The legend of the chessboard and the grains of wheat

Legend has it that long ago a king named Sheram reigned in a certain part of India.

In one of the battles in which his army participated, he lost his son, and that left him deeply

Dismayed Nothing that his subjects offered him was able to rejoice him.

One good day a Sissa appeared at his court and asked for a hearing. The king accepted her and Sissa introduced her to him.

Game that, he assured, would amuse and rejoice again: chess. After explaining the rules and giving him a board with his pieces the king began to play and felt

Marveling and his grief largely disappeared. Sissa had succeeded. Sheram, grateful for

Precious gift, told Sissa that as a reward he asked for what he wanted arguing that it was

Rich enough to fulfill his highest desire. Sissa asked her majesty time for

Meditate the response.

When the next day Sissa appeared again before the throne, she marveled the king with his request,

Unprecedented for his modesty. "Sovereign," Sissa said, "send me a grain of wheat for the first square on the

Chess.

- A simple grain of wheat? Replied the king. - Yes, sovereign. In the second box, order me to give me two grains; For the third, 4; For the fourth, 8; by

The fifth, 16; For the sixth, 32 ...

"Enough," the king interrupted irritably. You will receive the wheat corresponding to the 64 squares of the

According to your wish: for each box double quantity than for the previous one.

But you must know that your request is unworthy of my generosity. In asking me such a miserable reward,

Despise, irreverent, my benevolence. Truly, as wise as you are, you should have given

Greater proof of respect for the goodness of your sovereign. Retreat. My servers will pull you a sack with the

Wheat you request.

Sissa smiled, left the room and waited for the door of the palace.

During the following hours the monarch waited impatiently and without understanding the delay, the calculations of

The court mathematicians to find out the number of grains that corresponded to Sissa.

In the morning the senior mathematician of the court asked for a hearing to present the results. "Before I begin your report," Sheram told him, "I want to know if Sissa has finally been delivered."

Miserable reward he has requested. "Your Majesty, we have scrupulously calculated the total quantity of grains which Sissa wishes to receive. Result

Such a huge figure ...

"Whatever their magnitude," the King interrupted the king, "my barns will not be impoverished." He

Promised to give him that reward, and therefore, it must be given to him. - Sovereign, it is not up to you to fulfill such a desire. In all your barns there is no

Amount of wheat required by Sissa. Nor does it exist in the granaries of the whole kingdom. Even the world's granaries are insufficient. If you wish to deliver the promised reward without fail, he orders all the kingdoms of the earth to become crops, to have the oceans and seas dried up, to order the melting of the ice and

The snow covered by the distant deserts of the North. That the whole space be totally planted with wheat, and

Orders that all the harvest obtained in these fields be delivered to Sissa. Only then will you receive your

reward.

The king listened in amazement to the old wise man's words.

"Tell me what that monstrous figure is," he said, reflecting. "Oh, sovereign!" Eighteen trillion four hundred forty-six thousand seven hundred forty-four billion

Seventy-three thousand, seven hundred and nine million, five hundred and fifty-one thousand, six hundred and fifteen.

How do you get to this result?