

What are BODMAS, BIDMAS and PEMDAS?

[BODMAS, BIDMAS and PEMDAS](#) are acronyms for remembering the order of operations in mathematics. BODMAS stands for Brackets, Orders, Division, Multiplication, Addition and Subtraction. BIDMAS and PEMDAS do exactly the same thing but using different words.

BODMAS explains the "Order of Operations" in maths and BIDMAS AND PEMDAS do exactly the same thing but using slightly different words.

What is an Acronym?

An acronym is a word made up of the initial letters of words in a phrase. Acronyms can be pronounced as separate words.

Think of NASA and FAQ. They both are pronounced as if they were a word in their own right. However, NASA stands for **N**ational **A**eronautics and **S**pace **A**dministration and FAQ stands for **F**requently **A**sksed **Q**uestions.

In a similar way, the letters in BODMAS, BIDMAS and PEMDAS all stand for words.

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What do the letters in BODMAS, BIDMAS and, PEMDAS stand for?

In the case of the mathematical acronyms BODMAS, BIDMAS and PEMDAS, they all mean exactly the same thing, and they all serve exactly the same purpose. Here's what the letters stand for:

- Brackets
 - Orders
 - Division
 - Multiplication
 - Addition
 - Subtraction
-
- Brackets
 - Indices
 - Division
 - Multiplication
 - Addition
 - Subtraction
-
- Parenthesis
 - Exponents
 - Multiplication
 - Division
 - Addition
 - Subtraction

The third series above is the one most often used in the USA whilst UK schools almost always adopt series 1 or series 2 above. When your child first confronts you with one of these, you will do

well to remember which one it is because different schools use different ones. By sticking to the same one that your school uses you will at least avoid one level of complication.

What are Orders, Indices and Exponents?

Orders, Indices and Exponents are the little superscript numbers that represent powers in maths.

Brackets, Division, Multiplication, Addition and Subtraction are all words with which we are familiar but what of the second element of the acronyms – Orders, Indices or Exponents? These are the “half size numbers” that often occur in mathematical expressions. In the following example the 2 is an index (singular of the plural *indices*):

$$3^2 = 3 \times 3$$

What are Mathematical Operations?

A mathematical *operation* can be thought of as one of the symbols that *make something happen* in maths. A multiplication sign (x) means that two numbers need multiplying together whilst an addition sign (+) means that two numbers need adding together. These are *operations*.

What is the Correct Order of Operations in Maths?

The correct order of operations in maths is **Brackets, Orders, Division, Multiplication, Addition and Subtraction**.

If you are using BIDMAS then replace **Orders** with **Indices**.

The whole point of BIDMAS and BODMAS is to help you remember which operations to do in which order. Unfortunately, mathematics dictate that this is not the order from left to right as you might expect: Let's look at a typical example and see if you get the correct answer:

$$2 + 3 \times 4$$

Did you conclude that the answer is 20? If so, then you did the calculation from left to right and said that *2 plus 3 equals 5* and that is then *multiplied by 4 to give 20*. Unfortunately, in mathematical terms it is wrong!

If you look at the rules of BIDMAS/BODMAS you will see that multiplication comes before addition (the two operations we are dealing with) and therefore you should have dealt with the **Multiplication BEFORE** you dealt with the **Addition**. Therefore, the correct logic is *3 multiplied by 4 equals 12* and that is then *added to the 2 to give 14*. 14 is the correct answer.

I have lost count of the number of times that I have had a parent on the phone who has said, “You have just got to be wrong. Look, I have done it on my calculator and tapped in $2 + 3 \times 4$ and it always, but always, gives me the answer of 20”.

Throughout the many thousands of questions on the Education Quizzes site, this issue of the Order of Operations is the one that most often generates a query to our teachers - and when parents seem to have calculators on their side there is little wonder why!

Orders, Indices and Exponents are the little superscript numbers that represent powers in maths.

Does the 11-Plus Exam use BODMAS or BIDMAS?

Generally speaking, no. Now, this might take some believing but in an 11-Plus exam the wrong answer is often marked as correct whilst the correct answer is marked down! This is because some authorities believe that children up to the age of 11 should have no knowledge of the Order of Operations as defined by BIDMAS/BODMAS and therefore they expect the students to erroneously do the calculation from left to right.

To avoid the possibility of an 11-Plus candidate being marked down for getting the right answer (!) it is imperative that you check with your school whether or not the rules of Order of Operations should be applied in mathematical questions.

What are the rules of BODMAS or BIDMAS?

To see how BIDMAS (or BODMAS) rules are applied in more complex scenarios we need to analyse a mathematical expression that contains all the various elements. If you are ready, then let us begin!

$$2 \times 20 \div 2 + (3+4) \times 3^2 - 6 + 15$$

Step 1

Deal with the Brackets to get:

$$2 \times 20 \div 2 + 7 \times 3^2 - 6 + 15$$

Step 2

Deal with the Indices (if you are thinking BIDMAS) or the Orders (if you are thinking BODMAS) to get:

$$2 \times 20 \div 2 + 7 \times 9 - 6 + 15$$

Step 3

Division and Multiplication rank equally so deal with these together from left to right to get:

$$20 + 63 - 6 + 15$$

Step 4

Addition and Subtraction rank equally so deal with these together from left to right to get:

$$92$$

TIP: Work it out step-by-step and don't try to take shortcuts.