

"Ras1" * 2

Multiplication of all pixels of Ras1 with value 2

1	1	1
1	1	1
1	1	1

 $\cdot 2 =$

2	2	2
2	2	2
2	2	2

"Ras1" + 2

Addition of all pixels in Ras1 with value 2

9	1	1
1		
1	5	1

 $+ 2 =$

11	3	3
3		
3	7	3

"Ras1" + "Ras2" + "Ras3"

Addition of all overlapping pixels of Ras1 and Ras2 and Ras3

9	1	1
1		
1	5	1

 $+$

11	3	3
3	3	1
3	7	3

 $+$

1	1	1
1	1	1
1	1	1

 $=$

21	5	5
5		
5	13	5

This illustrates why it is important to check if a raster is purely integer or float or how to convert between these two (this is due to the underlying Python 2 syntax)

"Ras1" / 2

Divide all pixels from the integer Ras1 by value 2

2	4	8
1	3	7
9	10	2

 $/ 2 =$

1	2	4
0	1	3
4	5	1

"Ras1" / 2.0

Divide all pixels from the integer Ras1 by value 2.0

2	4	8
1	3	7
9	10	2

 $/ 2.0 =$

1.0	2.0	4.0
0.5	1.5	3.5
4.5	5.0	1.0

"Ras1" / 2

Divide all pixels from the float Ras1 by value 2

2.0	4.0	8.0
1.0	3.0	7.0
9.0	10.0	2.0

 $/ 2 =$

1.0	2.0	4.0
0.5	1.5	3.5
4.5	5.0	1.0

Con("Ras1" == 2, 1)

If a pixel in Ras1 has value 2, assign value 1 in new raster. In all other cases do nothing

2	2	8
1	3	7
9	10	2

 \rightarrow

1	1	
		1

Con("Ras1" == 2, 1, 9)

If a pixel in Ras1 is 2, assign value 1 in new raster. In all other cases assign value 9

2	2	8
1	3	7
9	10	2

 \rightarrow

1	1	9
9	9	9
9	9	1

Con("Ras1" > 2, "Ras2", "Ras1")

If a pixel in Ras1 is larger than value 2, it will be replaced by the corresponding value of Ras2. In all other cases, the original Ras1 value is kept.

2	2	8
1	3	7
9	10	2

 \rightarrow

1	2	1
9	5	4
4	10	2

Con("Ras1" == 2, "Ras2", Con("Ras1" > 5, 99, "Ras1"))

If a pixel in Ras1 is equals 2, it will be replaced by the corresponding value of Ras2. However, if it's larger than 5, it will be replaced by value 99. In all other cases, the original Ras1 value is kept.

2	2	8
1	3	7
9	5	0

 \rightarrow

1	2	1
9	5	4
4	10	2

 \rightarrow

1	2	99
1	3	99
99	5	0

Con("Ras1" != 0, "Ras1")

If a value in pixel in Ras1 does NOT have value 0, the new raster will have the original value from Ras1. In all other cases do nothing. NoData is ignored

2	2	8
1	3	
0	0	0

 \rightarrow

2	2	8
1	3	

Con(("Ras1" > 0) & ("Ras2" > 5), Con("Ras1" > "Ras2", "Ras1", "Ras2"), -1)

If a pixel in Ras1 is larger than 0 and at the same time larger than 5 in Ras2, the new raster is assigned the value from Ras1, but only if it is also larger than the value from Ras2. If the value is smaller the new raster is assigned the value from Ras2. As such, if the first condition is met, the second determines the larger of both values and assigns it. If the first condition is not met, the new raster is immediately assigned value -1.

2	2	8
9	3	7
0	5	7

 \rightarrow

1	6	1
9	5	4
4	10	6

 \rightarrow

-1	6	-1
9	-1	-1
-1	10	7

Con(IsNull("Ras1"), "Ras2", "Ras1")

If a pixel in Ras1 has no value, the value from Ras2 will be used in the new raster. If a value exists, it is kept

2	2	
1		
0	0	0

 \rightarrow

1	2	1
9	5	4
4	10	2

 \rightarrow

2	2	1
1	5	4
0	0	0

SetNull("Ras1" == 0, "Ras1")

If a pixel in Ras1 has value 0, change it to NoData. In all other cases the value of Ras1 is kept

2	2	1
1	5	4
0	0	0

 \rightarrow

2	2	1
1	5	4

Power("Ras1", "Ras2")

Calculate value from Ras1 to the power of the value from Ras2

2	2	3
1	2	3
5		10

 \rightarrow

1	2	3
9	5	4
2	10	2

 \rightarrow

2	4	27
1	32	81
25		100