

Consider the notation:

$3 \uparrow 3 = 3 \times 3 \times 3$ , as in three 3's multiplied together

$3 \uparrow\uparrow 3 = 3^{3^3}$ , as in three 3's in a tower of exponentiation

In general,  $3 \uparrow_n 3 = 3 \uparrow_{n-1} 3 \uparrow_{n-1} 3$

Now consider,  $g_1 = 3 \uparrow_4 3 \approx 1.25 \times 10^{3638334640024}$

Let  $g_n = 3 \uparrow_{g_{n-1}} 3$

Graham's number is defined as  $g_{64}$

If you tried to imagine every digit of Graham's number, your brain would collapse into a black hole!