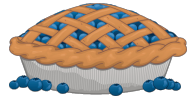


## Warm Up

11/18

What is your favorite pie?

Apple



Pumpkin



Chocolate Cream Pie



Strawberry Rhubarb



Blueberry



Pecan

Cherry

Never had pie



*Put a checkmark next to your favorite.*

## Problem 1.2

- A**
1. Make a table showing the number of rubas the king will place on squares 1 through 10 of the chessboard.
  2. Graph the points (*number of the square*, *number of rubas*) for squares 1 to 10.
  3. Write an equation for the relationship between the number of the square  $n$  and the number of rubas  $r$ .

1.

Square Number	Number of Rubas
1	1
2	2
3	4
4	8
5	16
6	32
7	64
8	128
9	256
10	512

+1 <  
+1 <  
+1 <

> x 2  
> x 2  
> x 2  
> x 2  
> x 2  
> x 2  
> x 2  
> x 2  
> x 2  
> x 2

2.  
> +1  
> +2  
> +4  
> +8  
> +16



Not Linear!

Exponential  
multiplying  
by a constant  
factor

How can we write an equation?

We know the equation for  
Problem 1.1

Number of Cuts	Number of Ballots
1	2
2	4
3	8
4	16
5	32
6	64
7	128
8	256
9	512
10	1,024

Problem 1.2

$x$	Number of Rubas
1	1
2	2
3	4
4	8
5	16
6	32
7	64
8	128
9	256
10	512

$$y = 2^x$$

\* Once you think you have your equation,  
check that it works with 2 points in your table.

- Comparing the two tables, it looks like the y-values in Problem 1.2 are half the values in Problem 1.1.
- We know the equation for 1.1 is  $y = 2^x$
- The equation for 1.2 must then be the equation for 1.1 divided by 2.
- Check it out!

How can we write an equation?

We know the equation for  
Problem 1.1

Number of Cuts	Number of Ballots
1	2
2	4
3	8
4	16
5	32
6	64
7	128
8	256
9	512
10	1,024

$$y = 2^x$$

Problem 1.2

x	Number of Rubas
1	1
2	2
3	4
4	8
5	16
6	32
7	64
8	128
9	256
10	512

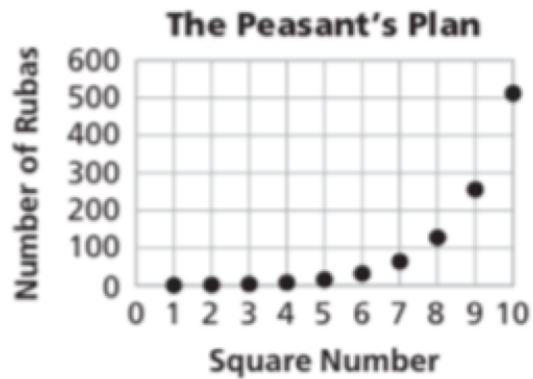
Always check your equation with at least 2 different data points from your table to make sure it works!

- B**
1. How does the number of rubas change from one square to the next?
  2. How does the pattern of change you observed in the table show up in the graph? How does it show up in the equation?

1.

Square Number	Number of Rubas
1	1
2	2
3	4
4	8
5	16
6	32
7	64
8	128
9	256
10	512

2.



### Problem 1.1

Number of Cuts	Number of Ballots
1	2
2	4
3	8
4	16
5	32
6	64
7	128
8	256
9	512
10	1,024

### Problem 1.2

Square Number	Number of Rubas
1	1
2	2
3	4
4	8
5	16
6	32
7	64
8	128
9	256
10	512

- C** 1. Which square will have  $2^{30}$  rubas? Explain.
2. What is the first square on which the king will place at least one million rubas? How many rubas will be on this square?
3. Larissa uses a calculator to compute the number of rubas on a square. When is the first time the answer is displayed in scientific notation?
- D** Compare the growth pattern to the growth pattern in Problem 1.1.

# Homework

Finish classwork