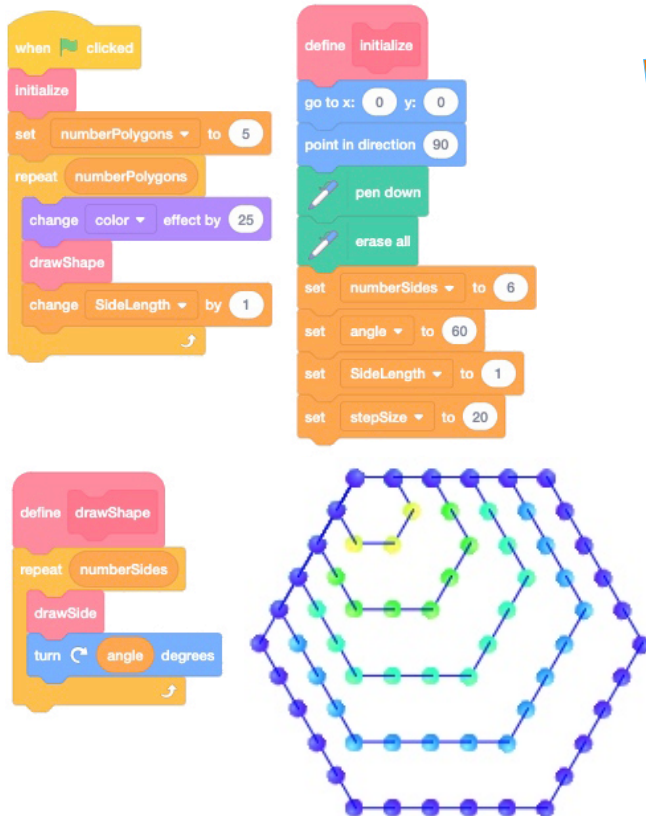
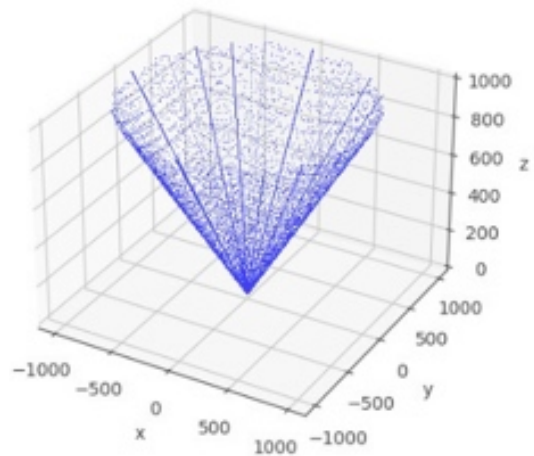


MATH + CODING TEAMS

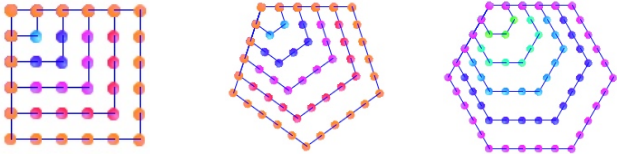
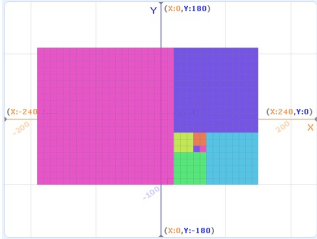
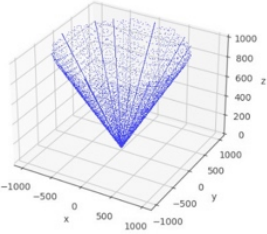

Grades 6-10



Low floor, high ceiling
Conceptual
Collaborative



CONTENTS

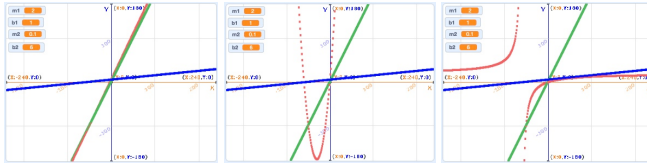
Math + Coding Teams	4	
1. Polygonal Numbers + Scratch		
– Student Task	7	Math: Growing patterns; geometric patterns; algebraic expressions; polygon properties
– Teacher Notes	18	Scratch: Turtle graphics; repeat; sub-programs; variables; lists
		
2. Golden Ratio + Scratch		
– Student Task	24	Math: Growing patterns; geometric patterns; algebraic expressions; history
– Teacher Notes	28	Scratch: Turtle graphics; repeat; sub-programs; variables; lists
		
3.A Sumerian Triples + Scratch		
– Student Task	35	Math: Side relationships of right triangles; “Pythagorean” triples; graphical representations; history; [complex numbers; vectors]
– Teacher Notes	36	
3.B Sumerian Triples + Python		
– Student Task	42	Scratch: Nested repeat; conditional statements; sub-programs; variables; lists
– Teacher Notes	43	Python: Lists; nested repeat; conditional statements; 2D plots; [3D plots]
		
4.A Infinity + Scratch		
– Student Task	49	Math: Visual representations of fractions; shrinking patterns; limit of an infinite series; history
– Teacher Notes	50	
4.B Infinity + Python		
– Student Task	53	Scratch: Turtle graphics; sub-programs; variables; sprite motion
– Teacher Notes	54	Python: repeat; variables; 2D plots; tabular output
		

5.A. Linear relations + Scratch

- Student Task 59
- Teacher Notes 63

5.B Linear relations + Python

- Student Task 69
- Teacher Notes 73



Math: Linear & non-linear relations; “operations” on linear equations; graphical representations of relations

Scratch: Nested repeat; conditional statements; sub-programs; variables

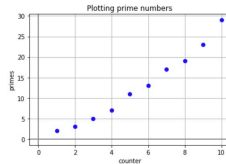
Python: Lists; nested repeat; conditional statements; 2D plots

6.A. Finding Primes + Scratch

- Student Task 80
- Teacher Notes 86

6.B Finding Primes + Python

- Student Task 92
- Teacher Notes 98



Math: Prime numbers; number theory; algebraic expressions; modulo arithmetic; history

Scratch: Repeat; conditional statements; sub-programs; variables; code efficiency; modulo arithmetic

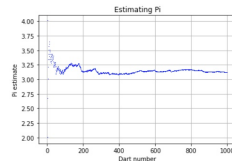
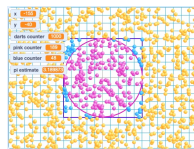
Python: Lists; repeat; conditional statements; 2D plots; code efficiency; modulo arithmetic

7.A Estimating Pi + Scratch

- Student Task 102
- Teacher Notes 111

7.B Estimating Pi + Python

- Student Task 115
- Teacher Notes 119



Math: Meaning of Pi; experimental probability

Scratch: Repeat; lists; conditional statements; sub-programs; variables

Python: Lists; repeat; conditional statements; 2D plots