Name _____

Topic 6: Other Patterns
Self-Test

Fill in the blanks with the appropriate words.

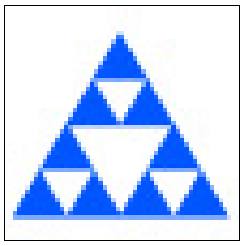
ITERATION **FRACTAL**

1) Each time a process is repeated, it is another _____.

2) You can never finish drawing a _____

3) The second iteration of the Sierpinski Triangle is shown. What is the total number of upward triangles for the 8th iteration?

____ 24 _____ 512 _____ 6,561 _____ 19,683

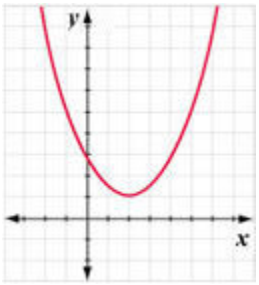


4) The second iteration of the Sierpinski Triangle is shown above . What iteration number has a total of 2187 upward triangles?

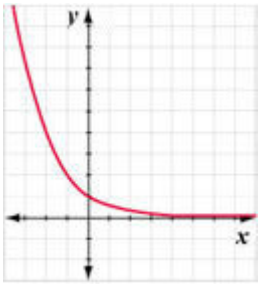
_____ 5 _____ 6 _____ 7 ____ 8

5) Which of the following graphs could represent an exponential function?

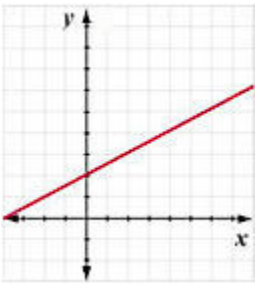
A



B



C



Sandra's science class launches a fireworks rocket upward from the ground. In a table, they record the height of the rocket in feet above the ground at specific times after launch.

Time in Seconds	0	1	2	3	4	5	6	7
Height in feet	0	144	256	336	384	400	384	336

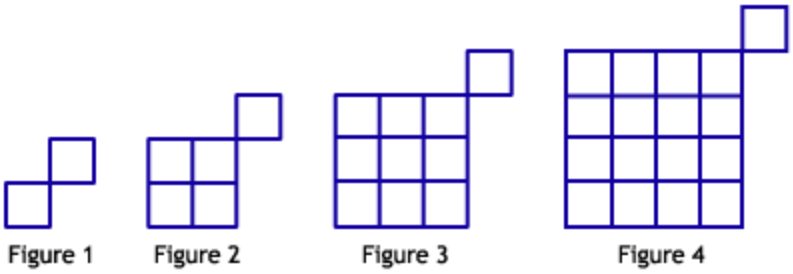
6) Based on the pattern in the table, what was the height of the rocket at 9 seconds?

____ 0 feet ____ 144 feet ____ 256 feet

7) Based on the pattern in the table, when will the rocket hit the ground?

___ 8 seconds after launch ____ 9 seconds after launch

____ 10 seconds after launch



8) Jennifer used algebra tiles to construct each of the figures shown above. Which of the following is a rule for the area of each figure, ***A***, in terms of the figure number, ***n***?

__ $A = n + 1$ ____ $A = n^2$

___ $A = 2n$ ____ $A = n^2 + 1$

9) Which type of function could best model the data in the table?

___ Linear __ Exponential __ Quadratic

x	-2	-1	0	1	2
y	8	5	4	5	8

10) A doctor prescribes a dosage of 400 milligrams of medicine to treat an infection. Each hour following the initial dosage, 85% of the concentration remains in the body from the preceding hour. Which of the following statements best describes the domain of the problem situation?

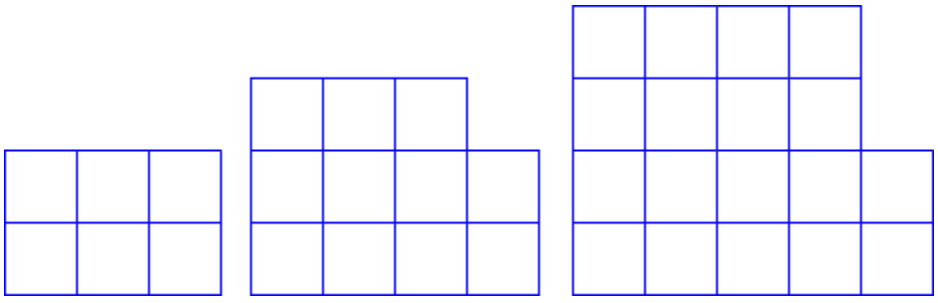
___ All real numbers __ $0 \leq x \leq 400$

___ Nonnegative numbers __ Positive integers

11) Classify each function as exponential (**E**) or quadratic (**Q**).

_____ $y = 2x^2 + 2$ ____ $y = x^2$ ____ $y = 2^x - 2$

_____ $y = 3^x + 1$ ____ $y = 5^x$ ____ $y = x^2(2 + 1)$



12) Joseph used algebra tiles to construct each of the figures shown above. Which of the following function rules describe the area, ***A,*** in terms of the heights in number of tiles, ***n***?

__ $A = n*n + n$ ___ $A = 2 + n^2$ ___ $A = 2n + n$