Your notes

GCSE Maths: revision notes

Order of operations (BIDMAS)

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Start here: why the order matters

- $2 + 3 \times 4$ could be 20 or 14, depending on what you do first. So everyone uses the same order, which makes the answer 14.
- The order is **BIDMAS**: Brackets, **Indices** (powers and roots), Division and Multiplication, then Addition and Subtraction.
- Division and multiplication are equal partners: do them from left to right. The same goes for addition and subtraction.

BIDMAS

- Calculations must be done in the right order: Brackets, **Indices** (powers and roots), Division and Multiplication, Addition and Subtraction.
- Division and multiplication have the same **priority**: work from left to right. The same applies to addition and subtraction.

Examples

- $3 + 4 \times 2 = 3 + 8 = 11$ (multiply first).
- $(3 + 4) \times 2 = 7 \times 2 = 14$ (brackets first).
- $18 \div 3 \times 2 = 6 \times 2 = 12$ (left to right).
- $2 + 3^2 = 2 + 9 = 11$ (**indices** before addition).

Fractions and calculators

- A fraction bar acts like brackets: $(12 + 8) \div (6 - 1)$ can be written as a fraction with $12 + 8$ on top.

- Scientific calculators follow **BIDMAS**, so use brackets when you type in calculations like (5 + 3) ÷ 2.

Common mistakes

- Don't just work from left to right: 10 – 2 × 3 is 4, not 24.
- $5 \times 2^2 = 5 \times 4 = 20$, not $10^2 = 100$.

Exam tip

- Write one step per line, even if you can do it in your head. Method marks need to see your working.
- Check with your calculator if it's allowed: type the whole calculation in at once.

Common mistakes

- Working left to right, regardless of the **operations**.
- Mixing up $(-3)^2$, which is 9, and -3^2, which is –9.

Worked examples

Work out 20 – 12 ÷ 4 × 2

No brackets or powers. Division and multiplication come first, from left to right. **12 ÷ 4 = 3**

Then the multiplication. **3 × 2 = 6**

Then the subtraction. **20 – 6 = 14**

Answer: 14

Work out $(3 + 5)^2 \div 4$

Brackets first. **3 + 5 = 8**

Then indices. **8^2 = 64**

Then the division. **64 ÷ 4 = 16**

Answer: 16

Key terms

BIDMAS	The order of operations: Brackets, Indices, Division/Multiplication, Addition/Subtraction.
Indices	Powers and roots, such as squares and square roots.
Operation	A mathematical process, such as adding or multiplying.
Priority	Which operation is done first.

Your notes

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is $3 + 4 \times 2$?
2. What is $(3 + 4) \times 2$?
3. What is $20 - 8 \div 4$?
4. What is $2 + 3^2$?
5. What is $(2 + 3)^2$?
6. What is $18 \div 3 \times 2$?
7. What is $10 - 4 + 3$?
8. What is 5×2^2?

Answers

1. 11
2. 14
3. 18
4. 11
5. 25
6. 12
7. 9
8. 20

What to do next

Practise 12 questions on this topic

Try 4 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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