Square Power Algorithm

Using polynomials

Author and researcher

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The discovery of a new algorithm, which went unnoticed for centuries, now comes to light to show its characteristics and its contribution to the use of polynomials.

Square Power Algorithm

Using polynomials

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Abstract: This document develops and demonstrates the discovery of a new square potentiation algorithm that works absolutely with all the numbers using the formula of the square of a binomial, trinomial, tetranomial and pentanomial.

Chapter 1 Square of a binomial, trinomial, tetranomial and pentanomial.

Example nº1, Square potentiation algorithm, (Binomial)

We will use the number 17.
1=a
7=b

$$(a+b)^2 = (a+b)*(a+b)$$

$$a^2 + 2ab + b^2$$

$$17^2 = 1^2 + 2 * 1 * 7 + 7^2$$
$$17^2 = 1 + 14 + 49$$

Now we add using the following method.
$17^2 = 289$

	1			*100
	1	4		*10
+		4	9	*1
	2	**8**	**9**	Result

The figure is a pattern that will be present in all the numbers of two digits squared.
We multiply the first term by 100, the second term by 10, and the third term by 1. In all cases when we use the square of a whole number.

Coefficient of terms

$$a^2 + 2ab + b^2$$

121

11^2=121

Pascal Triangle

		1		
	1		1	
1		2		1

Representation graphic

a	b	x
a^2	ab	a
ab	b^2	b

Terms

	b^2	
2ab		a^2

Coefficients

	1	
2		1

Example nº2 Square potentiation algorithm, (Trinomial)

258^2 = 66.564

2=a
5=b
8=c

$$(a+b+c)^2 = (a+b+c)*(a+b+c)$$

$$a^2 + \underbrace{2ab + 2ac}_{\text{2 terms}} + b^2 + \underbrace{2cb}_{\text{1 term}} + c^2$$

$$2^2 + 2*2*5 + 2*2*8 + 5^2 + 2*8*5 + 8^2$$

4 + 20 + 32 + 25 + 80 + 64

	4					*10.000
	2	0				*1.000
		3	2			*100
		2	5			*100
			8	0		*10
+				6	4	*1
	6	6	5	6	4	Result

The shape that is formed here is a pattern that will always be formed when we have three squared digits.
We can see that the geometric figure contains the figure of example 1 (square of a binomial).
We add following this model, ordering the numbers from left to right by moving them one place. the square of the letter Y will always be placed below the previous one and the following numbers will continue to move to the right one place.

Coefficient of terms

$$a^2 + 2ab + 2ac + b^2 + 2cb + c^2$$

122121

111^2= 12321

See chapter 3

Representation graphic

a	b	c	x
a^2	ba	ac	a
ab	b^2	bc	b
ac	bc	c^2	c

Terms

		c^2		
	2cb		b^2	
2ac		2ab		a^2

Coefficients

		1		
	2		1	
2		2		1

Expansion applying multiplication on the Pascal triangle.

Pascal

		1				1	=
	1		1		x	2	=
1		2		1		1	=

$(a+b+c)^2$

		1		
	2		2	
1		2		1

=122121

Example nº3 Square potentiation algorithm, (Tetranomial)

2513^2 = 6.315.169

2=a
5=b
1=c
3=d

$$(a+b+c+d)^2 = (a+b+c+d)*(a+b+c+d)$$

$$a^2 + \underbrace{2ab+2ac+2ad}_{\text{3 terms}} + b^2 + \underbrace{2cb+2bd}_{\text{2 terms}} + c^2 + \underbrace{2dc}_{\text{1 term}} + d^2$$

$$2^2 + 2*2*5 + 2*2*1 + 2*2*3 + 5^2 + 2*1*5 + 2*5*3 + 1^2 + 2*3*1 + 3^2$$

$$4 + 20 + 4 + 12 + 25 + 10 + 30 + 1 + 6 + 9$$

	4								*1.000.000
	2	0						3 terms	*100.000
		0	4						*10.000
			1	2					*1.000
		2	5						*10.000
			1	0				2 terms	*1.000
				3	0				*100
				0	1				*100
					0	6		1 term	*10
+						0	9		*1
	6	**3**	**1**	**5**	**1**	**6**	**9**		Result

The figure is a pattern that will be formed with all the numbers with a maximum of 4 digits.
To add we use this model, ordering the numbers from left to right.
This pattern contains the patterns of examples 1 and 2 within itself.

$$a^2 + 2ab+2ac+2ad + b^2 + 2cb+2bd + c^2 + 2dc + d^2$$

1222122121

1111^2= 1234321

See chapter 3

Representation graphic

a	b	c	d	x
a^2	ba	ca	da	a
ab	b^2	cb	db	b
ac	bc	c^2	dc	c
ad	bd	cd	d^2	d

Terms

			d^2			
		2dc		c^2		
	2bd		2cb		b^2	
2ad		2ac		2ab		a^2

Coefficients

			1			
		2		1		
	2		2		1	
2		2		2		1

=1222122121

Expansion applying multiplication.

$(a+b+c)^0$			1					1
$(a+b+c)^1$		1	1	1			x	2
$(a+b+c)^2$	1	2	2	1	2	1		1

$(a+b+c+d)^2$	1	2	2	2	1	2	2	1	2	1	Result

Another way to represent: $(a+b+c+d)^2$

T. Pascal

		1		
	1		1	
1		2		1

x

T. Pascal upside down

1		2		1
	1		1	
		1		

x

1
2
1

=

1	2	1
2	4	2
1	2	1

$4^2 = 16$

4=2*2 (With these two numbers the coefficients are formed)

Example nº4 Square potentiation algorithm, (Pentanomial)

$25.134^2 = 631.717.956$

2=a
5=b
1=c
3=d
4=e

$(a+b+c+d+e)^2 = (a+b+c+d+e)*(a+b+c+d+e)$

$$\underbrace{}_{}a^2 + \underbrace{2ab+2ac+2ad+2ae}_{\text{4 terms}} + b^2 + \underbrace{2cb+2bd+2be}_{\text{3 terms}} + c^2 + \underbrace{2dc+2ce}_{\text{2 terms}} + d^2 + \underbrace{2de}_{\text{1 term}} + e^2$$

2^2 +2*2*5+2*2*1 +2*2*3 +2*2*4 + 5^2+2*1*5 +2*5*3+ 2*5*4 +1^2+2*3*1+2*1*4+3^2 +2*3*4+4^2

4 + 20 + 4 + 12 + 16 + 25 + 10 + 30 + 40 + 1 + 6 + 8 + 9 + 24 +16

	4									*100.000.000
	2	0								*10.000.000
		0	4							*1.000.000
			1	2						*100.000
				1	6					*10.000
		2	5							*1.000.000
			1	0						*100.000
				3	0					*10.000
					4	0				*1.000
				0	1					*10.000
					0	6				*1.000
						0	8			*100
						0	9			*100
							2	4		*10
+								1	6	*1
	6	3	1	7	1	7	9	5	6	Result

The figure is a pattern that will be formed with all the numbers with a maximum of 5 digits.
To add we use this model, ordering the numbers from left to right.
This pattern contains the patterns of examples 1, 2 and 3 within itself.

The red numbers are the values that were squared in the formula. These are ordered multiplying each other by 100.
Example: 1; 100; 10.000; 1.000.000; 100.000.000

a^2	4									*100.000.000
2ab	2	0								*10.000.000
2ac		0	4							*1.000.000
2ad			1	2						*100.000
2ae				1	6					*10.000
b^2		2	5							*1.000.000
2cb			1	0						*100.000
2bd				3	0					*10.000
2be					4	0				*1.000
c^2				0	1					*10.000
2dc					0	6				*1.000
2ce						0	8			*100
d^2						0	9			*100
2de							2	4		*10
e^2	+							1	6	*1
	6	3	1	7	1	7	9	5	6	Result

The powers order the terms to achieve the sum, these are ordered in steps of 1 in 1.

a^2*10^8 + $2ab*10^7$ + $2ac*10^6$ + $2ad*10^5$ + $2ae**10^4$
b^2*10^6 + $2cb**10^5$ + $2bd*10^4$ + $2be*10^3$
c^2*10^4 + $2dc*10^3$ + $2ce*10^2$
\+ d^2*10^2 + $2de*10^1$
e^2*10^0

605.360.000
26.340.000
16.800
\+ 1.140
16

631.717.956

a^2 + 2ab+2ac +2ad+2ae + b^2+ 2cb+2bd+2be + c^2+2dc +2ce+ d^2+ 2de+ e^2

122221222122121

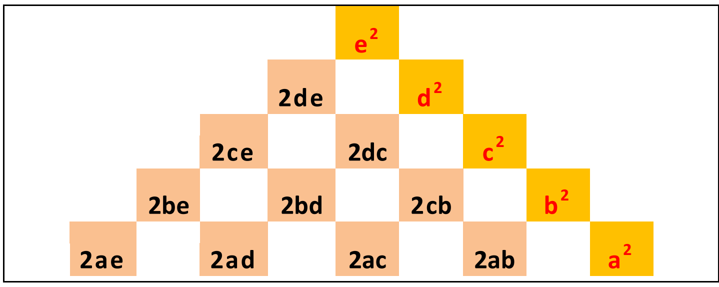
11111^2= 123454321

See chapter 3

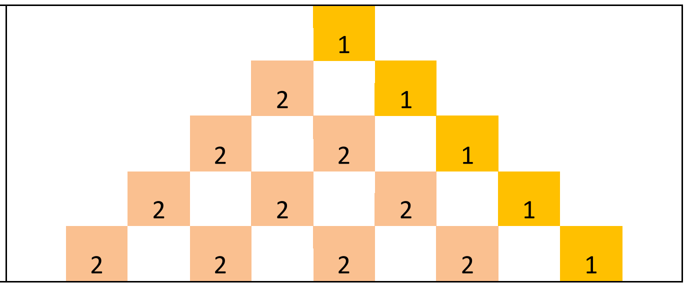
Representation graphic

a	b	c	d	e	x
a^2	ba	ca	da	ea	a
ab	b^2	cb	db	eb	b
ac	bc	c^2	dc	ec	c
ad	bd	cd	d^2	ed	d
ae	be	ce	de	e^2	e

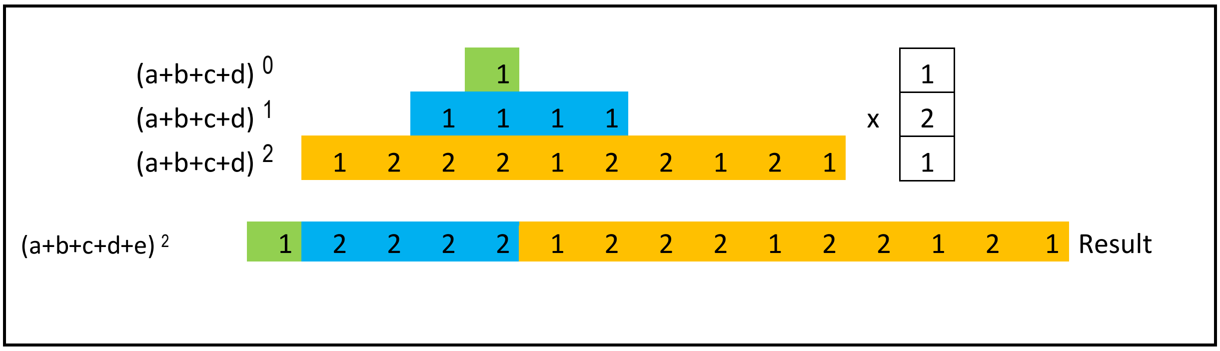
Terms



Coefficients



Expansion applying multiplication.



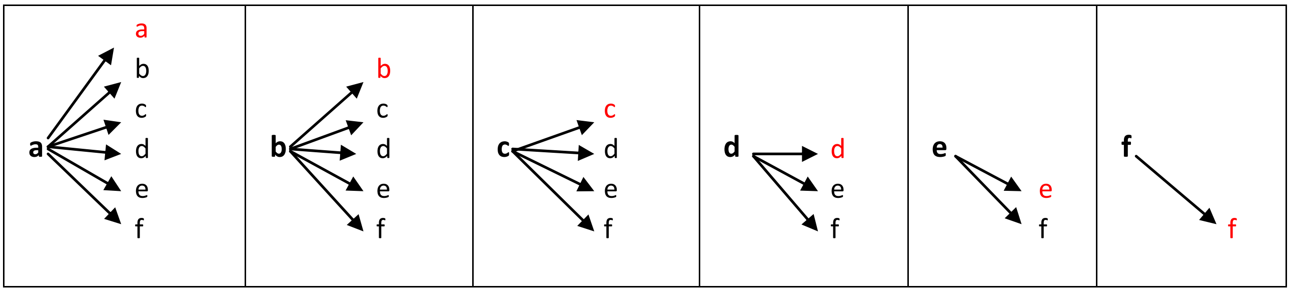
=122221222122121

Another way to solve: (a+b+c+d+e+f) ^{2}

$$a^2 + 2ab+2ac+2ad+2ae+2af + b^2 + 2cb+2bd+2be+2bf + c^2 +2dc +2ce+2cf+ d^2 + 2de+2df+ e^2 +2ef+ f^2$$

Another way to solve the distributive property.

With this method we refurbish the positioning and distribution of the letters and powers, those that go to the square take the coefficient 1, the rest have coefficient 2.



Chapter 2: Terms, coefficients and exponents

1) Coefficient of terms

Table 1

Square	Number of terms	Number of Coefficients = Triangular numbers	Triangular numbers
$(a)^2$	**1**	1	1
$(a+b)^2$	**2**	121	3
$(a+b+c)^2$	**3**	122121	6
$(a+b+c+d)^2$	**4**	1222122121	10
$(a+b+c+d+e)^2$	**5**	122221222122121	15

Quantity of terms formula

$Qt = \ Quantity\ of\ terms$
$N = Nº\ of\ terms$

$$Qt = \frac{N * (N+1)}{2}$$

Example: **$(a+b+c+d)^2$**

$N = 4$

$$Qt = \frac{4 * (4+1)}{2} = 10$$

Table 2

Square	T=Nº of terms	The sum of the Coefficients equals the Perfect Square Numbers	Perfect Square Numbers
$(a)^2$	**1**	1	1
$(x+b)^2$	**2**	121	4
$(a+b+c)^2$	**3**	122121	9
$(a+b+c+d)^2$	**4**	12.22122121	16
$(a+b+c+d+e)^2$	**5**	122221222122121	25

The Numbers 2 of the coefficients are ordered progressively. Starting from a number 2, then two numbers 2, then three numbers 2 and so on. Numbers 2 correspond to double the product of the letters. The numbers 2 are always interspersed by numbers 1, which represent the letters squared.

Formula

$t = Nº\ of\ terms$

$$Sum\ of\ the\ coefficients = t^2$$

2) Organization of the coefficients of the terms

																											1	1
																									1	2	1	2
																						1	2	2	1	2	1	3
																		1	2	2	2	1	2	2	1	2	1	4
													1	2	2	2	2	1	2	2	2	1	2	2	1	2	1	5
							1	2	2	2	2	2	1	2	2	2	2	1	2	2	2	1	2	2	1	2	1	6
1	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2	2	1	2	2	2	1	2	2	1	2	1	7

Another way to organize the coefficients of the terms

Example A

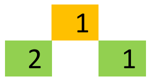
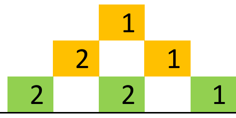
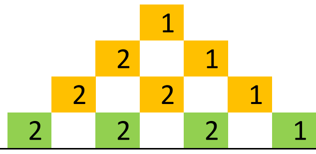
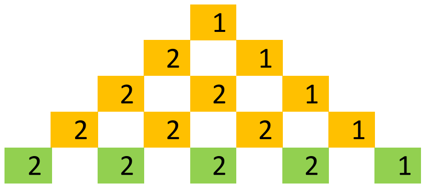
Terms																												
1								1																				
2						1	2	1																				
3					1	2	2	1	2	1																		
4				1	2	2	2	1	2	2	1	2	1															
5			1	2	2	2	2	1	2	2	2	1	2	2	1	2	1											
6		1	2	2	2	2	2	1	2	2	2	2	1	2	2	2	1	2	2	1	2	1						
7	1	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2	2	1	2	2	2	1	2	2	1	2	1

Example B:

Terms																												
1	1																											
2	1	2	1																									
3	1	2	2	1	2	1																						
4	1	2	2	2	1	2	2	1	2	1																		
5	1	2	2	2	2	1	2	2	2	1	2	2	1	2	1													
6	1	2	2	2	2	2	1	2	2	2	2	1	2	2	2	1	2	2	1	2	1							
7	1	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2	2	1	2	2	2	1	2	2	1	2	1

The totality of the numbers 2 coincides with the sequence of triangular numbers.
1, 3, 6, 10, 15, 21 etc.

Example C

Coefficients	Triangular numbers
$a^2 = 1$	
$(a+b)^2 = 121$	
$(a+b+c)^2 = 122121$	
$(a+b+c+d)^2 =$ 1222122121	
$(a+b+c+d+e)^3 =$ 122221222122121	

3) Distribution of exponents

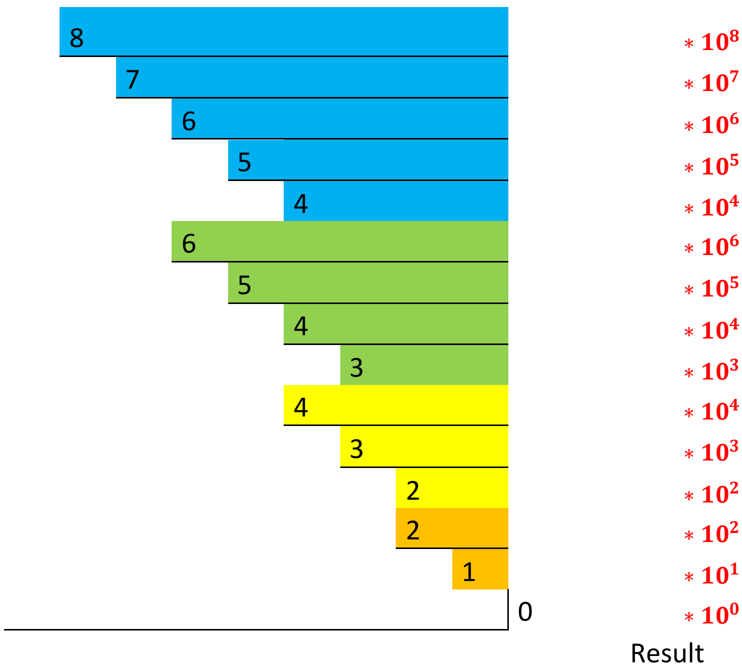
Coefficients | Terms

																											1	1
																									1	2	1	2
																						1	2	2	1	2	1	3
																		1	2	2	2	1	2	2	1	2	1	4
													1	2	2	2	2	1	2	2	2	1	2	2	1	2	1	5
							1	2	2	2	2	2	1	2	2	2	2	1	2	2	2	1	2	2	1	2	1	6
1	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2	2	1	2	2	2	1	2	2	1	2	1	7

Exponents

12	11	10	9	8	7	6	10	9	8	7	6	5	8	7	6	5	4	6	5	4	3	4	3	2	2	1	0

<u>Example:</u> $(a+b+c+d+e)^2$



Sequence of exponents: A051162 https://oeis.org/

4) Organization of the exponents

Terms	Exponents						
1	0						
2	1	2					
3	2	3	4				
4	3	4	5	6			
5	4	5	6	7	8		
6	5	6	7	8	9	10	
7	6	7	8	9	10	11	12

5) Sum of the exponents

Terms	Exponents							Sum	**Formula**
1	0							0	3*0
2	1	2						3	3*1
3	2	3	4					9	3*3
4	3	4	5	6				18	3*6
5	4	5	6	7	8			30	3*10
6	5	6	7	8	9	10		45	3*15
7	6	7	8	9	10	11	12	63	3*21

$tn = Triangular\ number$

$$Sum = 3 * tn$$

Reference A045943

6) Final number of the exponents

Terms	Exponents						
1	**0**						
2	1	**2**					
3	2	3	**4**				
4	3	4	5	**6**			
5	4	5	6	7	**8**		
6	5	6	7	8	9	**10**	
7	6	7	8	9	10	11	**12**

The final exponential number of each sector is determined under the following formula:

$fn = final\ number$
$T = term$

$$\boldsymbol{fn = 2t - 2}$$

7) Terms, coefficients and exponents

The triangle of exponents has its diagonals that are directed to the left linked to the sequence of natural numbers, while the other diagonals that are directed to the right are ordered in even and odd numbers.

S(n)= Sector Nº

Terms

S0					e^2				
S1				2de		d^2			
S2			2ce		2dc		c^2		
S3		2be		2bd		2cb		b^2	
S4	2ae		2ad		2ac		2ab		a^2

Coefficients

S0						1					
S1					2		1				
S2				2		2		1			
S3			2		2		2		1		
S4		2		2		2		2		1	
S5	2		2		2		2		2		1

Exponents

S0						0					
S1					1		2				
S2				2		3		4			
S3			3		4		5		6		
S4		4		5		6		7		8	
S5	5		6		7		8		9		10

Exponents

The number of S(n) is related to the number with which the row begins, twice as many will be the number with which it ends.

S0						0					
S1					1		2				
S2				2		3		4			
S3			3		4		5		6		
S4		4		5		6		7		8	
S5	5		6		7		8		9		10

Terms and exponents

				e^2*10^0				
			$2de*10^1$		d^2*10^2			
		$2ce*10^2$		$2dc*10^3$		c^2*10^4		
	$2be*10^3$		$2bd*10^4$		$2cb*10^5$		b^2*10^6	
$2ae*10^4$		$2ad*10^5$		$2ac*10^6$		$2ab*10^7$		a^2*10^8

S0						1	$S0 = (a)^2$
S1					2	1	$S0 + S1 = (a + b)^2$
S2				2	2	1	$S0 + S1 + S2 = (a + b + c)^2$
S3			2	2	2	1	$S0 + S1 + S2 + S3 = (a + b + c + d)^2$
S4		2	2	2	2	1	$S0 + S1 + S2 + S3 + S4 = (a + b + c + d + e)^2$
S5	2	2	2	2	2	1	$S0 + S1 + S2 + S3 + S4 + S5 = (a + b + c + d + e + g)^2$

8) Relationship whit the number 11

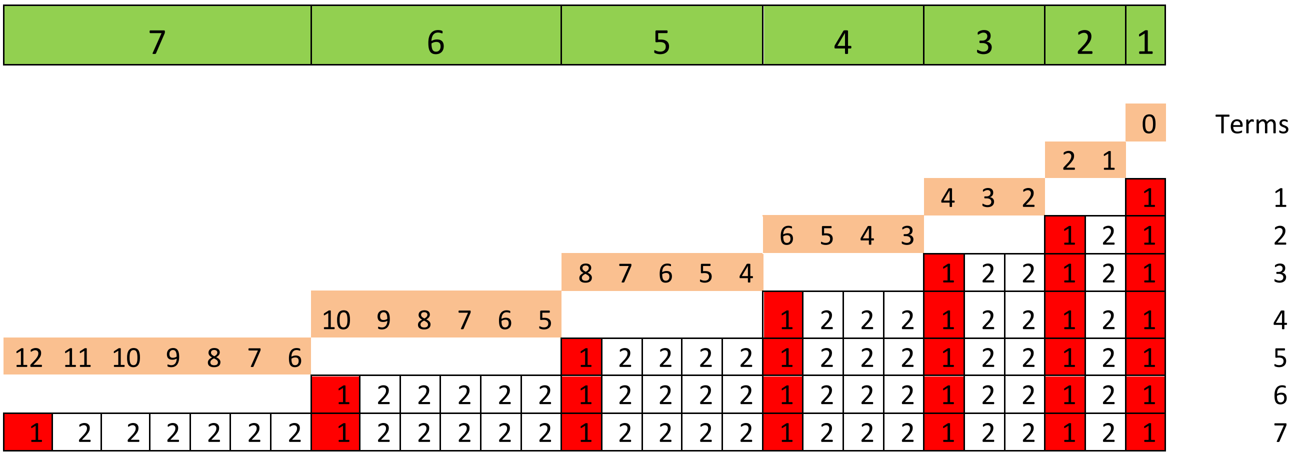
We can observe how the number eleven develops an expansive behavior.

1 2 2 2 2 1 2 2 2 1 2 2 1 2 1

11*11
111*11
1111*11
11111*11

121= 11*11
1221= 111*11
12221= 1111*11

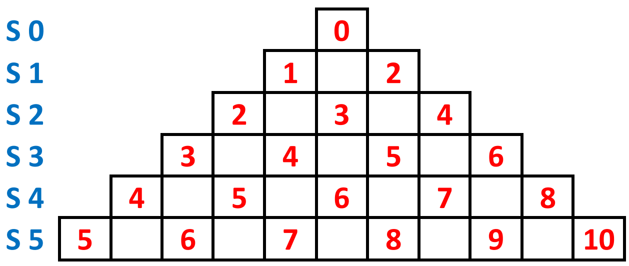
9) Exponents and Coefficients



The expansion of this model is very simple.
The next would get to have 8 numbers, which would be all numbers two minus the last one that would be a number 1

<u>According to the exponents we obtain the coefficients</u>

Exponents



The sum of each sector is the same: $a(n) = \frac{3*n*(n+1)}{2}$
$n \geq 0$

10) Formula to obtain coefficients from the exponents

$$\binom{n}{S} = \binom{0}{0};\left(\frac{1}{1}+\frac{2}{1}\right);\left(\frac{2}{2}+\frac{3}{2}+\frac{4}{2}\right);\left(\frac{3}{3}+\frac{4}{3}+\frac{5}{3}+\frac{6}{3}\right);\left(\frac{4}{4}+\frac{5}{4}+\frac{6}{4}+\frac{7}{4}+\frac{8}{4}\right);\left(\frac{5}{5}+\frac{6}{5}+\frac{7}{5}+\frac{8}{5}+\frac{9}{5}+\frac{10}{5}\right);$$

Sector 0 Sector 1 Sector 2 Sector 3 Sector 4 Sector 5

Formula A

$$\frac{N}{0} = \mathbf{1}$$

Formula B

$$\left(\frac{2*S}{n} = \mathbf{1}\right) = \mathbf{1}$$

Formula C

$$\left(\frac{2*S}{n} > 1\right) \approx \mathbf{2}$$

Example A

$S\,4\ \wedge\ n = 8$

$$\frac{2*S}{n} = \frac{2*4}{8} = \frac{8}{8} = \mathbf{1}$$

Example B

$S\,4\ \wedge\ n = 7$

$$\frac{2*S}{n} = \frac{2*4}{7} = \frac{8}{7} > 1 = \mathbf{1,1428..} \approx \mathbf{2}$$

Coefficients

S 0						1					
S 1					2		1				
S 2				2		2		1			
S 3			2		2		2		1		
S 4		2		2		2		2		1	
S 5	2		2		2		2		2		1

Chapter 3: Construction of the coefficients from 11,111, 1111,…

Square of polynomials

The square of the numbers 1, gives us a numerical value that at first sight does not seem to have any kind of relationship with the theme developed in this paper, but just as in Pascal's triangle we can obtain the expansion of a binomial, here with the square of the polynomials (binomial, trinomial, tetranomial, pentanomial, etc.) we obtain a value that is hidden in the power of them and forms the sequence of the coefficients of each term.

Example A Binomial

$(a+b)^2$

Right order of expression

$$a^2 + 2ab + b^2$$

Coefficient of terms

121

$$11^2=121$$

Example B Trinomial

$(a+b+c)^2$

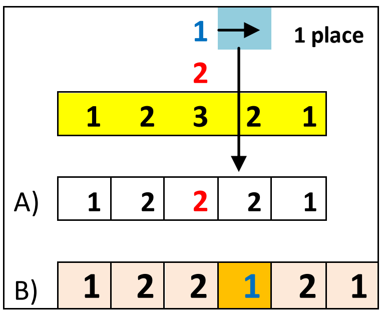
Right order of expression

$$a^2 + 2ab + 2ac + b^2 + 2cb + c^2$$

Coefficient of terms

122121

$$111^2= 12321$$



The number 3 becomes (2 +1), At point A the number 2 goes down with the other numbers 2, At point B the number 1 moves one place to the right and then we lower it, running to the left the numbers that occupied that space.
In the following examples the development will be much clearer.

T =Terms
P= Places

P_1=T-2 P=3-2=1 (The one we moved 1 place)

For more information see chapter 4

Example C Tetranomial

$(a+b+c+d)^2$

Right order of expression

$a^2 + 2ab + 2ac + 2ad + b^2 + 2cb + 2bd + c^2 + 2dc + d^2$

Coefficient of terms

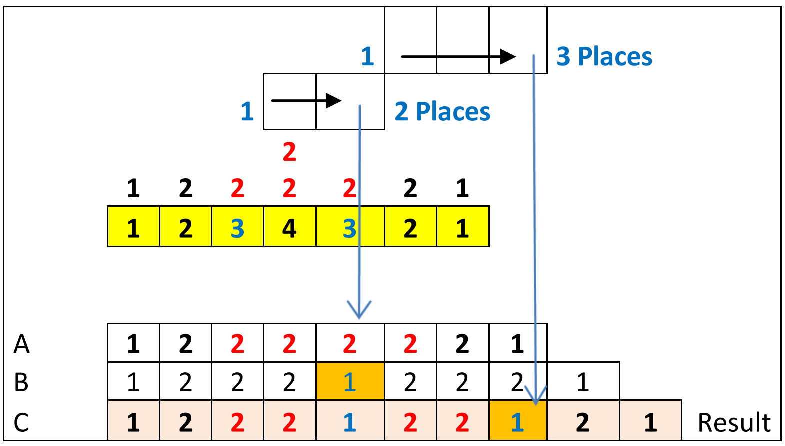
1222122121

$1111^2 = 1234321$

We convert numbers 3 and 4 into numbers 2 and 1

		1	2	1		
1	2	2	2	2	2	1
1	2	3	4	3	2	1

A) We order the numbers 2 side by side.
B) We move the first number 1 two places and lower it.
C) We move the second number 1 three places and lower it.

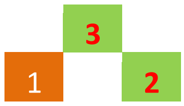


T =Terms
P= Places

P_1=T-2 P=4-2=2 (The first one we moved 2 places)

For more information see chapter 4

<u>Places</u>



$$\boldsymbol{Q = quantity\ of\ number\ of\ triangule\ base = Terms - 2}$$

$$\boldsymbol{Q = 4 - 2 = 2}\ (quantity\ of\ number\ of\ triangule\ base).$$

Example D Pentanomial

$(a+b+c+d+e)^2$

Right order of expression

$a^2 + 2ab + 2ac + 2ad + 2ae + b^2 + 2cb + 2bd + 2be + c^2 + 2dc + 2ce + d^2 + 2de + e^2$

Coefficient of terms

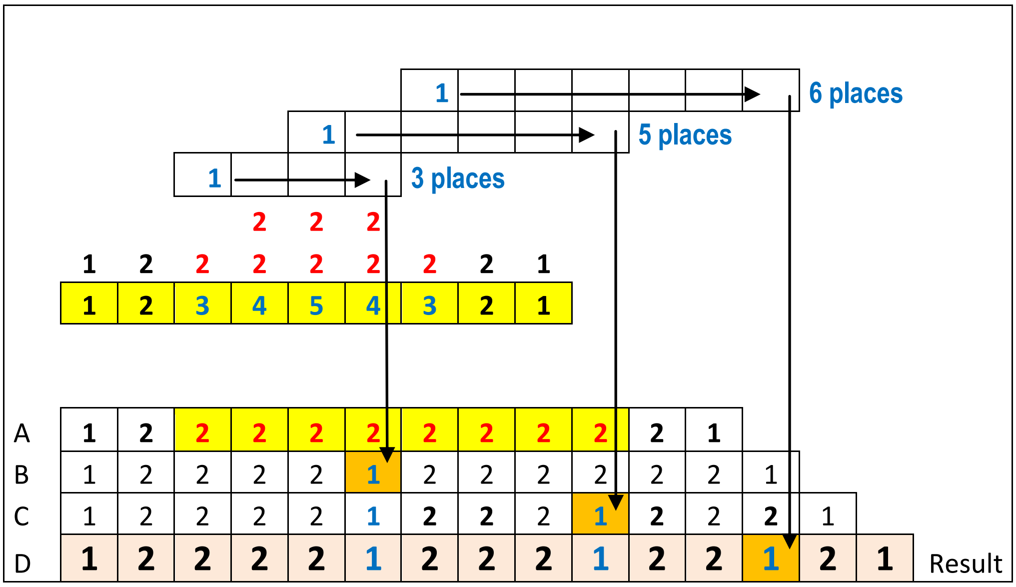
122221222122121

$11111^2 = 123454321$

We convert numbers 3, 4 and 5 into numbers 2 and 1

				1				
		1	2	2	2	1		
1	2	2	2	2	2	2	2	1
1	2	3	4	5	4	3	2	1

A) We order the numbers 2 side by side.
B) We move the first number 1 three places and lower it.
C) We move the second number 1 five places and lower it.
D) Finally we move the last number 1 six places and lower it.

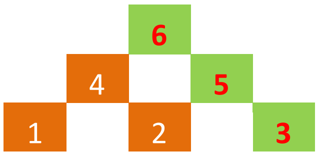


T =Terms
P= Places

P_1=T-2 **P=5-2=3** (The first one we moved 3 places)

For more information see chapter 4

Places



$$\boldsymbol{Q = quantity\ of\ number\ of\ triangule\ base = Terms - 2}$$

$$\boldsymbol{Q = 5 - 2 = 3}\ (quantity\ of\ number\ of\ triangule\ base).$$

Example E Hexanomial

$(a+b+c+d+e+f)^2$

Right order of expression

$a^2 + 2ab+2ac+2ad+2ae+2af + b^2 + 2cb+2bd+2be+2bf + c^2 +2dc +2ce+2cf+ d^2 + 2de+2df+ e^2 +2ef+ f^2$

Coefficient of terms

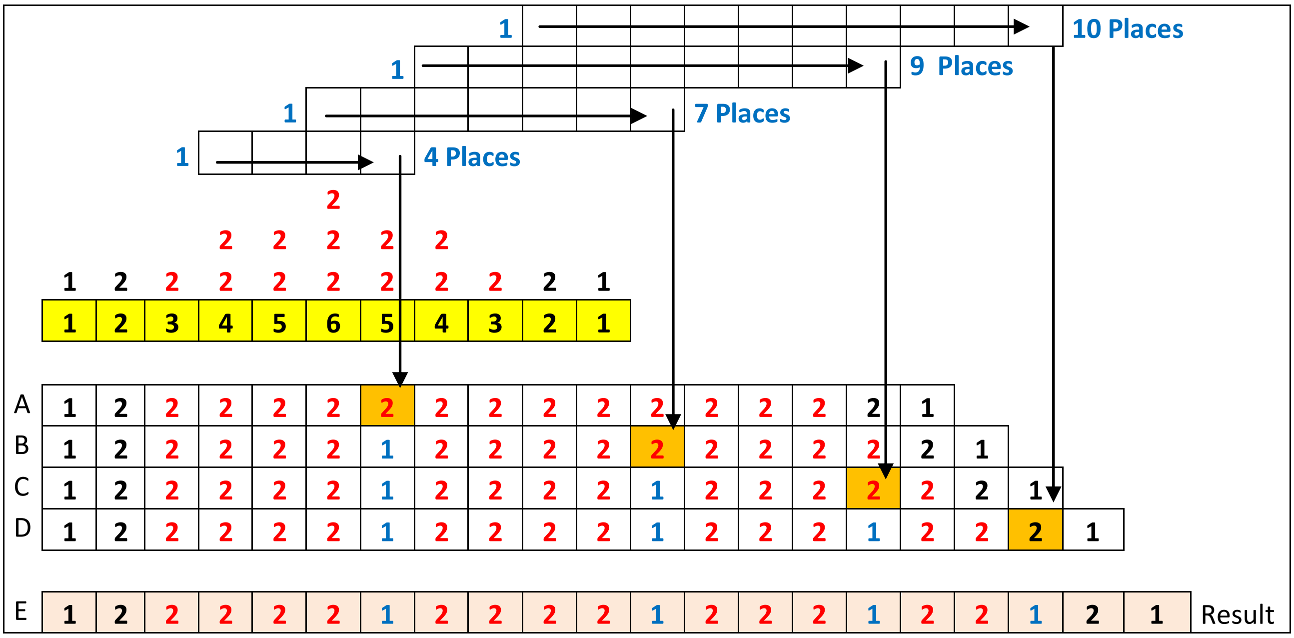
122222122221222122121

$111111^2 = 12345654321$

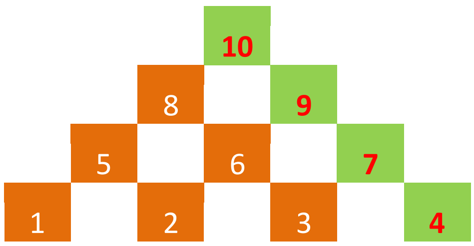
We convert numbers 3, 4, 5 and 6 into numbers 2 and 1

				1	2	1				
		1	2	2	2	2	2	1		
1	2	2	2	2	2	2	2	2	2	1
1	2	3	4	5	6	5	4	3	2	1

A) We order the numbers 2 (red) side by side.
B) We move the first number 1 four places and lower it.
C) We move the second number 1 seven places and lower it.
D) We move de third number 1nine places and lower it.
E) Finally we move the last number 1 ten places and lower it.



Places



$$Q = quantity\ of\ number\ of\ triangule\ base. = Terms - 2$$

$$Q = 6 - 2 = 4\ (quantity\ of\ number\ of\ triangule\ base).$$

Sequence of the numbers 1

The sequence of the numbers 1 corresponds to those that are located in the middle, not those of the extremes.

Example: Hexanomial, sequence 4, 7, 9, 10

$(a+b+c+d+e+f)^2$

Total Terms squared=T
T=6

The results belong to the boxes that the number 1 moves.

P= Places P1= first 1 P2= Second 1 P3= Third 1 P4= Four 1 The totality of numbers 1 that move is equal to P1 The totality of numbers 1 that exists per polynomial is equal to T.	A) P1=T-2 = 4 6-2
	B) P2=P1-1+P1=7 3 + 4
	C) P3=P1-2+P1-1+P1=9 2 + 3 + 4
	D) P4= P1-3+P1-2+P1-1+P1=10 1 + 2 + 3 + 4

Conclusion

This new algorithm presents a surprising precision, which transforms it into a reliable system or method for performing squared number operations.
This is simply different, it is a novel and interesting alternative.
The correct setting of the coefficients of the terms is fundamental to reselect the final addition operations.
This potentiation algorithm opens the door for the development of polynomials elevated to the cube, to the fourth, etc.
The numbers 1, 11, 1111, 1111, etc., squared, enclose in themselves the information on how the coefficients are ordered. The transformation method is very simple.
The multiplications by 121 forming the expansions are precise and very simple to obtain the coefficients.
The coefficients determine the precise order of the terms that form polynomials.

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Other algorithms by the same author:

Zeolla Gabriel Martin, New multiplication algorithm, http://vixra.org/abs/1811.0320
Zeolla Gabriel Martin, Algoritmo de multiplicación distributivo, http://vixra.org/abs/1903.0167
Zeolla Gabriel Martin, Simple Tesla algorithm, http://vixra.org/abs/1909.0215
Zeolla Gabriel Martin, New square potentiation algorithm, http://vixra.org/abs/1904.0446
Zeolla Gabriel Martin, New cubic potentiation algorithm, http://vixra.org/abs/1905.0098
Zeolla Gabriel Martin, Expansion of Terms Squared, Square of a Binomial, Trinomial, Tetranomial and Pentanomial. http://vixra.org/abs/1905.0361

Reference

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- Espuig, Alicia (2011-06). *Matemáticas: Prueba de acceso a Ciclos Formativos de Grado Superior*. Marcombo. ISBN 8426717047. Consultado el 15 de febrero de 2018.
- ↑ Saltar a:a b Gacía, Francisco Javier; Martín, Ruth (2016). *Matemáticas 2º ESO (LOMCE) - Trimestralizado 2016*. Editex. ISBN 9788490788004. Consultado el 15 de febrero de 2018.
- ↑ Miguel Guzmán. Ecuaciones diferenciales
- ↑ Saltar a:a b Domínguez, Luis Fernando Díaz (4 de marzo de 2016). *Manual. Competencia clave. Matemáticas Nivel III (FCOV12). Formación complementaria*. EDITORIAL CEP. ISBN 9788468183855. Consultado el 15 de febrero de 2018.