

4. “Hydrology Tools” – for use in deriving water flow parameters from an elevation grid

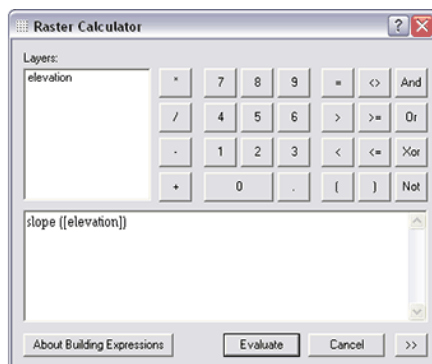
V. Raster Analysis

- a. Map Algebra – mathematical manipulation within and between raster grids, allows value-added transformation of grid data
 - i. Uses raster grids covering same area, of same grid resolution, and same projection
 - ii. Mathematical and logical operations on grid overlays
 1. e.g. adding/subtracting cell values between two grids
 2. True or False conditions using grid overlays

Example – matrix addition of two grids



- b. Raster Calculator is a tool to perform mathematical calculations using operators and functions, set up selection queries, or type in Map Algebra syntax.
 - i. Inputs can be raster datasets or raster layers, coverages, shapefiles, tables, constants, and numbers.
 - ii. To access the Raster Calculator, select it from the Spatial Analyst toolbar menu. In the dialog, you can enter Map Algebra into the expression box.



Paper and Pencil Work with Map Algebra

Work the following map algebra problems with grid 1 and 2 on the following pages (use only the grid cells highlighted in the box). Place your results on the blank grid answer sheets.

grid 1 x grid 2

grid 1 / grid 2

grid 1 + grid 2

grid 1 - grid 2

log (grid 1)

grid 1 x 333

		0	0	0	0	0	0		
6		0	385	321	354	635	0		
5		0	375	345	435	435	0		
4		0	243	356	217	235	0		
3		0	321	456	432	417	0		
2		0	0	0	0	0	0		
1		0	0	0	0	0	0		
0	0	1	2	3	4	5	6	7	8

Grid 1

7		2	2	2	2	2	2		
6		2	2	2	2	2	2		
5		2	2	2	2	2	2		
4		2	2	2	2	2	2		
3		2	2	2	2	2	2		
2		2	2	2	2	2	2		
1		2	2	2	2	2	2		
0	0	1	2	3	4	5	6	7	8

