

# **Function Pyramids**

First I experimented with different integers.

I noticed that powers of 2 gave integer answers.

$$f(1,2)=1$$

$$f(4,4)=4$$

$$f(4,1)=2$$

$$f(8,4)=5$$

Sometimes I got 0 or  $-\infty$ .

$$f(1,1)=0$$

$$f(2,0)=-\infty$$

This looks like  $\log_2$

I think  $f(a,b)=\log_2(ab)$

I tested this function with more numbers.

$$f(2048,4096)=23$$

$$f(1048576,1073741824)=50$$

To get 1 in top cell 2<sup>nd</sup> row has 1 and 2

1,2,2 works at bottom.

		1		
	1		2	
1		2		2

For 5:

		5		
	4		8	
4		4		64

For negative in top cell:

I need the 2<sup>nd</sup> row to give a negative power of 2.

		-1		
	0.5		1	
1.414213562 ( $\sqrt{2}$ )		1		2