Spot it!
Solitaire

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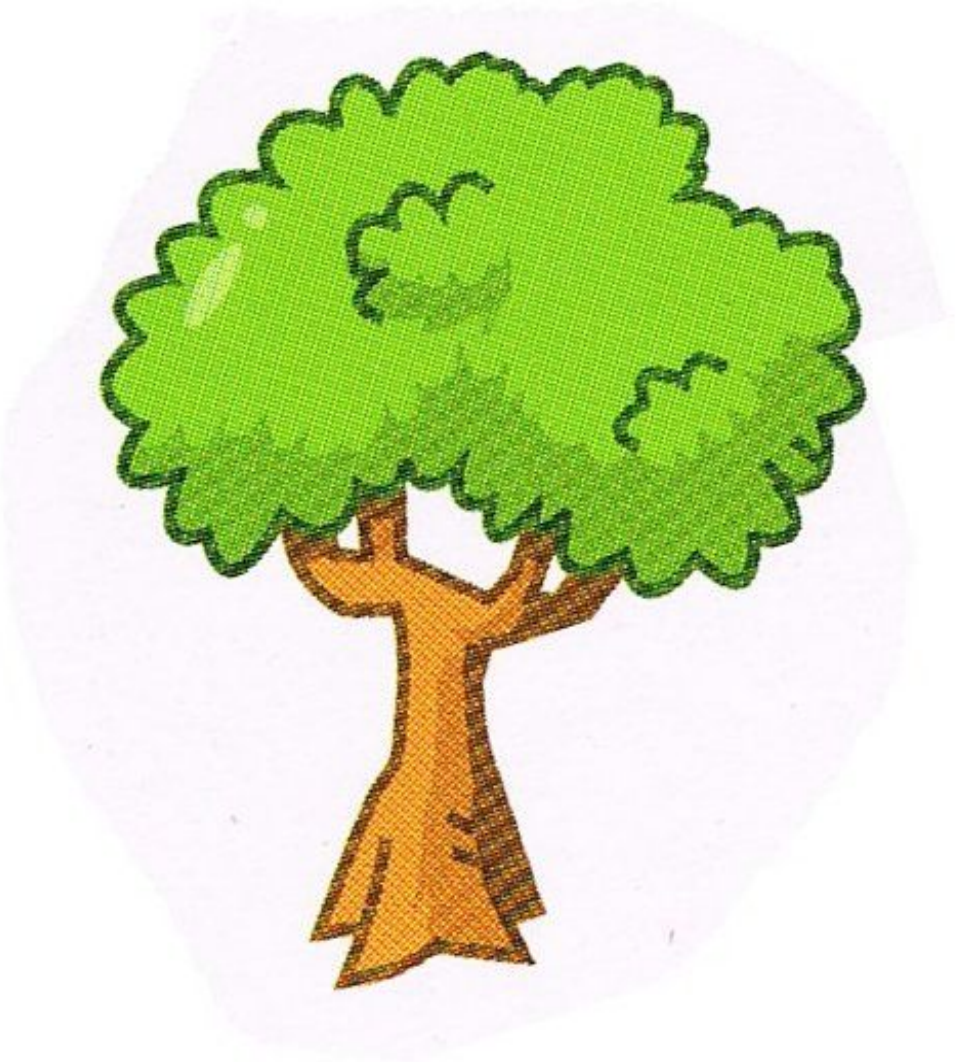
Monday, August 5, 2013
MOVES Conference
Baruch 14-266 3:30pm -3:50pm

The Original Game:

On the next slide, I will show two *Spot it!* cards.

Try to be the first one
to yell out the common symbol.


OK




OK


OK


ok

Audience Question

If there are 55 different cards, and each pair of cards contains exactly one pair of symbols in common, and there are 8 symbols per card, how many kinds of symbols are there?

A. 55 symbols
B. 55 * 8 / 2 = 220 symbols
C. 55 * 8 = 440 symbols
D. None of the above /Insufficient information

Gathering Clues:

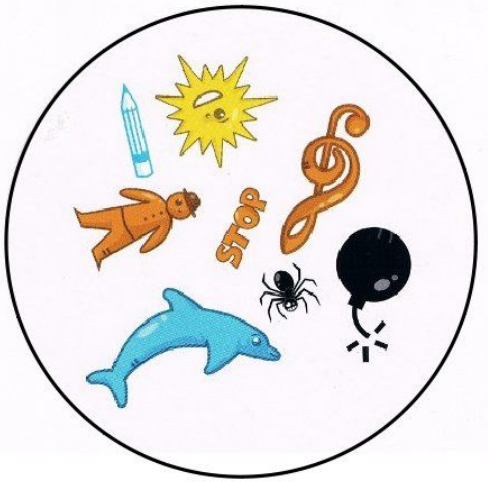
Let's presume you don't know how to answer this.

If you had the deck in your hands, you would flick through and find 8 cards containing a spider as one of the symbols.

NOW you can answer the question!

Why???


OK


STOP


ART

Leadup Questions:

1. What is the minimum number of symbols? (Count them! You see them!)

2. Since there are no other spider cards, what must be true about all other cards in the deck?

3. What is the maximum number of symbols?


ART
ok
STOP

How many cards could there be?

We have 55 currently, as given by the manufacturer, presuming they didn't lie to us.

Could we have more?

How did they arrange the symbols to make this work out?

Questions about Spot-it!

1. How many cards could there be?

Questions about Spot-it!

1. How many cards could there be?

2. How can we find any missing ones?

Questions about Spot-it!

1. How many cards could there be?

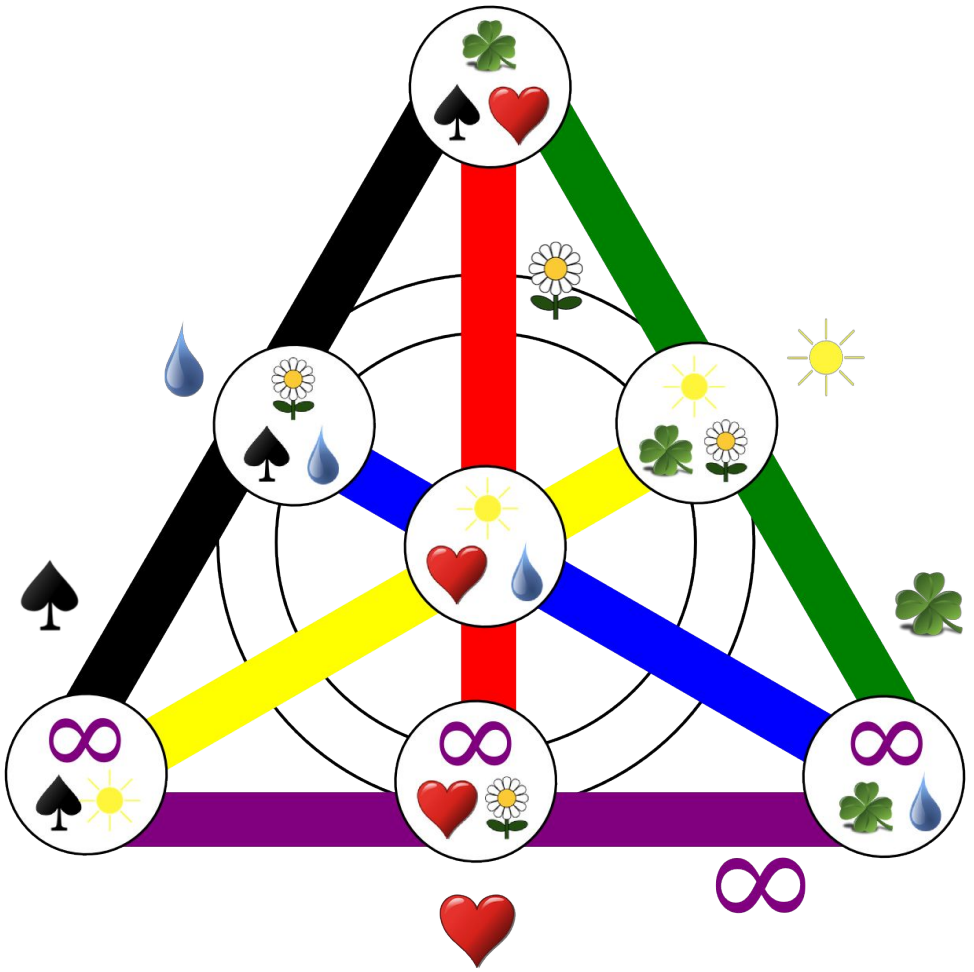
2. How can we find any missing ones?

3. How can we arrange the cards in a meaningful pattern?


Spot it!
blue orange
Spot it!
blue orange
Spot it!
Spot it!


Dobble
Dobble

Maxime Bourrigan, *Dobble et la geometrie finie.*
Images de Mathematiques, CNRS 2011



Internet says....

Spot-it!
is related to

the order 7 projective plane!

Some clues:

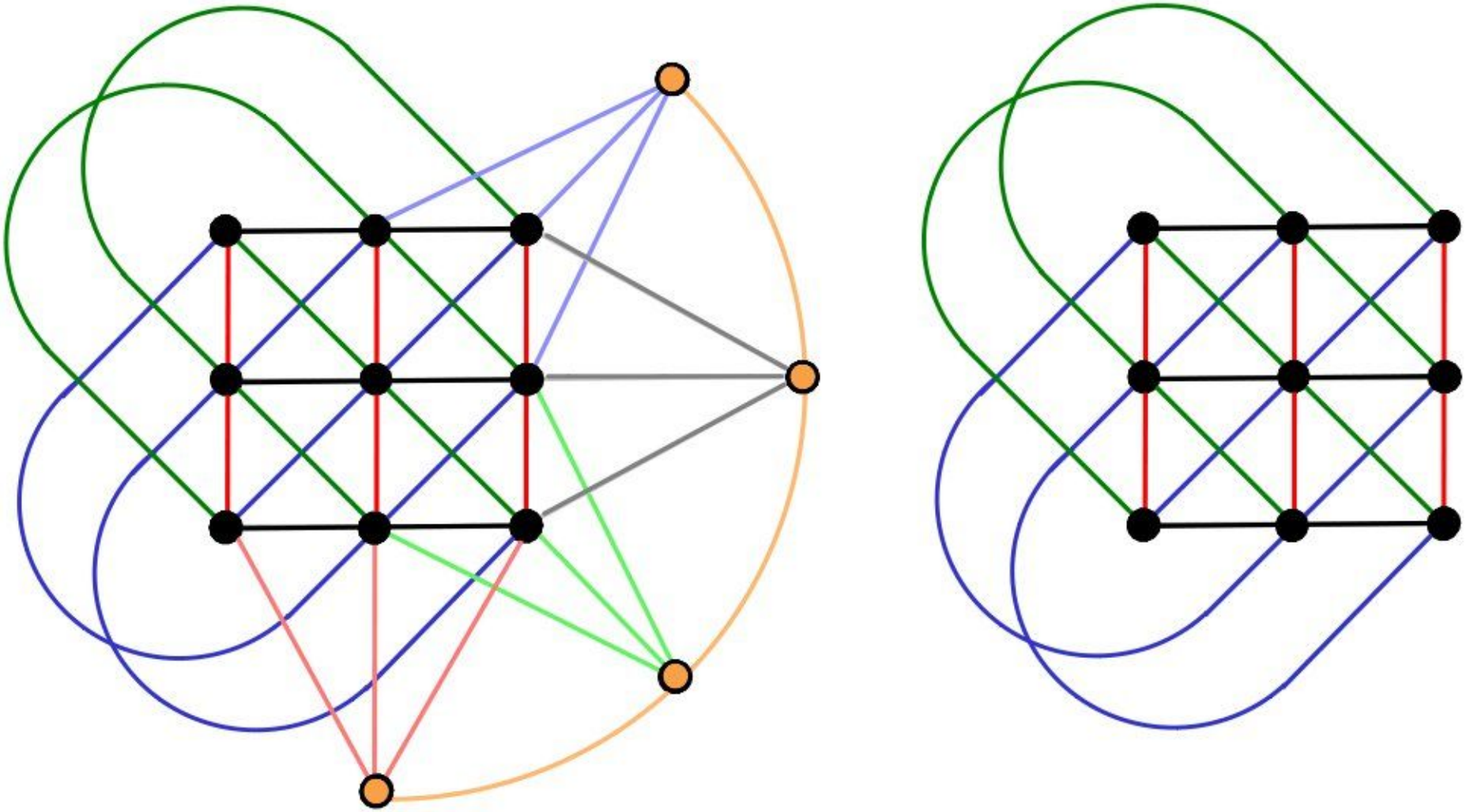
1. The order 7 projective plane has 57 elements.

2. All points/lines in a finite projective plane are isomorphic.

3. If you remove one single line from a finite projective plane, you get an affine plane.

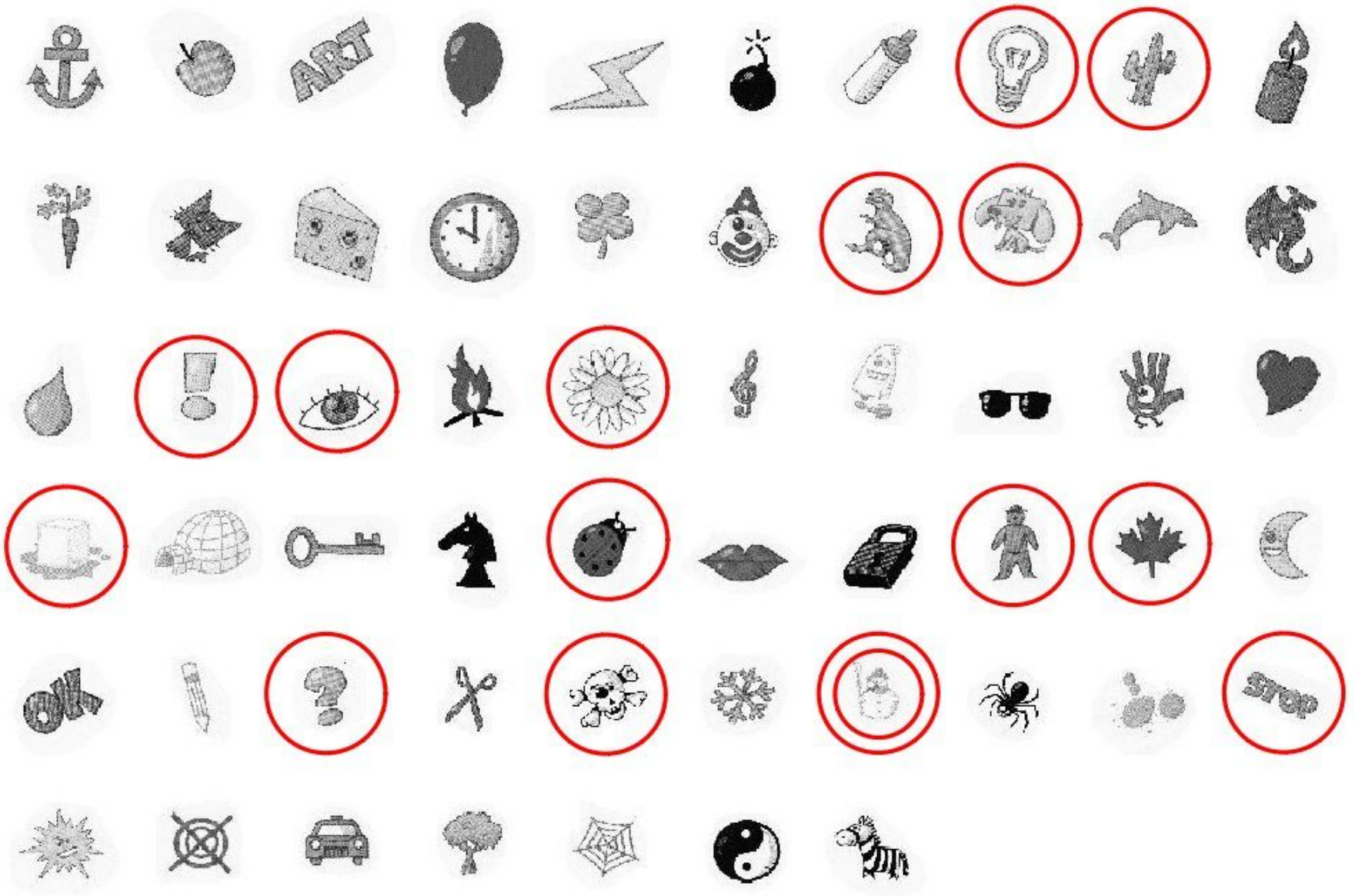
4. Affine planes can be built from their own axioms instead, then extended if desired.

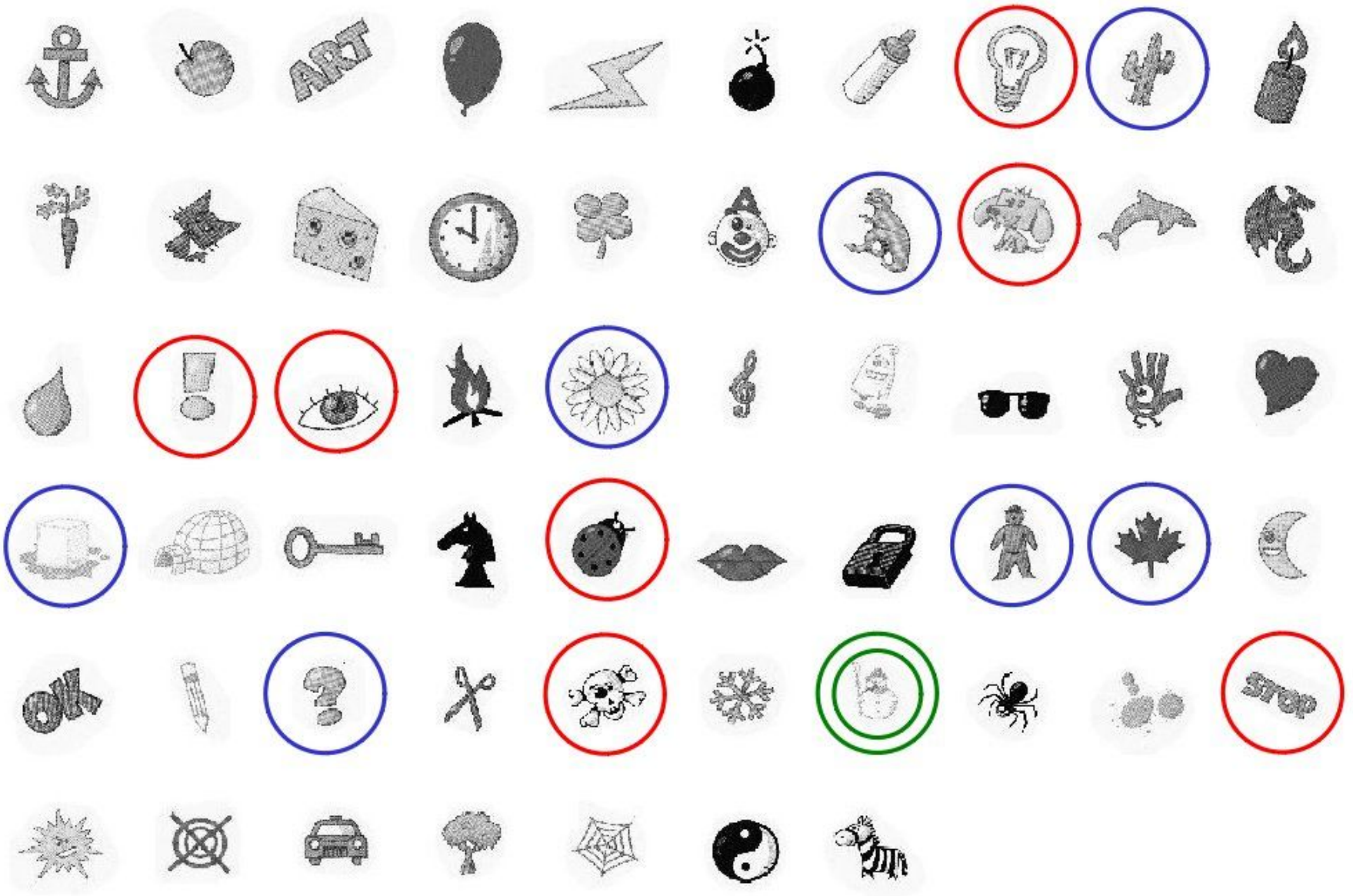
Projective Plane to Affine Plane



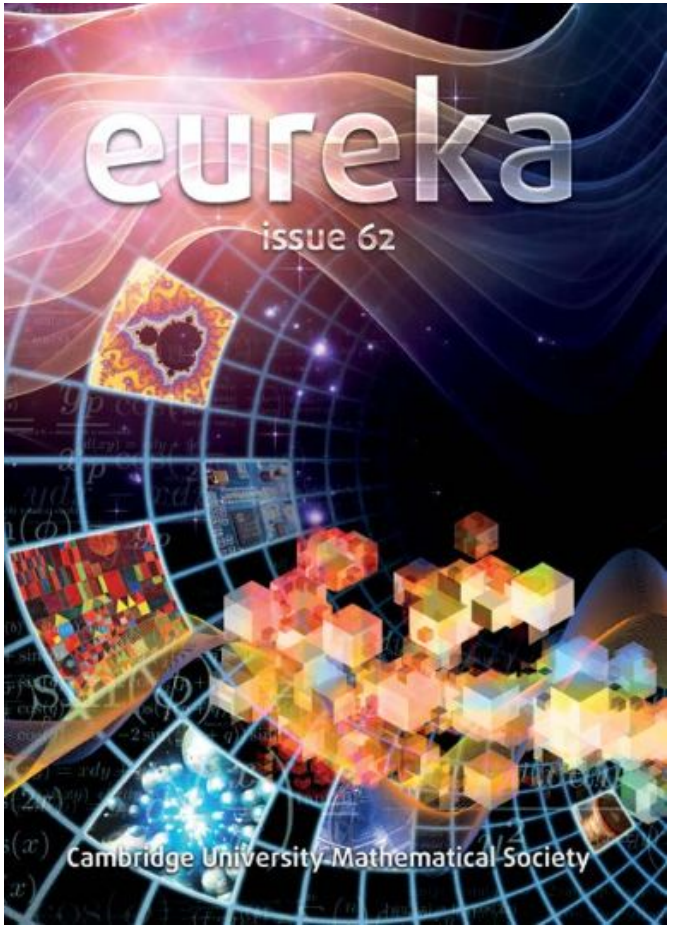
Order 7 Finite Projective Plane!

How did I find the missing cards?


ART
OK
STOP


ART
STOP

Please Read My Upcoming Paper....



Cambridge Undergraduate Mathematics Journal.

- Since 1939, not quite every year....
- Paul Erdos, Martin Gardner, John Conway, Hardy, Penrose... and soon... ME!


STOP

So, how do you line them all up?

Steps to Solve...

8
ice
cube
cards

7 more glasses

7 more knights

7 more apples

7 more lips

7 more suns

7 more splots

7 more eyes

Horizontal Family Card ---->

Vertical Family ---> Card

(Other 6 icecube cards under vertical family card)

By ROW:

glasses

knights

apples

lips

suns

splots

eyes

By COLUMN: Lightning Fire Cat Ghost Key Snowflake 'STOP'


Spot it!


Spot it!

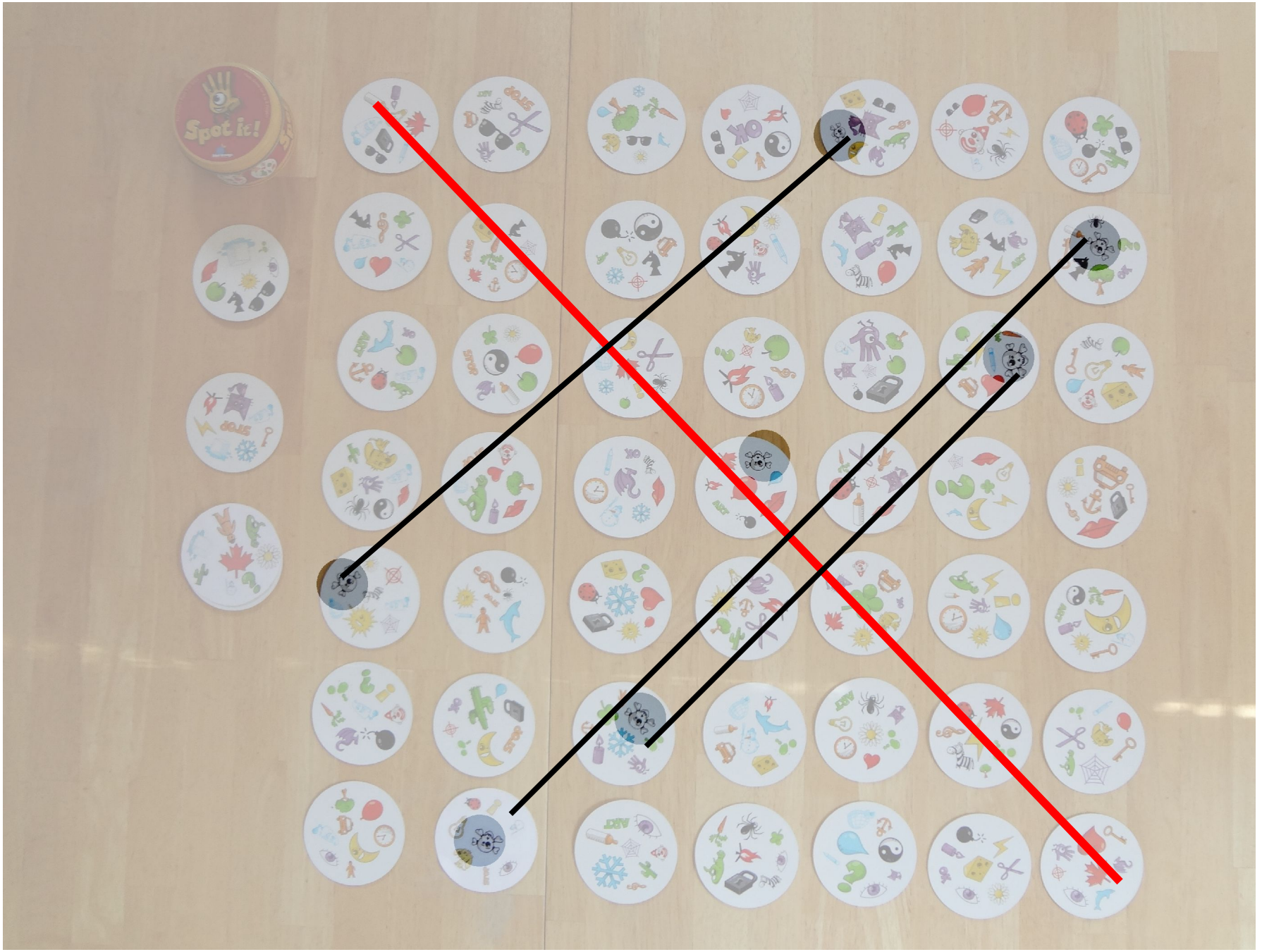

Spot it!

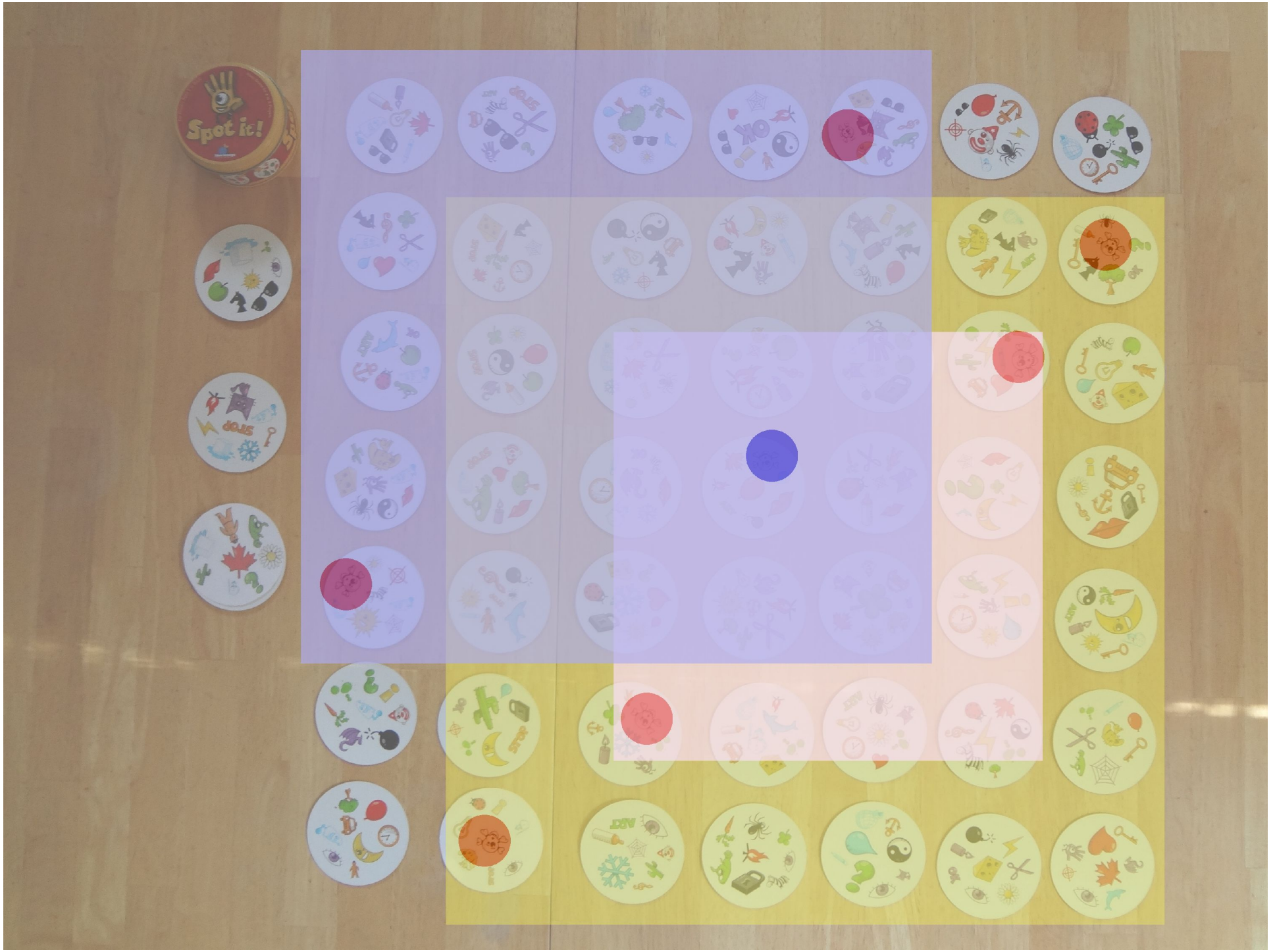

Spot it!


Spot it!


Spot it!


Spot it!


Spot it!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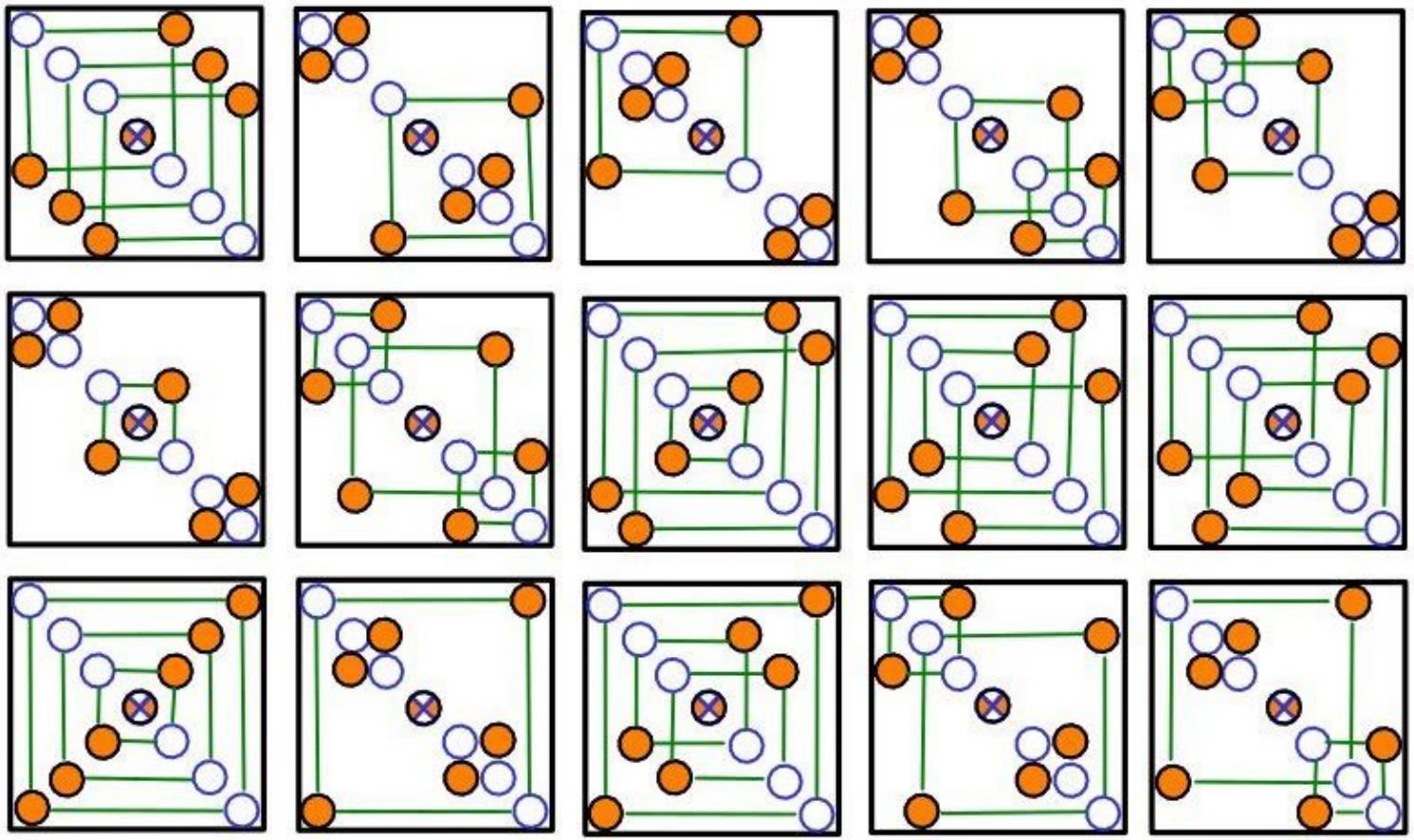
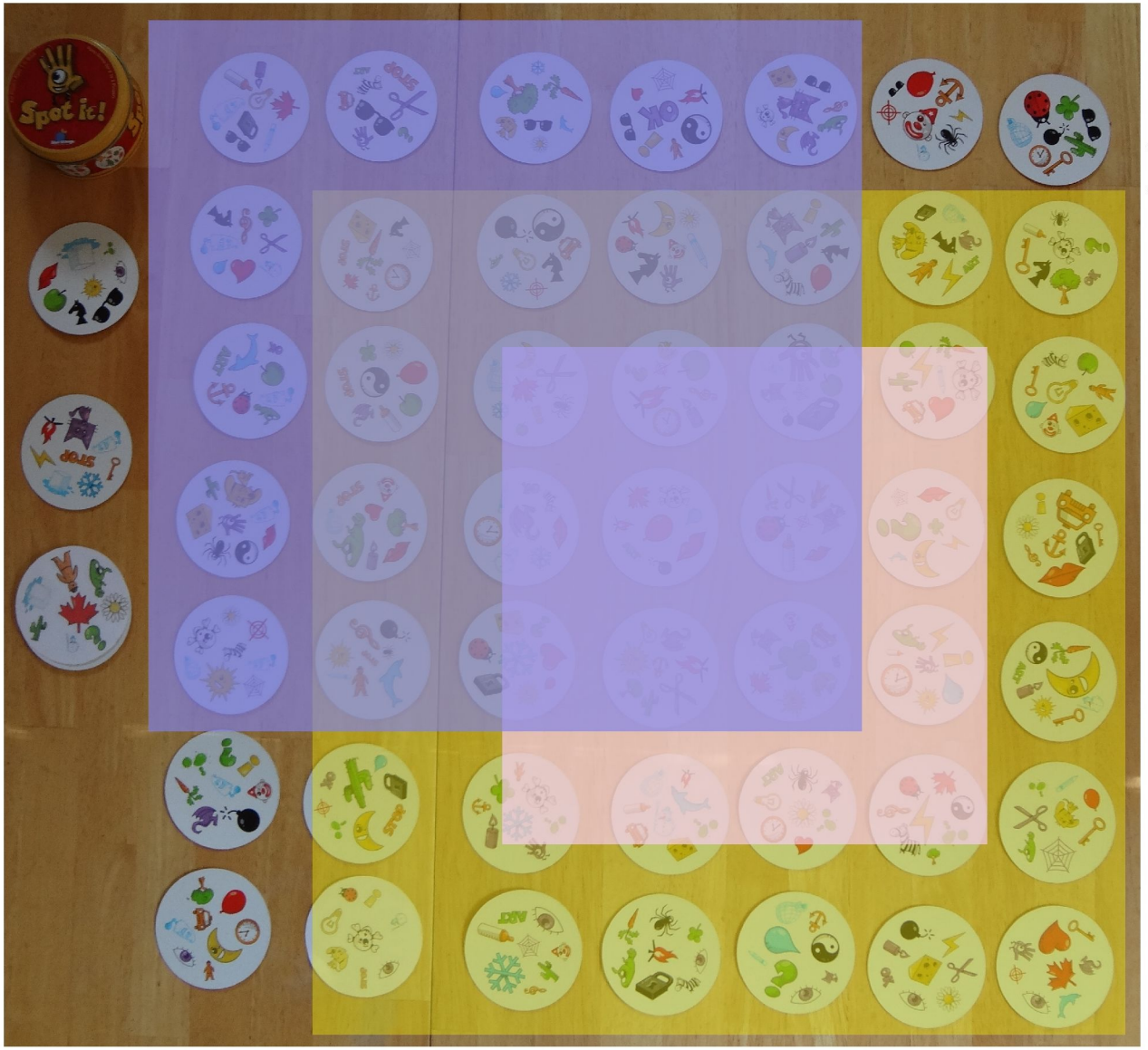
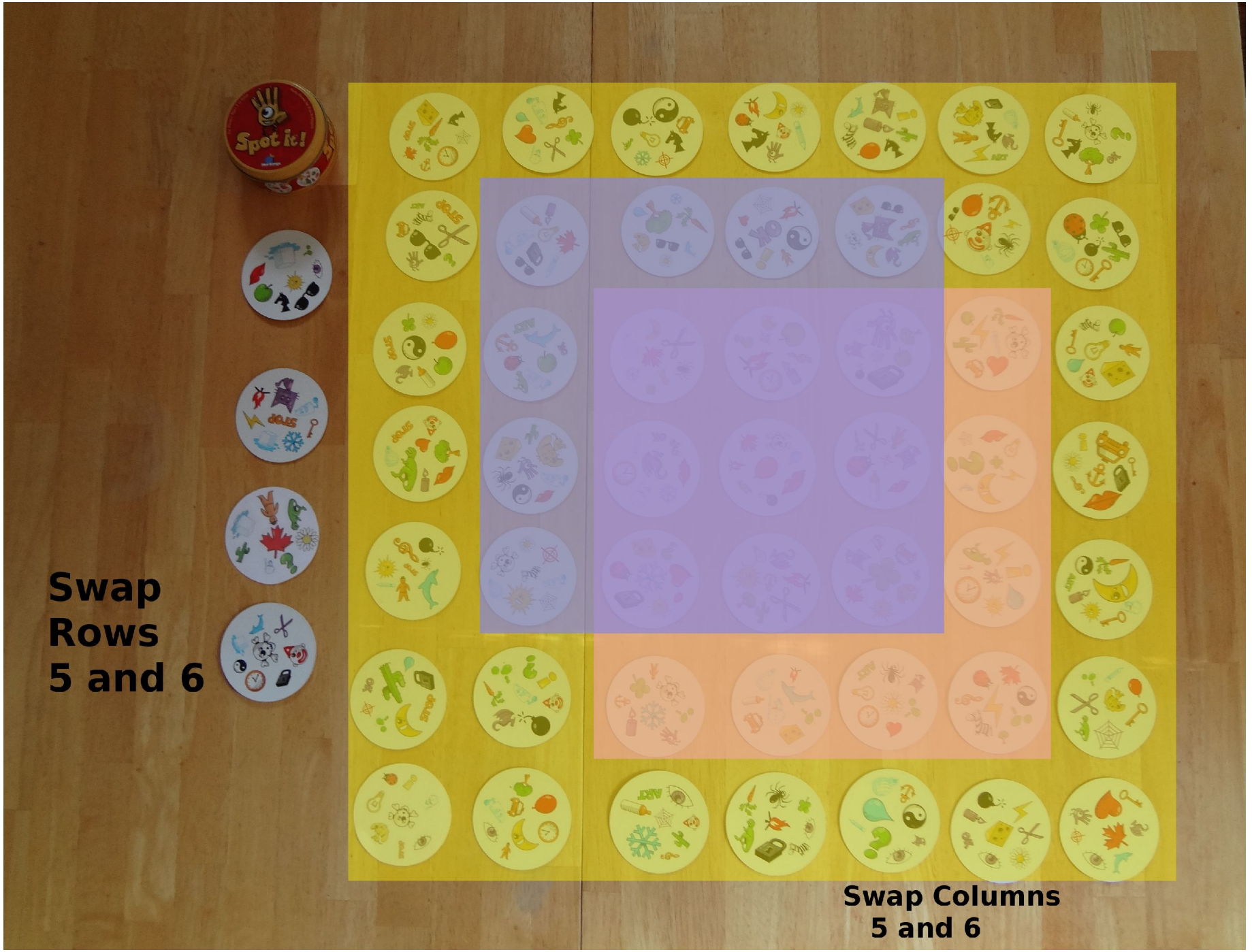



Spot it!
Swap Top Two Rows
Swap Two Leftmost Columns

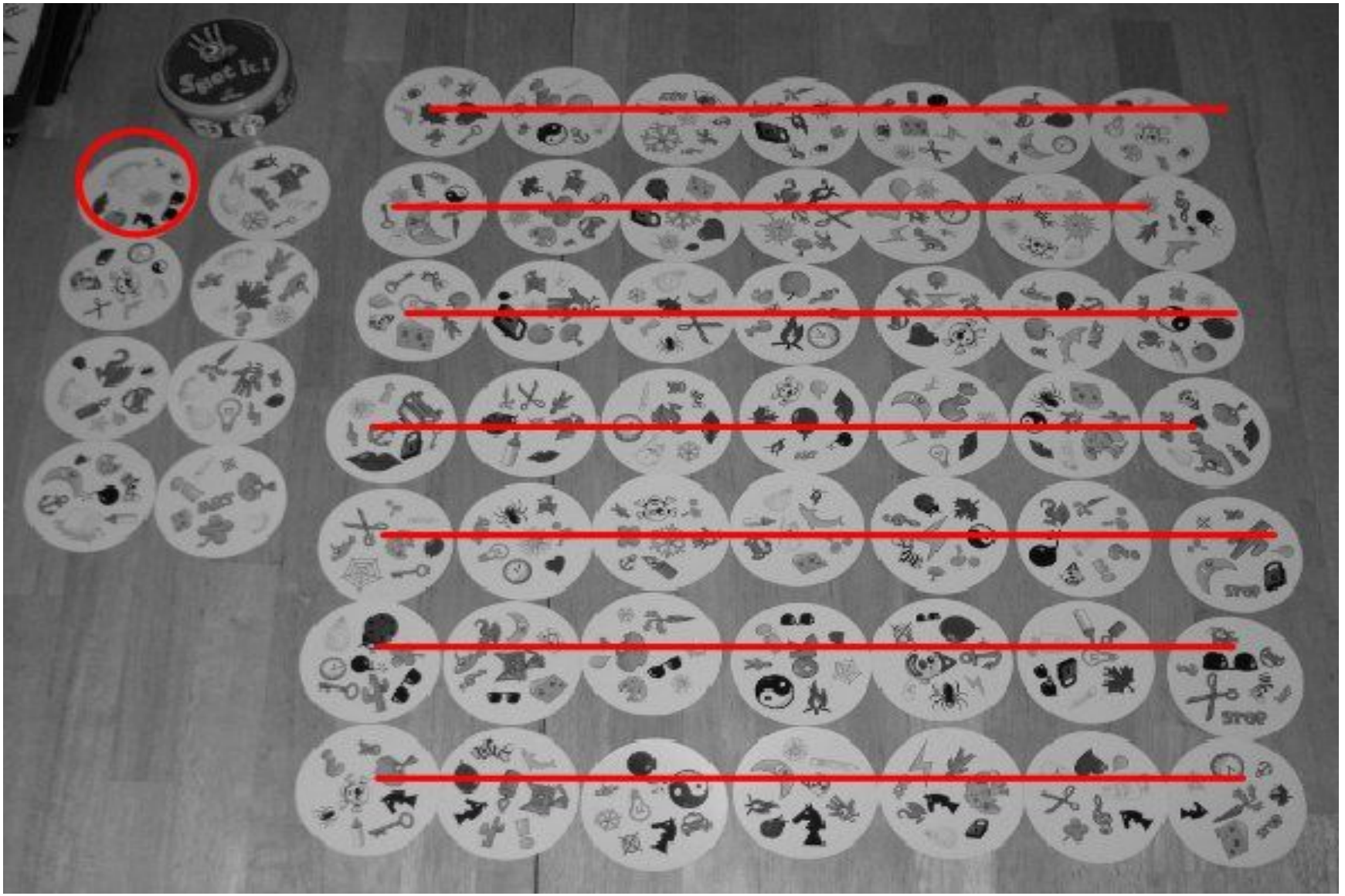

Spot it!
Swap
Rows
5 and 6
Swap Columns
5 and 6

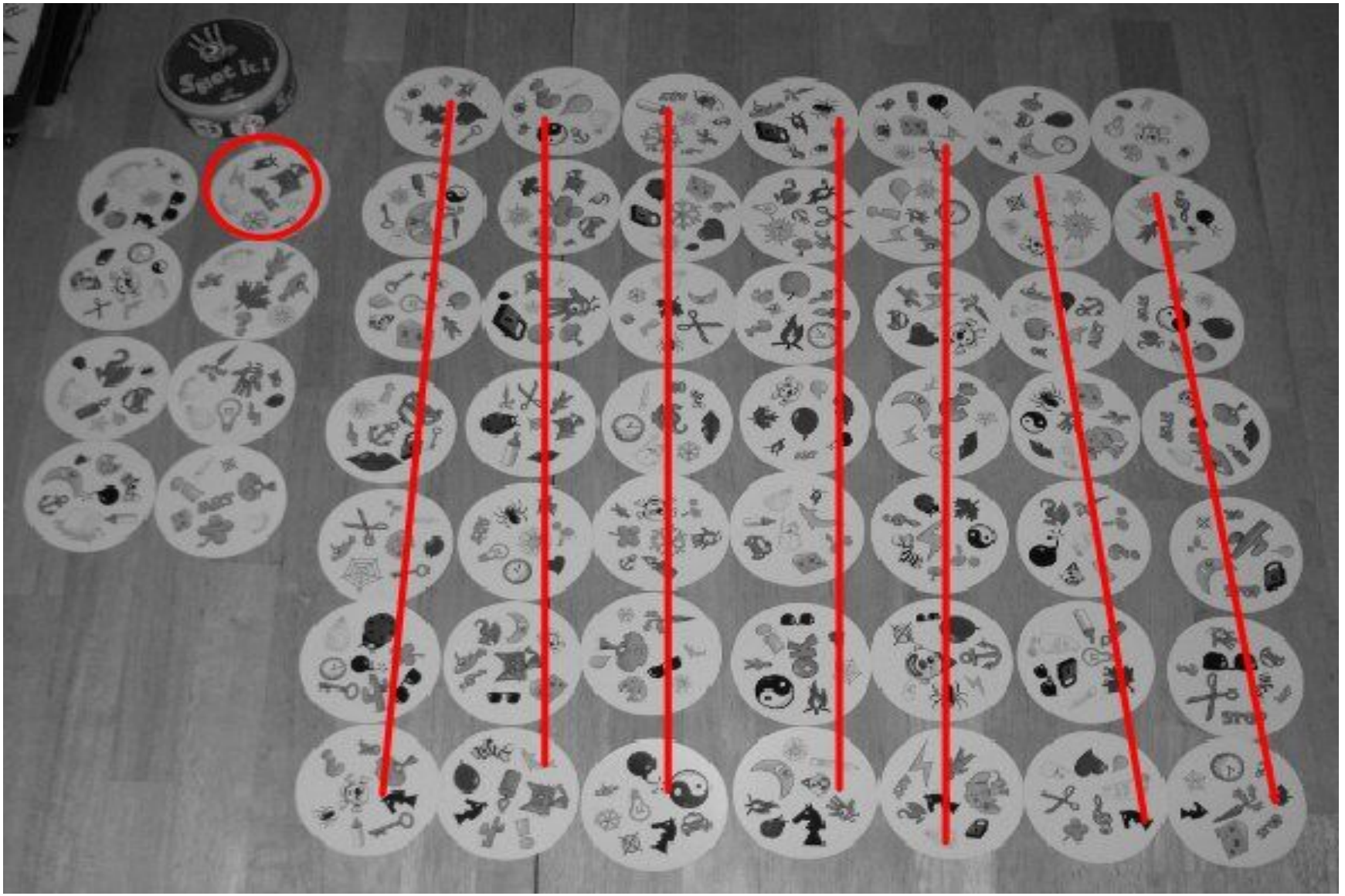

Spot it!

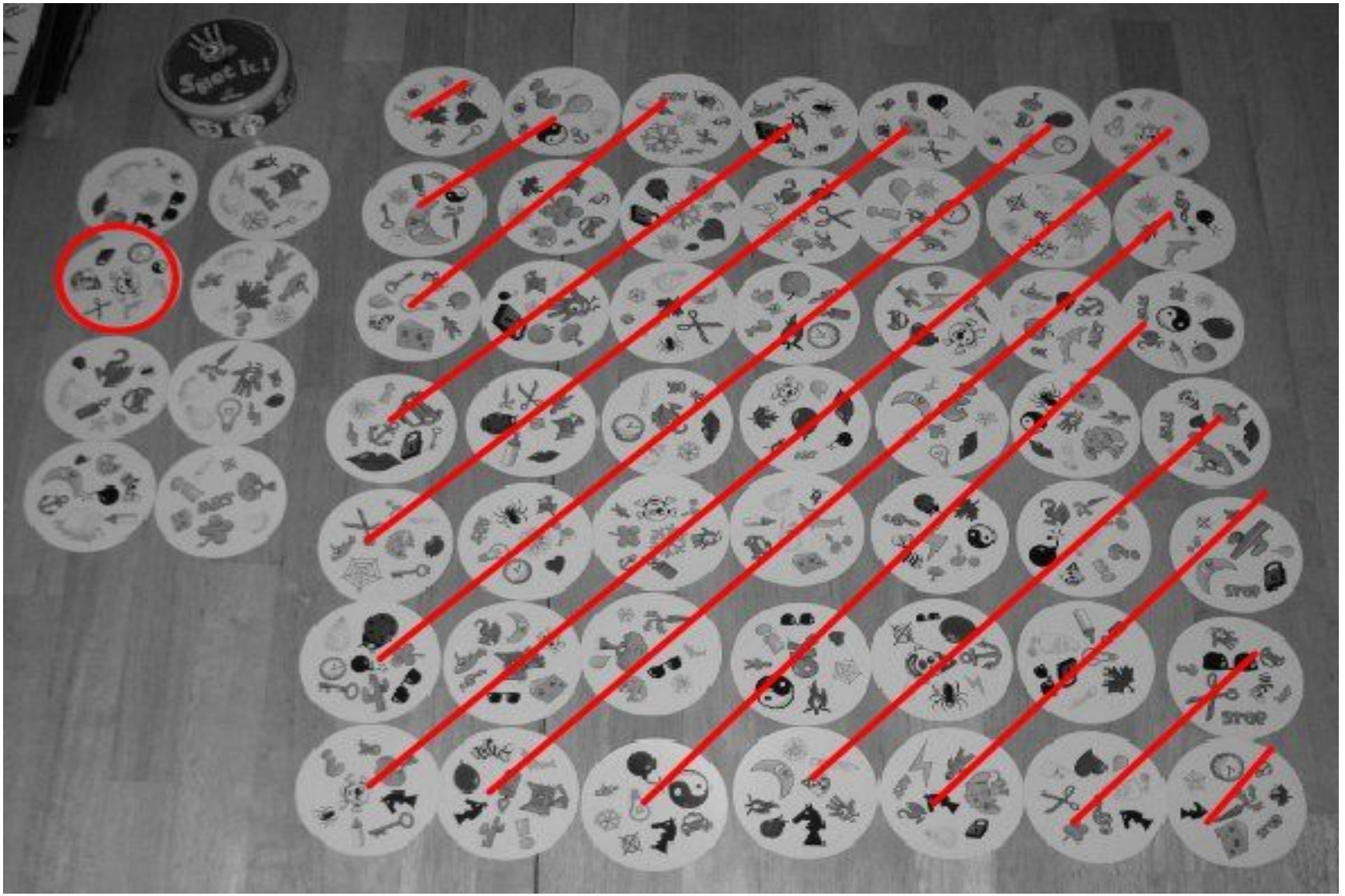
Swap Rows 2 and 6 & Swap Columns 2 and 6.

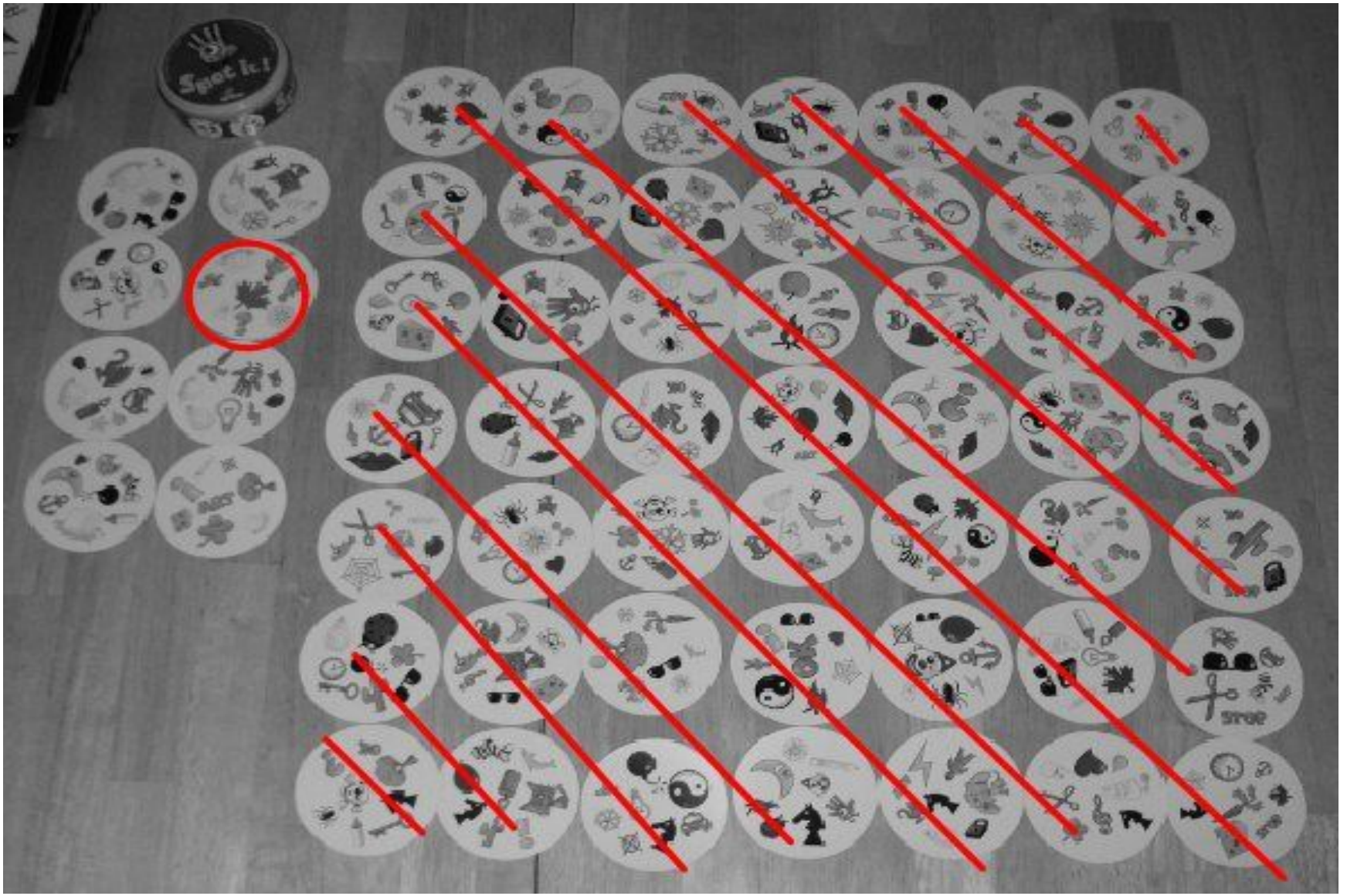
Swap Rows 1 and 7 & Swap Columns 1 and 7.

SUCCESS!!!


Spot it!


Spot it!


Spot it!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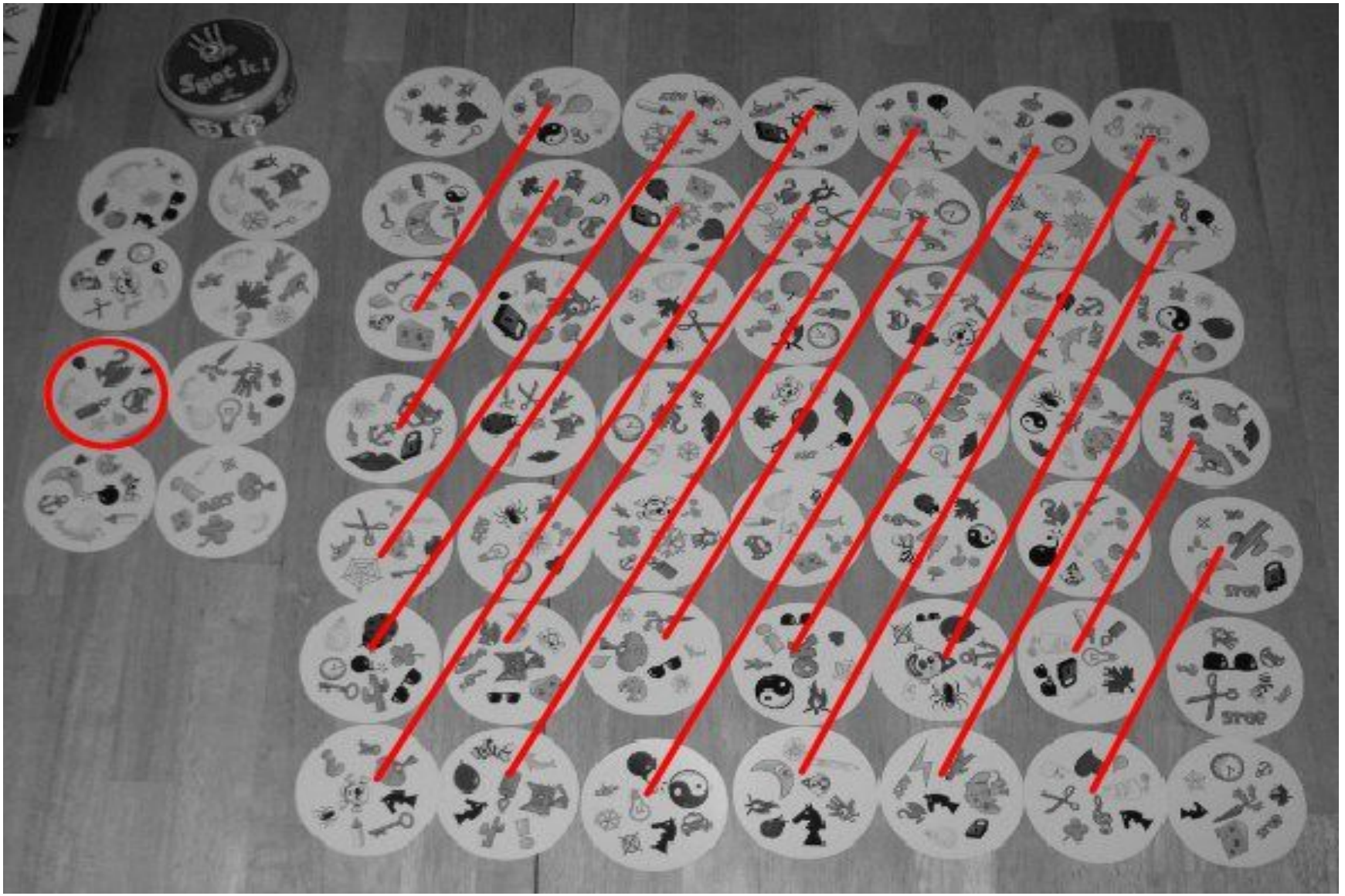
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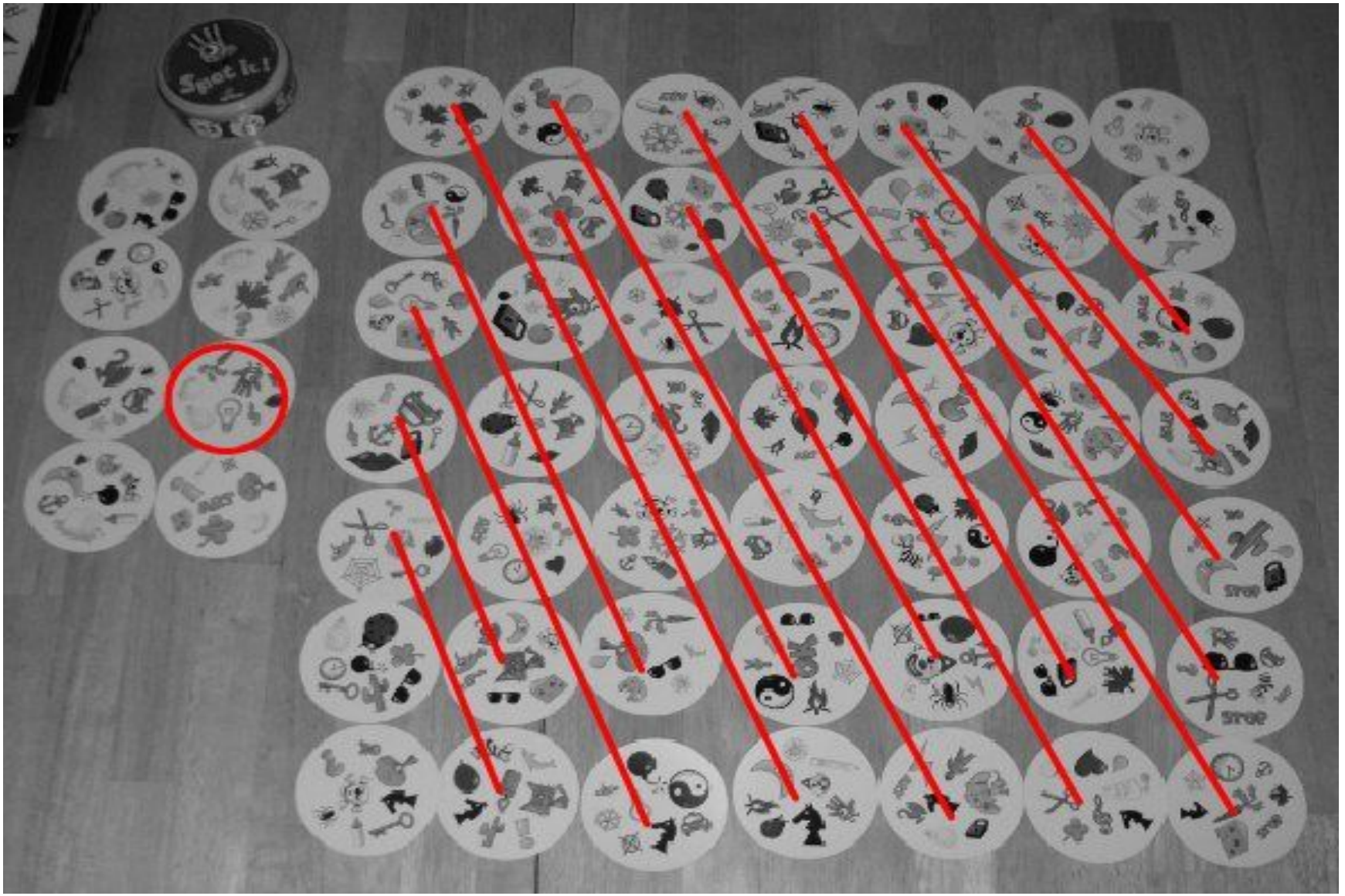
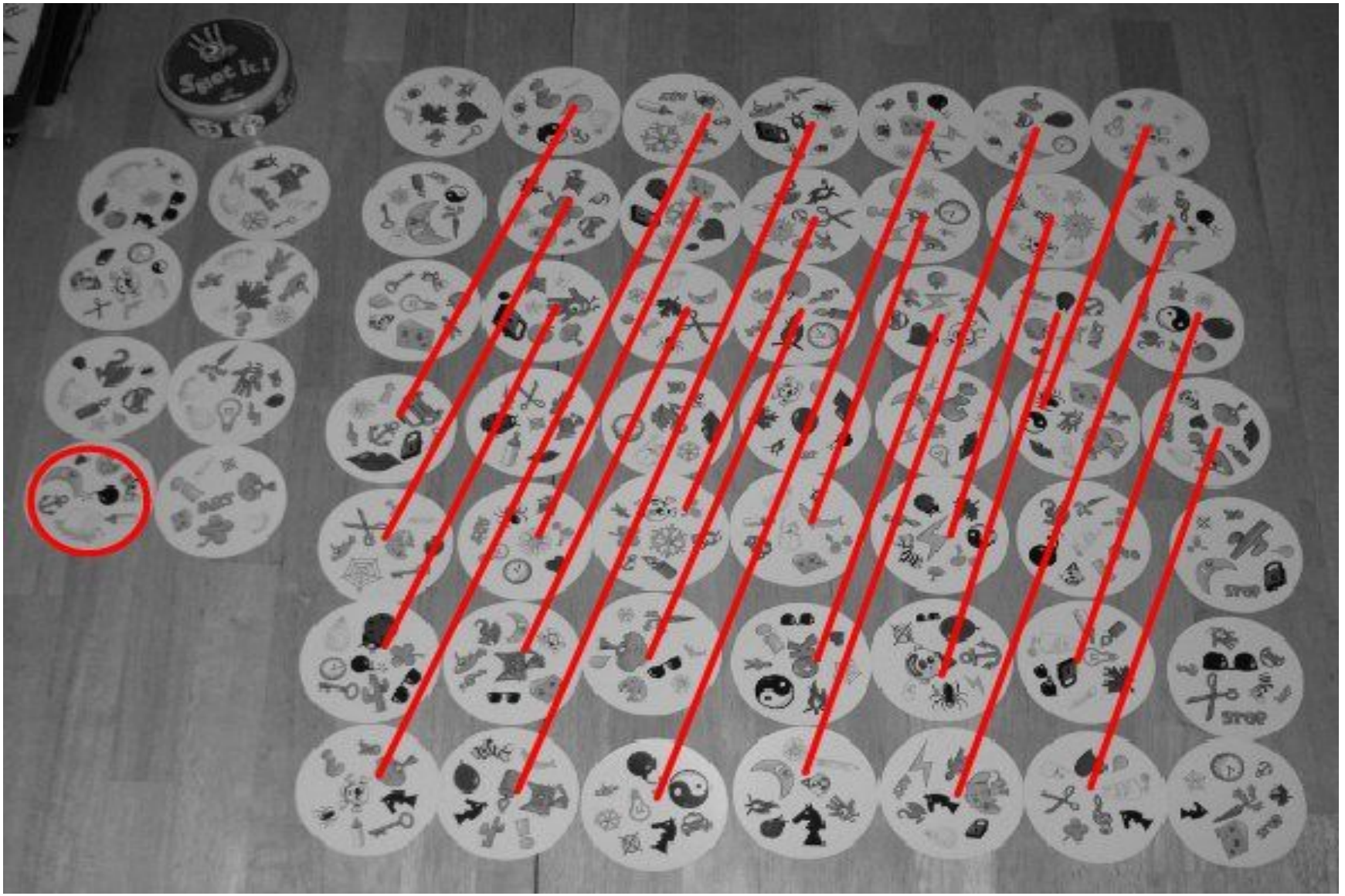

Spot it!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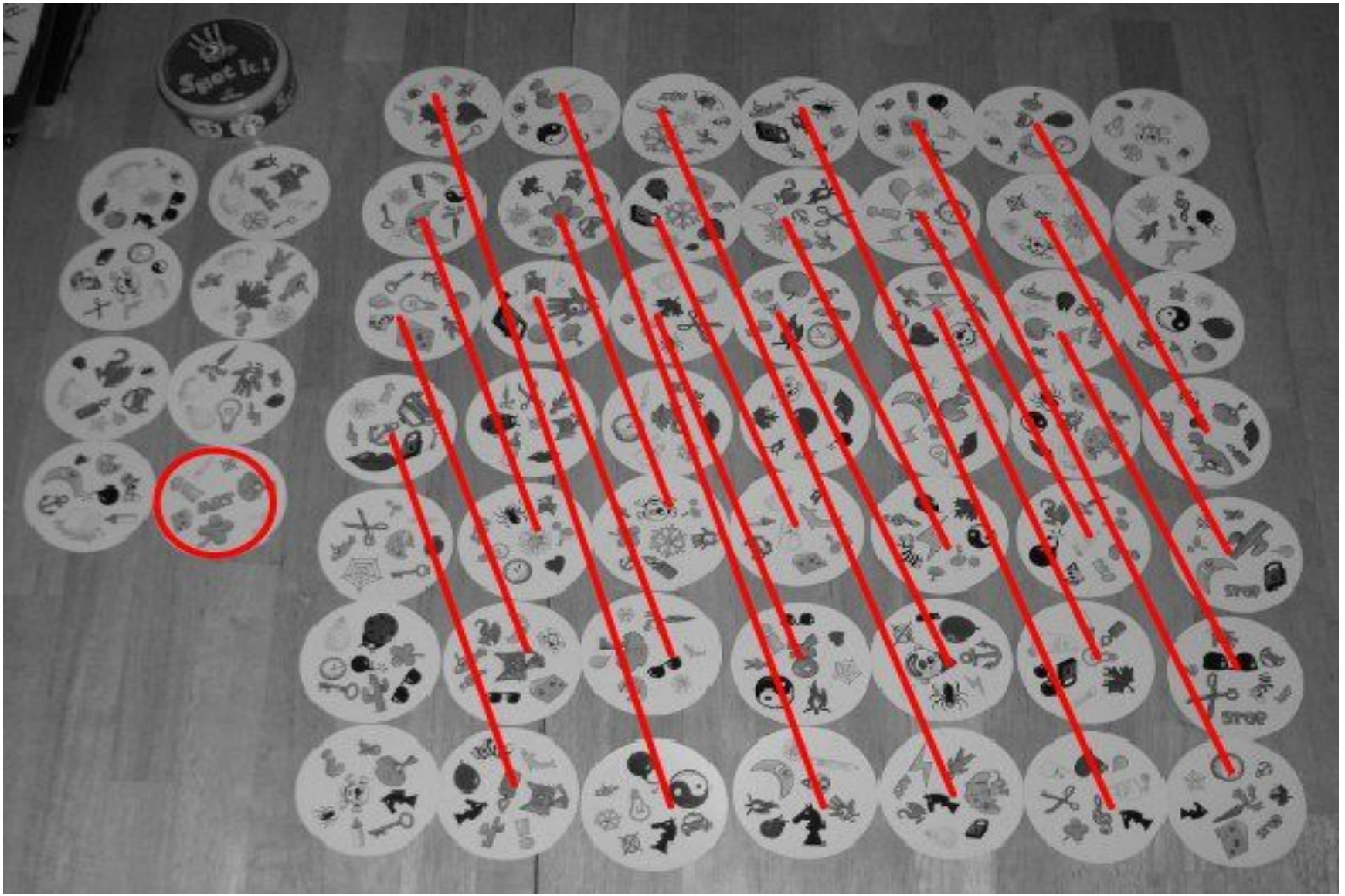
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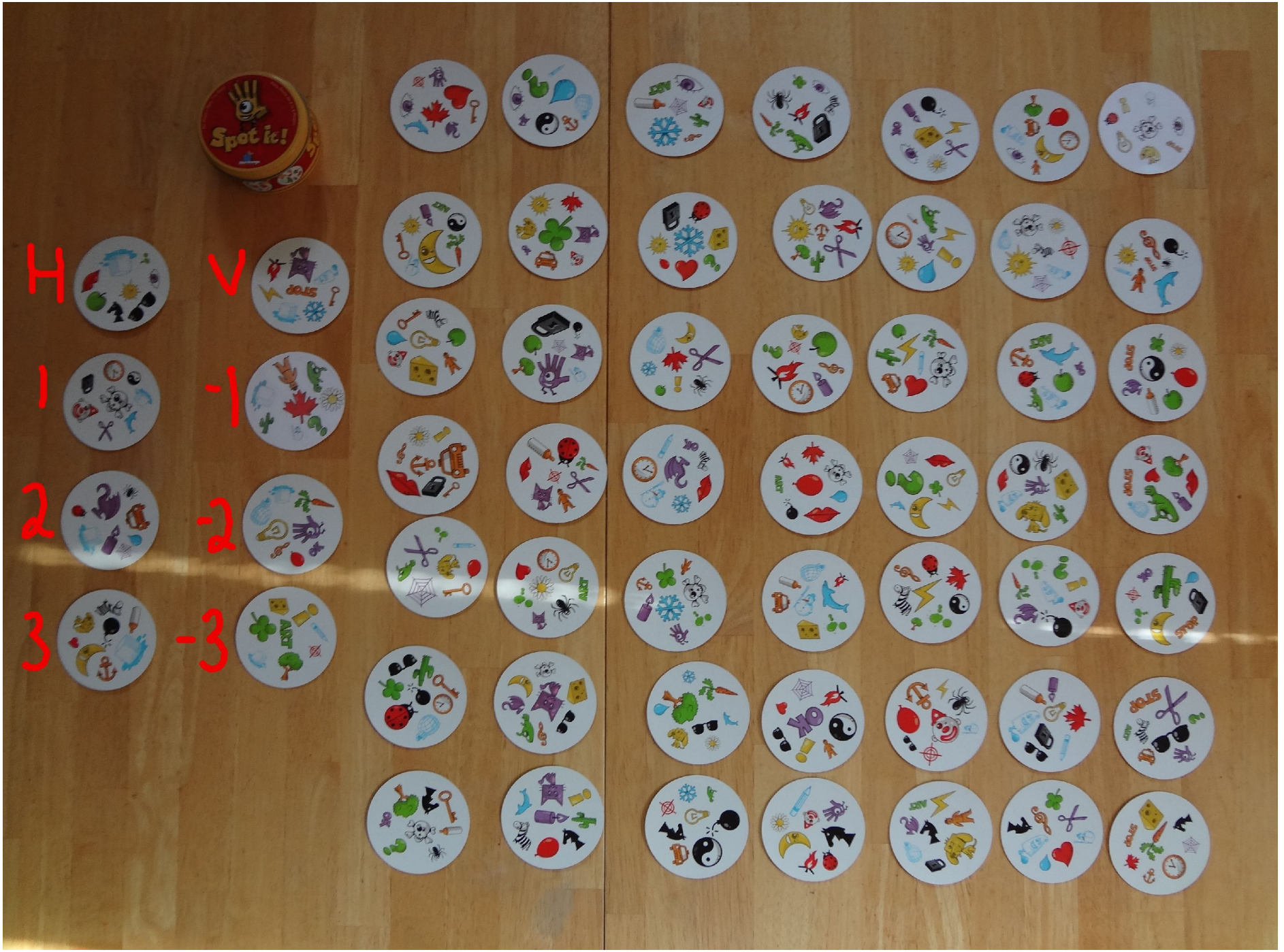
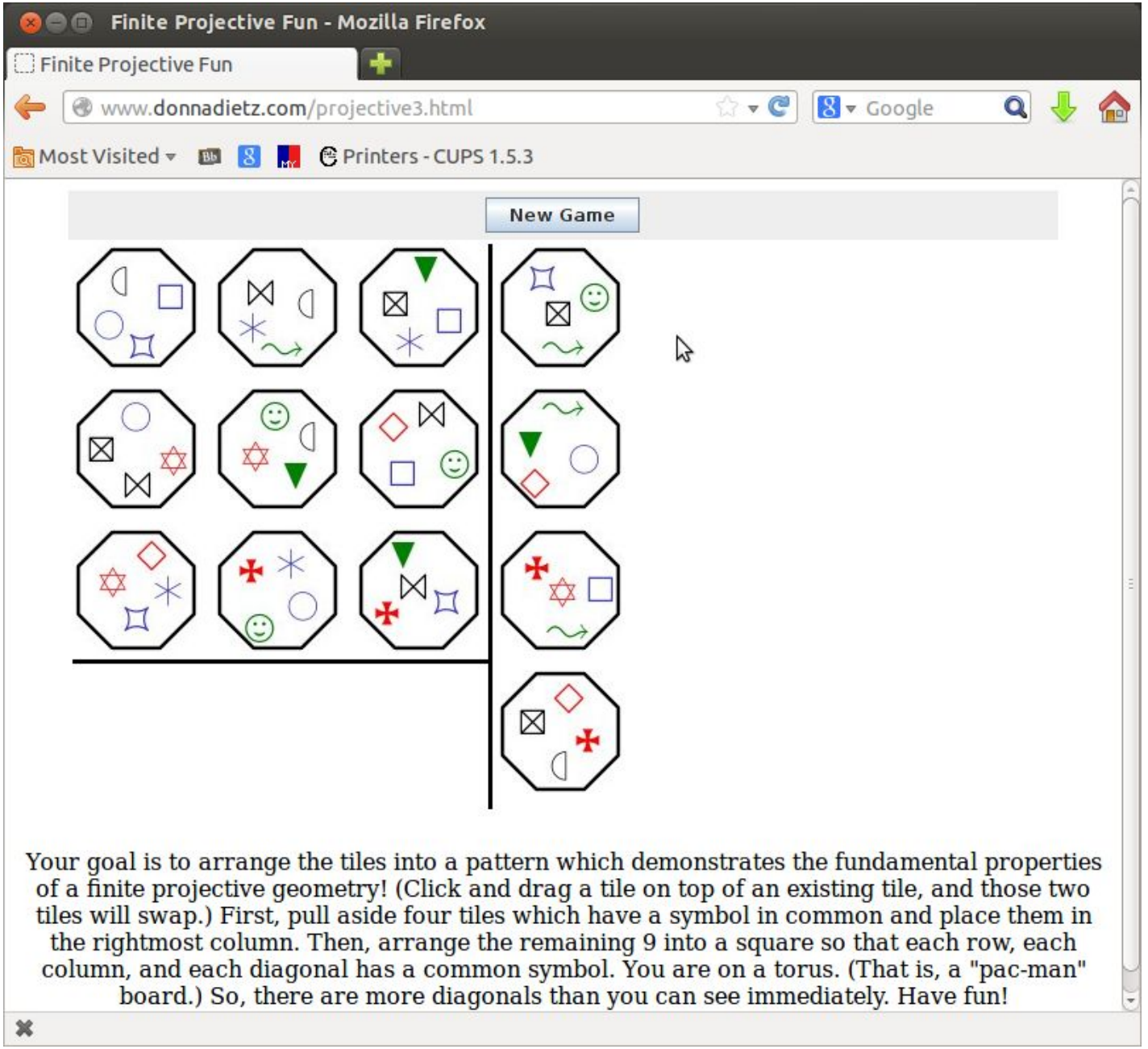

Spot it!
H
V
1
-1
2
-2
3
-3

blue orange™
Hot Games Cool Planet

Buy-it!

http://www.donnadietz.com



THANKS!