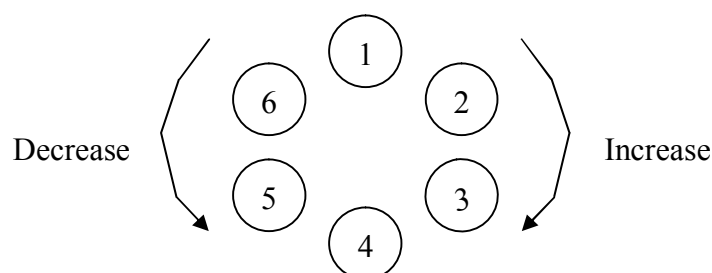


# 36 Candles Puzzle

## Solution

Let each candle be represented by an ordered pair (Color, Shape), such that: (1,6) represents a candle with the 1<sup>st</sup> color and the 6<sup>th</sup> shape.

We have 6 colors and 6 shapes, so we can make the following cycle:



Starting with the ordered pair (6,1), we can construct the table representing the required arrangement. We can do this by decreasing the color number and increasing the shape number horizontally and vertically using the above cycle.

The following table represents the required arrangement that solves the puzzle:

|       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| (6,1) | (5,2) | (4,3) | (3,4) | (2,5) | (1,6) |
| (5,2) | (4,3) | (3,4) | (2,5) | (1,6) | (6,1) |
| (4,3) | (3,4) | (2,5) | (1,6) | (6,1) | (5,2) |
| (3,4) | (2,5) | (1,6) | (6,1) | (5,2) | (4,3) |
| (2,5) | (1,6) | (6,1) | (5,2) | (4,3) | (3,4) |
| (1,6) | (6,1) | (5,2) | (4,3) | (3,4) | (2,5) |

Note that for each ordered pair (color, shape), we have

$$\text{Color} + \text{Shape} = 7$$

And starting with the numbers 1,2,...,6 in the first row and the first column, we can easily construct the table.

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