

The Math Forum PEMDAS and FOIL

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PEMDAS I: Order of Operations

Parentheses, Exponents, Multiplication Division, Addition, Subtraction

I. A student asks how he is supposed to divide before he adds for the problem: $\frac{2+3}{4+1}$

How do you proceed?

What should "twenty divided by the sum of five and fifteen" be? Why?

II. Is $12/4 * 3 = 12/4(3)$? See if your calculator agrees. What should a student get for $12/4x$ when $x = 3$? How do you justify your answer?

PEMDAS II: Order of Operations

III. What is $-x^2$ when $x = -3$? What is $(-x)^2$ when $x = -3$?
What is $(^{-}x)^2$ when $x = -3$? How do you explain?

IV. Why do some teach students Order of Operations?
What problems have you encountered in algebra based on student understanding or misunderstanding of order of operations?

What answer do you expect for $6 \log(100) * 10^2$?

What if the asterisk is not there?

V. What's the difference between a convention and a law? Is PEMDAS (Please Excuse My Dear Aunt Sally) a set of laws? Is it complete?

PEMDAS: Examples

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$$5 + 3 \cdot 4^2$$

$$(5 + 3) \cdot 4^2$$

$$3 \cdot 2 + 5 - 2^2$$

$$3 \div 2 + 5 - 2^2$$

$$3 \cdot y + 5 - x^2$$

$$3 \div y + 5 - 2^2$$

$$3 \div (2 + 5) - 2^2$$

FOIL I

I. A student is asked to multiply $(x + 2)(x^2 + 3x + 4)$ and writes:

$$x^3 + 4x + 2x^2 + 8.$$

He explains his answer by saying, 'I foiled it.'
How do you proceed?

Ia) What are several explanations for the method of multiplying polynomials. Is there more than one method?

II. Why do we teach students to multiply binomials?

FOIL II

III. Why do we teach students to factor trinomials?

IV. How should one explain the procedure for computing

$$(x + y)^3?$$

V. How do we prevent the error: $\sqrt[4]{x^4 + y^4} = x + y$?