

## **Fractal Foundation Fractivities**



Sierpinski triangle – make a fractal triangle composed of smaller and smaller triangles Tetrahedron – construct a large, complex tetrahedron out of marshmallows and toothpicks Cutout card - make a 3-dimentional fractal cutout card by repeating a simple process of cutting and folding XaoS – use free fractal software, explore mathematics and interact with fractals in a compelling and artistic way Fraction tree – use the branching of a tree to explore fractions Koch curve and coastlines – transform a simple shape into a complex fractal curve by repeating the same operation at smaller and smaller scales and track changes to the perimeter at each step; apply this to measuring coastlines Watersheds and rivers– learn about how rivers are fractals, what a watershed is and the create your own fractal design Fractal trees – use the natural fractal branching of a tree to explore quotients and ratios in a simple, tangible way Exponents – learn about exponents, specifically with the bases of 2, 3, 4 and 10

Fibonacci Sequence and Fractal Spirals - investigate the Fibonacci sequence and how natural spirals are created

Code	Standard	Fraction Tree	Koch Curve and	Watersheds	Fractal	Exponents	Fibonacci Sequence
		Ince	coastines	and Rivers	iiices		and Spirals
OA	Operations and Algebraic Thinking	3 – 5	3 – 5	5	4, 5	4, 5	K – 5
NBT	Number and Operations in Base Ten					4	K – 5
NF	Number and Operations – Fractions	3 – 5			4, 5	4	
MD	Measurement and Data	3 – 5	3 – 5	3	4, 5	4, 5	K – 4
G	Geometry	3	3, 5, 6	K – 7	4, 5	5	6
NS	Number System	6, 7	6, 7		6, 7	6, 7	7
RP	Ratios and Proportional Relationships	6, 7	6, 7	6, 7	6, 7	6, 7	6, 7
EE	Expressions and Equations		7		7	6 - 8	
F	Functions		8			8	
SP	Statistics and Probability		6				

## Common Core standards in K – 8 Mathematics (1 of 2)

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Code	Standard	Sierpinski Triangle	Tetrahedron	Cutout Card	XaoS
СС	Counting and Cardinality	К	К	К	К
NBT	Number and Operations in Base Ten	K, 1	K, 1	K, 1	K, 1
0A	Operations and Algebraic Thinking	K – 5	K – 5	K – 5	K – 5
MD	Measurement and Data	K – 5	K – 5	K – 5	К
G	Geometry	K – 8	K – 8	K – 8	K – 4
NF	Number and Operations – Fractions		4	4	
NS	Number System		6, 7	6	
RP	Ratios and Proportional Relationships	6, 7	6, 7	6, 7	6, 7
SP	Statistics and Probability	6	6	6 – 8	
EE	Expressions and Equations		6, 7		6
F	Functions		8		8

## Common Core standards in K – 8 Mathematics (2 of 2)

## **Common Core standards in High School Mathematics**

Code	Standard	Koch Curve and Coastlines	Fractal Trees	Exponents
N-RN	Number and Quantity – Real Number System			X
N-Q	Number and Quantity – Quantities	Х	Х	
A-SSE	Algebra – Seeing Structure in Expressions			Х
A-CED	Algebra – Creating Equations	Х		Х
F-BF	Functions – Building Functions			Х
F-LE	Functions – Linear, Quadratic and Exponential Models	X		X
Modeling	Modeling	Х	Х	
G-MG	Geometry – Modeling with Geometry	Х	Х	
G-SRT	Geometry – Similarity, Right Triangles and Trigonometry	X	X	

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