Mathematics

Growth and Decay.
Downloadable resource - To the power of n.

Mr. Thomas

Try this

Xavier is putting rice on a chess board.
He puts:

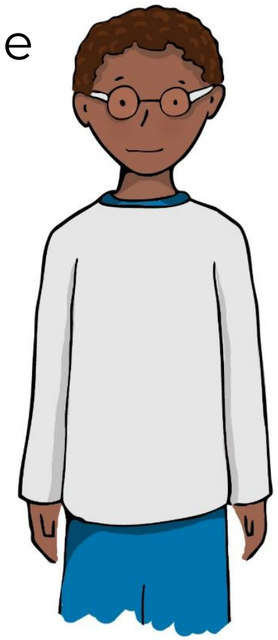
1 grain of rice in the first square,

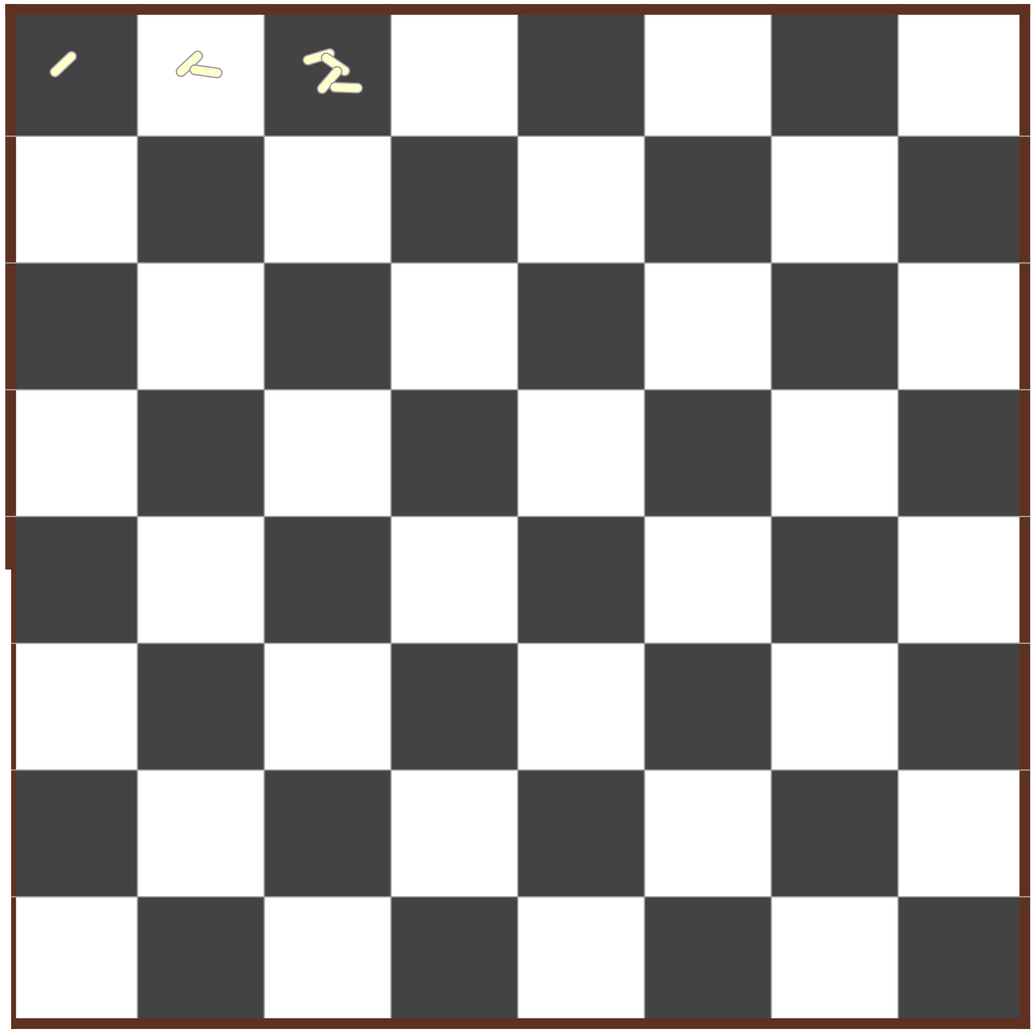
2 grains of rice in the second square,

and 4 grains of rice in the third square.

He continues this pattern, doubling the number from square-to-square.

Guess the total number of grains of rice once Xavier finishes the whole board like this.





Connect

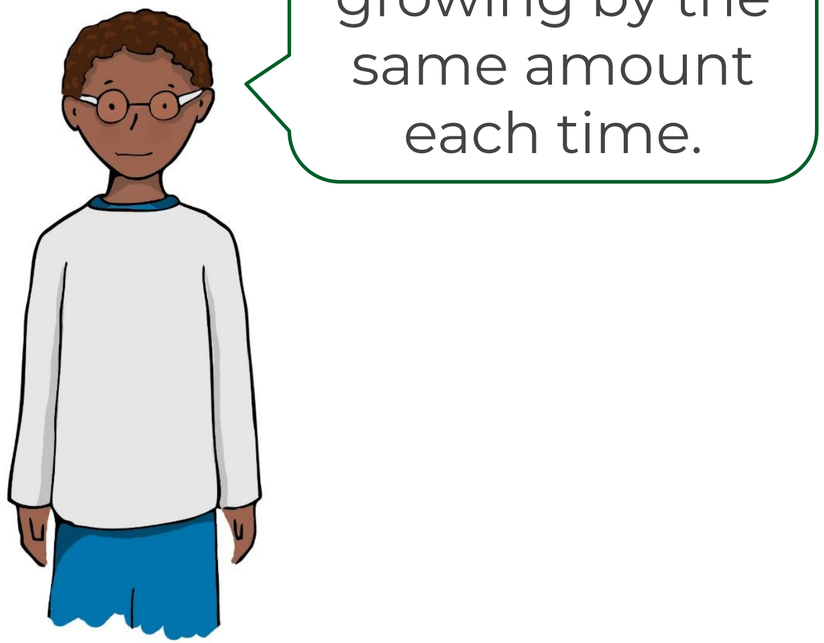
2

2×2

$2 \times 2 \times 2$

$2 \times 2 \times 2 \times 2$

$2 \times 2 \times 2 \times 2 \times 2$



Independent Task

$y = 5^n$

y							
n	-2	-1	0	1	2	3	4

$y = 10^n$

y							
n	-2	-1	0	1	2	3	4

Plot the graphs. What do you notice? What similarities and differences are there?

Consider $3^n < 30 < 3^m$. For which consecutive integer values of n and m is this true?

Consider $5^a < 200 < 5^b$. For which consecutive integer values of a and b is this true?

Explore

In binary fission, a cell divides in 2 to create 2 new cells. If binary fission occurs every minute, after how long will there be

a) More than 10 cells?

b) More than 100 cells?

c) More than 1000 cells?

d) More than 10000 cells?