Order of Operations

Order of Operations

Java uses the PEMDAS method for determining order of operations.

P Parentheses
E Exponents - powers & square roots
MD Multiplication & Division - left to right
AS Addition & Subtraction - left to right

The code below should output `10.0`.

```
int a = 2;
int b = 3;
int c = 4;
double result = 3 * a - 2 / (b + 5) + c;
System.out.println(result);
```

TRY IT

```
10.0
```

▼ **Explanation**

- The first step is to compute `b + 5` (which is `8`) because it is surrounded by parentheses.
- Next, do the multiplication and division going from left to right. `3 * a` is `6`.
- `2` divided by `8` is `0` (remember, the `/` operator returns an `int` when you use two `int`s so `0.25` becomes `0`).
- Next, addition and subtraction from left to right - `6 - 0` to get `6`.
- Finally, add `6` and `4` together to get `10.0`.

Mental Math
`5 + 7 - 10 * 3 /0.5`
▼ Solution
-48.0

`(5 * 8) - 7 % 2 - (-1 * 18)`

▼ Solution

57.0

`9 / 3 + (100 % 0.5) - 3`

▼ Solution

0.0

TRY IT

```
10.0
-48.0
57.0
0.0
```

Order of Operations

At what point does Java calculate modulo?

- ◯ Parantheses
- ◯ Exponent
- ◯ Multiplication and Division
- ◯ Addition and Subtraction

Modulo is a type of division, so it is done in order from left to right with the `/` and `*` operators.