

Order of Operations

1011 0010 1010 1101 0001 0100 1011

Mrs. Vogt
5th Grade Math



Introduction

011 0010 1010 1101 0001 0100 1011



1 2
4 5

Introduction

011 0010 1010 1101 0001 0100 1011

- What things in your life require you to do them in a proper order?



Introduction

011 0010 1010 1101 0001 0100 1011

- What things in your life require you to do them in a proper order?
- Is there an order to making a peanut butter and jelly sandwich?



Introduction

111 0010 1010 1101 0001 0100 1011

- What things in your life require you to do them in a proper order?
- Is there an order to making a peanut butter and jelly sandwich?
- What about getting dressed in the morning?



Introduction

111 0010 1010 1101 0001 0100 1011

- What things in your life require you to do them in a proper order?
- Is there an order to making a peanut butter and jelly sandwich?
- What about getting dressed in the morning?



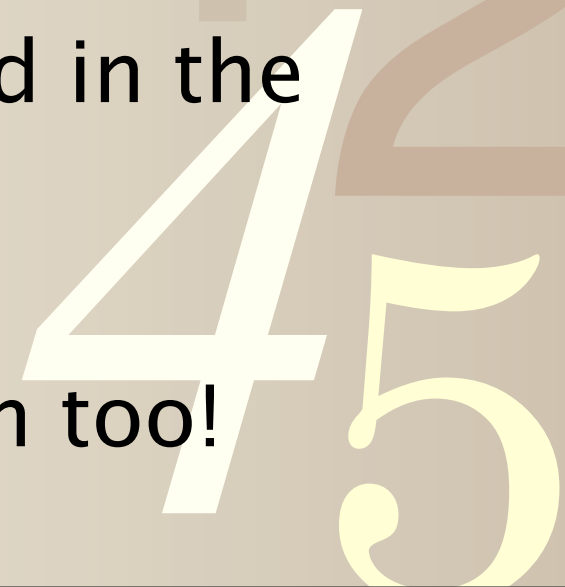
Introduction

111 0010 1010 1101 0001 0100 1011

- What things in your life require you to do them in a proper order?
- Is there an order to making a peanut butter and jelly sandwich?
- What about getting dressed in the morning?



Order matters in Math too!



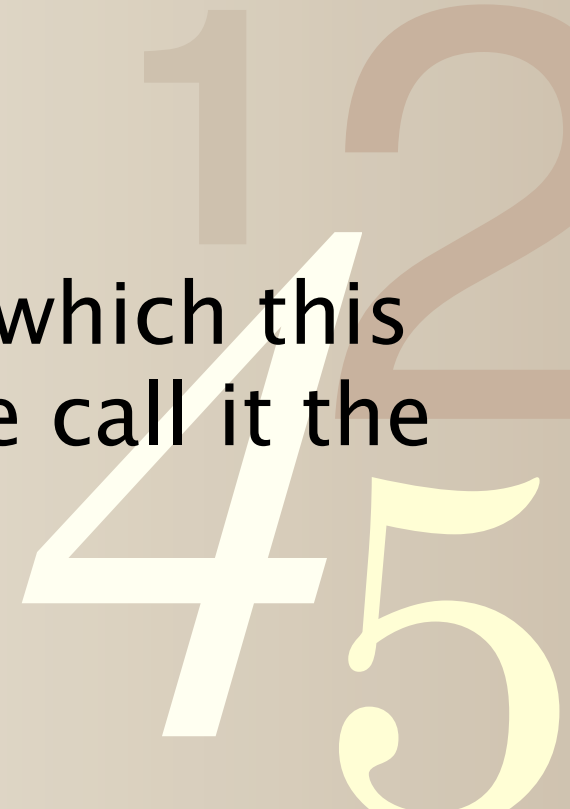
Order in Math

111 0010 1010 1101 0001 0100 1011

- How would you solve this math problem?

$$8 \times 14 - 8 + 8$$

- There is a proper order in which this needs to be solved, and we call it the **Order of Operations.**



PEMDAS

011 0010 1010 1101 0001 0100 1011

- The order of operations tells us how to solve a math problem with multiple operations.
- There is a trick in helping us remember the order!

PEMDAS!!!



Oh, Aunt Sally!

011 0010 1010 1101 0001 0100 1011

1 2
4 5



Oh, Aunt Sally!

111 0010 1010 1101 0001 0100 1011

- Please Excuse My Dear Aunt Sally



Oh, Aunt Sally!

111 0010 1010 1101 0001 0100 1011

- Please Excuse My Dear Aunt Sally



Oh, Aunt Sally!

111 0010 1010 1101 0001 0100 1011

- Please Excuse My Dear Aunt Sally

P: Parenthesis ()



Oh, Aunt Sally!

011 0010 1010 1101 0001 0100 1011

- Please Excuse My Dear Aunt Sally

P: Parenthesis ()

E: Exponents



Oh, Aunt Sally!

011 0010 1010 1101 0001 0100 1011

- Please Excuse My Dear Aunt Sally

P: Parenthesis ()

E: Exponents

M: Multiplication x



Oh, Aunt Sally!

011 0010 1010 1101 0001 0100 1011

- Please Excuse My Dear Aunt Sally

P: Parenthesis ()

E: Exponents

M: Multiplication x

D: Division ÷



Oh, Aunt Sally!

111 0010 1010 1101 0001 0100 1011

- Please Excuse My Dear Aunt Sally

P: Parenthesis ()

E: Exponents

M: Multiplication x

D: Division ÷

A: Addition +



Oh, Aunt Sally!

111 0010 1010 1101 0001 0100 1011

- Please Excuse My Dear Aunt Sally

P: Parenthesis ()

E: Exponents

M: Multiplication x

D: Division ÷

A: Addition +

S: Subtraction -



Teach us Mr. Khan

011 0010 1010 1101 0001 0100 1011

Let's watch this Khan Academy video to learn the process for Order of Operations

https://www.khanacademy.org/math/arithmetic/multiplication-division/order_of_operations/v/introduction-to-order-of-operations

Remember PEMDAS

011 0010 1010 1101 0001 0100 1011

1 2
4 5



Remember PEMDAS

Please write these in your notes as
we go.

011 0010 1010 1101 0001 0100 1011

1 2
4 5



Remember PEMDAS

Please write these in your notes as
we go.

011 0010 1010 1101 0001 0100 1011

1 2
4 5



Remember PEMDAS

Please write these in your notes as
we go.

Step One: Locate any parentheses and do what is inside the parenthesis first.



Remember PEMDAS

Please write these in your notes as
we go.

Step One: Locate any parentheses and do what is inside the parenthesis first.

Step Two: Locate any exponents and solve them.



Remember PEMDAS

Please write these in your notes as
we go.

Step One: Locate any parentheses and do what is inside the parenthesis first.

Step Two: Locate any exponents and solve them.

Step Three: Next, multiply if necessary.



Remember PEMDAS

Please write these in your notes as we go.

Step One: Locate any parentheses and do what is inside the parenthesis first.

Step Two: Locate any exponents and solve them.

Step Three: Next, multiply if necessary.

Step Four: Divide if necessary



Remember PEMDAS

Please write these in your notes as we go.

Step One: Locate any parentheses and do what is inside the parenthesis first.

Step Two: Locate any exponents and solve them.

Step Three: Next, multiply if necessary.

Step Four: Divide if necessary

Step Five: Add if necessary



Remember PEMDAS

Please write these in your notes as we go.

Step One: Locate any parentheses and do what is inside the parenthesis first.

Step Two: Locate any exponents and solve them.

Step Three: Next, multiply if necessary.

Step Four: Divide if necessary

Step Five: Add if necessary

Step Six: Subtract if necessary



What are exponents?

The exponent of a number shows you how many times the number is to be used in a multiplication.

It is written as a small number to the right and above the base number.

In this example: $8^2 = 8 \times 8 = 64$

(Another name for exponent is index or power)

Let's try one

$$8 \times (13 - 3) + 9$$

011 0010 1010 1101 0001 0100 1011

12

45



Let's try one

$$8 \times (13 - 3) + 9$$

- Are there any parenthesis? YES!



Let's try one

$$8 \times (13 - 3) + 9$$

- Are there any parenthesis? YES!
(13-3) That equals?? _



Let's try one

$$8 \times (13 - 3) + 9$$

- Are there any parenthesis? YES!
(13-3) That equals?? —
- Rewrite the equation.



Let's try one

$$8 \times (13 - 3) + 9$$

- Are there any parenthesis? YES!
(13-3) That equals?? —
- Rewrite the equation.

$$8 \times 10 + 9$$



Let's try one

$$8 \times (13 - 3) + 9$$

- Are there any parenthesis? YES!
(13-3) That equals?? —

- Rewrite the equation.

$$8 \times 10 + 9$$

- Any exponents? No, so go to next step.



Let's try one

$$8 \times (13 - 3) + 9$$

- Are there any parenthesis? YES!
(13-3) That equals?? —
- Rewrite the equation.

$$8 \times 10 + 9$$

- Any exponents? No, so go to next step.
- Any multiplication? Yes!



Let's try one

$$8 \times (13 - 3) + 9$$

- Are there any parenthesis? YES!
(13-3) That equals??
- Rewrite the equation.

$$8 \times 10 + 9$$

- Any exponents? No, so go to next step.
- Any multiplication? Yes!

$$8 \times 10 = \underline{\quad}$$



Let's try one

$$8 \times (13 - 3) + 9$$

- Are there any parenthesis? YES!
(13-3) That equals?? —

- Rewrite the equation.

$$8 \times 10 + 9$$

- Any exponents? No, so go to next step.
- Any multiplication? Yes!

$$8 \times 10 = \text{—}$$

- Rewrite your equation



Let's try one

$$8 \times (13 - 3) + 9$$

- Are there any parenthesis? YES!
(13-3) That equals??

- Rewrite the equation.

$$8 \times 10 + 9$$

- Any exponents? No, so go to next step.
- Any multiplication? Yes!

$$8 \times 10 = \underline{\quad}$$

- Rewrite your equation

- $80 + 9 = 89$



Whiteboards please

011 0010 1010 1101 0001 0100 1011

- Let's try some with a partner.

$$(44 - 4) \div 5 - 6 \text{ squared}$$

- And another

$$(30 - 2) \div 7 - 2 \text{ squared}$$



On your own

011 0010 1010 1101 0001 0100 1011

- Please show me the solution to these problems:

$$1. 10 \times 4 - (9 + 11)$$

$$2. 3 + 5 \times 2 - 10$$

$$3. (7 + 2) \times 3 - 8$$



Closure

011 0010 1010 1101 0001 0100 1011

- Please list out the steps for solving an order of operations problem.

