





How do  
they do  
that?







### **Dobble, what is it?**

Dobble consists of 55 cards, with 8 symbols per card from the 50 available. There is **only one identical symbol** in common between each card, it is up to you to find out which one.

### **Before playing...**

If you've never played or if you're playing with people who've never played before, draw two random cards and place them face-up on the table between all the players. **Look**

**for the identical symbol between the two cards**

(same shape, same color, only the size can be different). The first player to find the right symbol names it out loud and draws two new cards which are then placed face-up on the table. Repeat this until each player understands

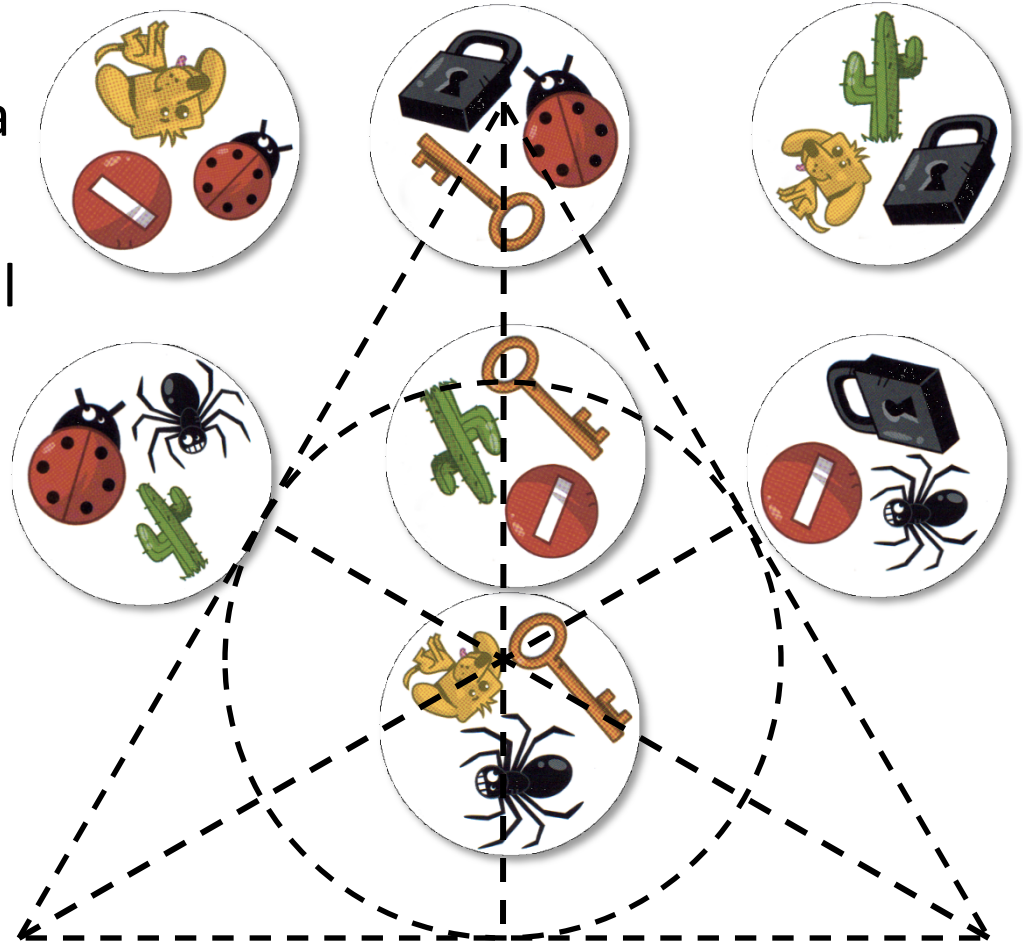
**that there's always only one identical symbol between two cards.**

How do  
they do  
that?

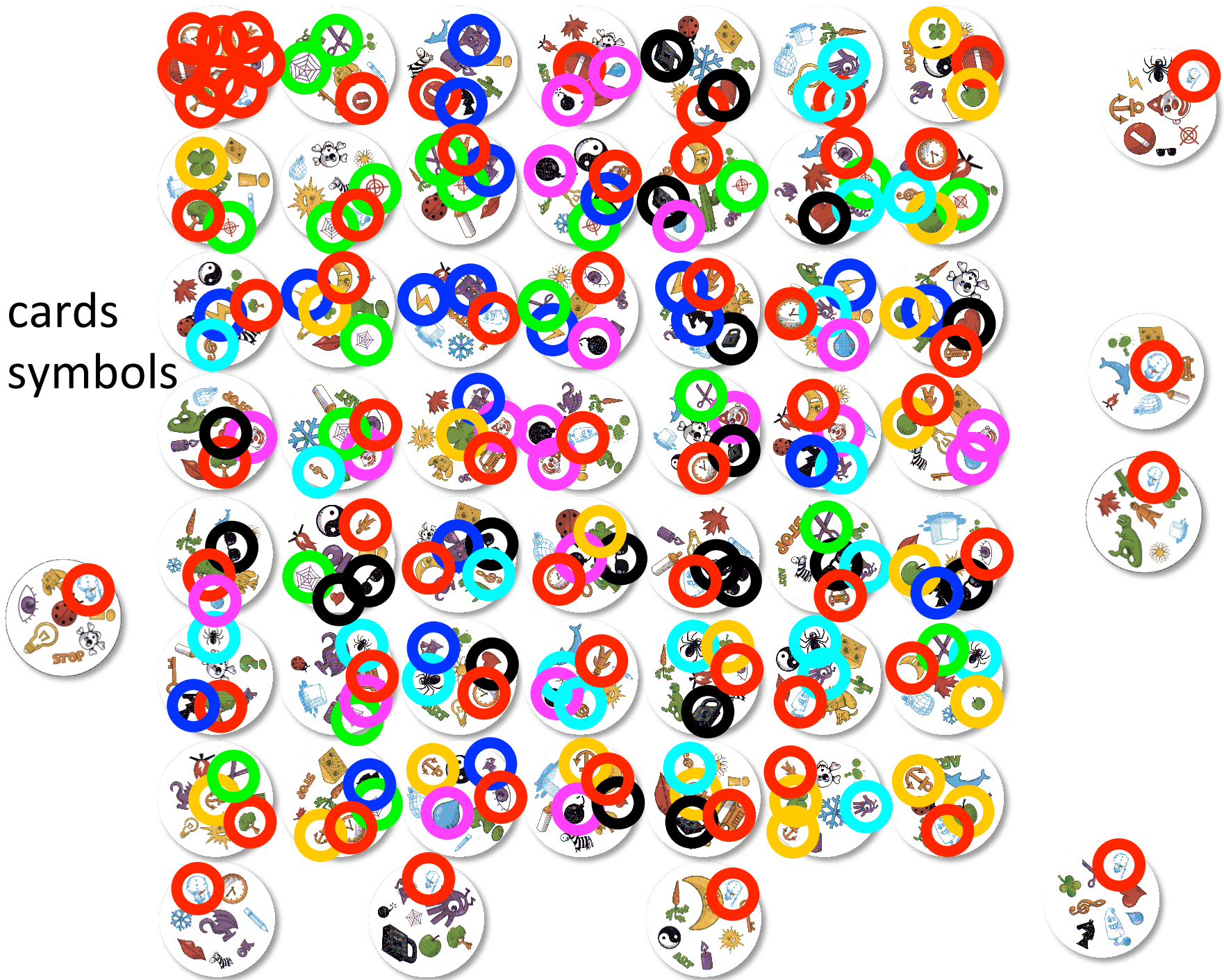


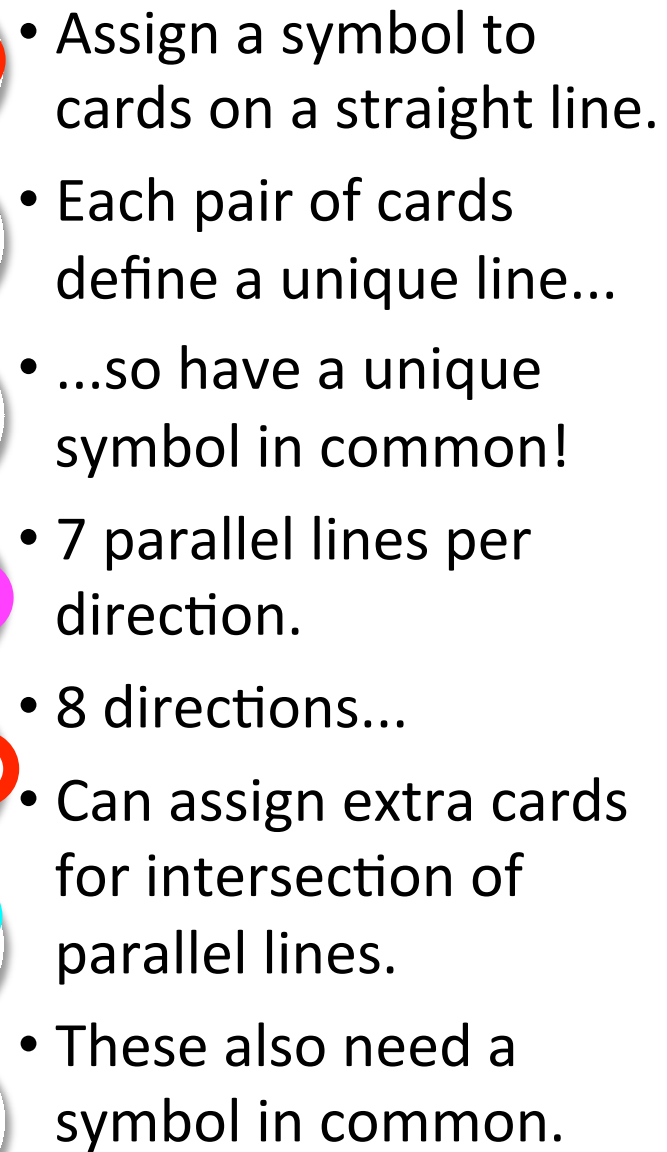
# Simpler case: 3 symbols per card

- 1 symbol for every line.
- Every pair of cards lie on a unique line...  
...so have a unique symbol in common.
- Fano plane
- Finite projective plane of order  $N=2$ .
  - $N^2+N+1$  points, lines
  - $N+1$  symbols/card
- Dobble:  $N=7$ 
  - 8 symbols/card
  - 57 points (cards)
  - 57 lines (symbols)



57 cards  
57 symbols





49 cards  
50 symbols





- Finite projective plane of order  $n=7$ .

- $n^2+n+1$  cards

- $n^2+n+1$  symbols

- $n+1$  cards / symbol

- $n+1$  symbols / card

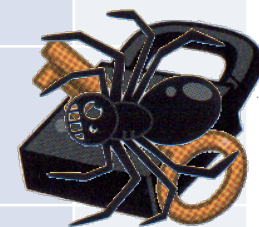
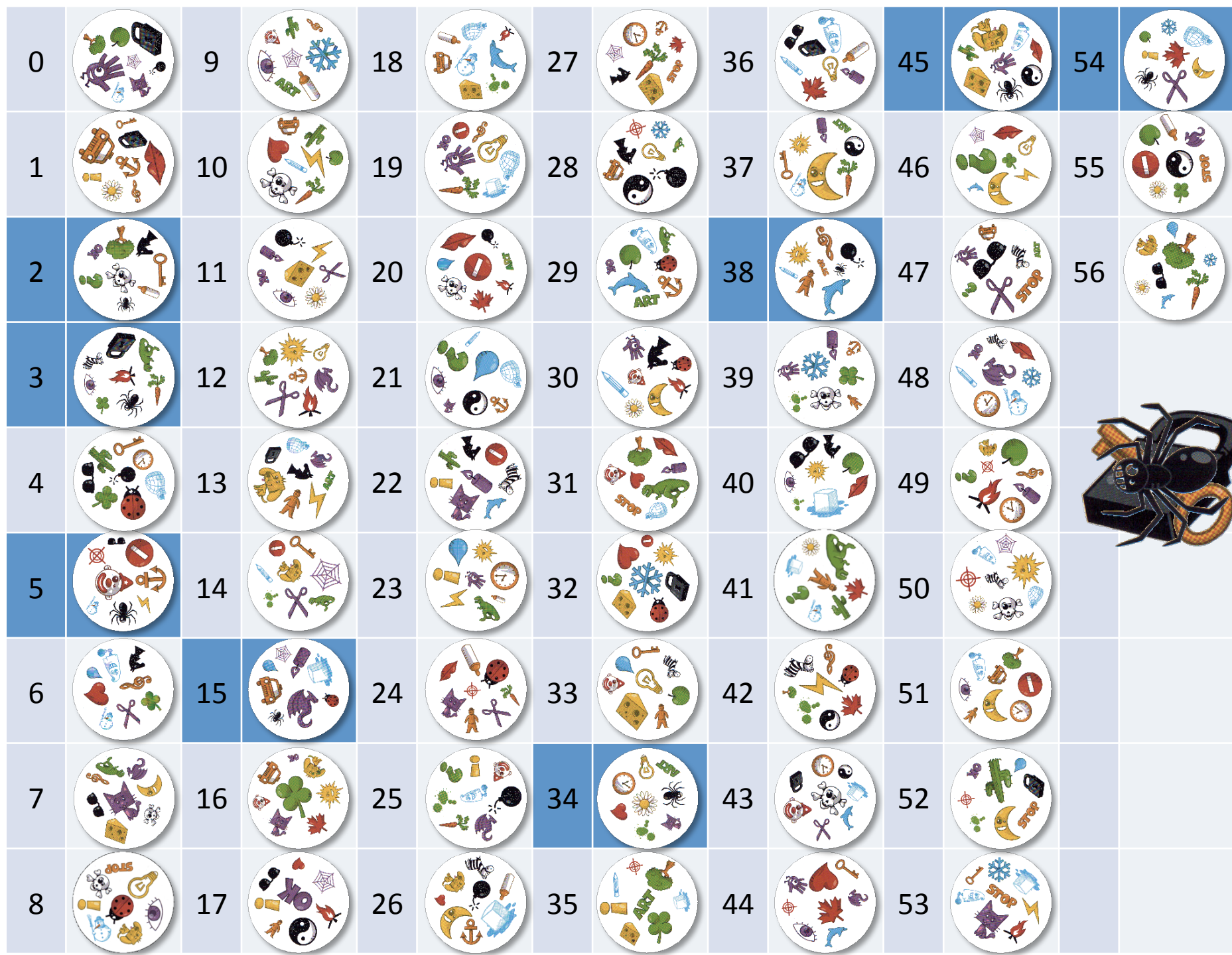
A set of cards with a  
nice mathematical  
structure!



Not  
included  
in pack

Another representation of  
the structure





Matching symbols occur at  
relative positions (mod 57)

0, 1, 3, 13, 32, 36, 43, 52

What is special about these  
numbers that makes this  
ordering possible?

