Order of operations: fact sheet

Planner week 5 · Learn these facts

BIDMAS

Brackets
Indices (powers)
Divide and Multiply
Add and Subtract

Do them in this order

÷ × left to right, + − left to right

Multiply before adding

2 + 3 × 4
= 2 + 12
= 14

Not 5 × 4 = 20

3 × 5 + 7 = 22

Brackets first

20 ÷ (3 + 2)
= 20 ÷ 5
= 4

Work out the brackets before anything else

10 × (3 + 5) = 80

Powers

$2^3 = 2 \times 2 \times 2$
= 8

Not 2 × 3

$5^2 = 25$, $10^2 = 100$

Which sheet do I need?

BIDMAS ▸
no calculator: which operation first

Using a calculator ▸
type it in and write the display

Key words

- **BIDMAS** the order to work things out
- **Indices** powers, like ² and ³
- **Reciprocal** 1 ÷ the number
- **Display** everything the calculator shows

Exam tips

- × and ÷ come **before** + and −.
- Do the brackets first.
- Use the **fraction button** for anything with a line.
- Write down **all** the figures on the display.
- Estimate to check: round each number to 1 s.f.
- "Explain why he is wrong": say which operation should come first.

Adding brackets

7 × 2 + 3 = 35?
7 × (2 + 3) = 35

Try each place until it works

Check by working it out

Fractions on a calculator

300
2 × 5
300 ÷ (2 × 5) = 30

Use the fraction button or brackets

The line means divide everything

Reciprocal

Reciprocal of 20
= 1 ÷ 20 = $\frac{1}{20}$
= 0.05

1 divided by the number

Reciprocal of 1.6 = 0.625

Calculator checklist

Fractions	use the fraction button
Roots	close the bracket after √
Display	copy every figure
Check	estimate first

BIDMAS: fact sheet

Order of operations · Planner week 5 · Learn the method

Worked example

QUESTION

Work out $(6 - 2.5)(8 + 4)$

ANSWER

1. Brackets first: $6 - 2.5 = 3.5$ and $8 + 4 = 12$
2. Two brackets next to each other mean multiply: 3.5×12

42

Brackets, Indices, Divide and Multiply, Add and Subtract.

How to do it

1. Work out anything in **brackets** first.
2. Then **indices** (powers and roots).
3. Then **×** and **÷**, working left to right.
4. Then **+** and **−**, working left to right.
5. To add brackets to make a statement true, try each place and check.

Model answer:

$3.5 \times 12 = 42$

Watch out

- Working left to right: $2 + 3 \times 4 = 20$ ×.
- Thinking $2^3 = 6$.
- Forgetting that (a)(b) means multiply.

Using a calculator: fact sheet

Order of operations · Planner week 5 · Learn the method

Worked example

QUESTION

Use your calculator to work out $\frac{5.27 + 3.5}{7.9 - 4.36}$

Write down all the figures on your calculator display.

ANSWER

1. Use the fraction button: type the top, then the bottom.
2. Or use brackets: (5.27 + 3.5) ÷ (7.9 − 4.36)
3. = 8.77 ÷ 3.54

2.477401130

Type it in exactly as it looks, using the fraction button.

How to do it

1. Use the **fraction button** for anything with a fraction line.
2. Square roots: put everything under the root **inside** the root.
3. Squared numbers: use the x^2 button.
4. Write down **all** the figures on the display.
5. Estimate to check it makes sense.

Model answer:

2.477401130

Watch out

- Typing 5.27 + 3.5 ÷ 7.9 − 4.36 without brackets.
- Only dividing part of the top.
- Rounding when the question says “all the figures”.