



# EXCEL - BODMAS BIDMAS



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## WHAT IS BODMAS & BIDMAS?

Simply put, it's the order of Maths.

BODMAS & BIDMAS help you to remember the order that you need to do your mathematical calculations.

**BRACKETS**  
**ORDER (OVER)**  
**DIVISION**  
**MULTIPLE**  
**ADDITION**  
**SUBTRACTION**

**BRACKETS**  
**INDICES**  
**DIVISION**  
**MULTIPLE**  
**ADDITION**  
**SUBTRACTION**

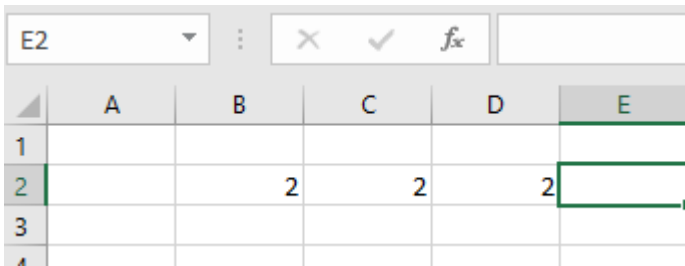


## EXERCISE WALKTHROUGH

### Learning how to use BODMAS

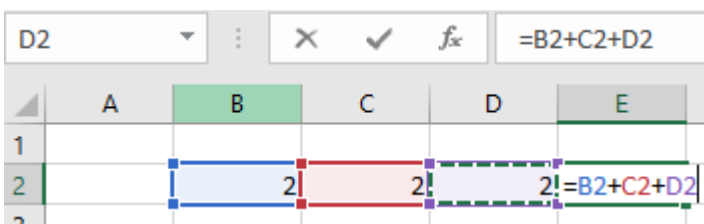
#### BODMAS

Open up a blank Excel spreadsheet, and click into B2, then type the following.



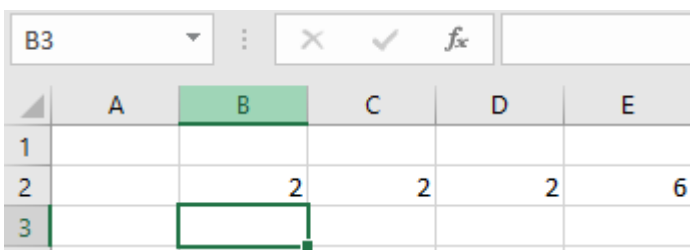
	A	B	C	D	E
1					
2		2	2	2	
3					
4					

Now we will write our Formula. Every Formula starts with an "=", Click on "B2", then a "+", then click on "C2", then a "+" and finally click on "D2".



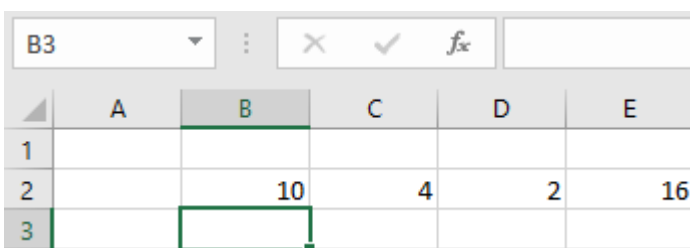
	A	B	C	D	E
1					
2		2	2	2	=B2+C2+D2
3					
4					

Now press enter, and you should have "6" displayed in E2



	A	B	C	D	E
1					
2		2	2	2	6
3					
4					

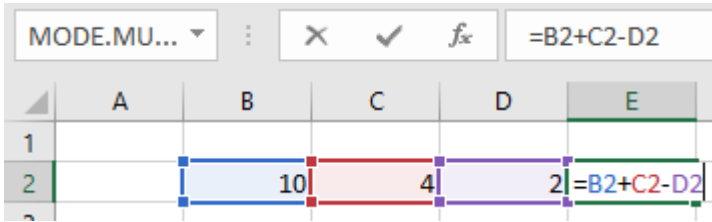
Excel works as a calculator, and if one of our values is changed, the value in E2 should change too. To try this out, change your values like this.



	A	B	C	D	E
1					
2		10	4	2	16
3					
4					

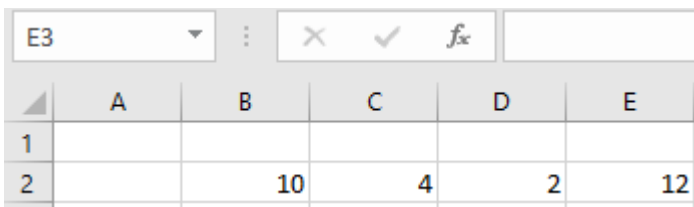
### Subtraction

Now let's practice with subtracting. Double click (or press "F2") to enter cell E2, change the last "+" to a "-".



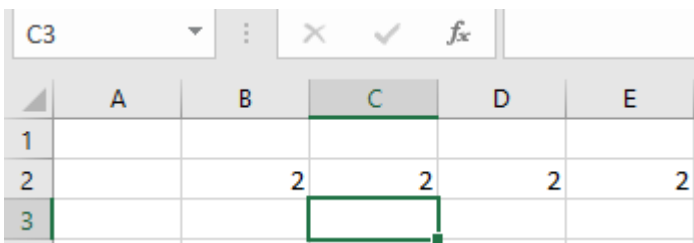
	A	B	C	D	E
1					
2		10	4	2	=B2+C2-D2

When we press enter, this should now result in 12 being the value in E2.

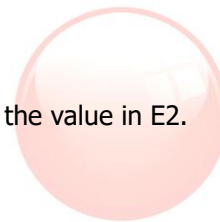


	A	B	C	D	E
1					
2		10	4	2	12

Once again, if we change cells B2 and C2 to 2, our Formula will recalculate the value in E2.



	A	B	C	D	E
1					
2		2	2	2	2
3					



## Multiplication

Now let's go back into cell E2, and change the "-" to "\*" which is multiply.

	A	B	C	D	E
1					
2		2	2	2	=B2+C2*D2

Now we would think that  $2+2=4$

$4*2=8$ . However, this is not the value we get when we press enter.

	A	B	C	D	E
1					
2		2	2	2	6

It is 6 because of the order of BODMAS, if we look Addition comes after Multiple, so Excel works out the \* before the +.

If we wanted 8 to be the value displayed, we need to put the formula in the correct order according to BODMAS.

To do this we need to put brackets in the correct places, to tell Excel the order of the formula

	A	B	C	D	E
1					
2		2	2	2	=(B2+C2)*D2

Now it will display the desired value.

	A	B	C	D	E
1					
2		2	2	2	8

## Summary of BODMAS

$$= 2 + 2 * 2$$

How to read maths using BODMAS

= Start of the formula

**B** = Brackets - Means you do this part first.

**O** = Order - Brackets determine the order of which part you do first, as there are no Brackets, it looks to the next step, Division.

**D** = Division - As there no Division it goes the next step multiple.

**M** = Multiplication - It uses the multiplication before the Addition  $2 * 2 = 4$ .

**A** = Addition - After Multiplication, the next step is Addition - (It's still working from left to right even though it's the same answer  $2 + 4 = 6$ ).

**S** = Subtraction – It looks for subtraction – as there is no Subtraction in the Formula, we have reached the end of BODMAS.

$$2 + 2 * 2 = 6$$

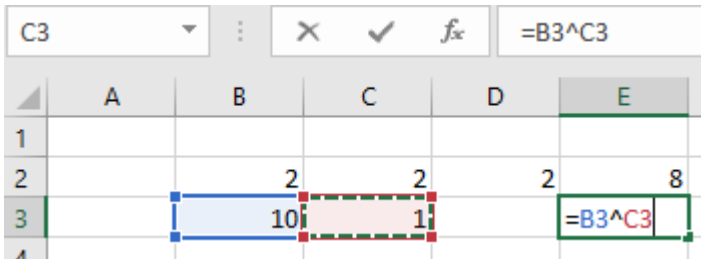
If we want the answer to be 8 without changing the values then the Bracket would need to be placed around  $(2 + 2)$

$$= (2 + 2) * 2 = 8$$

## BIDMAS

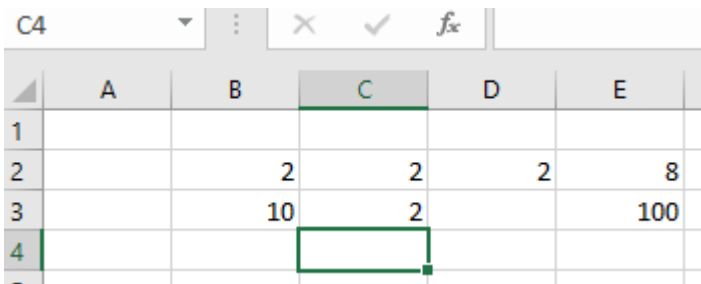
### Indices

Indices means the power of a number, for example  $2^2$  &  $3^3$ . Input the following.



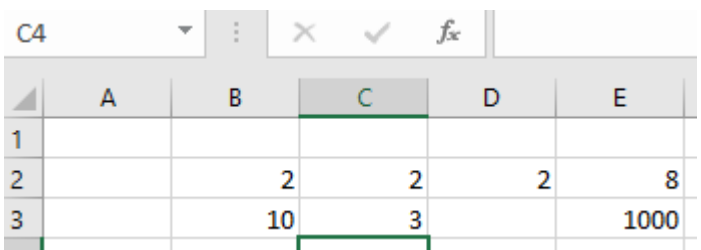
	A	B	C	D	E
1					
2		2	2	2	8
3		10	1		=B3^C3
4					

This formula means  $10^2$ , which is 100.



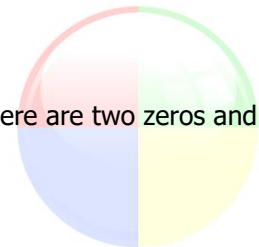
	A	B	C	D	E
1					
2		2	2	2	8
3		10	2		100
4					

Now let's change C2 to 3, this shows  $10^3$



	A	B	C	D	E
1					
2		2	3	2	8
3		10	3		1000
4					

As we can see, when the power is one, there is one zero, when the power is two, there are two zeros and when the power is three there are three zeros. This is a little trick to help





## Summary of BIDMAS

$$10^2 = 100$$

How to read maths using BIDMAS

= Start of the formula

**B** = Brackets - Means you do this part first.

**I** = Indices - Means the power of a number, for example  $2^2$  &  $3^3$ .

**D** = Division - As there no Division it goes the next step multiple.

**M** = Multiplication - It uses the multiplication before the Addition  $2 * 2 = 4$ .

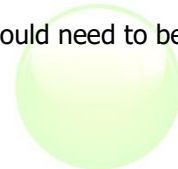
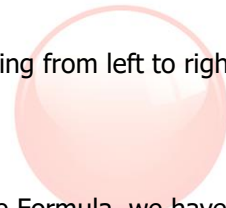
**A** = Addition - After Multiplication, the next step is Addition - (It's still working from left to right even though it's the same answer  $2 + 4 = 6$ ).

**S** = Subtraction – It looks for subtraction – as there is no Subtraction in the Formula, we have reached the end of BIDMAS.

$$2 + 2 * 10^2 = 202$$

If we want the answer to be 600 without changing the values then the Bracket would need to be placed around  $(2 + 2)$

$$(2 + 2) * 10^2 = 400$$



## EXCEL HELP FILE

BODMAS is the order of how formulas work in Excel and Maths in general. It lets you know which order to solve complex sums. When you are solving a formula in Excel it uses BODMAS so you get the result you're looking for, BODMAS stands for:

**B**rackets

**O**ver (Powers, Root etc.)

**D**ivision

**M**ultiplication

**A**ddition

**S**ubtraction.

Always remember to start the formula off with the equals sign.

It can also be known as BIDMAS, in this case the Over becomes Indices, they have the same meaning but some people may know it as the different names.

Letter	Key Used
Equals	=
Brackets	( )
Over	^
Division	/
Multiplication	*
Addition	+
Subtraction	-

In Excel BODMAS will apply to every formula, starting with Brackets and working across as shown above.

Here is an example of a sum:

$$= 2 + 2 * 2.$$

If you worked this simple sum out in your head without using a formula that uses BODMAS you would end up with 8 and you'd be wrong, this mistake could result in an entire database being incorrect. By using BODMAS you would end up with the answer of 6 which is the correct answer.

You have to do the calculations using BODMAS as it doesn't just work from left to right in a sum, the brackets in the sum could be in the middle or at the end but you still have to calculate the brackets part first.

Here is an example of a sum with brackets:

$$= 5 + 5 - (3 + 3).$$

The correct answer to this sum using BODMAS is 4. So you would calculate the brackets and then move onto the multiplication as that would be next because there's no division in this sum. Then you'd do the addition to get your final answer.

Now we'll move onto a sum with division:

$$= 2 + 6 / 2.$$

The answer to this is 5 using BODMAS.

If you are using an ordinary calculator to solve a sum that has different operations in could give you the wrong answer, as ordinary calculators may not use BODMAS, meaning that it works out sums from left to right, meaning that it will make its calculations based on the order of the numbers that are put in, however most scientific calculators have BODMAS so they will use the BODMAS order for calculations.

Over: Some of you may know what the 'Over' / 'Indices' in BODMAS means. They mean both powers and roots.

Powers can be tricky if you haven't worked with them before, if you see this '^2' after a number it means to the power of, in this case it's to the power of 2 which means to square it, for example  $10^2$  is  $10 \times 10$  which equals 100. If you were to see this ' $10^3$ ' it means  $10 \times 10 \times 10$  which equals 1000.

Square Roots work a little differently than all the other BODMAS functions as it's an actual formula and not a key. So when you write out a formula for square roots you start it off with the '=' sign as always and then type in 'SQRT' which stands for square roots. For example,  $=\text{SQRT}(100)$  is 10.

Cube and Quad roots are more difficult. Here is an example of what a cube root and quad root formulas look like:

Root	Formula	Answer
Cube	$=10^{(1/3)}$	2.154435 or 2.15 to 2dp
Quad	$=10^{(1/4)}$	1.778279 or 1.78 to 2dp

Because of the BODMAS rule the brackets section is calculated first. So for the Quad root it would calculate 1 divided by 4 which equals 0.25. Then it would do  $10^$  to the power of 0.25 which gives you the final answer shown above.

Examples:  $3^2 = 3 \times 3 = 9$  (3 squared)  $5^3 = 5 \times 5 \times 5 = 125$  (5 cubed)  $3^4 = 3 \times 3 \times 3 \times 3 = 81$  (3 to the power of 4)  $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$  (2 to the power of 5)  $2^1 = 2$  (2 to the power of 1)

