

## Today's Learning Goal(s):

Date: \_\_\_\_\_

By the end of the class, I will be able to:

- a) describe the characteristics of the graphs and equations of exponential functions.

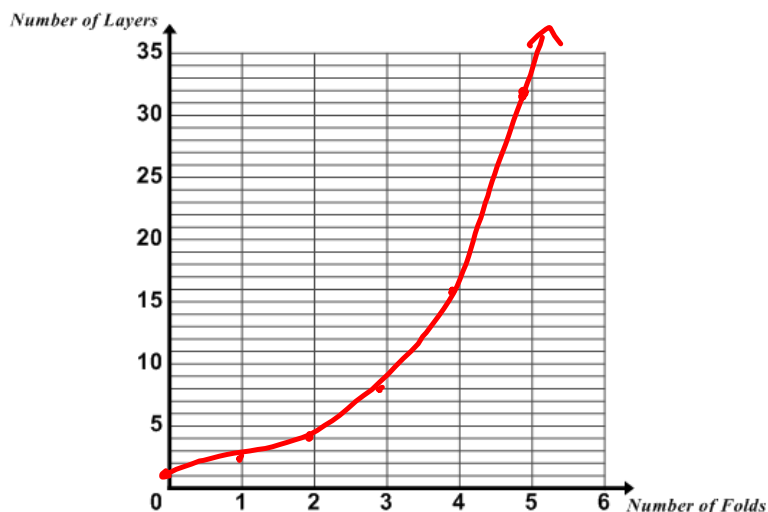
Last day's work: pp. 240-241 A - P  
p. 243 #1, 2

# 4.1 Exploring Growth and Decay

Date: Nov. 2/15

Ex. 1: Take a sheet of paper. Fold it in half. Count the number of layers formed. Fold it in half again and repeat. Complete the table. Draw a graph of the number of layers versus the number of folds.

Number of folds	Number of layers
0	1
1	2
2	4
3	8
4	16
5	32
n	$2^n$



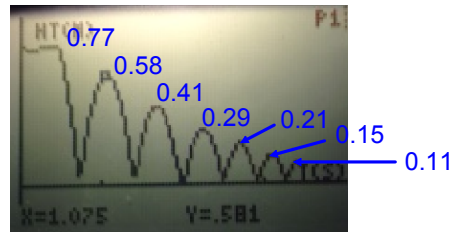
n	L	1st Differences	2nd Differences	y-ratios
0	$2^0 = 1$			
1	$2^1 = 2$	$2 - 1 = 1$	$2 - 1 = 1$	$\frac{2}{1} = 2$
2	$2^2 = 4$	$4 - 2 = 2$	$2 - 1 = 1$	$\frac{4}{2} = 2$
3	$2^3 = 8$	$8 - 4 = 4$	$4 - 2 = 2$	$\frac{8}{4} = 2$
4	$2^4 = 16$	$16 - 8 = 8$	$8 - 4 = 4$	$\frac{16}{8} = 2$
5	$2^5 = 32$			
n	$L = 2^n$			

↑  
Growth Factor

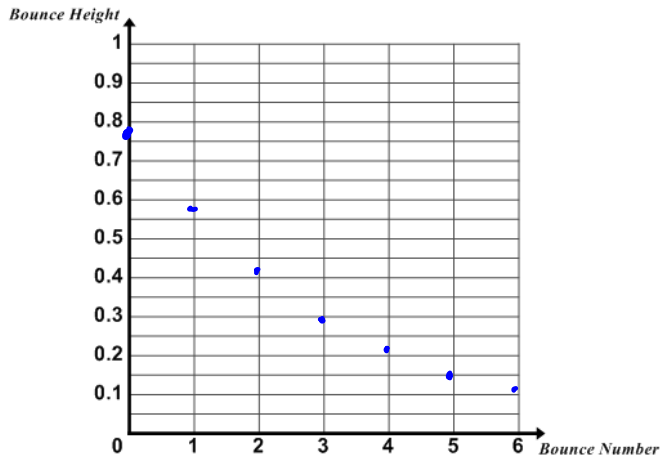
Recall: An exponential function has the variable **in** the exponent.

Pull

Ex. 2: Ball Bounce. Let a ball drop. Record the height after each bounce. Graph the height versus the bounce number.



Bounce number	Bounce height	y-ratios
0	0.77	
1	0.58	$\frac{0.58}{0.77} = 0.75$
2	0.41	$\frac{0.41}{0.58} = 0.71$
3	0.29	$\frac{0.29}{0.41} = 0.71$
4	0.21	$\frac{0.21}{0.29} = 0.72$
5	0.15	$\frac{0.15}{0.21} = 0.71$
6	0.11	$\frac{0.11}{0.15} = 0.73$



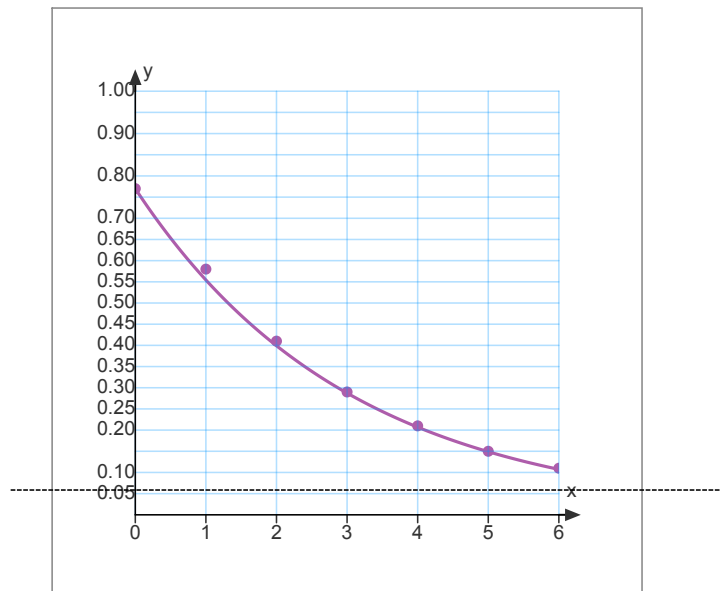
Initial Amount      Decay Factor

↓                      ↓

$$h = 0.77(0.72)^n$$

$$h(n) = 0.77(0.72)^n$$

Bounce Number	Bounce Height
0	0.77
1	0.58
2	0.41
3	0.29
4	0.21
5	0.15
6	0.11



**Are there any Homework Questions you would like to see on the board?**

Last day's work: pp. 240-241 A - P  
p. 243 #1, 2

MythBusters (max. folds=7)



Today's Homework Practice includes:

pp. 214-215 A – H  
p. 216 #1, 2