BEDMAS

Stephen Styles

September 21, 2020

BEDMAS is an acronym that reminds us of the correct order of operations:

Brackets	First Priority
Exponents	Second Priority
Division	Third Priority
Multiplication	Third Priority
Addition	Fourth Priority
Subtraction	Fourth Priority

This acronym tells us which order to evaluate our expressions. When an expression has multiple operations that are of the same priority, we solve them from left to right.

Examples:

1. Simplify $(5 \times 6) \times 1^2 \div 3 - 8 + 4$

Solution:

$(5 \times 6) \times 1^2 \div 3 - 8 + 4$	Simplify the bracket
$= 30 \times 1^2 \div 3 - 8 + 4$	Solve the exponent
$= 30 \times 1 \div 3 - 8 + 4$	Multiply first two terms since they're on the left
$= 30 \div 3 - 8 + 4$	Dividing because its the highest priority
$= 10 - 8 + 4$	Subtracting since it comes first from the left
$= 2 + 4$	
$= 6$	

2. Simplify $(6 \times 2 - 5) \times \big((3 + 9) \times 4 \div 8\big) \div 1^2 - 7^2$

Solution:

$(6 \times 2 - 5) \times \big((3 + 9) \times 4 \div 8\big) \div 1^2 - 7^2$	Simplify the bracket within the bracket
$= (6 \times 2 - 5) \times \big(12 \times 4 \div 8\big) \div 1^2 - 7^2$	Multiply the first terms in the first bracket
$= (12 - 5) \times \big(12 \times 4 \div 8\big) \div 1^2 - 7^2$	Finish simplifying the first bracket
$= 7 \times \big(12 \times 4 \div 8\big) \div 1^2 - 7^2$	Multiply the first two terms in the bracket
$= 7 \times \big(48 \div 8\big) \div 1^2 - 7^2$	Finish the bracket
$= 7 \times 6 \div 1^2 - 7^2$	Simplify both exponents
$= 7 \times 6 \div 1 - 49$	Multiply first since it appears on the left
$= 42 \div 1 - 49$	Divide since it has higher priority
$= 42 - 49$	
$= -7$	

3. Simplify $7^3 + 3 \times (4 \times 5 - 2^2 - 28 \div 7 + 3) + 9 + \dfrac{3+5}{3-1}$

Solution:

$7^3 + 3 \times (4 \times 5 - 2^2 - 28 \div 7 + 3) + 9 + \dfrac{3+5}{3-1}$	Rearrange the fraction
$= 7^3 + 3 \times (4 \times 5 - 2^2 - 28 \div 7 + 3) + 9 + (5+3) \div (3-1)$	Simplify the first bracket
$= 7^3 + 3 \times (4 \times 5 - 4 - 28 \div 7 + 3) + 9 + (5+3) \div (3-1)$	
$= 7^3 + 3 \times (20 - 4 - 28 \div 7 + 3) + 9 + (5+3) \div (3-1)$	
$= 7^3 + 3 \times (20 - 4 - 4 + 3) + 9 + (5+3) \div (3-1)$	
$= 7^3 + 3 \times (16 - 4 + 3) + 9 + (5+3) \div (3-1)$	
$= 7^3 + 3 \times (12 + 3) + 9 + (5+3) \div (3-1)$	
$= 7^3 + 3 \times 15 + 9 + (5+3) \div (3-1)$	Final two brackets
$= 7^3 + 3 \times 15 + 9 + 8 \div (3-1)$	
$= 7^3 + 3 \times 15 + 9 + 8 \div 2$	Simplify exponent
$= 343 + 3 \times 15 + 9 + 8 \div 2$	Multiplication
$= 343 + 45 + 9 + 8 \div 2$	Division
$= 343 + 45 + 9 + 4$	
$= 388 + 9 + 4$	
$= 397 + 4$	
$= 401$	

4. Simplify $(6 \div (2+4)^{(2^2-4)})^2 + \big(6 \times (2+1-2)\big)^2 \div 3$

Solution:

$(6 \div (2+4)^{(2^2-4)})^2 + \big(6 \times (2+1-2)\big)^2 \div 3$	Simplify the bracket in the exponent
$(6 \div (2+4)^{(4-4)})^2 + \big(6 \times (2+1-2)\big)^2 \div 3$	Finish the subtraction in the exponent
$(6 \div (2+4)^0)^2 + \big(6 \times (2+1-2)\big)^2 \div 3$	Simplify bracket within first term
$(6 \div 6^0)^2 + \big(6 \times (2+1-2)\big)^2 \div 3$	Exponent within first bracket
$(6 \div 1)^2 + \big(6 \times (2+1-2)\big)^2 \div 3$	Finish the first bracket
$6^2 + \big(6 \times (2+1-2)\big)^2 \div 3$	Simplify bracket within second term
$6^2 + \big(6 \times 1\big)^2 \div 3$	Multiply terms within bracket
$6^2 + 6^2 \div 3$	Calculate the exponents
$36 + 36 \div 3$	Division has higher priority
$36 + 12$	Finally add the remaining terms
48	

Questions:

1. Simplify $2 \times (21 + 29) - 3^2 \times 7$

2. Simplify $7^2 - \big((3 \times 6 + 3) \div 7\big)^3$

3. Simplify $6^{(3-2)} \times \big(3 + 25 \div (1 + 4)\big)$