

*Logistics speciosae*: the four forms of the operation are shown by example.

Examples of addition.

To be added	..... a	To be added	..... aa	To be added	..... aaa
	..... b		..... bc		..... bcc
Sum	a + b	Sum	aa + bc		aaa + bcc
To be added	..... a + b	To be added	..... a + b		
	..... c + d		..... c - d		
Sum	a + b + c + d	Sum	a + b + c - d		
To be added	..... a + b	To be added	..... a + b		
	..... - d		..... - b		
Sum	a + b - d	Sum	a		
To be added	..... a + b	To be added	..... aa + cc		
	..... c + b		..... aa + cc		
Sum	a + c + 2.b	Sum	2.aa + 2.cc		
To be added	..... aaa + cdf - ddd	To be added	..... b + 7.a		
	..... aaa + bdd + ddd		..... + 9.a		
Sum	2.aaa + cdf + bdd	Sum	b + 16.a		
To be added	..... b + 7.a	To be added	..... b + 9.a	To be added	..... b - 9.a
	..... - 9.a		..... b - 7.a		..... b + 7.a
Sum	b - 2.a	Sum	2.b - 2.a	Sum	2.b - 2.a

Examples of subtraction.

Being placed	..... a	Being placed	..... aa	Being placed	..... aaa
To be taken	..... b	To be taken	..... bc	To be taken	..... bcc
Remaining	a - b	Remaining	aa - bc	Remaining	aaa - bcc
Being placed	..... a + b	Being placed	..... a + b		
To be taken	..... a + d	To be taken	..... c - d		
Remaining	b - d	Remaining	a + b - c + d		
Being placed	..... a + b	Being placed	..... a + b		
To be taken	..... - d	To be taken	..... - b		
Remaining	a + b + d	Remaining	a + 2.b		
Being placed	..... a + b	Being placed	..... aa + cc		
To be taken	..... c + b	To be taken	..... aa + cc		
Remaining	a - c	Remaining	0		
Being placed	..... aaa + cdf - ddd				
To be taken	..... aaa + bdd + ddd				
Remaining	cdf - bdd - 2ddd				
Being placed	..... b + 7.a	Being placed	..... b + 7.a		
To be taken	..... + 9.a	To be taken	..... - 9.a		
Remaining	b - 2.a	Remaining	b + 16.a		
Being placed	..... b + 9.a	Being placed	..... b - 9.a		
To be taken	..... b - 7.a	To be taken	..... b + 7.a		
Remaining	+ 16.a	Remaining	- 16.a		

Examples of multiplication.

To be multiplied	a	To be multiplied	bc
Product	ab	Product	d
To be multiplied	aa	To be multiplied	bbb
Product	abb	Product	bbb
To be multiplied	bbcc	To be multiplied	b + a
Product	bbccdd	Product	b + a
To be multiplied	b - a	To be multiplied	b + a
Product	bb - ba - ba + aa	Product	b - a
To be multiplied	b - a	To be multiplied	bb + ba
Product	bb - 2.ba + aa	Product	-ba - aa
To be multiplied	b + c + d	To be multiplied	bb - aa
Product	ba + ca + da	Product	b + c - d
		Product	b - c + d
		Product	bb + bc - bd
		Product	-bc - cc + dc
		Product	+bd +dc - dd
		Product	bb - cc +2.cd - dd

Examples of division or placing upon.

Dividend	bbcc	Dividend	bcde
Divisor	cc	Divisor	bdc
Quotient	bb	Quotient	c
Dividend	bcdf	Dividend	bc +ca + da
Divisor	cf	Divisor	a
Quotient	bd	Quotient	b + c + d
Dividend	ba +ca +da	Dividend	bb +2.ba + aa
Divisor	b + c + d	Divisor	b + a
Quotient	a	Quotient	b + a
Dividend	bb - aa	Dividend	bb - aa
Divisor	b - a	Divisor	b + a
Quotient	b + a	Quotient	b - a

These last three examples are evident from the previous generation.

Note.

If the form of division formulated by the operation of placing under, instead of the words Dividend, Divisor, and Quotient, [the words] Placed Upon [Applicatum], Measuring [Metiens], and Outcome [Ortuum] can be invoked or [words] similar to these, or by similar means.

Signs for comparison made use of in what follows.

Being Equal  $\text{=====}$  as a  $\text{=====}$  b means a is equal to b itself.

Being Greater  $\text{>}$  as a  $\text{>}$  b means a is greater than b.

Being Lesser  $\text{<}$  as a  $\text{<}$  b means a is less than b.

*Reducible fractions on reduction are equal to themselves .*

$$\frac{ba}{b} = a \quad \left| \quad \frac{bca}{b} = ca \quad \left| \quad \frac{bca}{c} = ba \quad \left| \quad \frac{bcda}{ca} = bd \right. \right. \right.$$


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$$\frac{ba}{c} + d = \frac{ba}{c} + \frac{dc}{c} = \frac{ba+dc}{c} \quad \left| \quad \frac{ac}{b} + d = \frac{ac+bd}{b} \right.$$

$$\frac{ac}{b} + \frac{dd}{g} = \frac{acg}{bg} + \frac{bdd}{bg} = \frac{acg+bdd}{bg}$$


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$$\frac{ac}{b} - d = \frac{ac}{b} - \frac{db}{b} = \frac{ac-db}{b}$$

$$\frac{ac}{b} - \frac{dd}{g} = \frac{acg}{bg} - \frac{ddb}{bg} = \frac{acg-ddb}{bg}$$


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$$\frac{\frac{ac}{b}}{\frac{b}{b}} = \frac{acb}{b} = ac \quad \left| \quad \frac{\frac{ac}{b}}{d} = \frac{acd}{b} \quad \left| \quad \frac{\frac{ac}{b}}{\frac{dd}{g}} = \frac{acdd}{bg} \right. \right.$$


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$$\frac{\frac{aaa}{b}}{d} = \frac{aaa}{bd} \quad \left| \quad \frac{\frac{bg}{ac}}{d} = \frac{bgd}{ac} \quad \left| \quad \frac{\frac{bbb}{c}}{\frac{aaa}{dg}} = \frac{bbbdg}{caaa} \right. \right.$$


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Examples of equations of irregular form reduced to the legitimate form:

*By Antithesis or transposition of particular [terms], which is done by ordinary addition.*

Let . . . . .  $aa - dc = gg$  , , , , be the equation to be reduced.

To be added to both sides . . . . + dc

Thus, . . . . .  $aa = gg + dc$  . . . . . shall be reduced.

In like manner . . . .  $aa - dc = gg - ba$  , , , , to be reduced.

To be added to both sides . . . . + dc + ba

Then, . . . . .  $aa + ba = gg + dc$  , , , , is reduced.

*By ordinary division, how a given homogeneous [term] can be cancelled from the components by a degree [power], which is called the Depression of Viète.*

Let . . . . .  $aaa + baa = dca$  , , , , be the equation to be reduced.

Therefore . . . . .  $\frac{aaa}{a} + \frac{baa}{a} = \frac{dca}{a}$

Therefore, . . . . .  $aa + ba = dc$  , , , , is reduced.