

MathFLIX CHALLENGE

The King's Chessboard

In this story, the wise man agrees to take as his reward one grain of rice on the first square of the checkerboard. He asks that it be doubled on each succeeding square. Use the checkerboard below to plan the king's daily payment. Then, use the table to calculate the total.

| | | | | | |
|----|-----|--------|-----------|-------------|----------------|
| 1 | 7 | 13 | 19 | 25 | 31 |
| 1 | 64 | | | | |
| 2 | 8 | 14 | 20 | 26 | 32 |
| 2 | 128 | | | | |
| 3 | 9 | 15 | 21 | 27 | 33 |
| 4 | | 16,384 | | | |
| 4 | 10 | 16 | 22 | 28 | 34 |
| 8 | | | 2,097,152 | | |
| 5 | 11 | 17 | 23 | 29 | 35 |
| 16 | | | | 268,435,456 | |
| 6 | 12 | 18 | 24 | 30 | 36 |
| | | | | | 34,359,738,368 |

Look for the pattern in this table. It will show you how to quickly find the sum of grains of any number of days.

| <u>Day</u> | <u>Daily Grains</u> | <u>Total Grains</u> |
|------------|---------------------|---------------------|
| 1 | 1 | 1 |
| 2 | 2 | 3 |
| 3 | 4 | 7 |
| 4 | 8 | |
| 5 | 16 | |
| 6 | 32 | |
| 7 | 64 | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |