

# Digital Schoolhouse Puzzle Page

*"If I had an hour to solve a problem I'd spend 55 minutes thinking about the problem and 5 minutes thinking about solutions"*

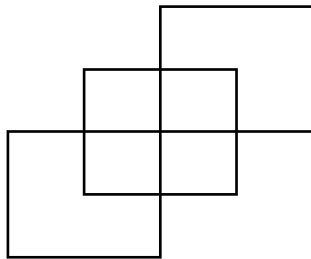
Albert Einstein

## Welcome to the Digital Schoolhouse Puzzle Page

On this paper, we will investigate a series of puzzles that can be used to promote Computational Thinking.

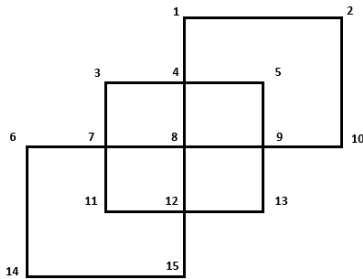
### Figure Tracing - Overlapping Squares

Trace the figure below without lifting your pen off the paper or going back over any line on it, or prove that it is impossible to do.



**Answer:**

Turn the figure into a graph and label each vertex on the graph.



A possible solution starting at 1 and tracing the figure is:

1—2—10—9—13—12—15—14—6—7—3—4—5—9—8—12—11—7—8—4—1

### Linkage to Computer Science

This puzzle is a springboard to graph theory and Euler circuits. Figure tracing is a standard problem in puzzle books. This application of Euler's theorem goes back to the Scottish mathematician Peter G. Tait.

### Puzzle 13: Easy

6					7		9
8			1			2	
	3		7		2		8
		7		9	8		1
		5				8	
9			4	5		6	
	9		5		1		3
	2			4			5
4		3					7

### Puzzle 14: Medium

5		6	8	3		1	2	9
			2		6			7
4				9			3	
						4	7	
	9	3						
	3		9					8
6			3		7			
9	5	7		8	2	3		1

### Puzzle 15: Hard

	1		3					8
2		7						
	3	4			9	5		
1	7	2	8	6				
5								4
				9	5	7	1	6
		6	5			1	7	
						8		3
7					2		6	

### Solutions

6	2	5	1	3	7	4	8	9
3	7	8	9	2	4	6	5	1
3	4	1	8	6	9	5	2	7
8	9	6	8	5	7	4	3	2
6	8	9	4	1	7	2	5	3
1	8	5	9	7	3	1	4	6
2	6	4	8	9	5	7	3	1
6	4	6	8	1	5	3	7	2
1	8	2	3	4	7	6	9	5
7	5	3	2	9	6	8	1	4

Puzzle 15: (Hard, difficulty rating 0.72)

9	5	7	4	8	3	6	1	2
6	1	8	3	5	7	2	9	4
2	3	4	6	9	1	7	5	8
1	9	3	7	4	5	6	8	2
7	4	5	6	2	8	9	1	3
8	6	2	1	9	3	4	7	5
4	2	1	5	7	6	8	3	9
3	8	9	2	1	6	5	4	7
5	7	6	8	3	4	1	2	9

Puzzle 14 (Medium, difficulty rating 0.58)

7	1	2	9	8	6	3	5	4
5	9	6	4	7	8	3	1	2
8	3	4	1	5	6	9	7	2
1	9	3	7	4	5	6	8	2
7	4	5	6	2	8	9	1	3
8	6	2	1	9	3	4	7	5
4	2	1	5	7	6	8	3	9
3	8	9	2	1	6	5	4	7
5	7	6	8	3	4	1	2	9

Puzzle 13: (Easy, difficulty rating 0.42)