuff}) = a + (-1)(\text{stuff})$$

$$a(\text{stuff}) = (a)(\text{stuff})$$

$$(\text{stuff})^a = (\text{stuff})^a$$

Brackets can be removed

Brackets can not be removed