Today's Learning Goal(s):

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

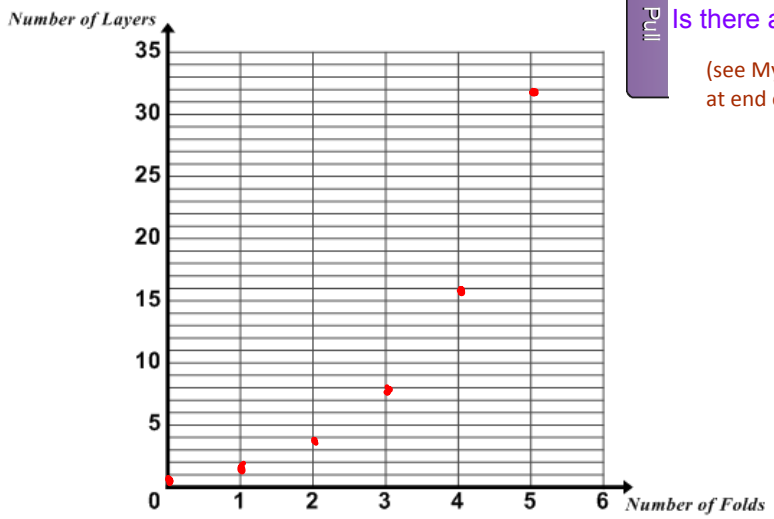
a) describe the characteristics of the graphs and equations of exponential functions.

4.1 Exploring Growth and Decay

Date: Apr 10/19

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	



Pull Is there a maximum?

(see MythBusters at end of file)

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

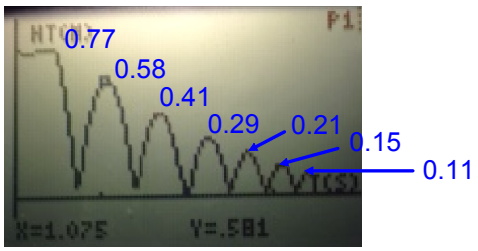
Growth Factor

the y-ratios are constant

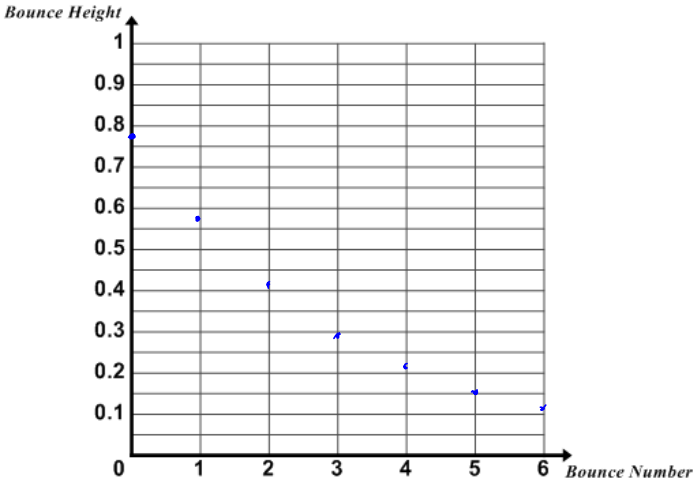
the table represents an exponential relation

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

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

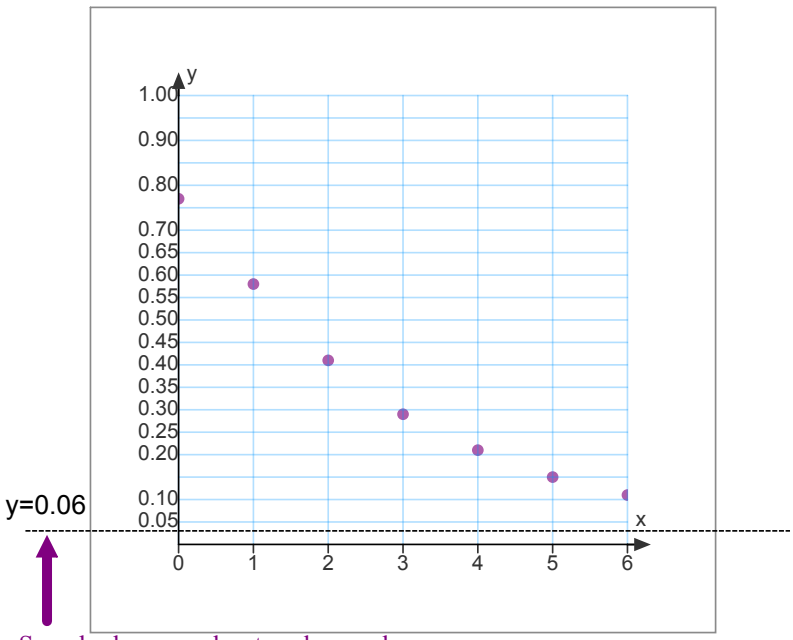
Decay Factor

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

$$y = ab^x$$

$$h(n) = ab^n$$

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



Somebody remember to ask me why y=0.06 and not y=0

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