

One Grain of Rice

Long ago in India, there lived a raja who believed that he was wise and fair. But every year he kept nearly all of the people's rice for himself. Then when famine came, the raja refused to share the rice, and the people went hungry. Then a village girl named Rani devises a clever plan. She does a good deed for the raja, and in return, the raja lets her choose her reward. Rani asks for just one grain of rice, doubled every day for thirty days. Through the surprising power of doubling, one grain of rice grows into more than one billion grains of rice — and Rani teaches the raja a lesson about what it truly means to be wise and fair.

In the story, Rani cleverly tricks the raja into giving rice to the village. Use the story to answer the questions below.

How many grains of rice Rani will have at the end of 30 days? Estimate before you calculate.

How many grains of rice will Rani have at the end of n days?

One Grain of Rice

NAME _____

In the book *One Grain of Rice* by Demi, the main character Rani cleverly tricks the raja into giving rice to the village. Use the story from the book to answer the questions below.

1. Estimate how many grains of rice you think Rani will have at the end of 30 days.
2. Use the chart below to record the number of grains of rice Rani would receive each day.

Day 1 1 <i>grain of rice</i>	Day 2 2 <i>grains of rice</i>	Day 3 <i>grains of rice</i>	Day 4 <i>grains of rice</i>	Day 5 <i>grains of rice</i>	Total After 5 Days
Day 6 <i>grains of rice</i>	Day 7 <i>grains of rice</i>	Day 8 <i>grains of rice</i>	Day 9 <i>grains of rice</i>	Day 10 512 <i>grains of rice</i>	Total After 10 Days
Day 11 <i>grains of rice</i>	Day 12 <i>grains of rice</i>	Day 13 <i>grains of rice</i>	Day 14 <i>grains of rice</i>	Day 15 <i>grains of rice</i>	Total After 15 Days
Day 16 <i>grains of rice</i>	Day 17 <i>grains of rice</i>	Day 18 131,072 <i>grains of rice</i>	Day 19 <i>grains of rice</i>	Day 20 <i>grains of rice</i>	Total After 20 Days
Day 21 <i>grains of rice</i>	Day 22 <i>grains of rice</i>	Day 23 <i>grains of rice</i>	Day 24 <i>grains of rice</i>	Day 25 <i>grains of rice</i>	Total After 25 Days
Day 26 <i>grains of rice</i>	Day 27 <i>grains of rice</i>	Day 28 <i>grains of rice</i>	Day 29 <i>grains of rice</i>	Day 30 <i>grains of rice</i>	Total After 30 Days

3. If the story continued and you know how many grains of rice Rani receives on Day 30, how can you determine how many grains of rice she would receive on Day 31?

How can you determine how many grains of rice she would receive on Day 35?

How can you determine how many grains of rice she would receive on Day 40?

If you know how many grains of rice she receives on a certain day, how can you determine how many grains of rice she will receive 2 days later? ...10 days later?

4. Write a sentence that describes how many grains of rice Rani receives each day.
5. Write a sentence that describes the *total* number of grains of rice Rani will receive through a certain number of days.
6. Write each of your sentences from Questions 4 and 5 in the form of an equation using only numbers and symbols.
7. Test each of your equations to see if they generate the values in the table. Were your algebraic equations correct? If not, modify your equations and test them until you are certain they are correct. Record the changes you make so that you can explain to others how you arrived at your final equations.