

NAME: _____ Date: _____ Period: _____

Growing, Growing, Growing Assignment #6

1. Latisha has a 24-inch string of licorice to share with her friends. As each friend asks her for a piece, Latisha gives him or her half of what she has left. She doesn't eat any of the licorice herself.

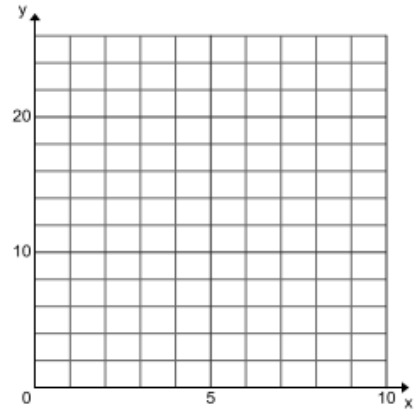
a. Make a table showing the length of licorice Latisha has left each time she gives a piece away.

Cuts	1	2	3	4	5	6
Amount of licorice left						

b. Make a graph of the data from part (a).

c. Suppose that, instead of half the licorice that is left each time, Latisha gives each friend 4 inches of licorice. Make a table and a graph for this situation. Use the graph at the right for both b and c.

Cuts	1	2	3	4	5	6
Amount of licorice left						



d. Compare the tables and the graphs for the two situations. Explain the similarities and the differences.

2. In the first classwork of this unit, you read about the ballots Chen is making for a meeting. Recall that Chen cuts a sheet of paper in half, stacks the two pieces and cuts them in half, stacks the resulting four pieces and cuts them in half, and so on. The paper Chen starts with has an area of 64 square inches. Complete the table to show the area of a ballot after each of the first 10 cuts.

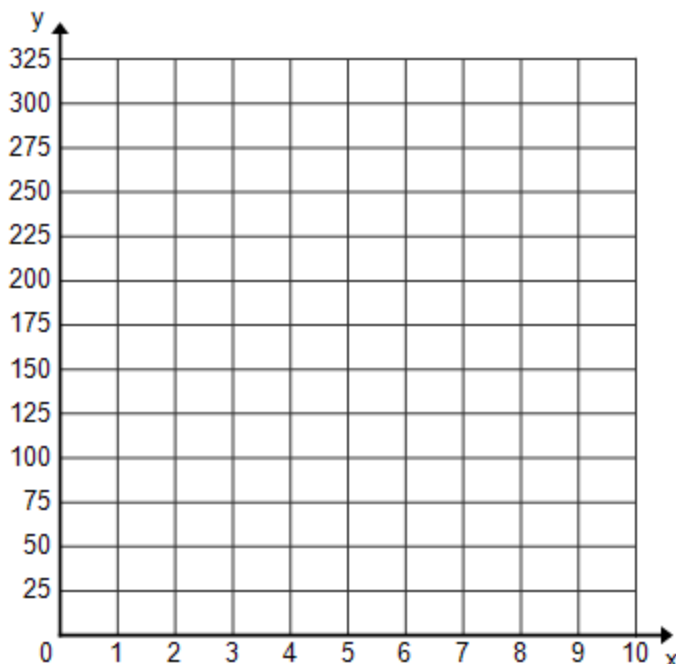
Number of Cuts	Area (in ²)
0	64
1	32
2	16
3	
4	
5	
6	
7	
8	
9	
10	

3. How does the area of a ballot change with each cut?

4. Write an equation for the area A of a ballot after any cut n .

5. How is the pattern of change in the area different from the exponential growth patterns you studied?

6. Graph the data from the table in #2.



7. Chen finds that his ballots are very small after only a few cuts. He decides to start with a larger sheet of paper. The new paper has an area of 324 in^2 . Complete this table to show the area of each ballot after each of the first 10 cuts.

Number of Cuts	Area (in^2)
0	324
1	162
2	81
3	
4	
5	
6	
7	
8	
9	
10	

8. Write an equation for the area A of a ballot after any cut n .

9. In number 2 above, the area of a ballot is 1 in^2 after 6 cuts. How many cuts does it take to get ballots smaller than 1 in^2 if Chen uses the larger sheet?

10. Chen wants to be able to make 12 cuts before getting ballots with an area of 1 in^2 . How large does his starting paper need to be? (this is at 0 cuts)

11. Graph the data from the table on the axes from #6.

Tell whether the equation represents exponential decay or exponential growth. Explain why.

12. $y = 0.8(2.1)^x$

13. $y = 20(0.5)^x$

14. $f(x) = (0.928)^x$

15. $f(x) = 14.73(6)^x$