

The order of operations is based on one kind of "big idea": That more powerful operations are done before less powerful (unless we're implicitly told otherwise).

Which of these is the most powerful?

addition, subtraction, division, multiplication

multiplication and division are just the inverse of each other!

addition and subtraction are just the inverse of each other!

This is why we will start with only two 'tiers' of operations:

multiplication and division

addition and subtraction

BUT MR. POTTER! WHAT ABOUT PARENTHESES?!?!

yes, this is where "implicit" comes in. We always do those first, working from the inside out....

$$\begin{array}{l} 6 + [((3 + 2) + (10 - 1)) - ((2 + 1) + (4 + 1))] \\ 6 + [(\underbrace{5 + 9}_{14}) - (\underbrace{3 + 5}_{8})] \\ 6 + [14 - 8] \end{array}$$

And then, there is one more thing we haven't learned (much) about yet....exponents and radicals. These are actually more powerful than just regular multiplication and division, so they come before that.

Which means our final

Order of Operations goes:

1. parenthesis
2. exponents and radicals
3. multiplication and division
4. addition and subtraction