

## Order of Operations

### Starter

1. (Review of Y7 material)

Find the value of: (a)  $2 + 5 \times 6$  (b)  $25 \div (9 - 4)$  (c)  $5 \times 4^2$

**N.B.** If you've forgotten about order of operations (BIDMAS), click [here](#) or read on.

### Notes

We do not do calculations in the order that we see them, i.e. we do not read a calculation from left to right like a sentence.

The mnemonic **BIDMAS** tells us in which order we should do a calculation.

**B**rackets  
**I**ndices (or powers)  
**D**ivision  
**M**ultiplication  
**A**ddition  
**S**ubtraction

1. In fact, when considering division and multiplication it does not matter in which order they are done.

For example,  $12 \times 6 \div 2$ . could be

$$(12 \times 6) \div 2 = 36 \quad \text{or} \quad 12 \times (6 \div 2) = 36$$

2. Addition and subtraction are similar

For example,  $16 - 4 + 10$  could be

$$(16 - 4) + 10 = 22 \quad \text{or} \quad 16 + (-4 + 10) = 22$$

3. When we see a calculation like  $\frac{5 + 7}{2 \times 3}$  we must imagine that the line separating the 2

calculations creates brackets in the numerator and denominator i.e.  $\frac{(5 + 7)}{(2 \times 3)}$  and these are done separately (**B**) before we do the division (**D**).

**N.B.** When inserting brackets in calculations make sure they go around numbers.

For example, we cannot write  $7 \times (8 - 3+)5$ .

**E.g. 1** Find the value of the following calculations:

(a)  $3 \times (7 - 2) - 5 \times 3$

(b)  $4 \times (5 - 3)^3 - 2$

(c)  $18 - 3 \times 2^2$

(d)  $20 + 4 \times 5^2$

(e)  $2 \times 4^3 + 4$

(f)  $(8 - 3 \times 2)^3$

**E.g. 2** Insert brackets to the following calculation to make them correct:

(a)  $3 + 2 \times 5 = 25$

(b)  $8 + 2 \times 6 - 5 = 10$

(c)  $1 + 9 + 10 \div 4 = 5$

(d)  $8 - 2^3 + 1 = 1$

**N.B.** Inserting brackets is usually a bit of trial and error

**Working:** (a)  $(3 + 2) \times 5 = 25$

**Video:** [Order of operations](#)

**Exercise**

p67 Ex 4.3 Qu 1acegi, 2aceg, 3-9 (not qu 10)

**Summary**

The mnemonic **BIDMAS** tells us in which order we should do a calculation.

- B**rackets
- I**ndices (or powers)
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[Textbook answers \(only available during a lockdown\)](#)