Mathematical Classroom Quilts

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Abstract

In an effort to create a visual and historical basis to my classroom instruction, I began quilting high school mathematics topics in the early 1980's. The visual approach to teaching a lesson was successful in that the quilts engaged the students immediately. Students' motivation and enjoyment of mathematics were evident in their enthusiasm for the topic being studied. Cultural and historical connections evolved with the story of each quilt.

Introduction

During the early years of generating classroom quilts, two authors inspired me: Dan Pedoe [13] and Thomas Banchoff [1]. I began to think that a whole new way of teaching mathematics would be possible. Could I use color, form, composition, perspective and formulas to interest students in mathematics? Banchoff and Pedoe inspired me to show the beauty in mathematics.

As the number of quilts grew and lesson plans to go with the quilts were written, I found that other teachers were interested in learning about my unique classroom. Cloth quilts inspired paper quilts and mathematical placemats. My classroom was evolving creatively!

Most recently, I have taken the 39 mathematical quilts and organized them into a PowerPoint presentation that many groups have enjoyed over the last few years. The quilts are organized historically. Each quilt has been used in the high school classroom or could be used in the high school classroom. There is no need to limit the use of these quilts to the high school level.

Topics in the PowerPoint of the Mathematical Quilts

1. Golden Rectangle—around 500 B.C.E.
2. Golden Rectangle at Givemy
3. Fiddle Dee Dee Golden Rectangle #3
4. Labyrinth at Chartres Cathedral—Golden Rectangle
5. Blue-Breasted Hummingbird—Golden Rectangle
6. The Sacred Cut-around 500 B.C.E.
7. The Lutes of Pythagoras—582–502 B.C.E.
8. Spiraling Pythagorean Triples
9. My Spiraling Pythagorean Triples
10. Mathematical Harmony—500 B.C.E.
11. The Wheel of Theodorus—400 B.C.E.
12. The Six Trigonometric Functions—400 B.C.E.
13. The Parabola—375–325 B.C.E.

14. The Hyperbola and Ellipse—375–325 B.C.E.
15. Spiraling Squares—300 B.C.E.
16. Fibonacci x 3—1175–1250
17. Leonardo's Dessert no Pi—1452–1519
18. Leonardo's Claw
19. Lucy's Quilt of Leonardo
20. San Gaku—1603–1867
21. Pascal's Surprise—1623–1662
22. Pascal's Pumpkin
23. Mascheroni Cardioid—1797
24. Poincaré Plane—1854–1912
25. Koch Curve—1870–1924
26. Sierpinski's Gasket—1882–1969
27. Sierpinski's Carpet
28. Indiana Puzzle—Snail's Trail
29. Clifford Torus—1845–1879
30. Tessellation
31. Tessellation
32. Worlds of Geometry—1990—The Geometry Center
33. Orthic Triangles—talk by Douglas Hofstadter at Indiana University
34. Graeco-Latin Squares and Sudoku
35. Fabulous Fibonacci Flowers
36. The Music of the Genes—2007
37. Spiraling Spidrons—2007
38. Buckyballs and Bubbles—2008

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