**A** simple 2×2 [Le Monde mathematical puzzle](https://xianblog.wordpress.com/2011/09/03/le-monde-puzzle-website/):

*Arielle and Brandwein play a game out of two distinct even integers between 1500 and 2500,  and y. Providing one another with either the pair (x/2,y+x/2) or the pair (x+y/2,y/2) until they run out of even possibilities or exceed 6 rounds. When x=2304, what is the value of y that makes Brandwein win?*

Which I solved by a recursive function (under the constraint of a maximum of 11 levels of recursion):

nezt=function(x,y,i=1){

if ((i>11)||((is.odd(x)&is.odd(y)))){ return(-1)

}else{

z=-1

if (is.even(x)) z=-nezt(x/2,y+x/2,i+1)

if (is.even(y)) z=max(z,-nezt(y/2,x+y/2,i+1))

return(z)}}

and checking all values of y between 1500 and 2500 when x=2304, which produces y=1792 as the only value when Arielle loses. The reason behind (?) is that both 2304 and 1792 are divisible by 2⁸, which means no strategy avoids reaching stalemate after 8 steps, when it is Arielle’s turn to play.