Name: _____ Date: _____ Period: _____

Unit 3 Growing, Growing, Growing #2 Classwork

One day in the ancient kingdom of Montarek, a peasant saved the life of the king's daughter. The king was so grateful he told the peasant she could have any reward she desired. The peasant, the kingdom's chess champion, made an unusual request:

"I would like you to place 1 ruba on the first square of my chessboard, 2 rubas on the second square, 4 on the third square, 8 on the fourth square, and so on. Continue this pattern until you have covered all 64 squares. Each square should have twice as many rubas as the previous square."

The king replied, "Rubas are the least valuable coin in the kingdom. Surely you can think of a better reward!" But the peasant insisted, so the king agreed to her request.
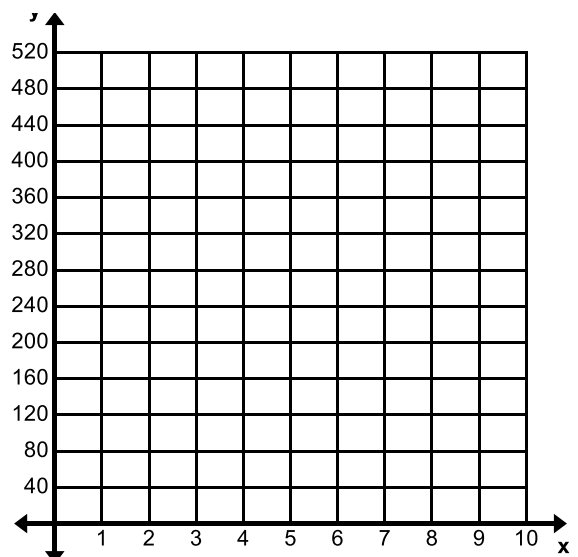
Did the peasant make a wise choice? Explain.

1. Make a table showing the number of rubas the king will place on squares 1 through 10 of the chessboard.

Square	1	2	3	4	5	6	7	8	9	10
Rubas										

2. How does the number of rubas change from one square to the next?

3. Graph the data for squares 1 to 10, using the number of the square as x and the number of rubas as y.

4. Write an explicit equation for the relationship between the number of the square x and the number of rubas y.

5. a) How does the pattern of change you observed in the table show up in the graph?

    b) How does it show up in the equation?

6. Write at least five other explicit equations for this relationship, using different terms from the pattern.

7. Which square will have 2^{30} rubas? Explain.

8. What is the first square on which the king will place at least one million rubas? How many rubas will be on this square?