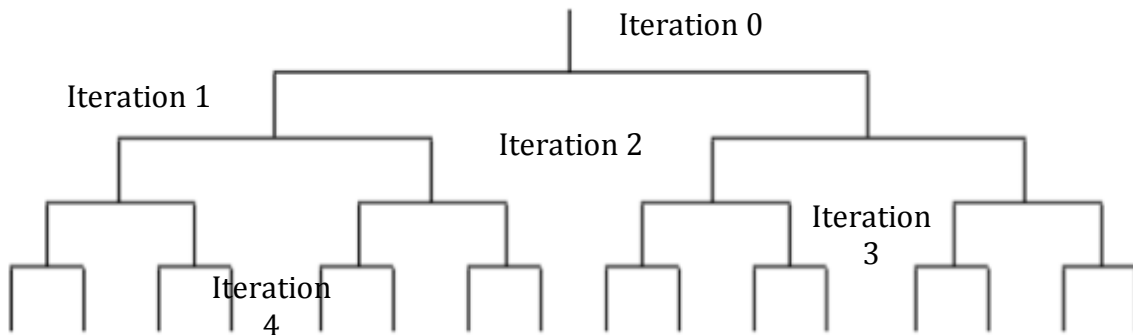


Name: _____

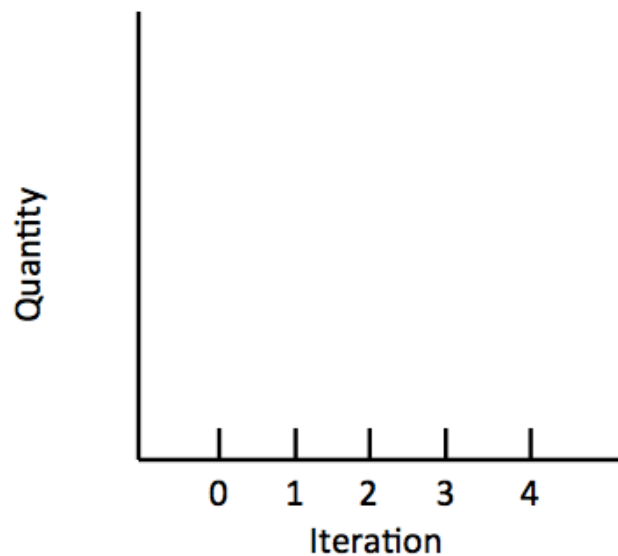
Fractals and Exponents

Based on the images in this exercise, fill in the tables using the power expression and the quantity per iteration and graph your results. You have to write in the tick marks for the Y axis and write the associated numbers. Do not use a calculator for this – write out your math!

Powers of 2

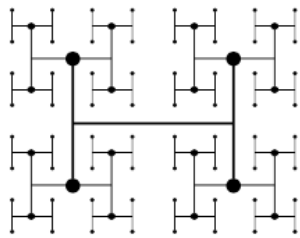


Iteration	Power	How many lines?
0	2^0	1
1	2	
2	2	
3	2	
4	2	



2. What kind of a line is your graph?

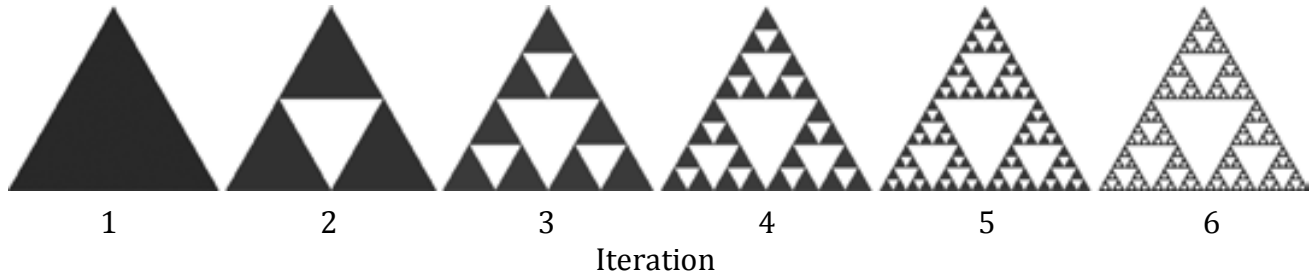
3. Write an equation for your graph in the form: $Y =$



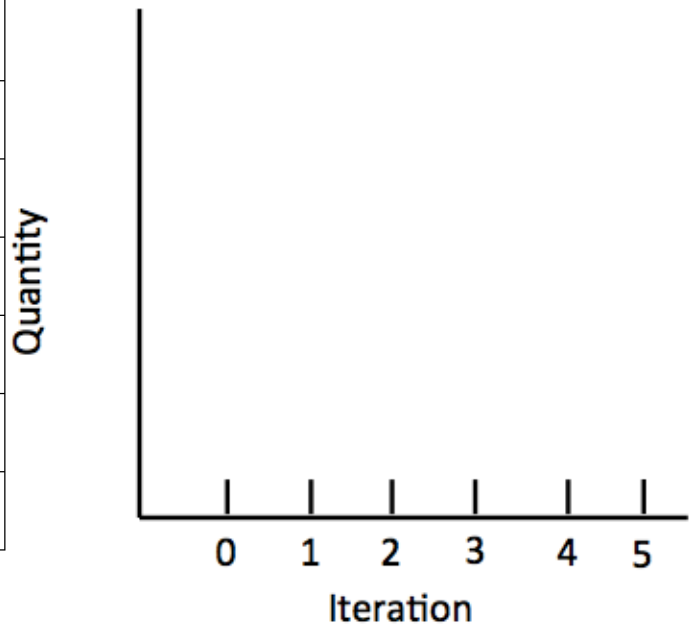
Name: _____

Fractals and Exponents

Powers of 3

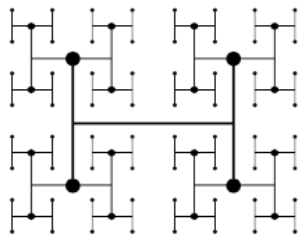


Iteration	Power	How many black triangles?
0	3^0	1
1	3	
2	3	
3	3	
4	3	
5	3	



4. What kind of a line is your graph?

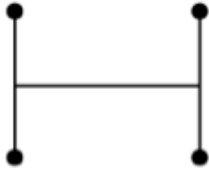
5. Write an equation for your graph in the form: $Y =$



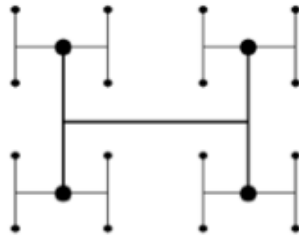
Name: _____

Fractals and Exponents

Powers of 4

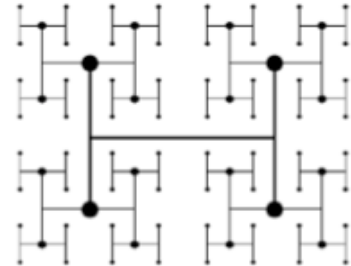


1



2

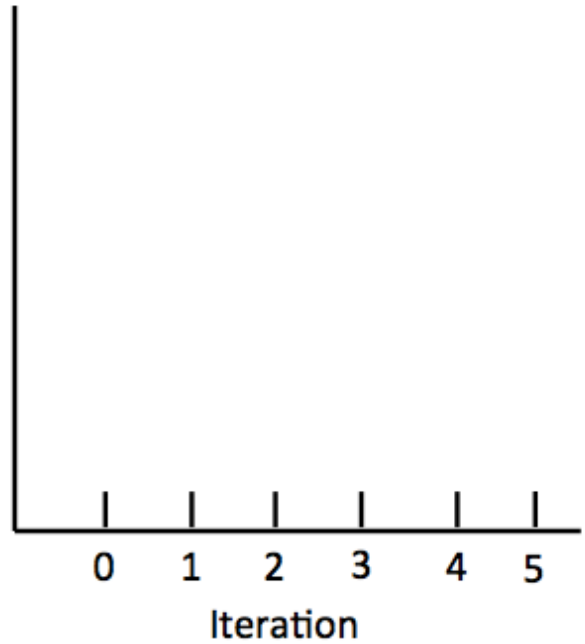
Iteration



3

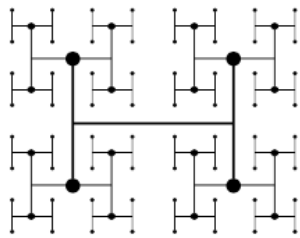
Iteration	Power	How many black dots?
1	4	
2	4	
3	4	
4	4	
5	4	

Quantity



6. What kind of a line is your graph?

7. Write an equation for your graph in the form: $Y =$



Name: _____

Fractals and Exponents

Powers of 10



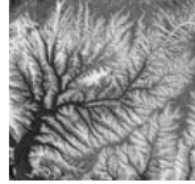
Neuron
 .1mm
 .0001 m 10^{-4} m



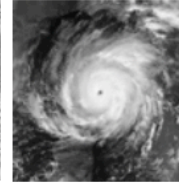
Nautilus
 10 cm
 10^{-1} m



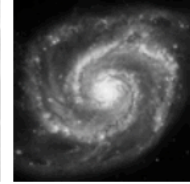
Oak Tree
 10 m
 10^1 m



River Network
 100 km
 10^5 m



Hurricane
 1000 km
 10^6 m



Galaxy
 10000000000000000 m
 10^{16} m

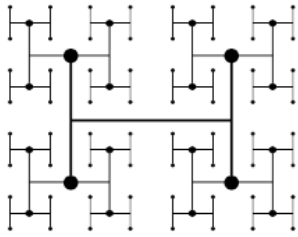
Now, compare the sizes of the items above. Write down the math you did to come up with your answer and express your answer as a power of 10 as well as a number.

8. How much bigger is the river network than the oak tree?

9. How much bigger is the galaxy than the nautilus shell?

10. How much smaller is the neuron to the hurricane?

11. How much smaller is the nautilus to the river network?



Name: _____

Fractals and Exponents

Now we're going to see how some things around you compare in size.

12. Using a measuring tape, measure the items listed below. Be sure to measure in centimeters! You can use a calculator to figure out the ratios or just round your numbers up.

Item	Length (cm)	Ratio of item below to item above, rounded to nearest whole number
Width of your finger		Not applicable
Length of desk		
Your height		
Width of classroom		
Length of classroom		