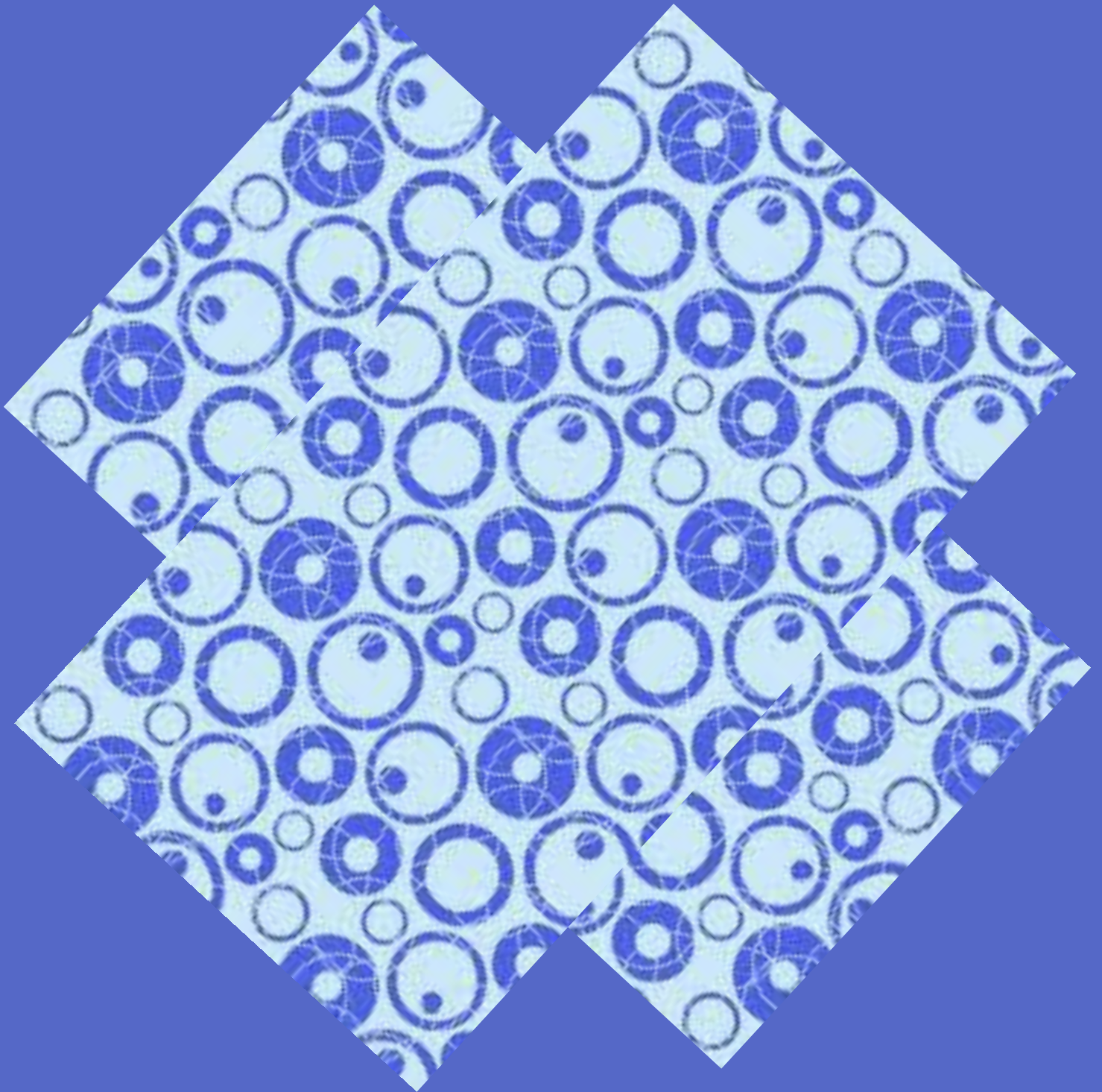


Pattern Grid-unLocks

Carole Greenes and Tanner Wolfram



Pattern Grid-unLocks

Carole Greenes and Tanner Wolfram

Object of the Puzzle: Use pattern clues to complete grids.

Talents Developed:

- Critical thinking and creativity: Willingness to consider and identify multiple solutions, testing them, and revising when necessary.
- Spatial thinking: Ability to solve problems that involve interpreting information about position and form.
- Persistence! Not giving up when the “going gets tough”!

Components: 50 Grid-unLock Puzzles

Each puzzle contains:

- Grid: 3-by-3 square with 9 cells.
- Clues about location of tiles in the grid.
- 9 pattern tiles: 3 ●, 3 ▼, and 3 X.

Clues show portions of the completed grid, as for example a completed diagonal, a row, or a different set of connected cells. For each problem, there will be two, three, or four clues. Some clues overlap on the grid. Clues may not be rotated or flipped. Some missing pieces have to be “deduced” from what is already in place. Grids may be completed using tiles or drawings of the tiles.

Set 1: 16 Warm-up Puzzles

Set 2: 18 Puzzling Puzzles

Set 3: 16 Super Stumper Puzzles

Solutions are provided at the end of the book.

Give it a try!



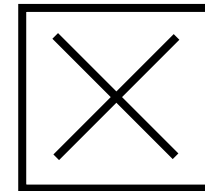
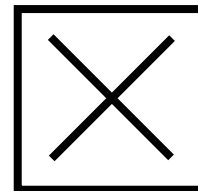
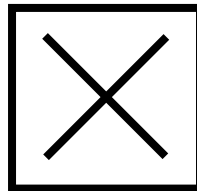
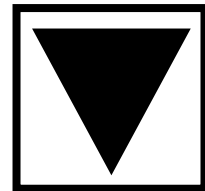
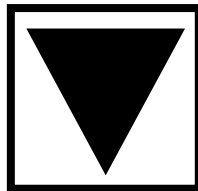
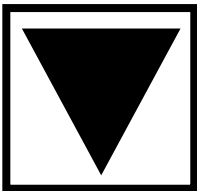
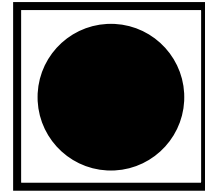
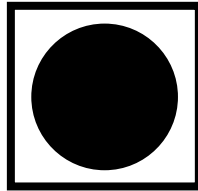
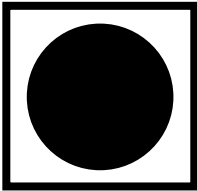
Carole Greenes, Ed.D. is Professor Emerita, Mathematics Education at Arizona State University. While at ASU, she served as Associate Vice President for STEM Education, Dean of the School of Educational Innovation and Teacher Preparation, Director of the Practice Research and Innovation in Mathematics Education (PRIME) Center, Director of the Vertically Integrated Projects program that provides research experiences for undergraduate students, and Professor of Mathematics Education in the Ira A. Fulton Schools of Engineering and the College of Liberal Arts and Sciences. Currently, she directs the PRIME Group that develops books of challenge problems for students, grades K – 12. Carole is author of more than 350 books for PreK-12 and college students, and teachers; 81 articles; six mathematical musicals; and two histories of mathematics in story and song. She served as editor of the Arizona Association of Teachers of Mathematics journal, *OnCore*, and author of the online monthly free *MATHgazine Senior* (grades 8-12), *MATHgazine Junior* (grades 5-8), *MATHgazine Elementary* (grades 3-5) and *MATHgazine Primary* (grades K-2). In 2003, Greenes was inducted into the Massachusetts Mathematics Educators' Hall of Fame. In 2011, she received the NCSM Ross Taylor/Glenn Gilbert National Leadership Award in Mathematics Education. In 2016, she received the Copper Apple Award for Leadership in Mathematics in Arizona, and in 2018 she received the National Council of Teachers of Mathematics Lifetime Achievement Award.



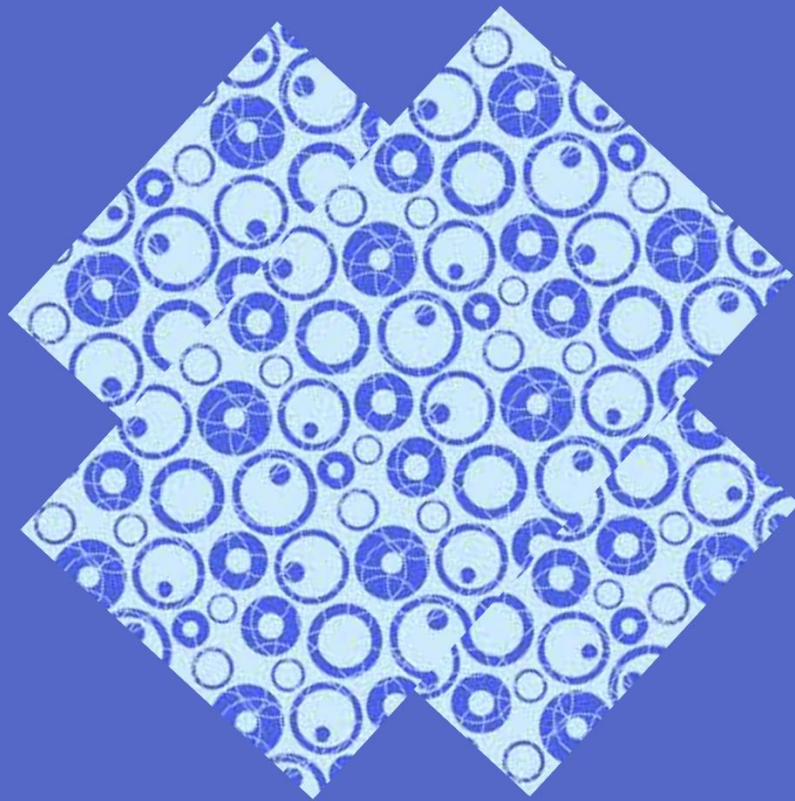
Tanner Wolfram is a Fall 2019 graduate, Summa cum Laude, of Barrett, The Honors College at Arizona State University. He holds a major in Physics and minors in both Spanish and Chinese. Tanner is co-author of *Pattern Grid-unLocks*, *Alge-Grid: What's the a?* puzzle books, and senior author of the *Facasumi Puzzle Book*. From Spring 2016 to Fall 2020, Tanner served as Senior Project Assistant in the Practice, Research, and Innovation in Mathematics Education (PRIME) Center at ASU, and is now co-Director of the PRIME Group. During his time with the PRIME Center, Tanner assisted with the NSF-funded App Maker Pro (AMP) project, edited and contributed to eight *MATHadazzle Puzzle Books*, co-authored six articles and co-edited two free monthly online *MATHgazines*. He also co-edited the Fall and Spring (2019, 2020) issues of *OnCore*, the journal of the Arizona Association of Teachers of Mathematics (AATM).

Puzzle Pieces

Cut out these nine pieces. Use them to complete the patterns.

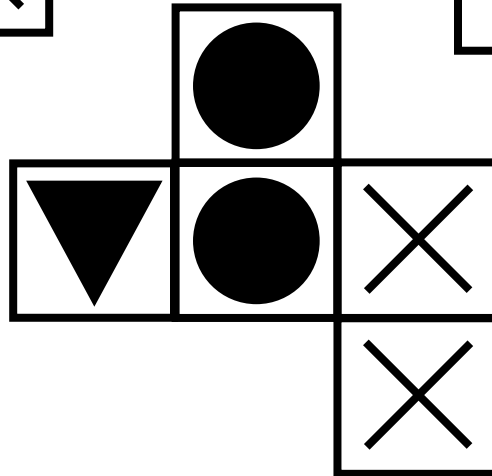
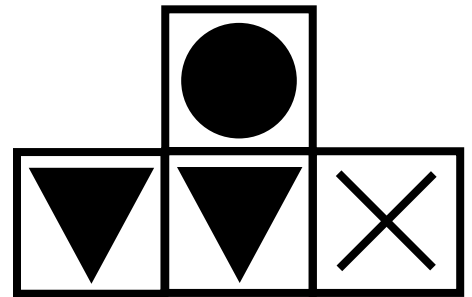
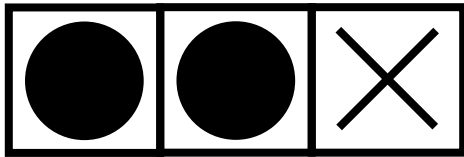


Set 1: Warm-up Puzzles

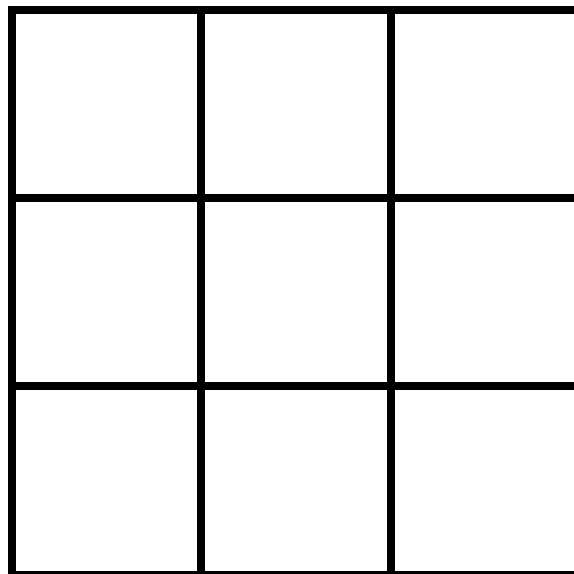


Pattern 1

Clues

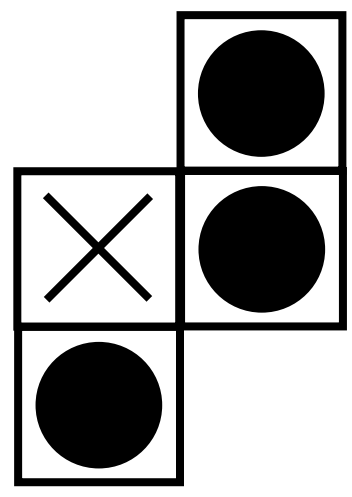
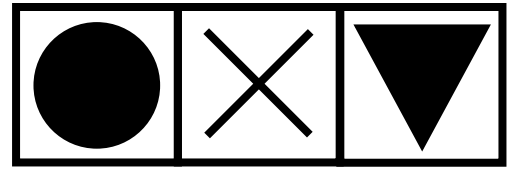
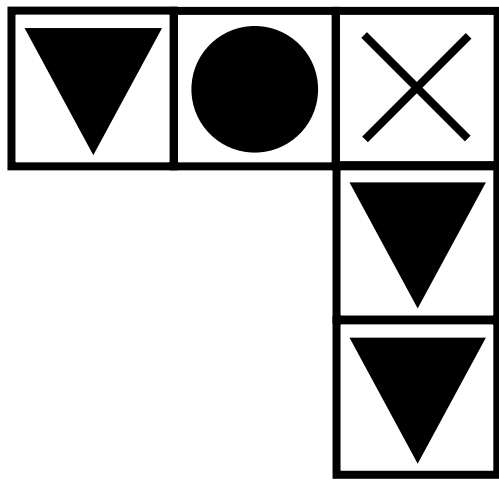


Grid

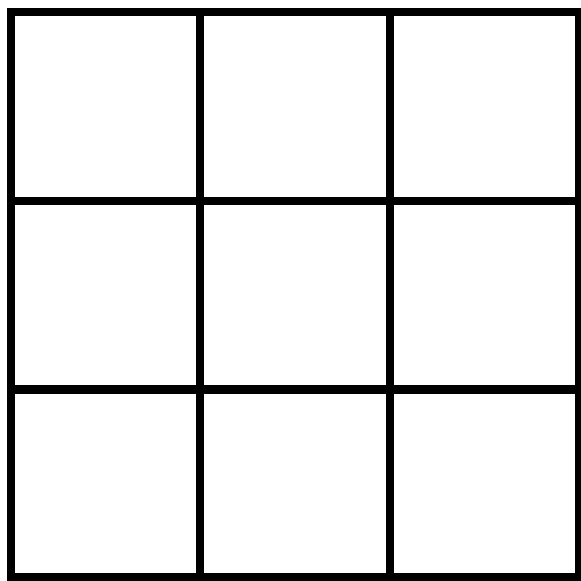


Pattern 2

Clues

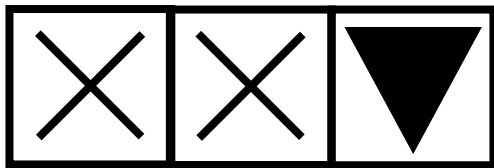
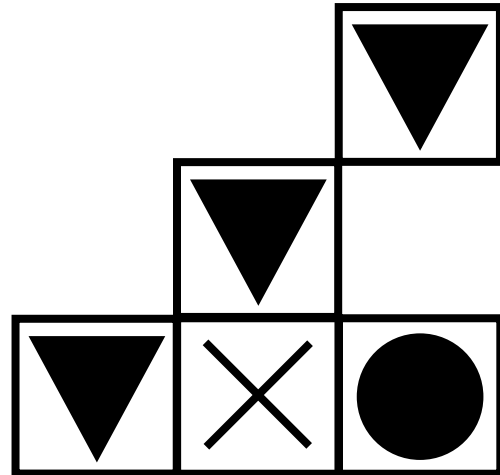
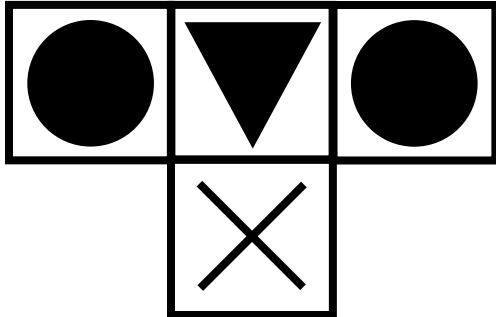


Grid

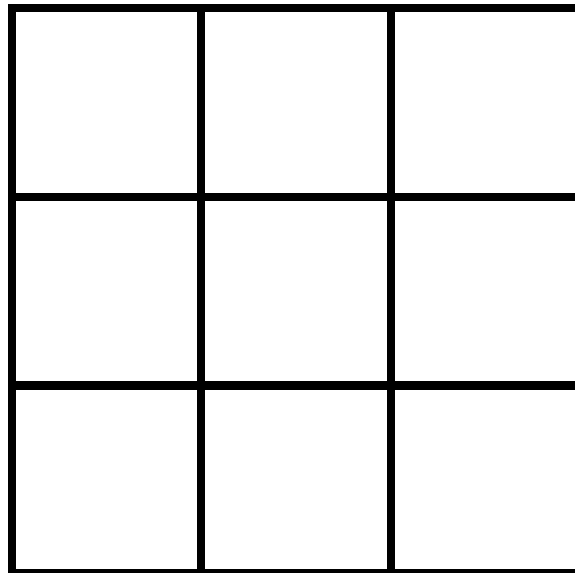


Pattern 3

Clues

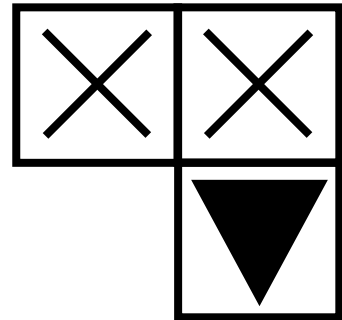
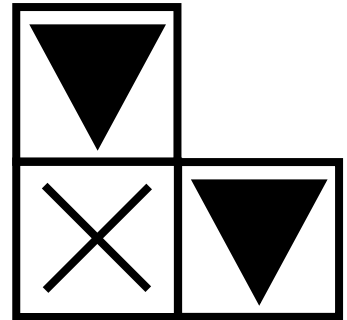
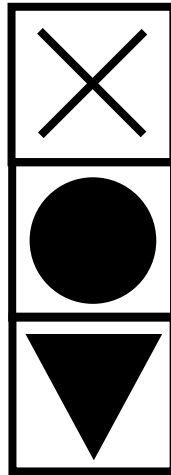
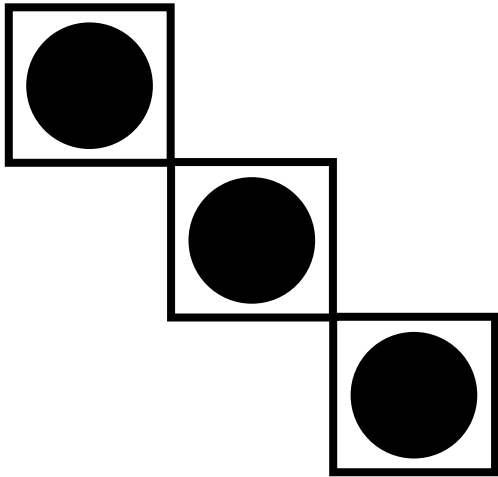


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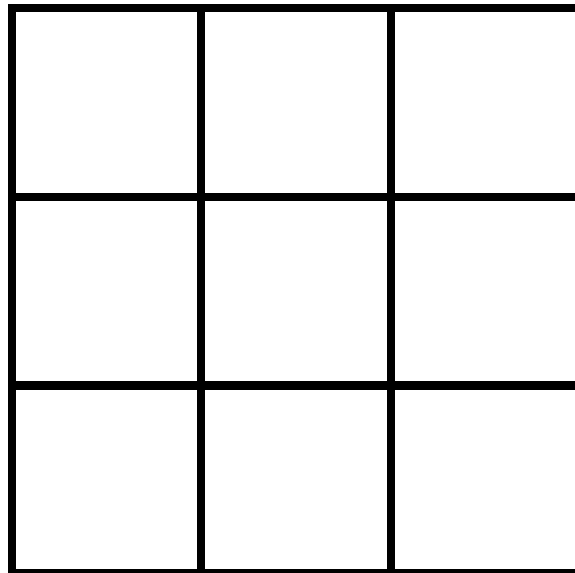


Pattern 4

Clues

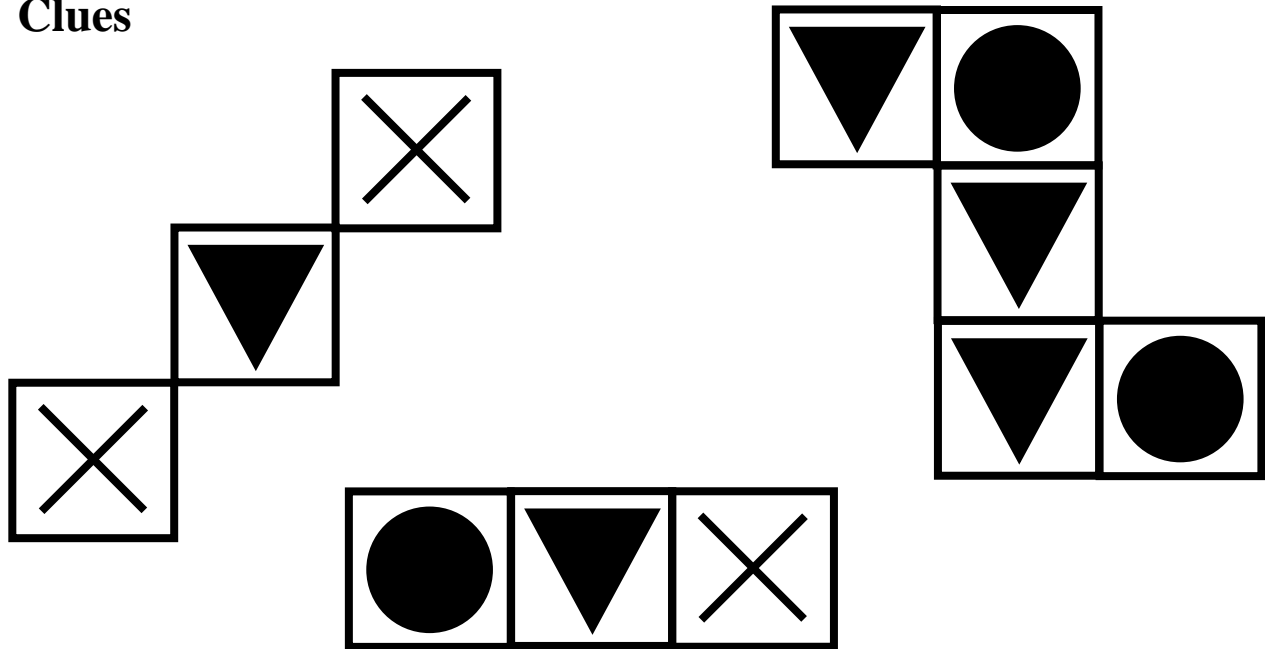


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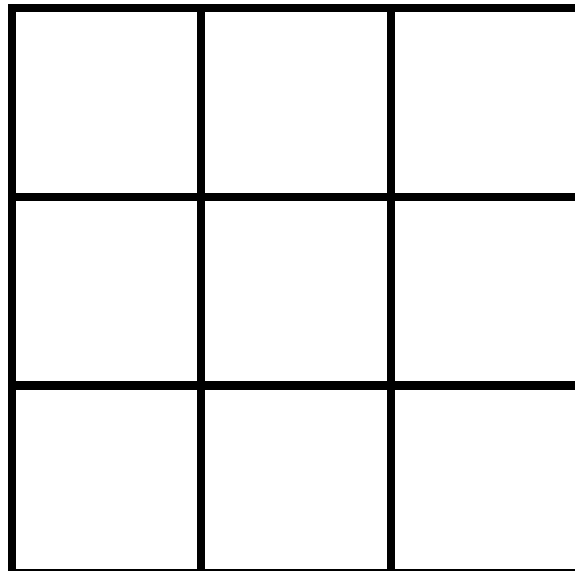


Pattern 5

Clues

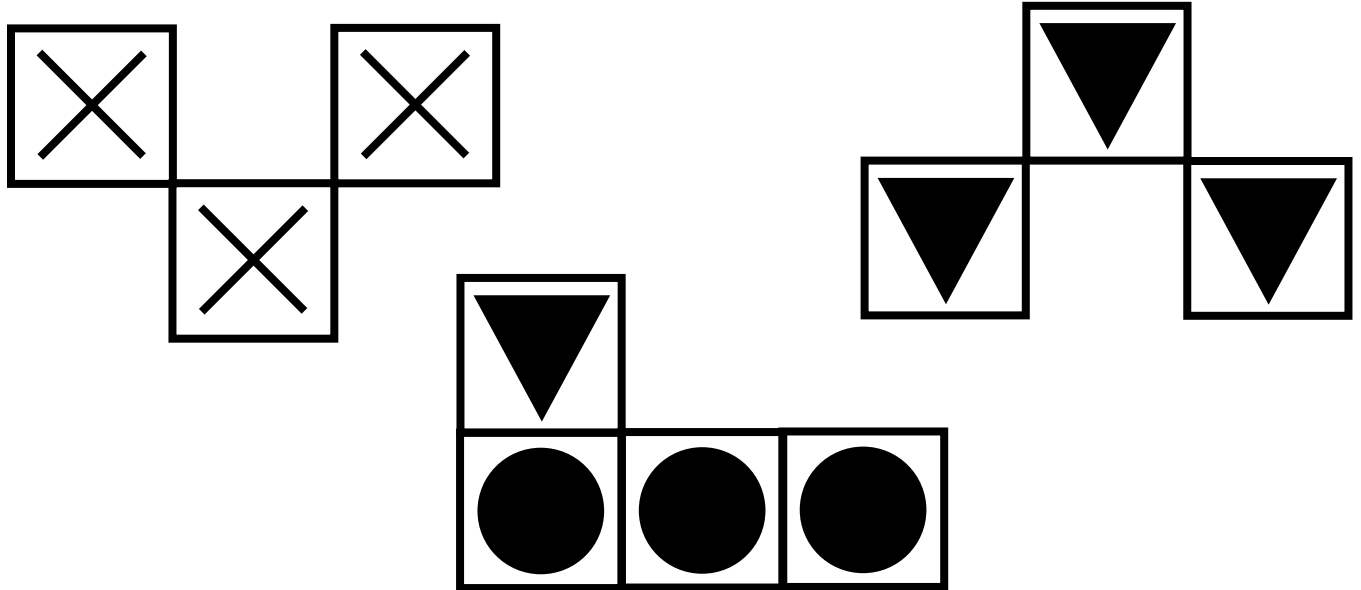


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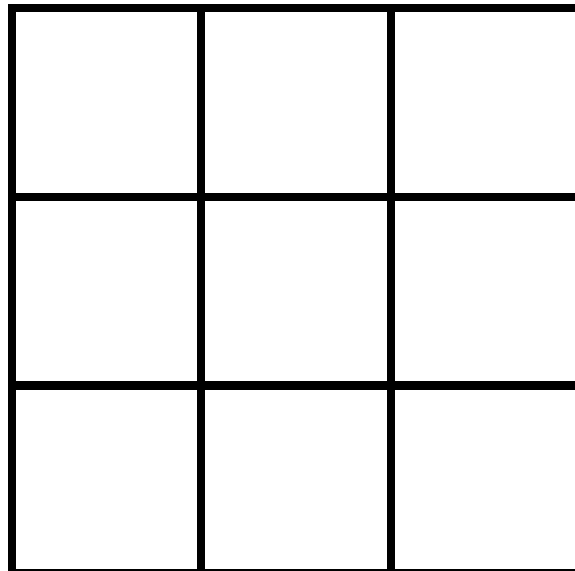


Pattern 6

Clues

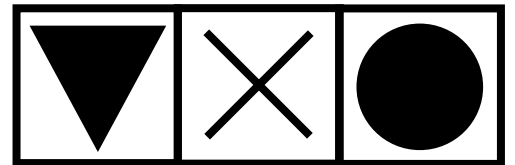
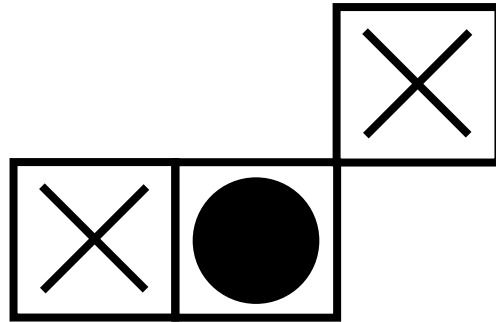
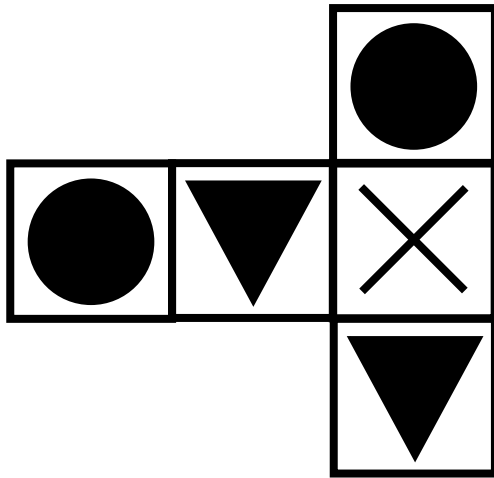


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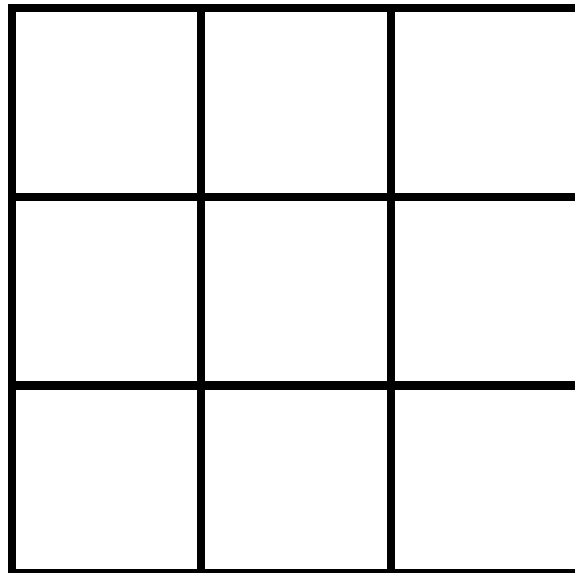


Pattern 7

Clues

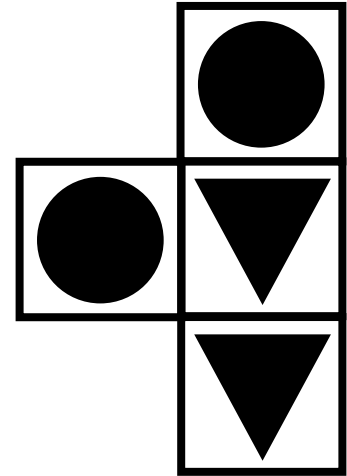
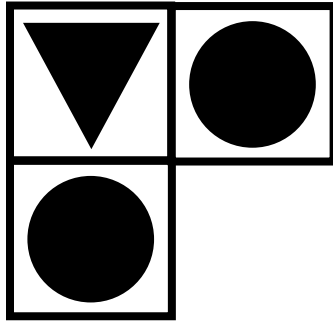
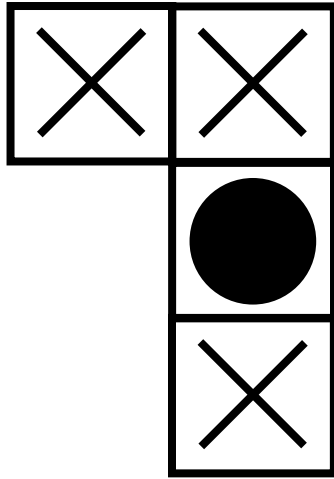


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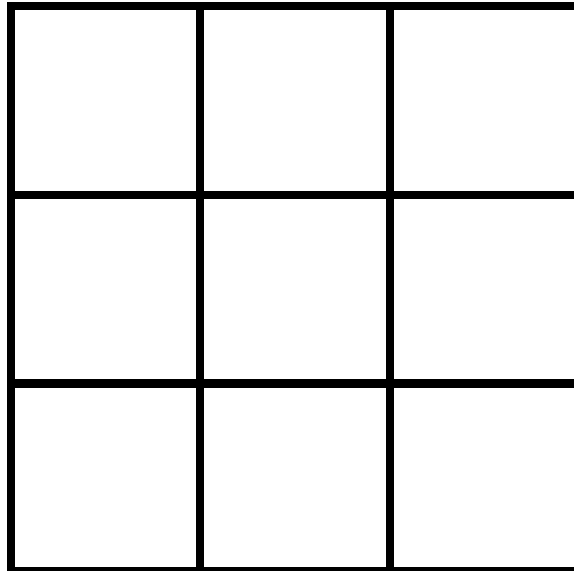


Pattern 8

Clues

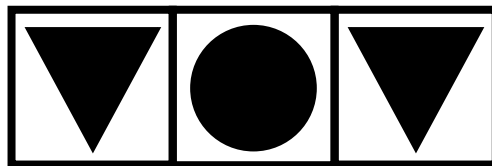
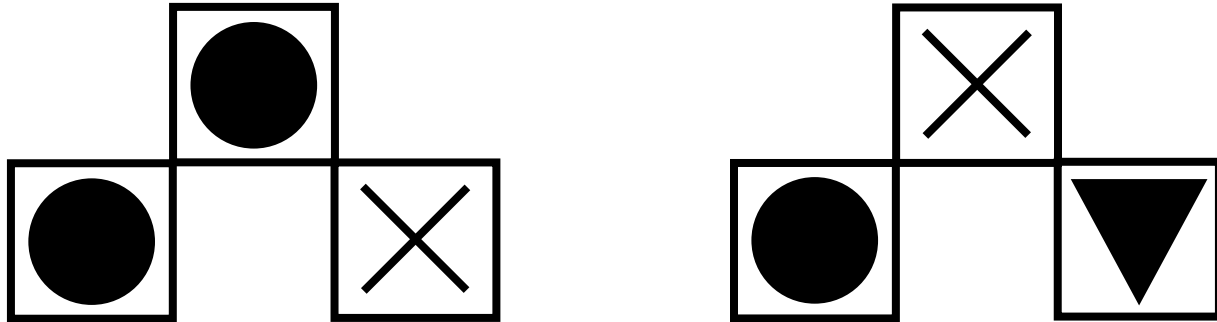


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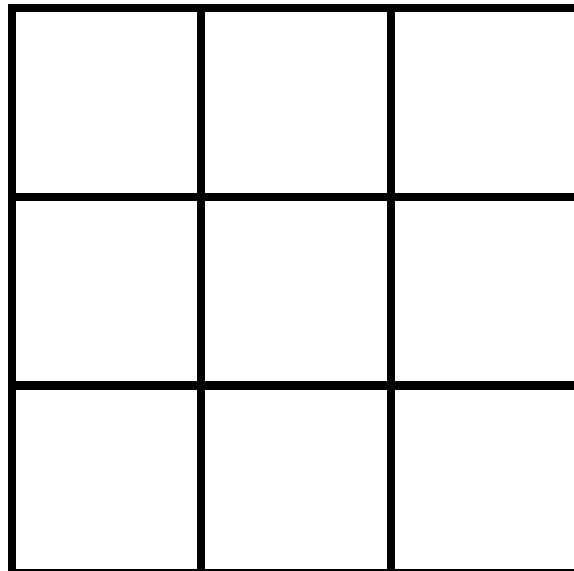


Pattern 9

Clues

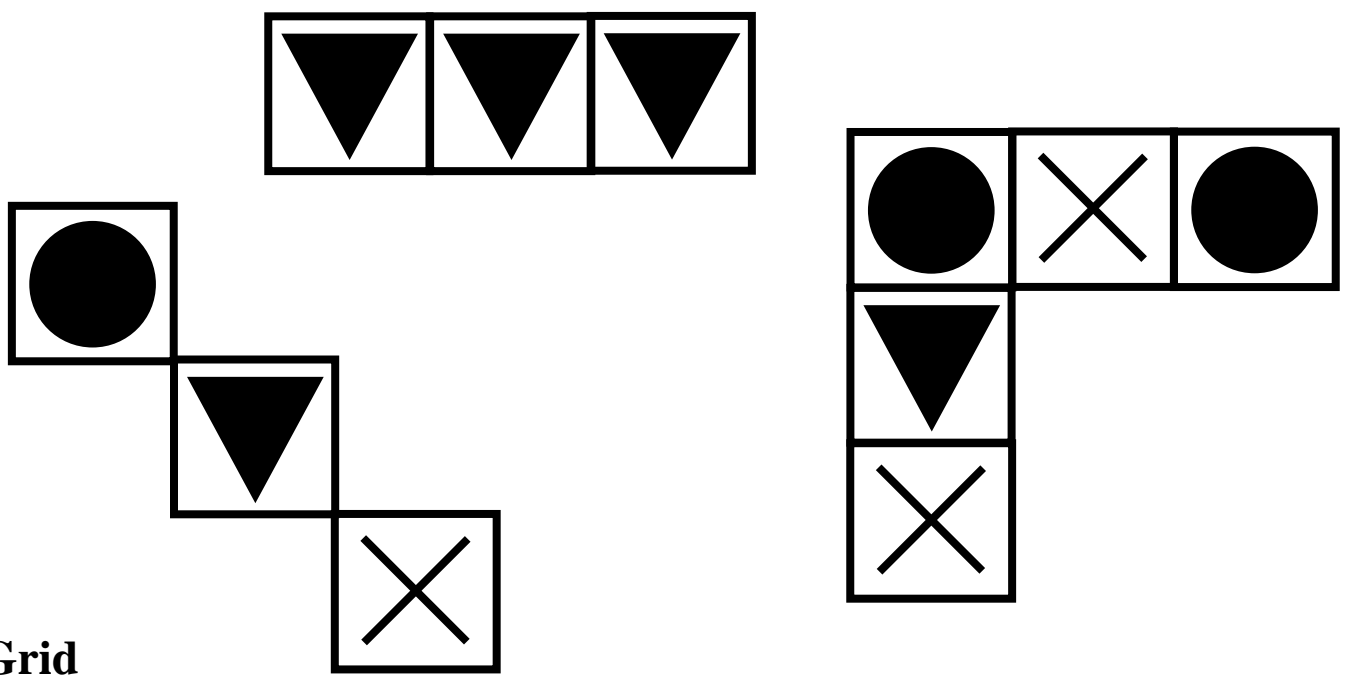


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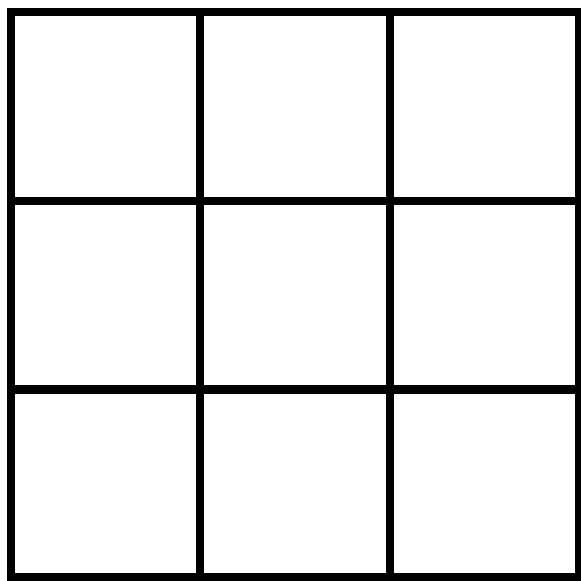


Pattern 10

Clues

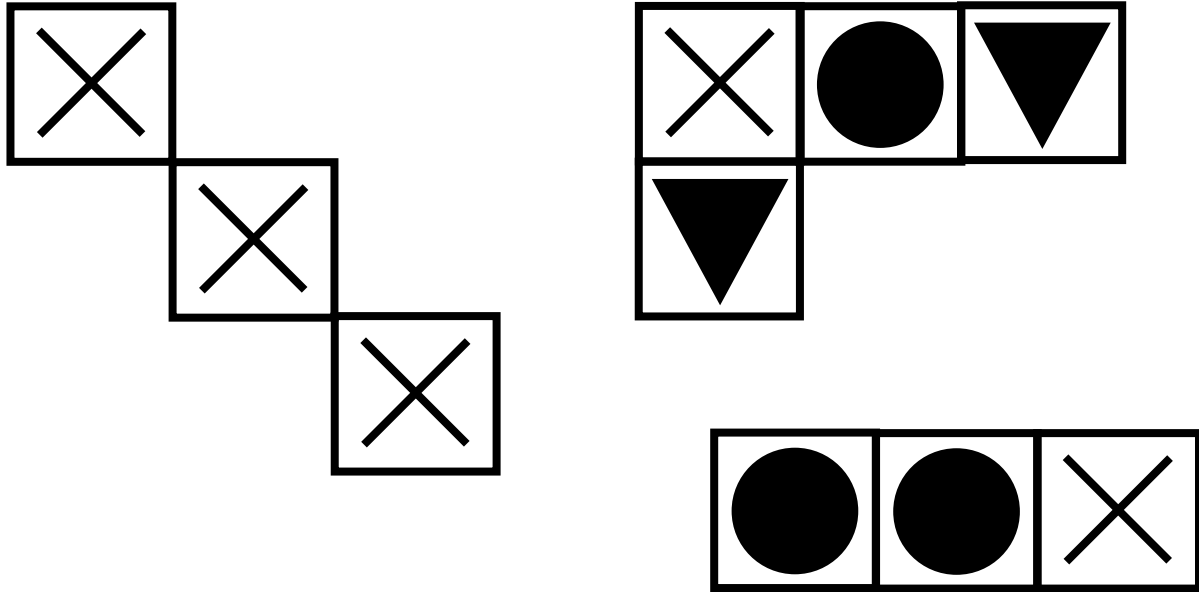


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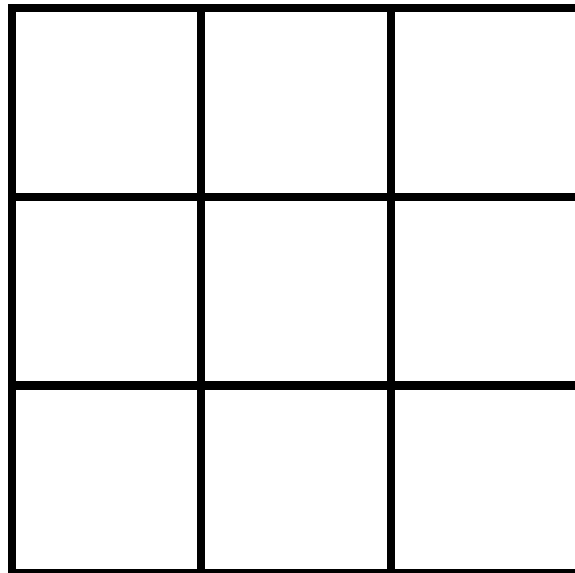


Pattern 11

Clues

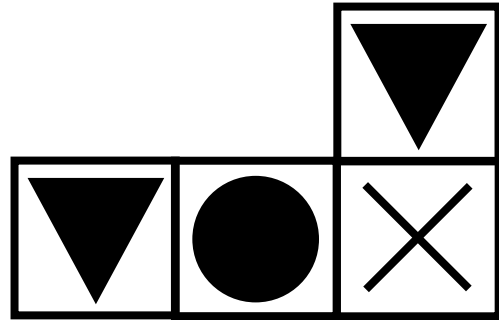
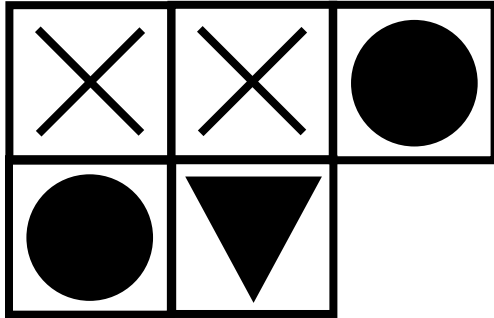


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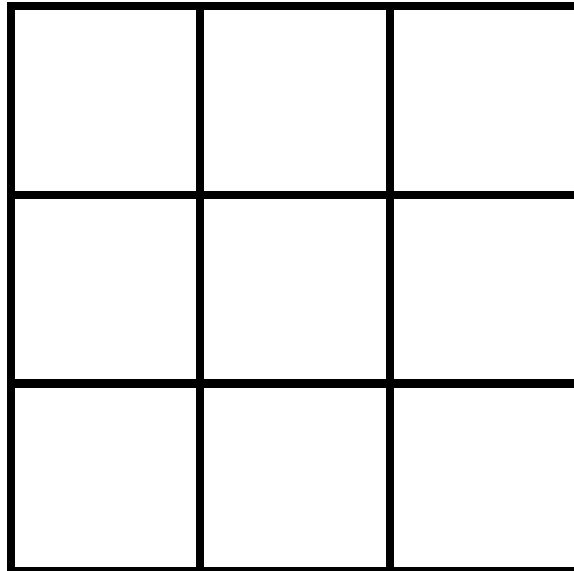


Pattern 12

Clues

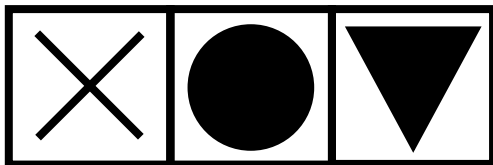
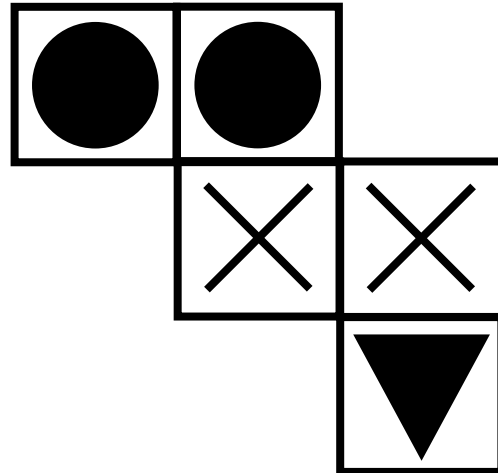
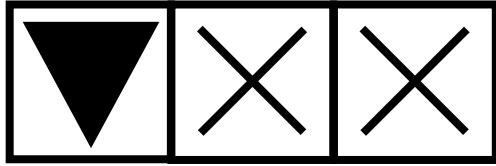


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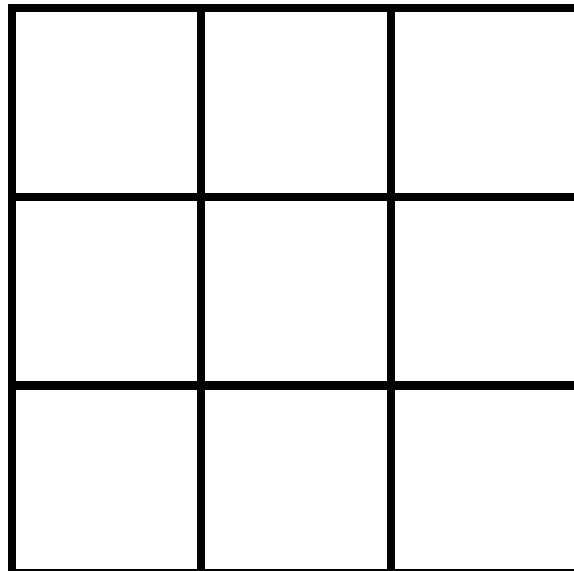


Pattern 13

Clues

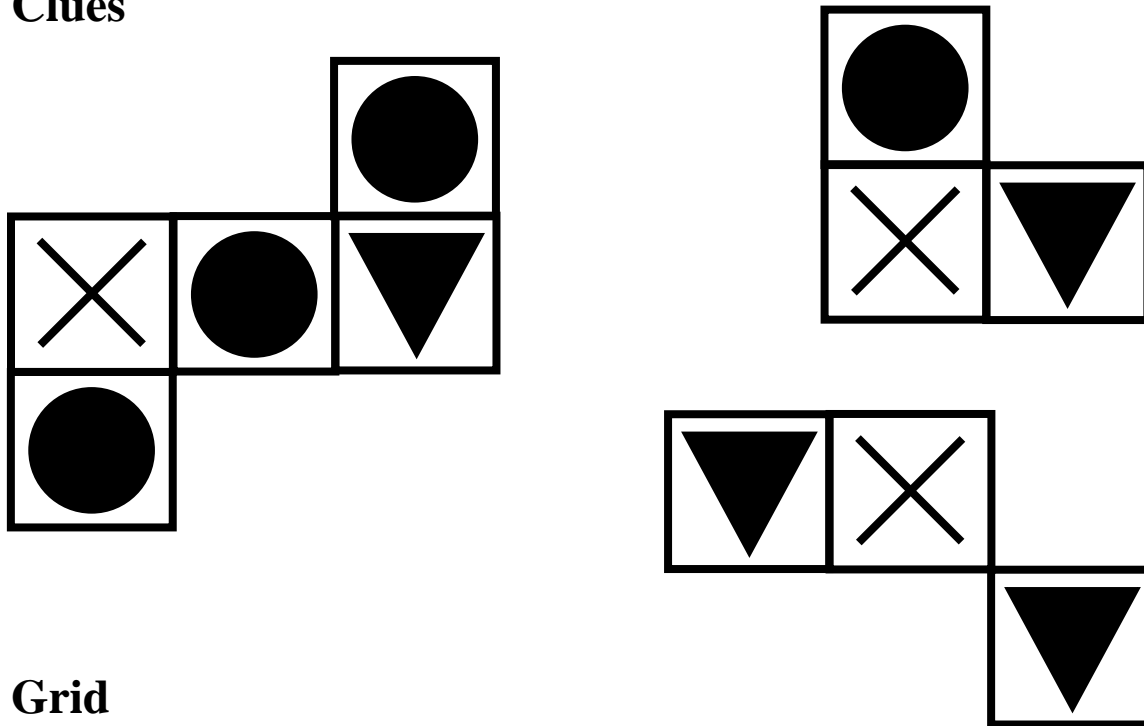


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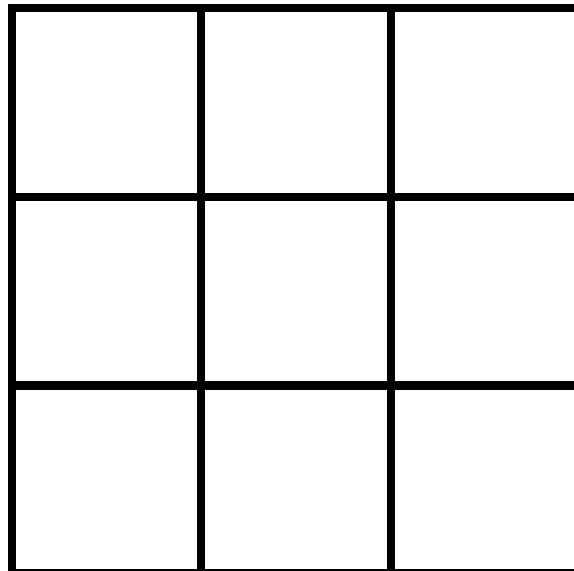


Pattern 14

Clues

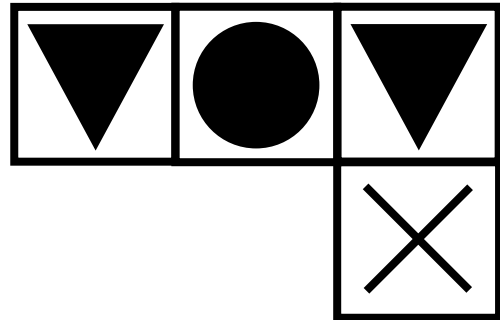
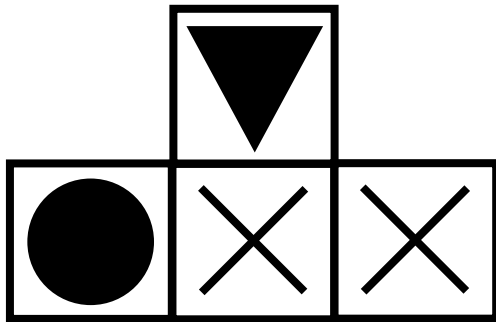


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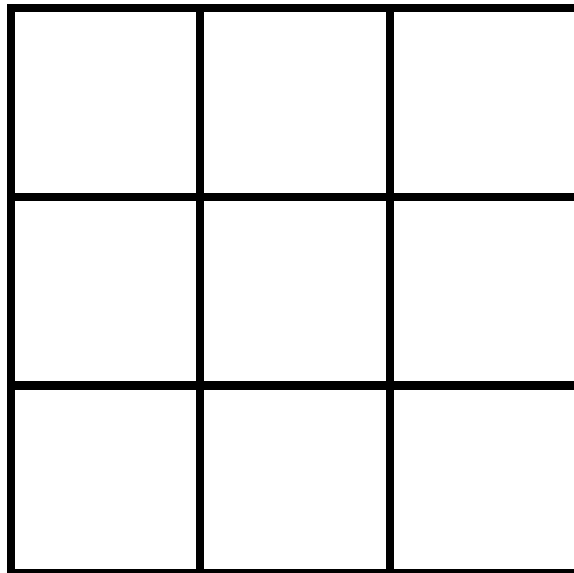


Pattern 15

Clues

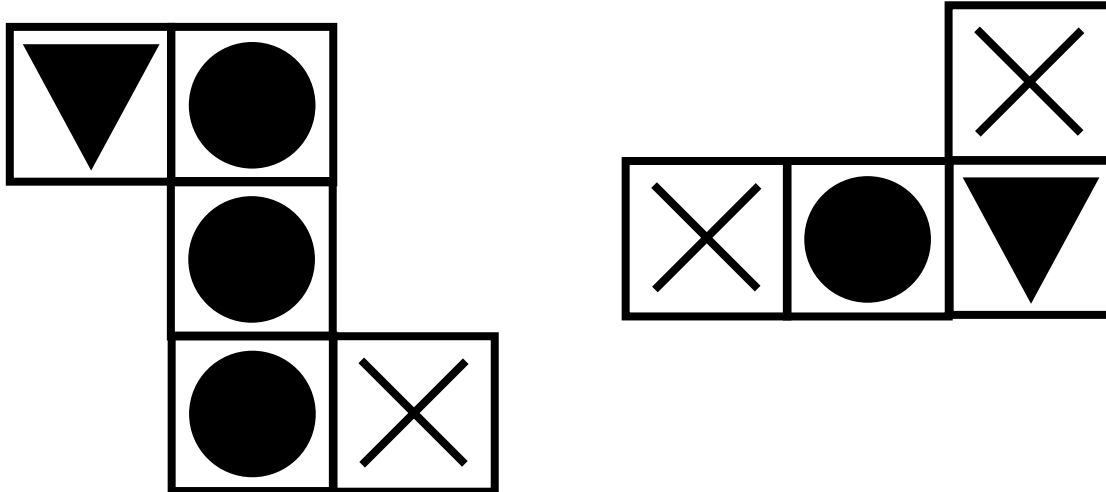


Grid

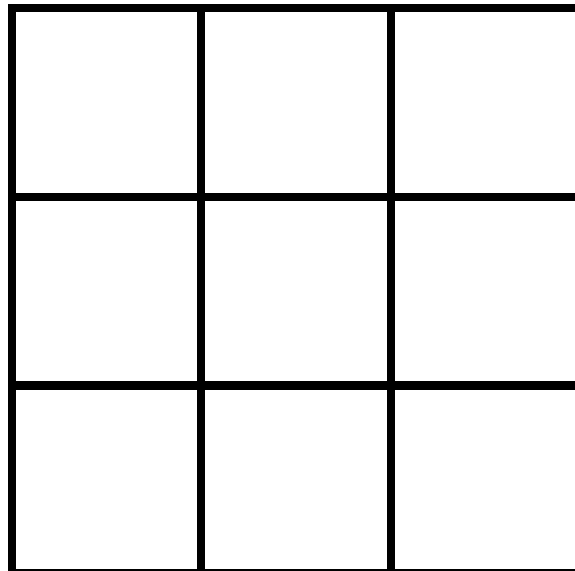


Pattern 16

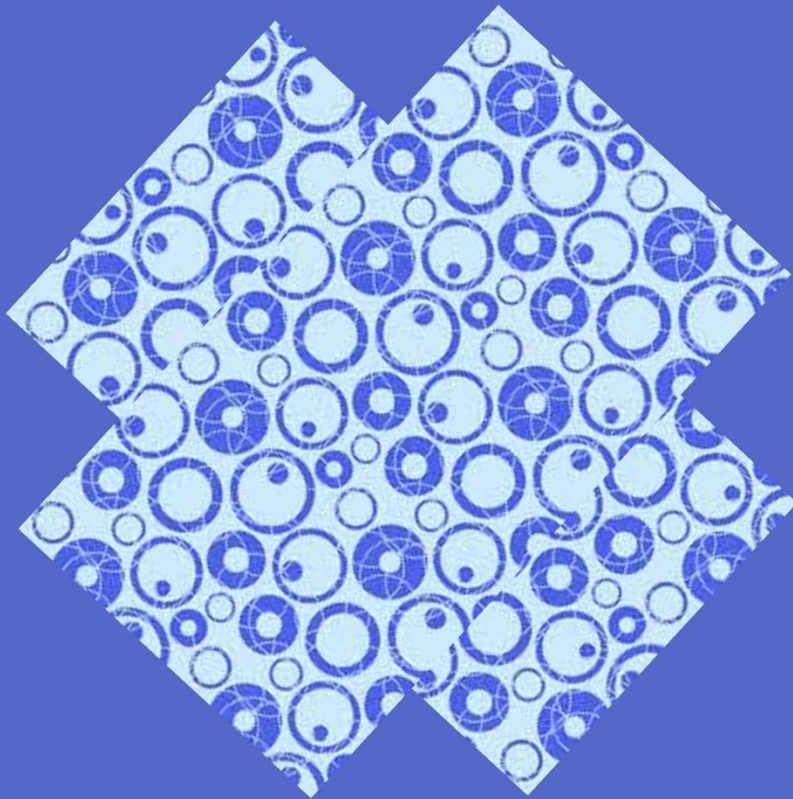
Clues



Grid

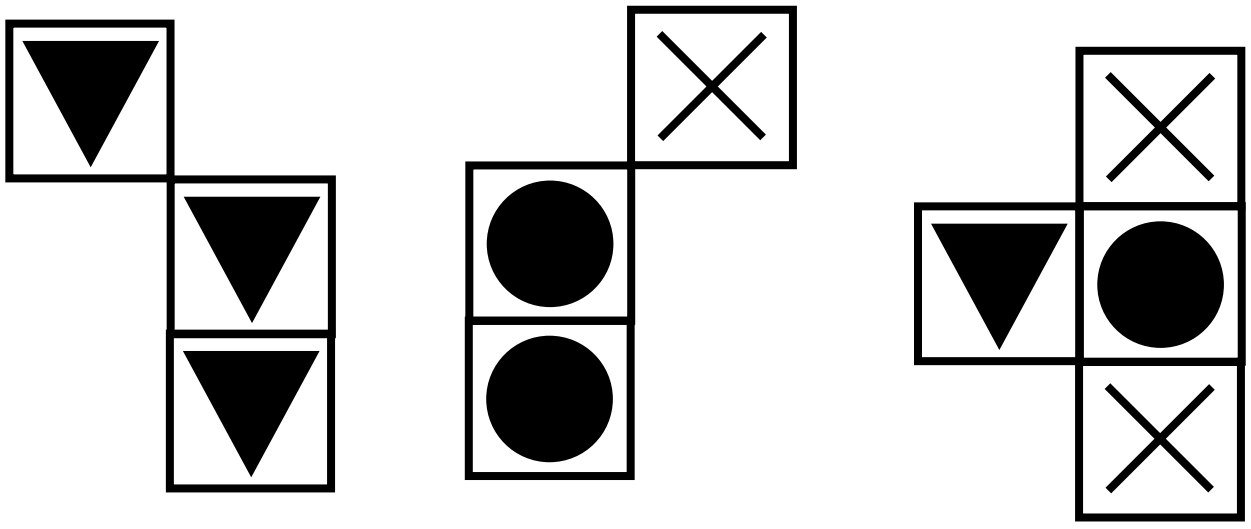


Set 2: Puzzling Puzzles

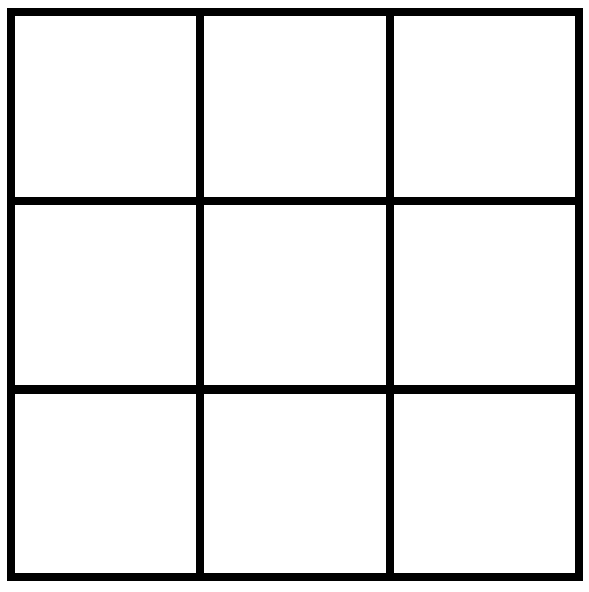


Pattern 17

Clues

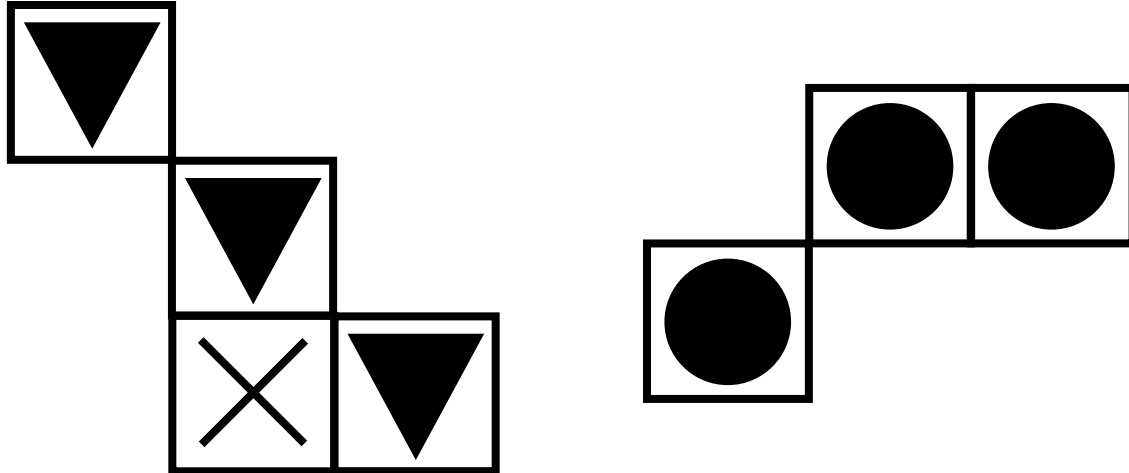


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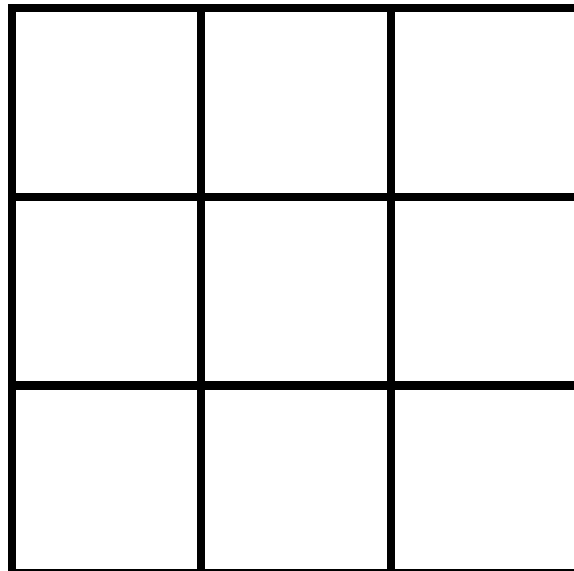


Pattern 18

Clues

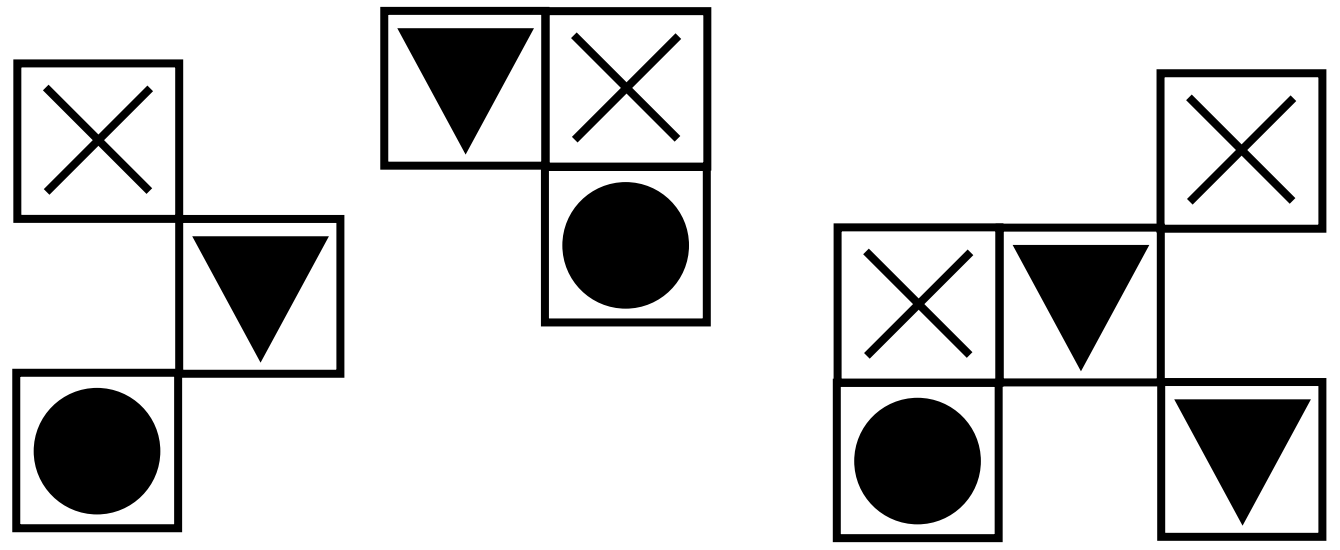


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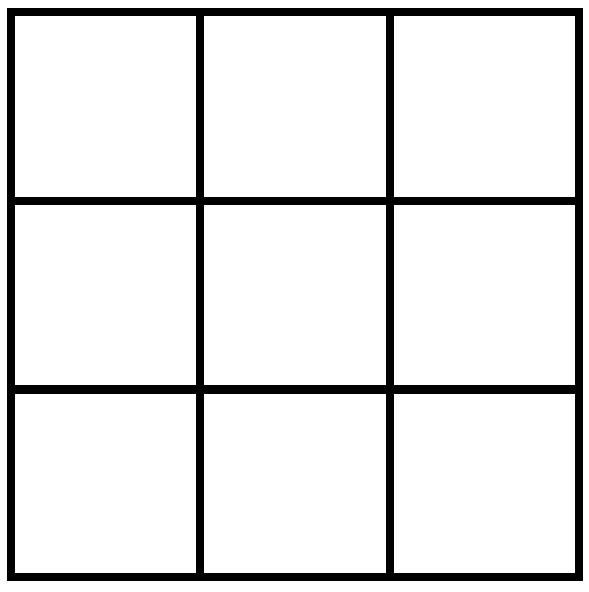


Pattern 19

Clues

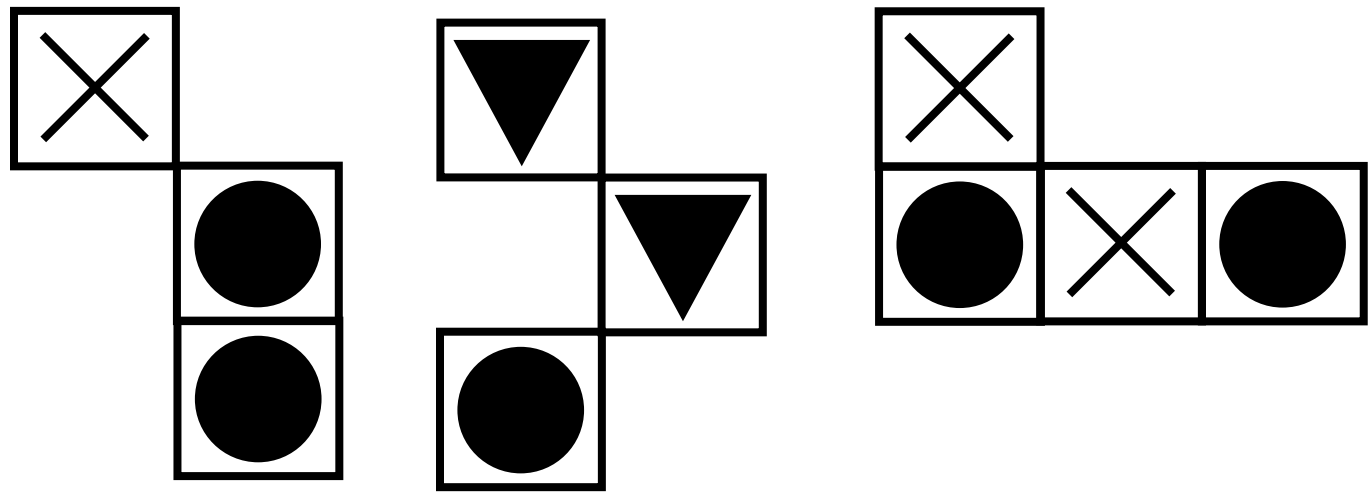


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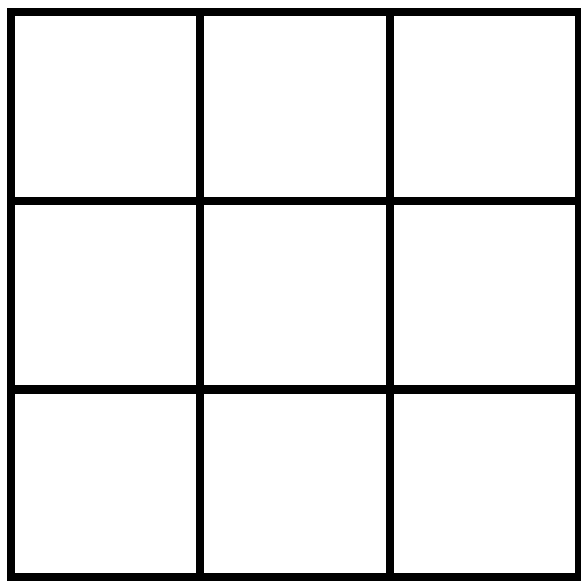


Pattern 20

Clues

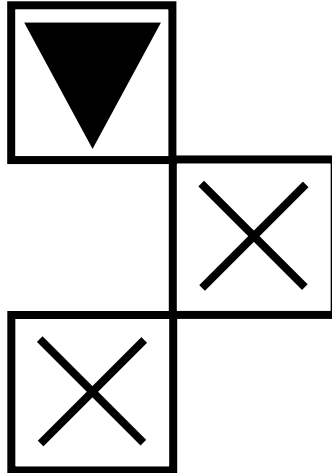
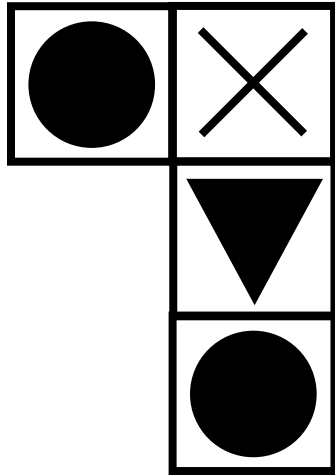


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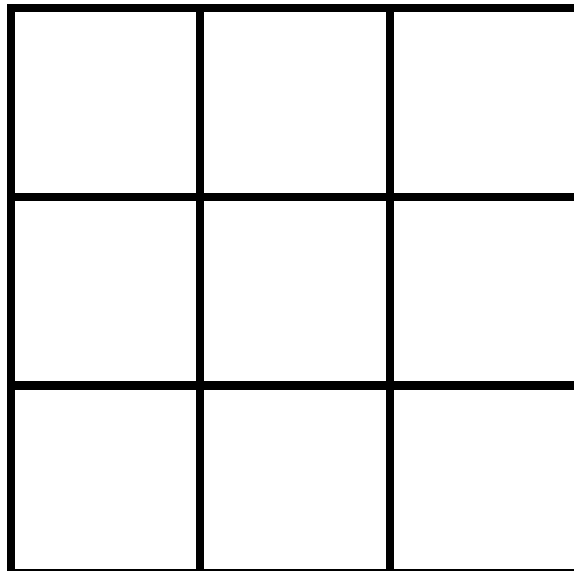


Pattern 21

Clues

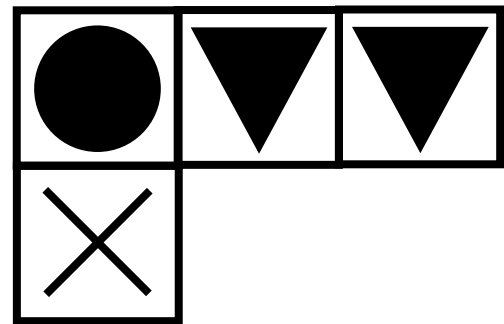
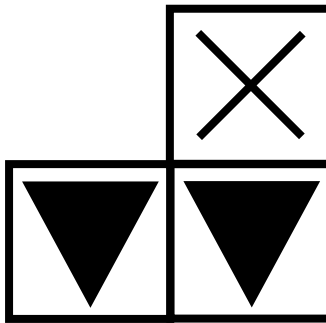
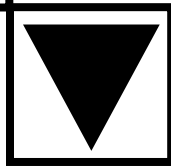
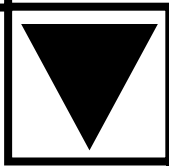
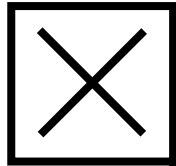


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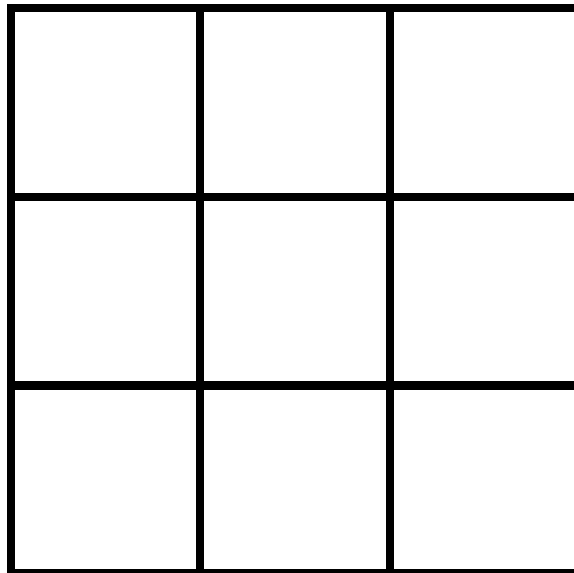


Pattern 22

Clues

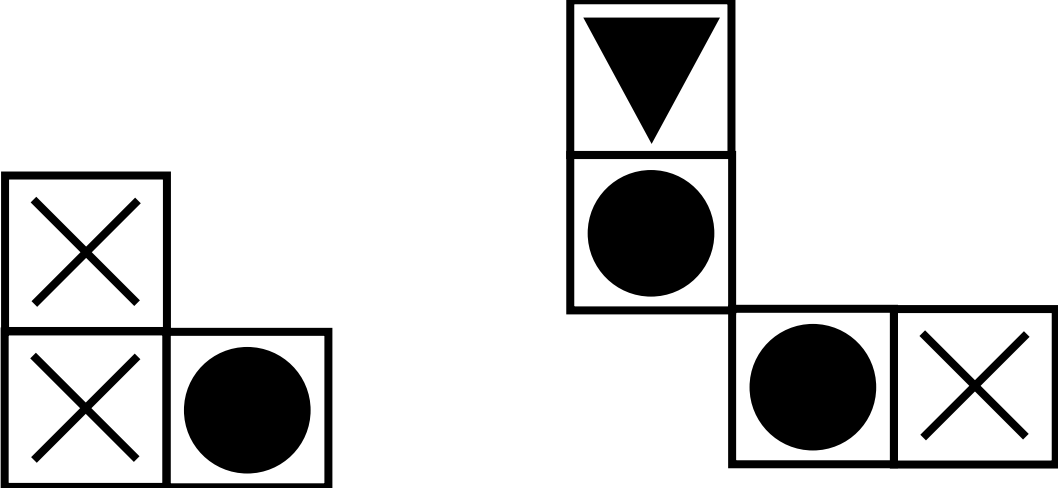


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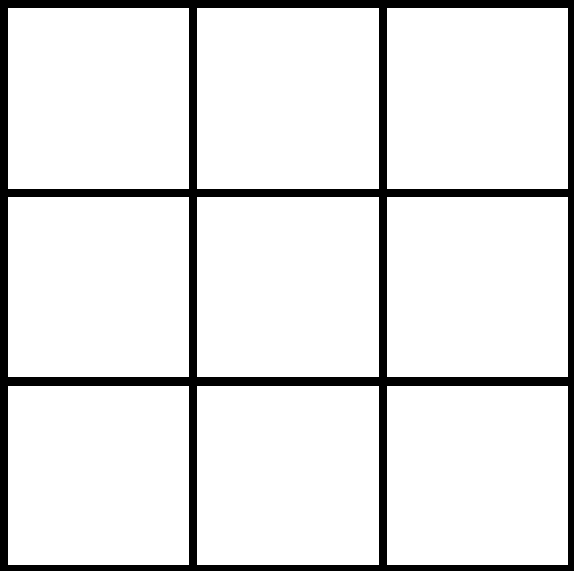


Pattern 23

Clues

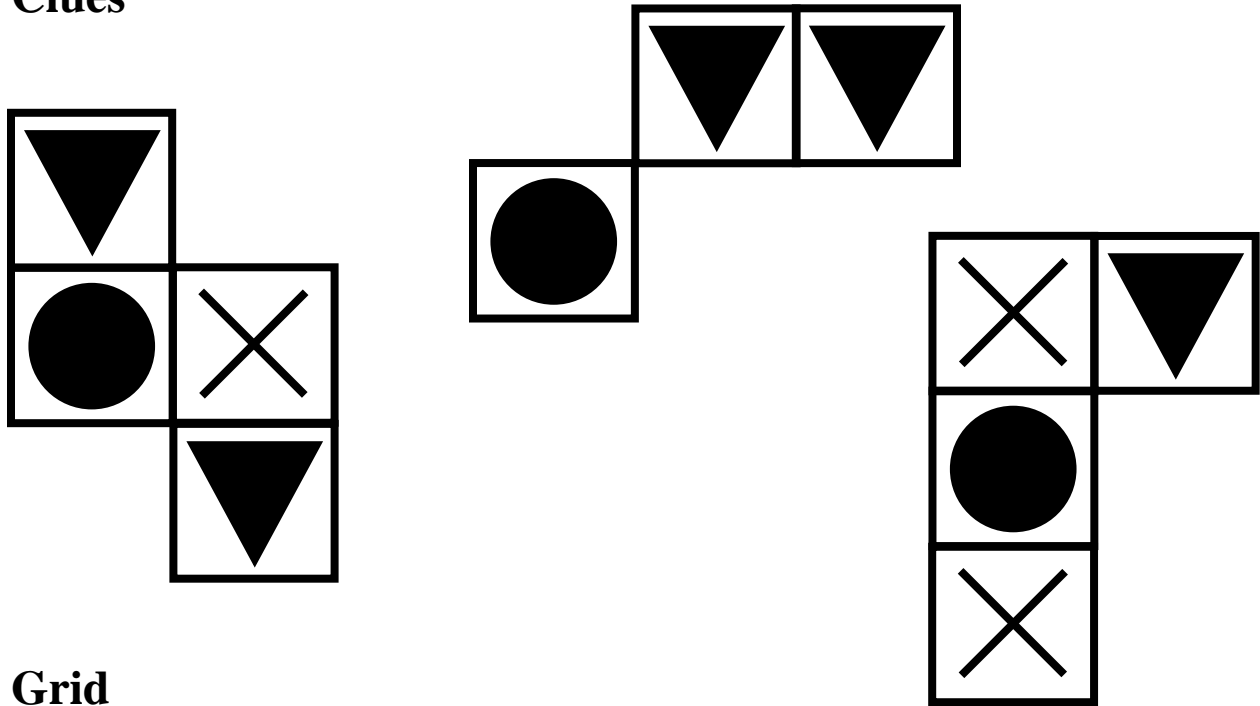


Grid

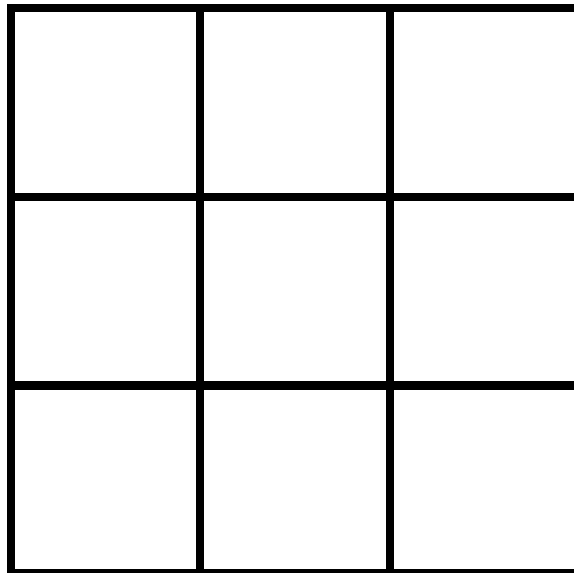


Pattern 24

Clues

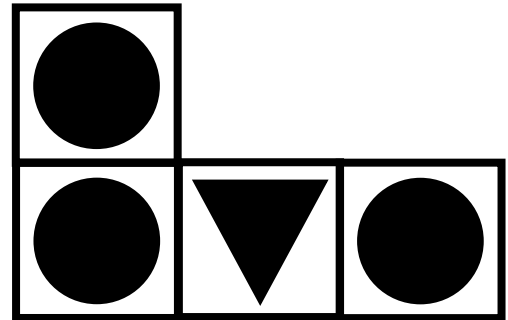
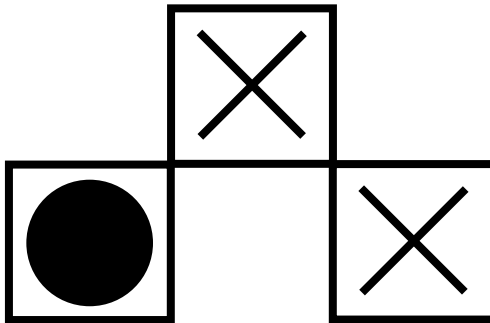
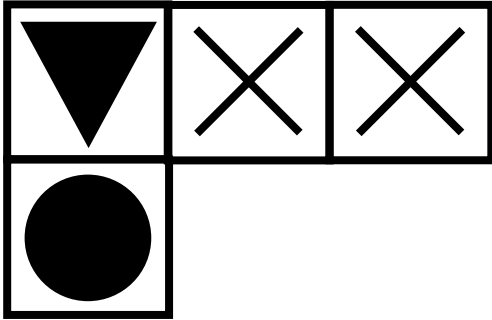


Grid

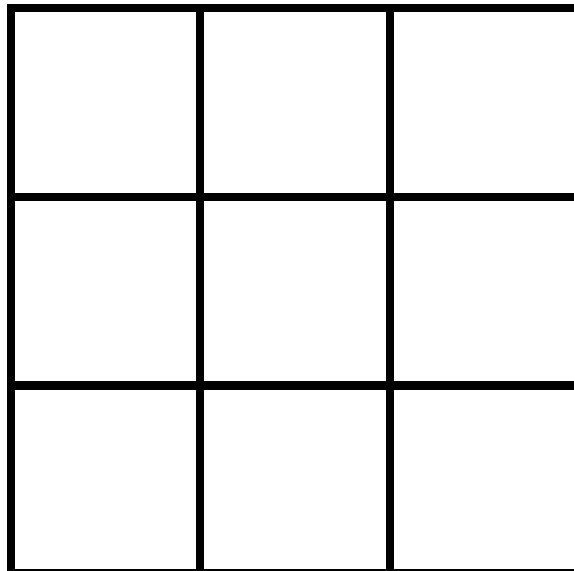


Pattern 25

Clues

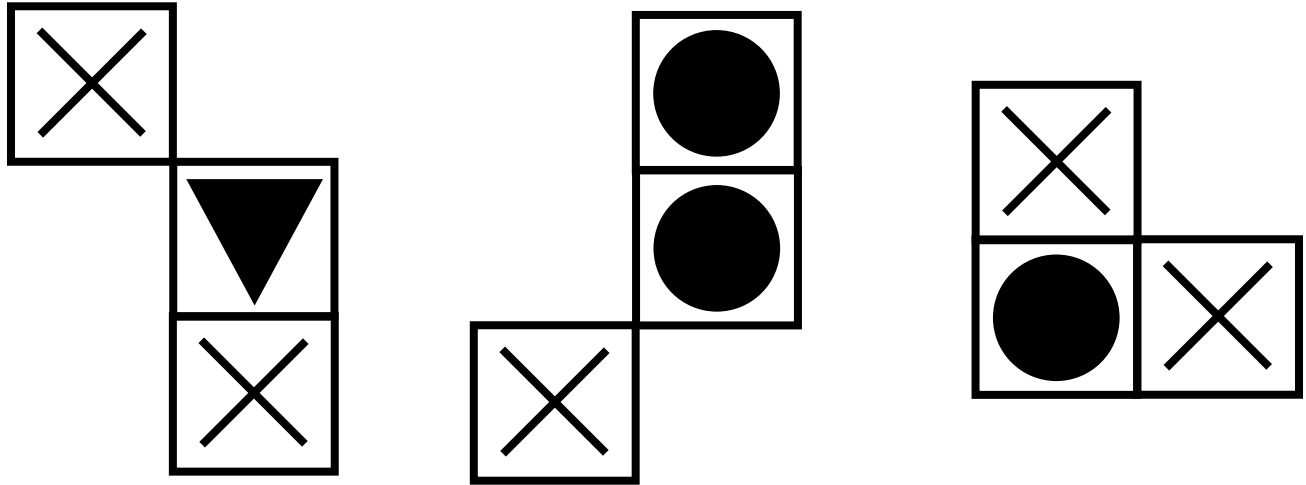


Grid

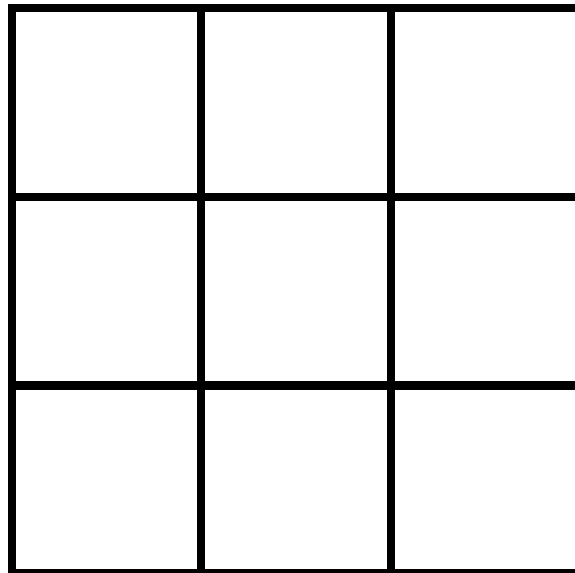


Pattern 26

Clues

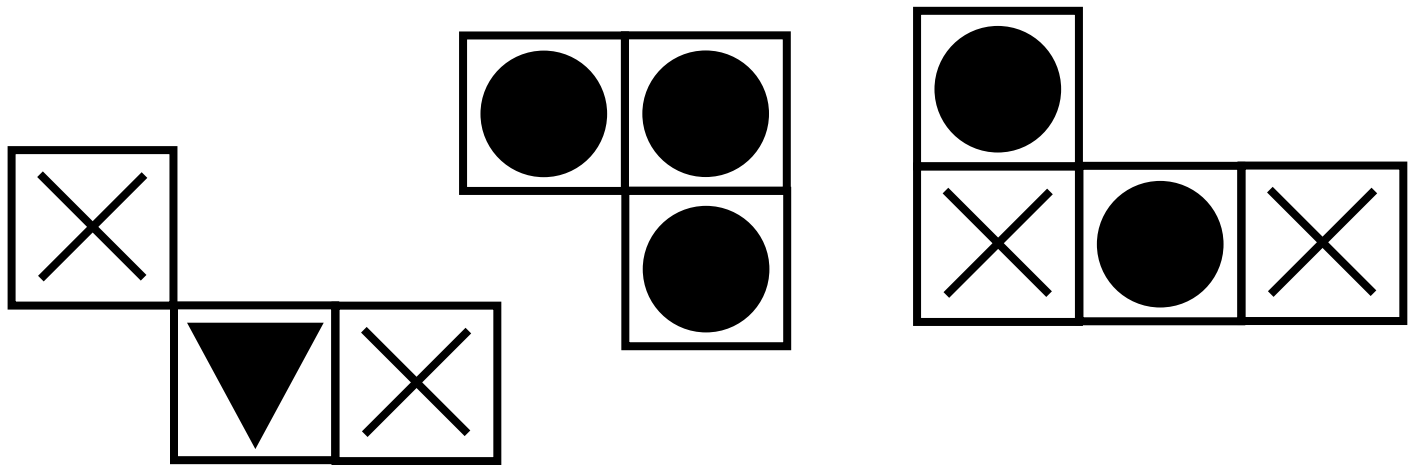


Grid

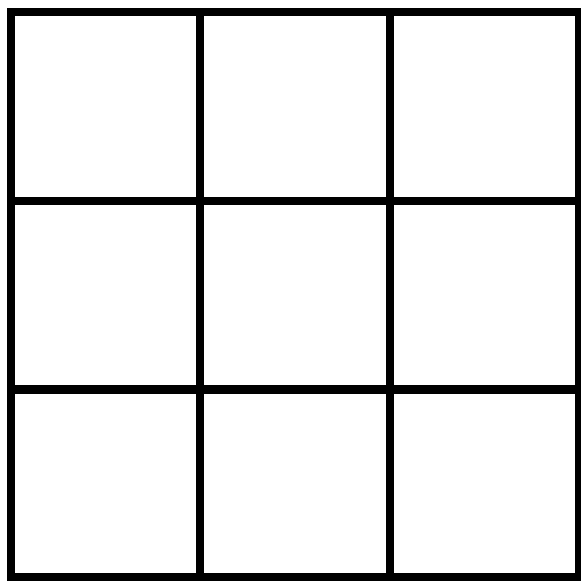


Pattern 27

Clues

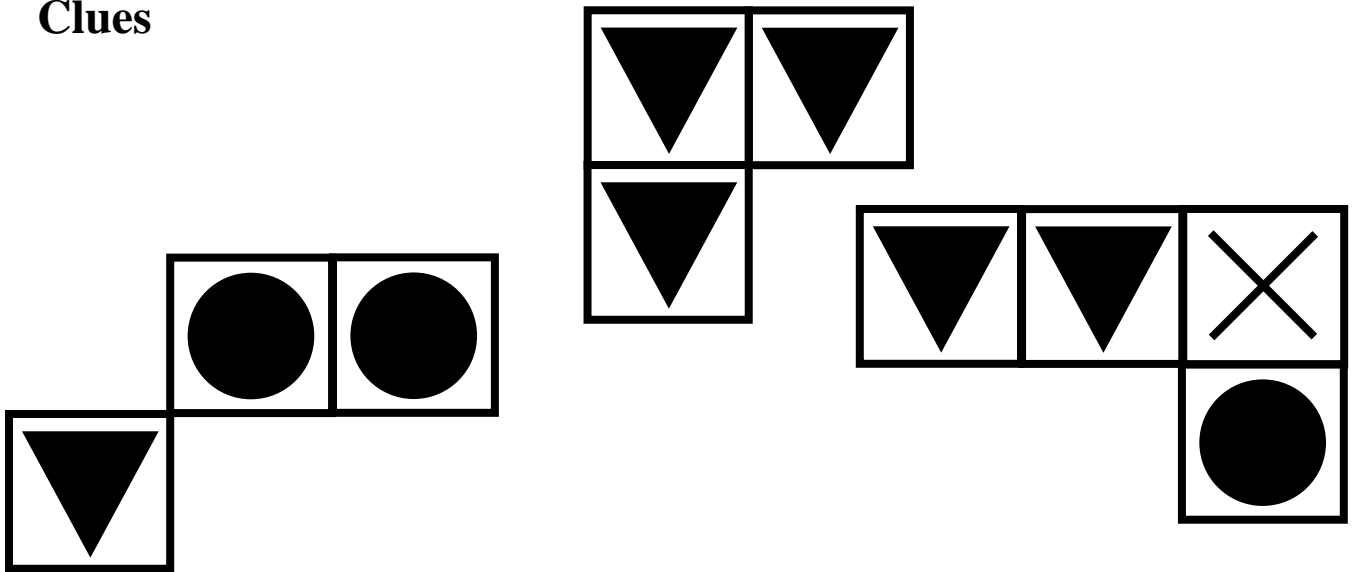


Grid

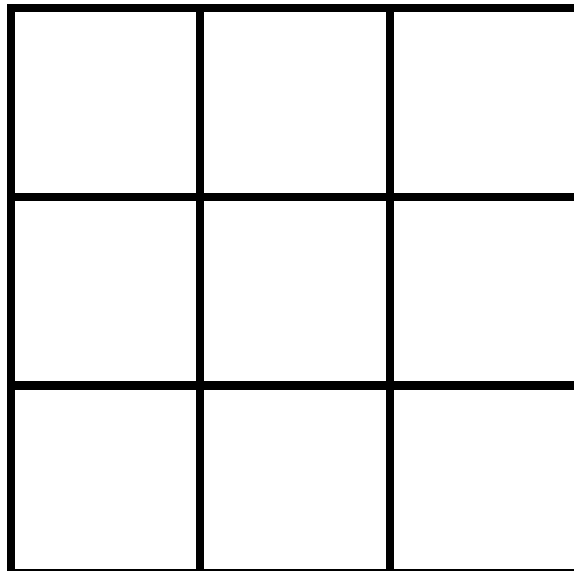


Pattern 28

Clues

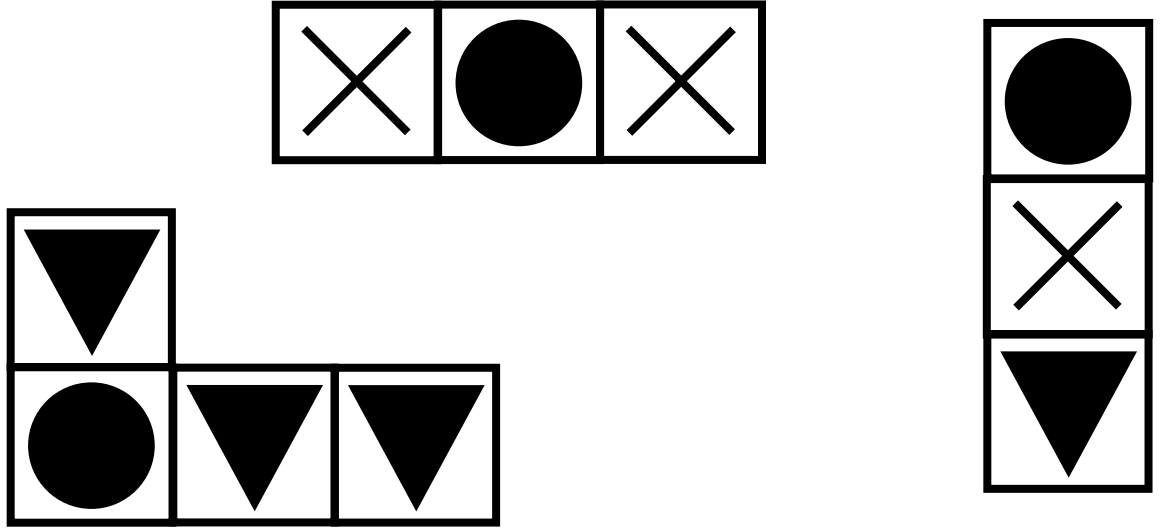


Grid

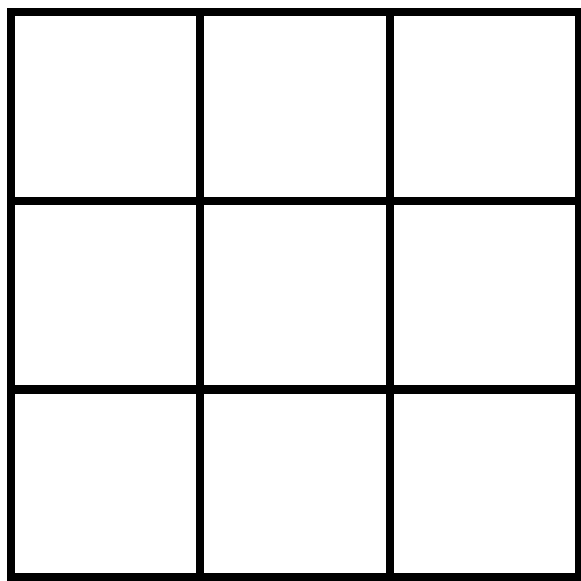


Pattern 29

Clues

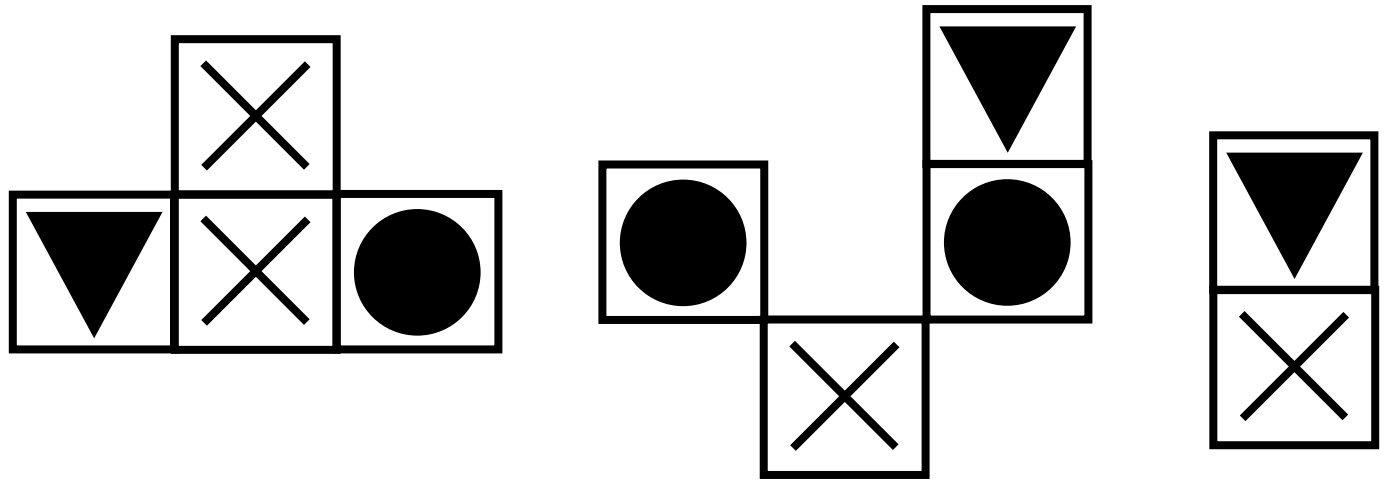


Grid

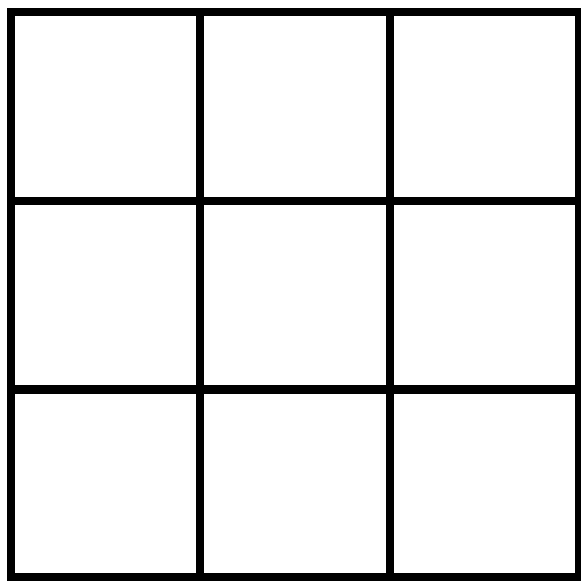


Pattern 30

Clues

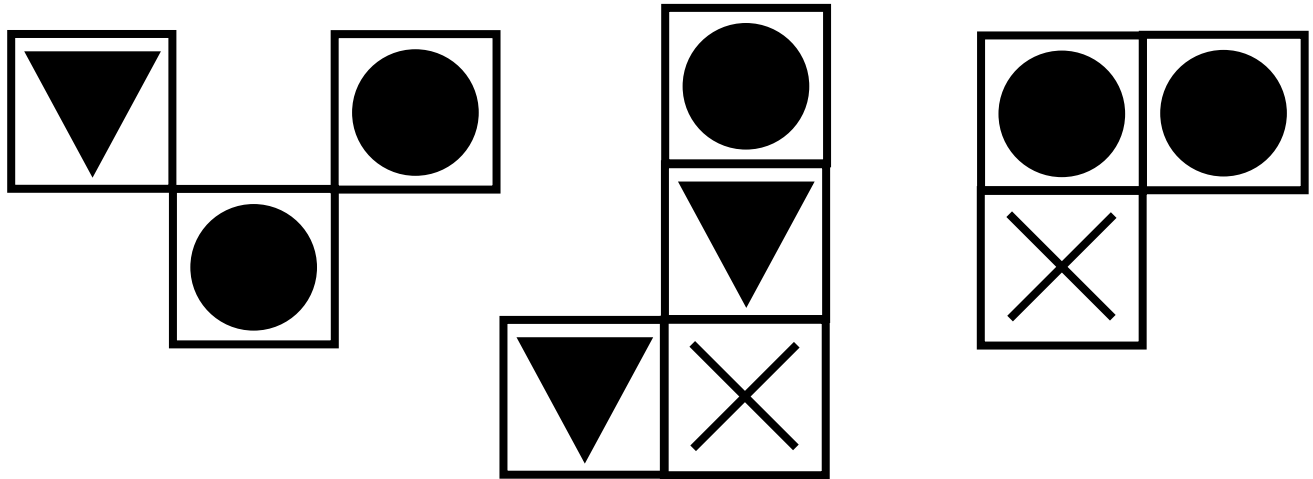


Grid

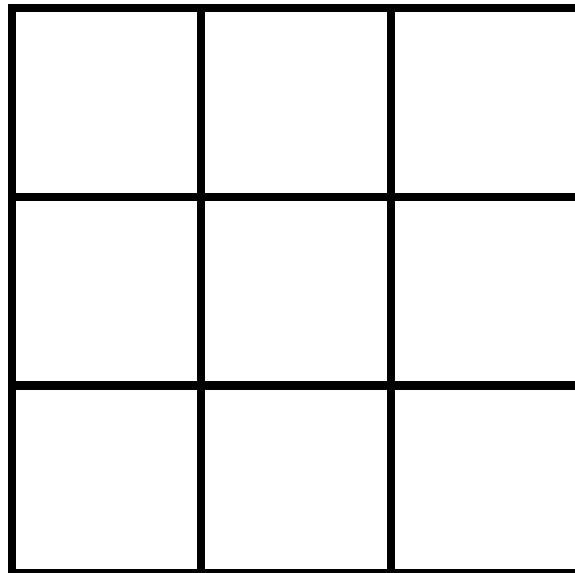


Pattern 31

Clues

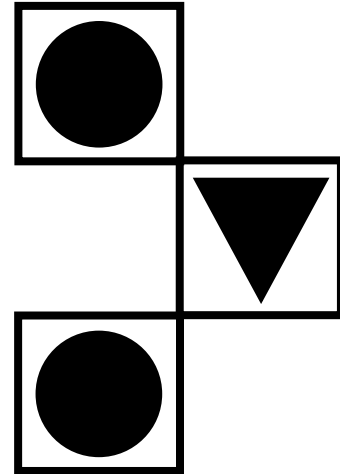
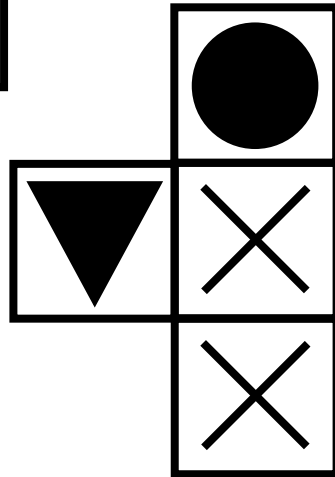
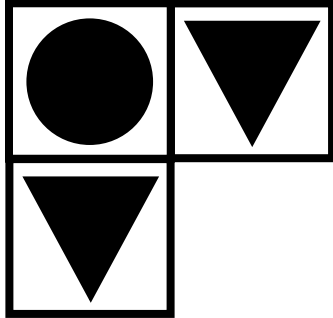


Grid

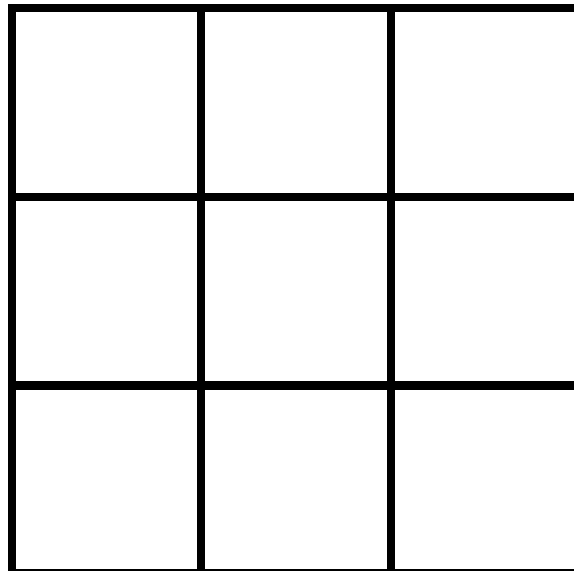


Pattern 32

Clues

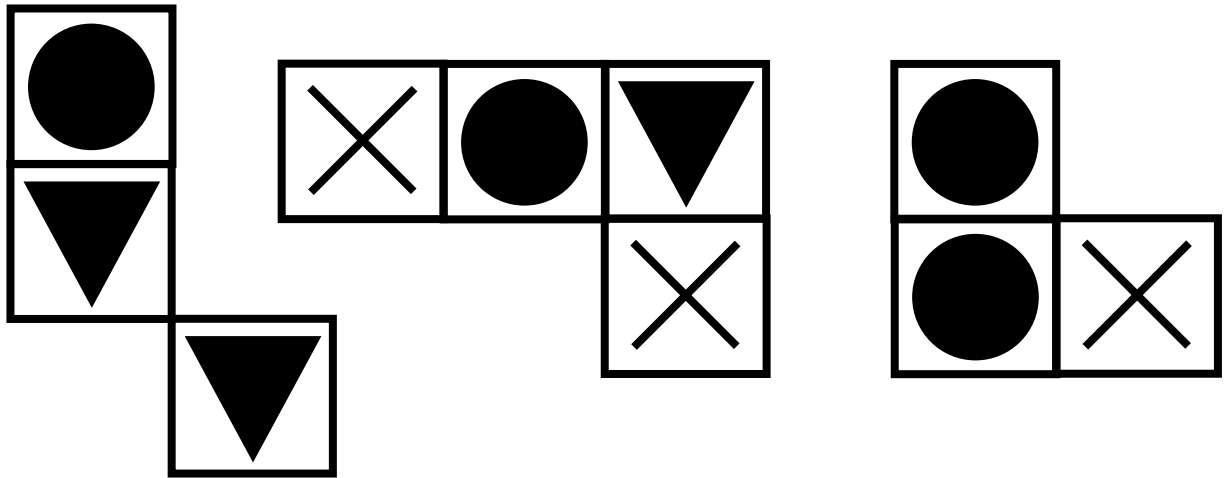


Grid

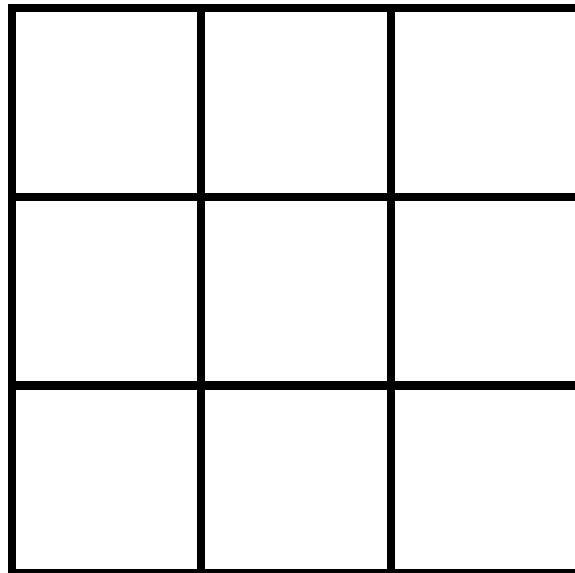


Pattern 33

Clues

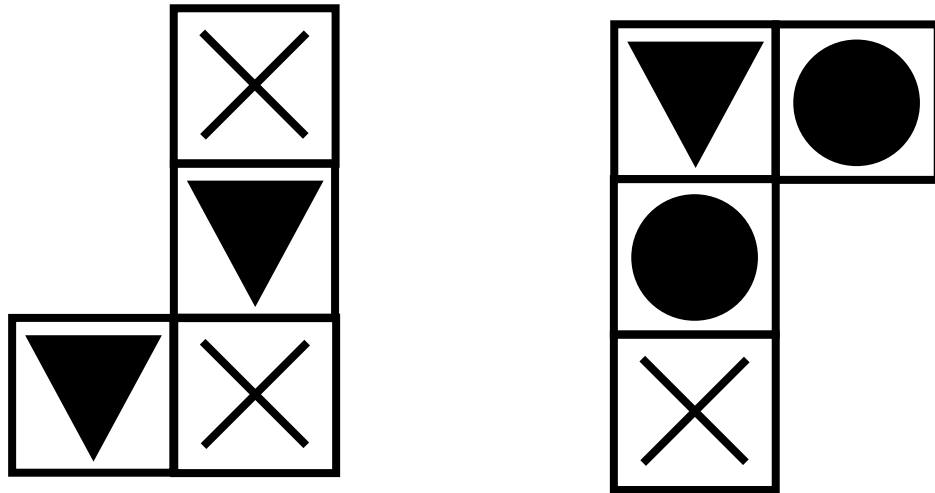


Grid

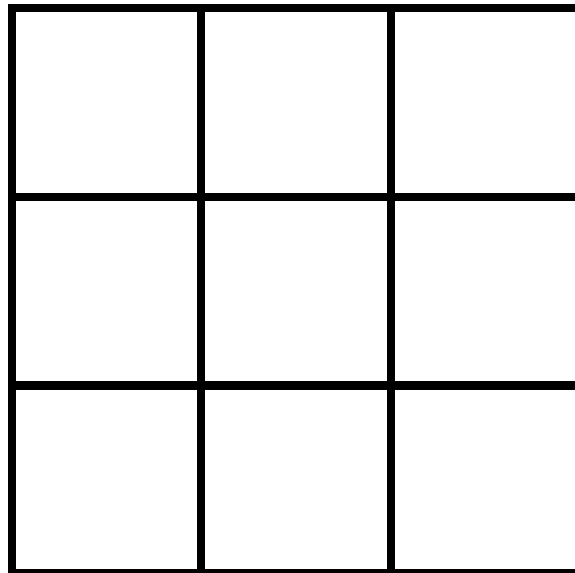


Pattern 34

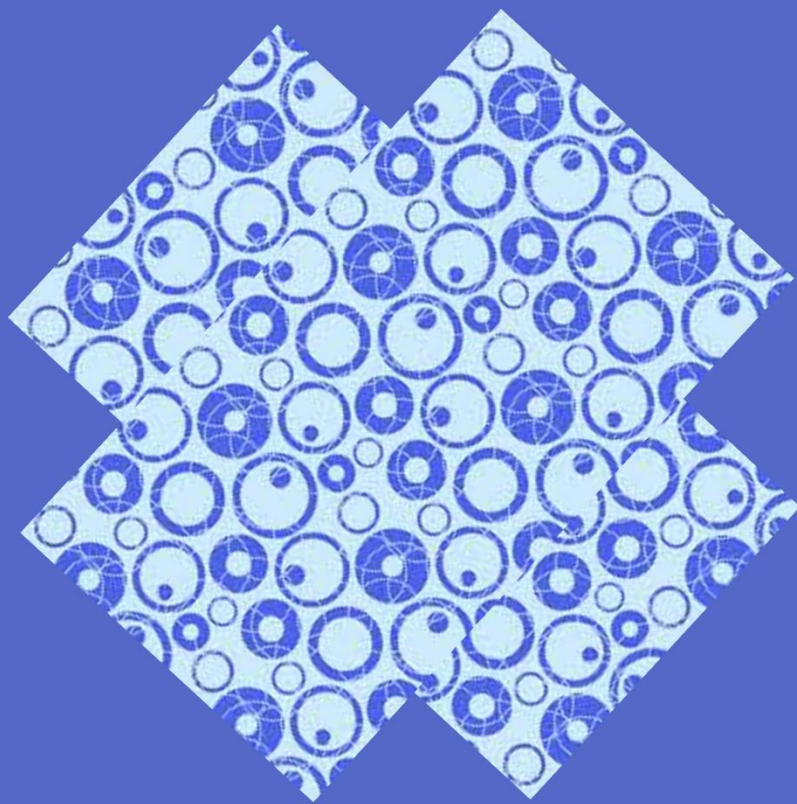
Clues



Grid

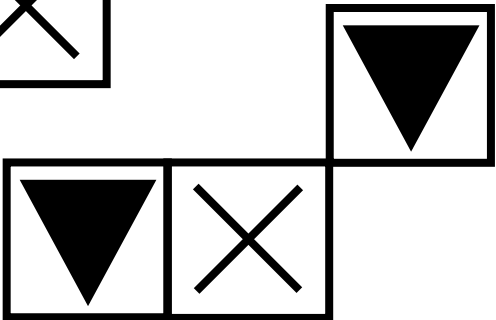
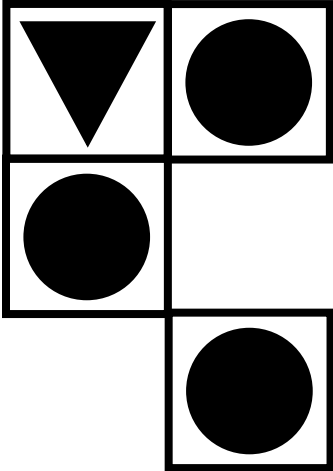
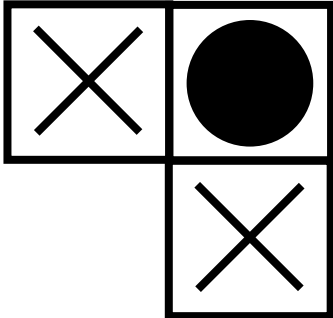


Set 3: Super Stumper Puzzles

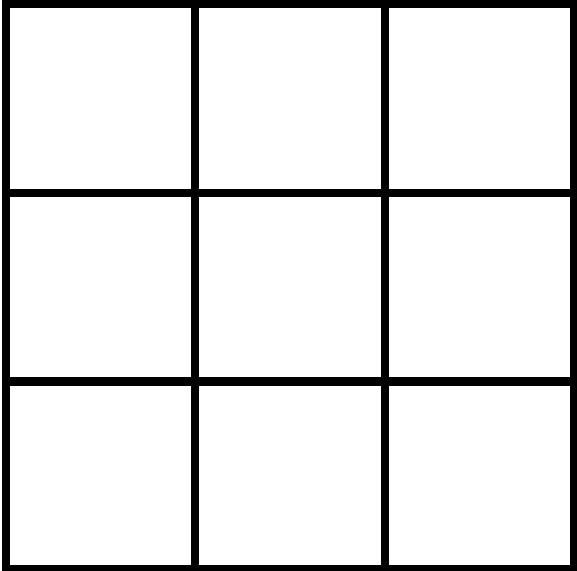


Pattern 35

Clues

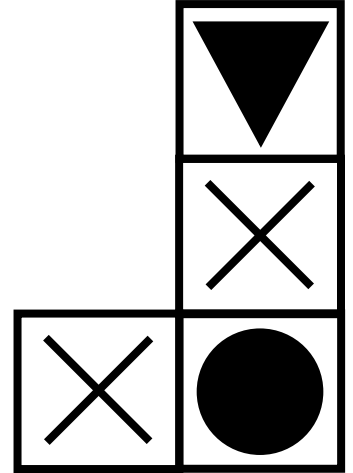
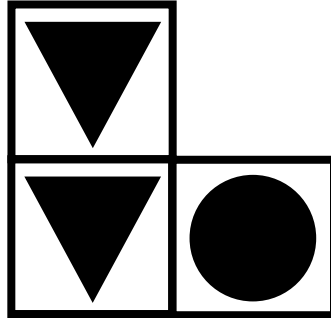
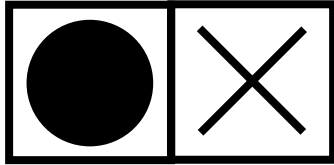


Grid

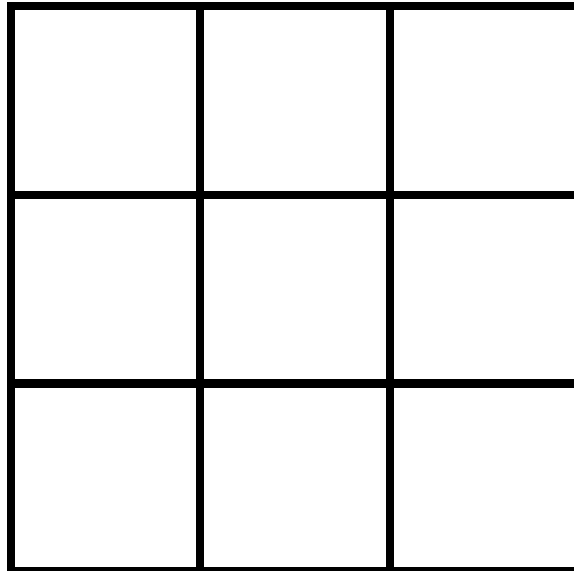


Pattern 36

Clues

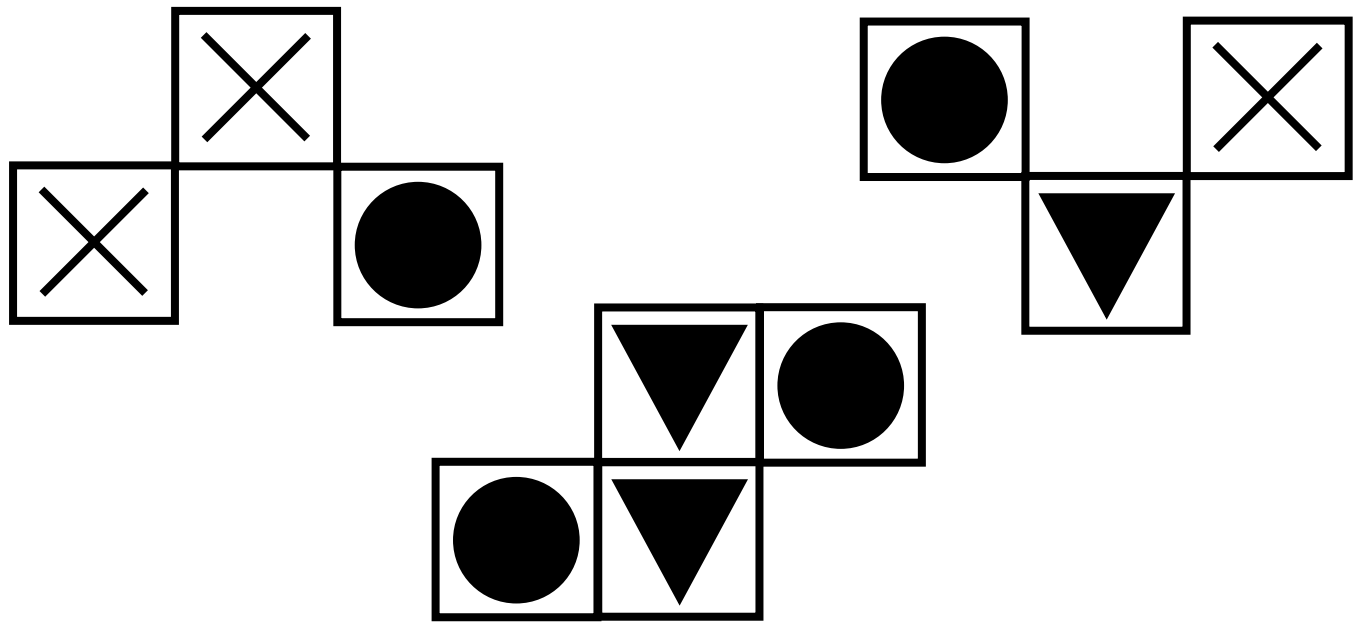


Grid

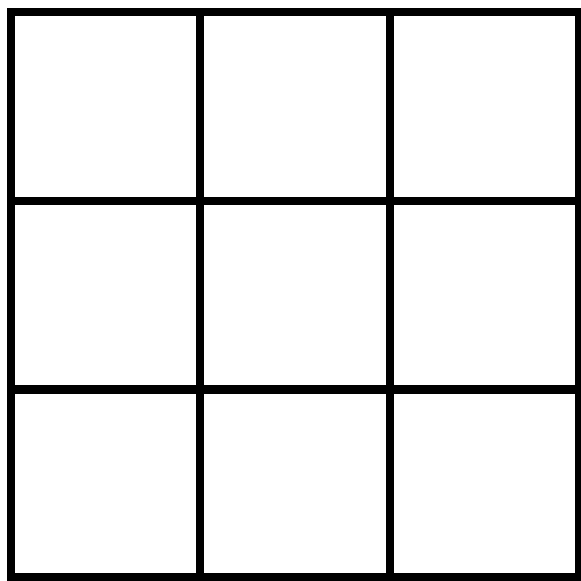


Pattern 37

Clues

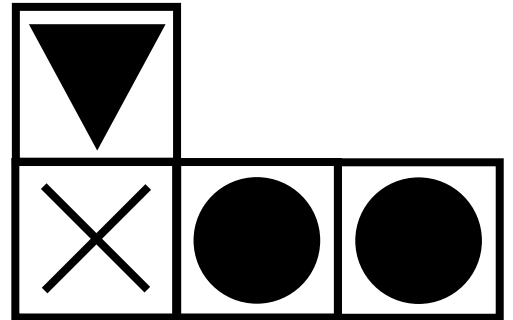
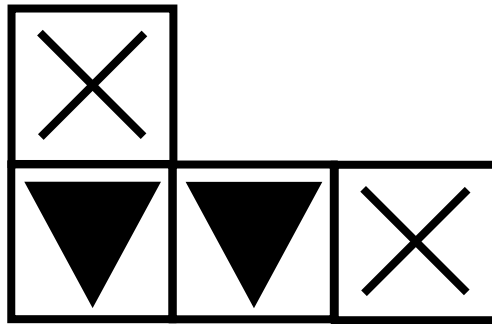
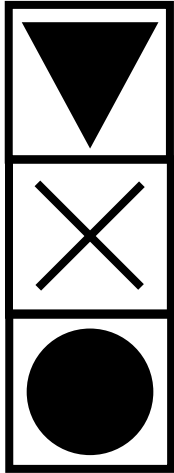


Grid

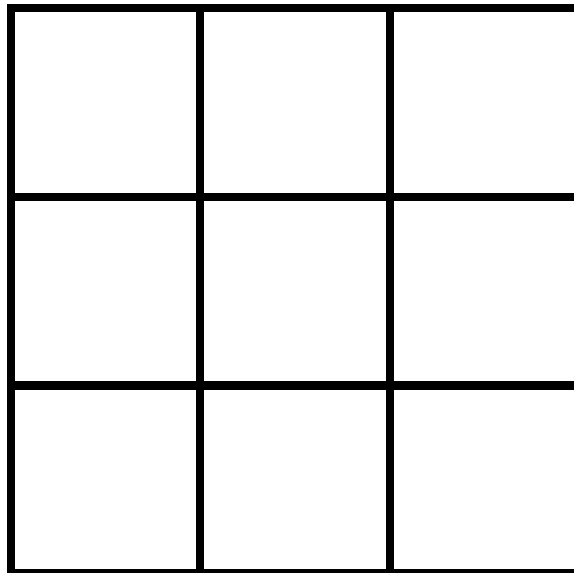


Pattern 38

Clues

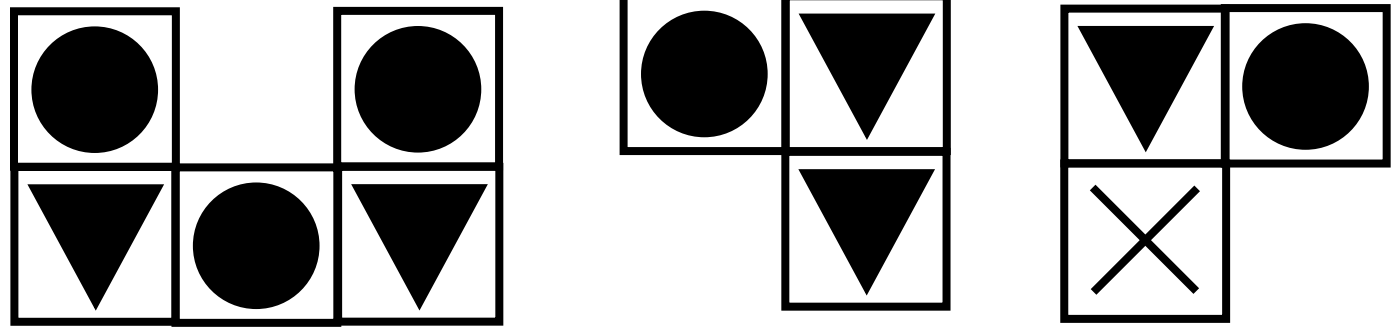


Grid

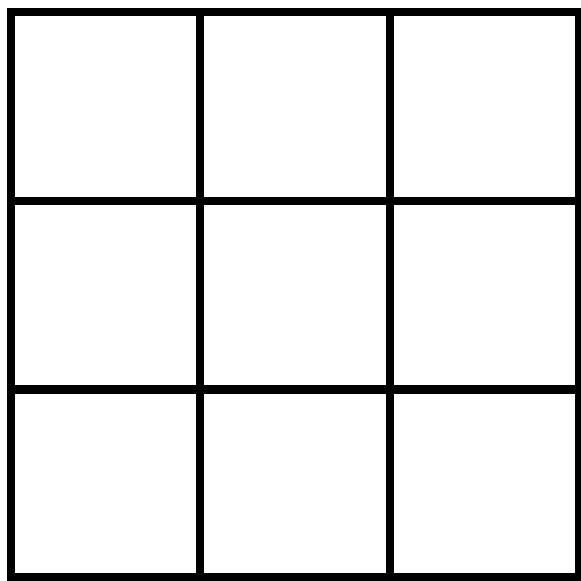


Pattern 39

Clues

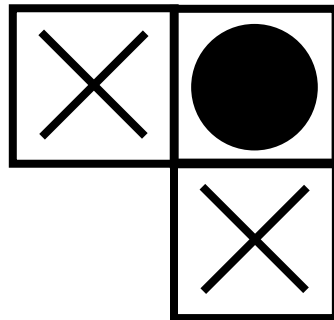
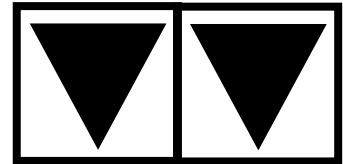
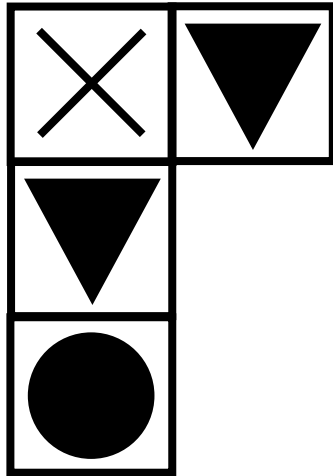


Grid

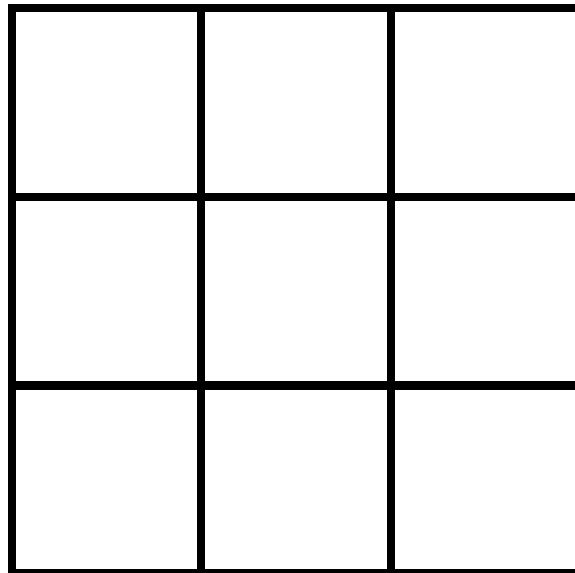


Pattern 40

Clues

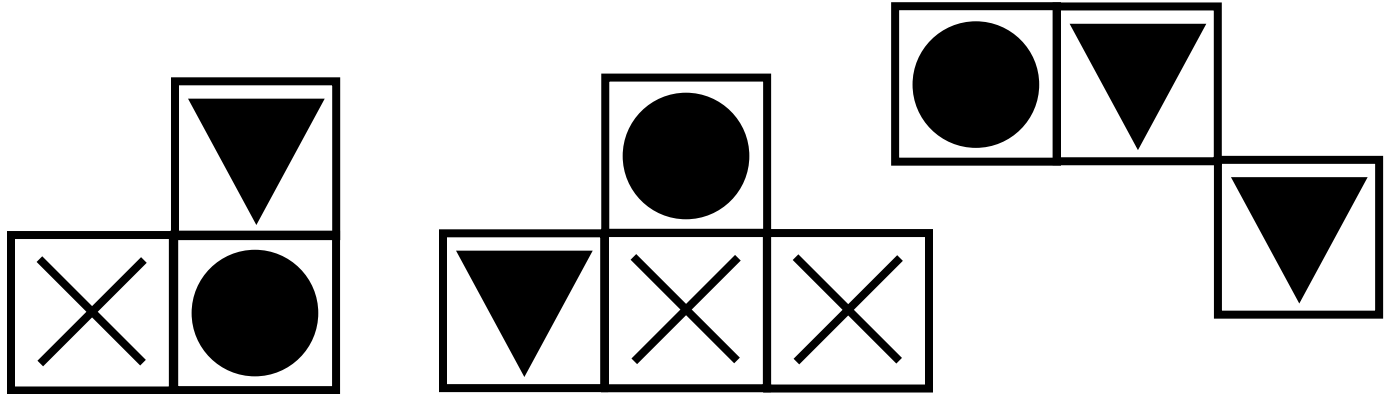


Grid

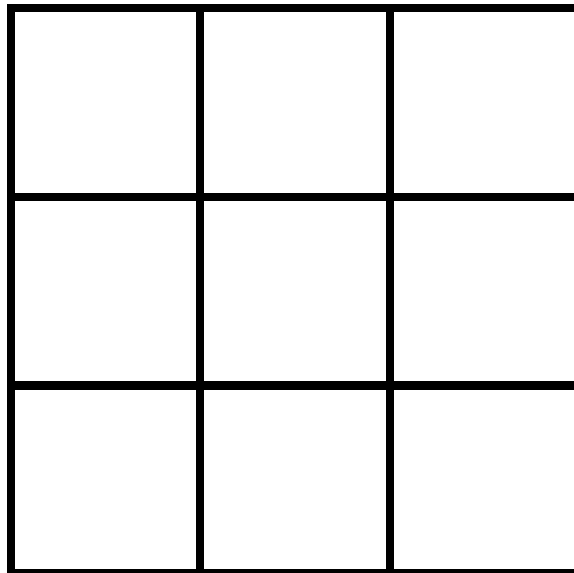


Pattern 41

Clues

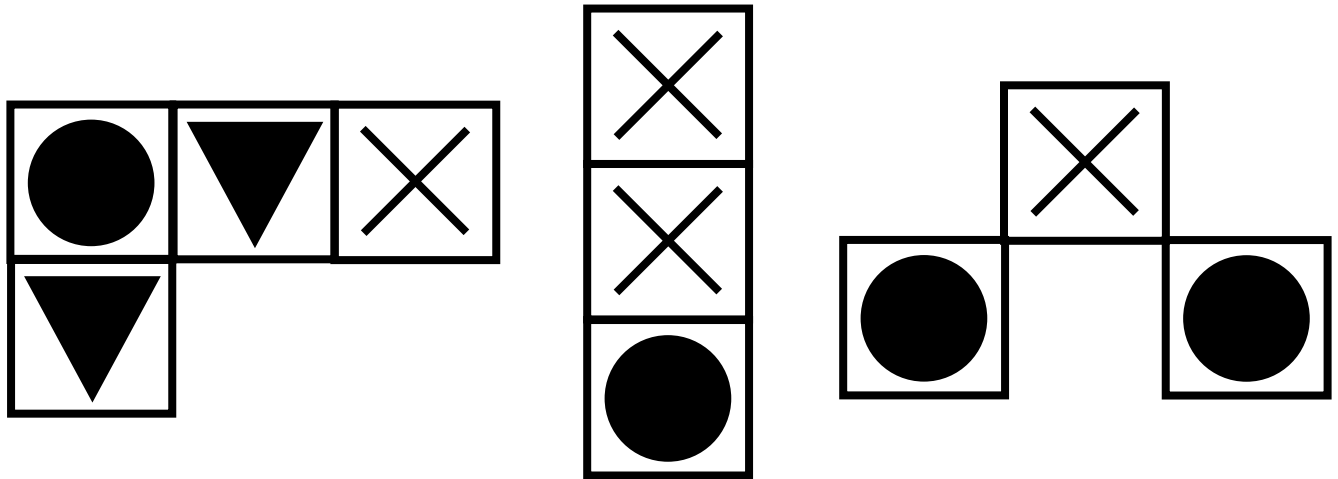


Grid

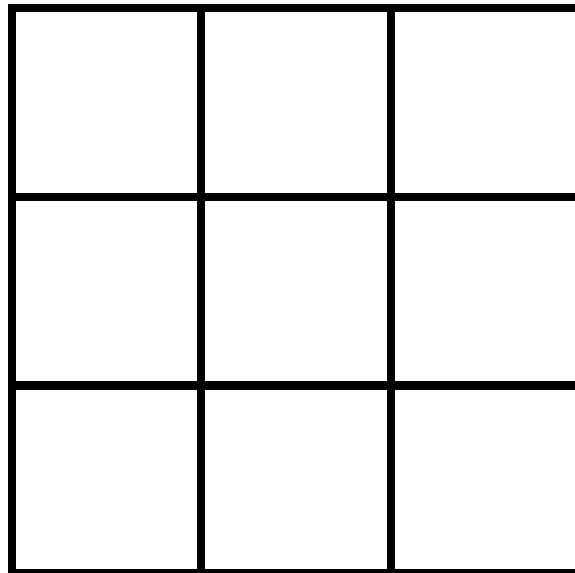


Pattern 42

Clues

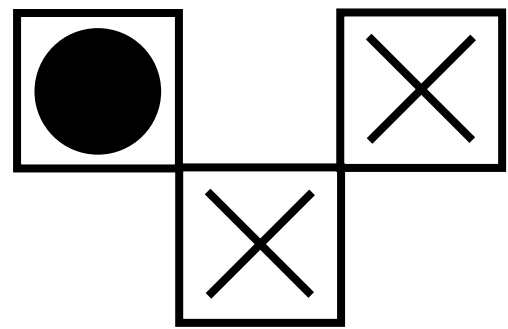
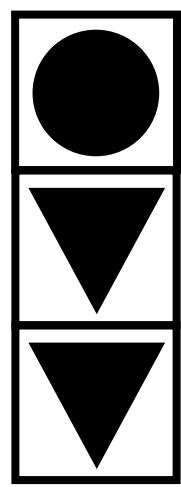
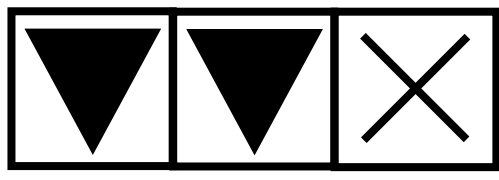


Grid

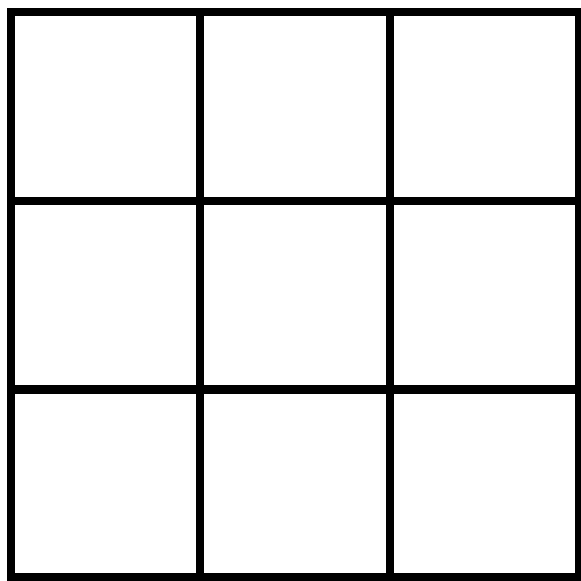


Pattern 43

Clues

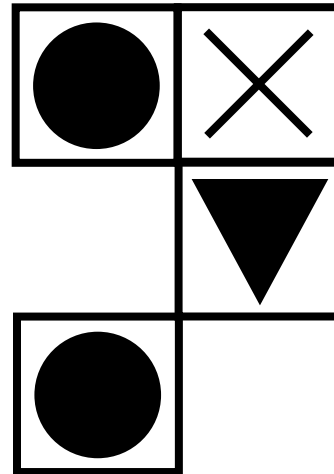
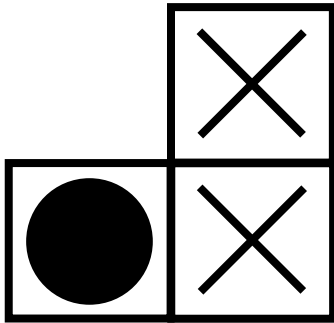


Grid

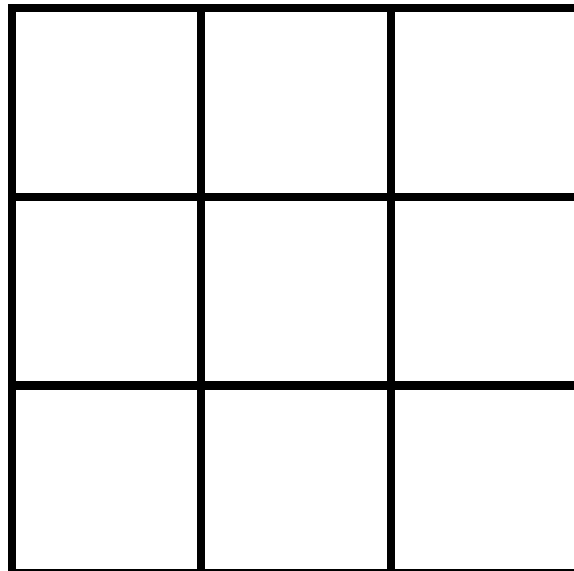


Pattern 44

Clues

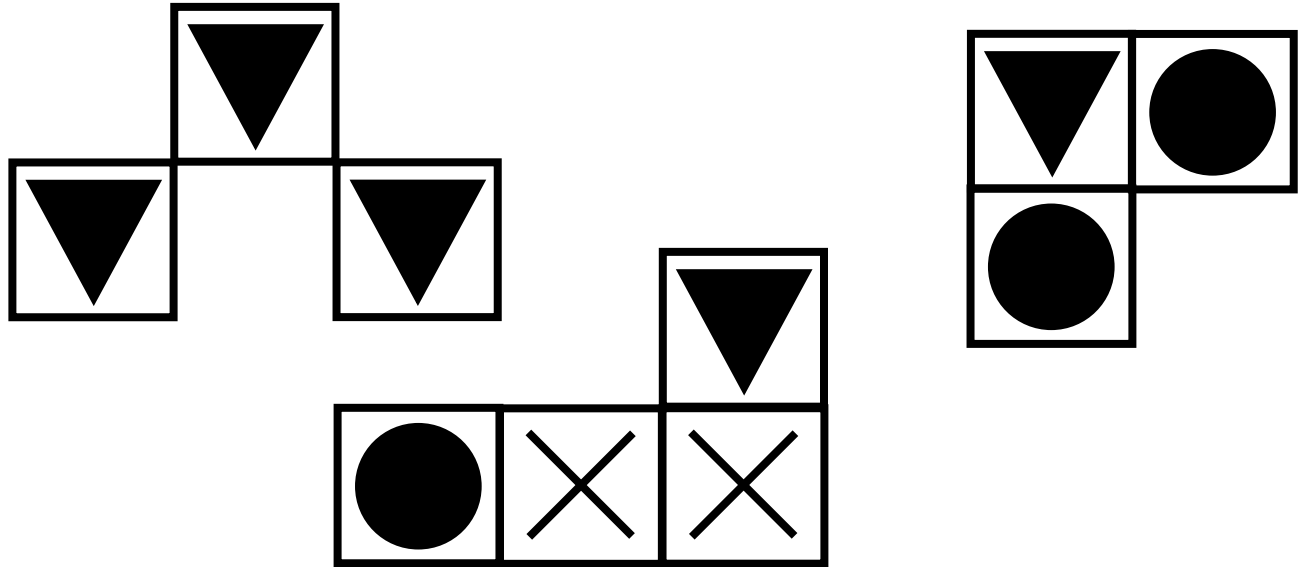


Grid

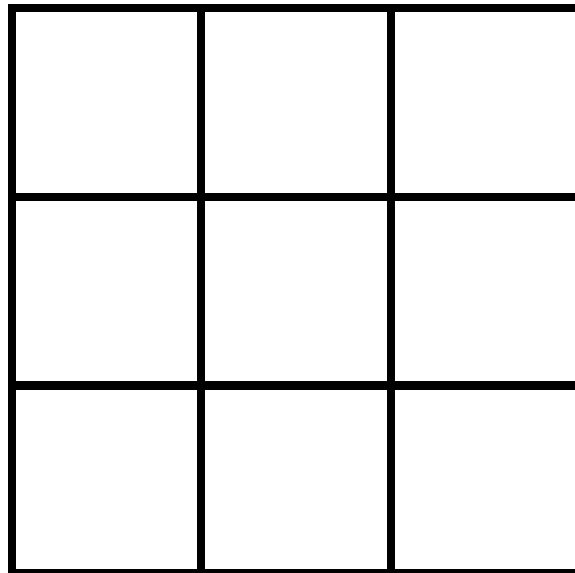


Pattern 45

Clues

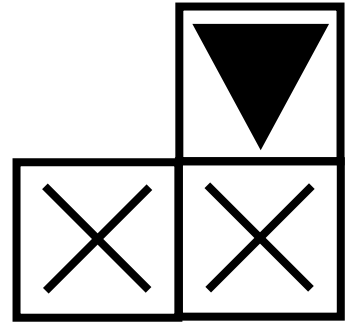
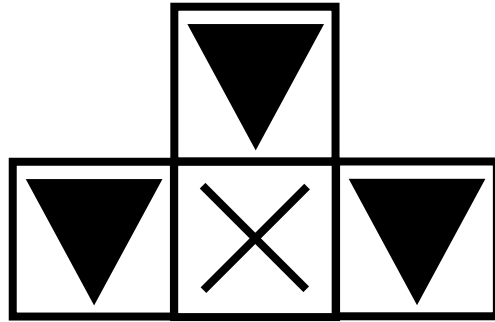
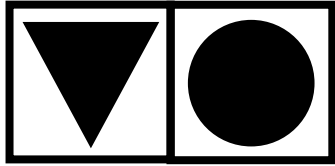


Grid

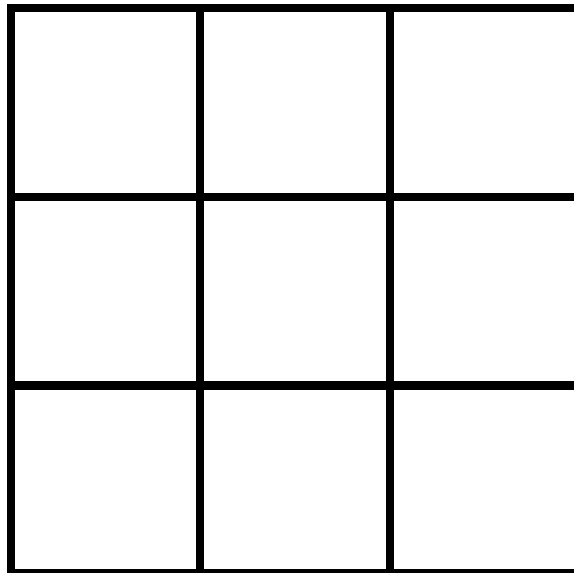


Pattern 46

Clues

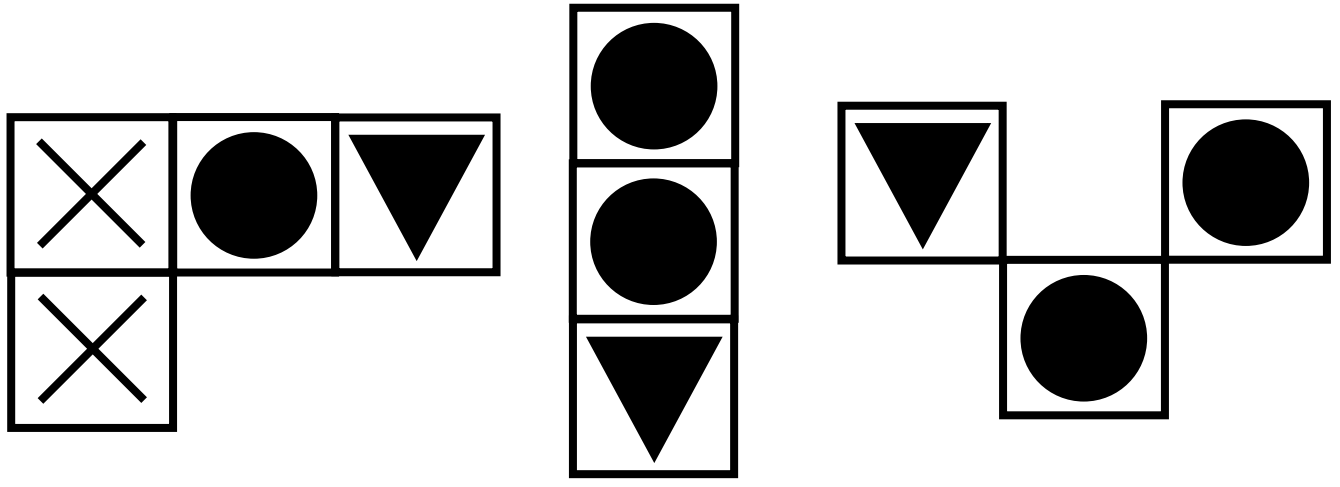


Grid

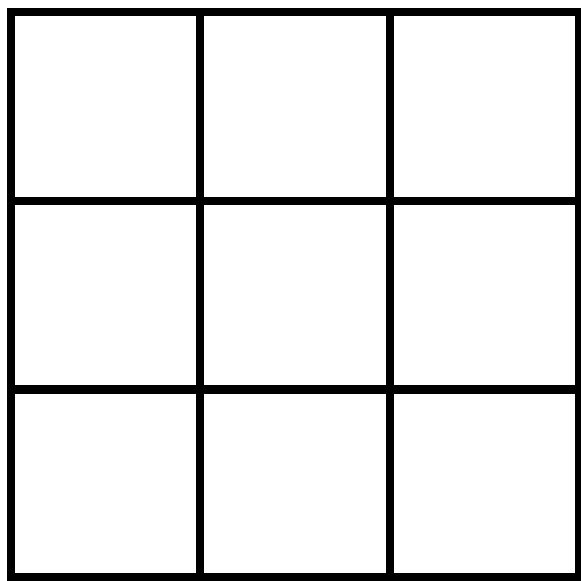


Pattern 47

Clues

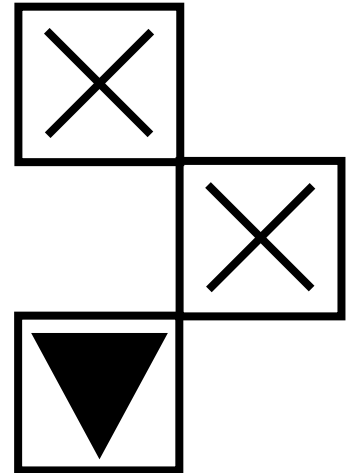
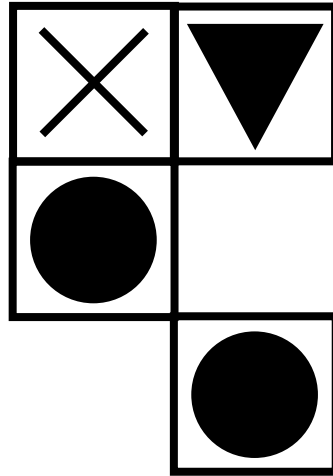
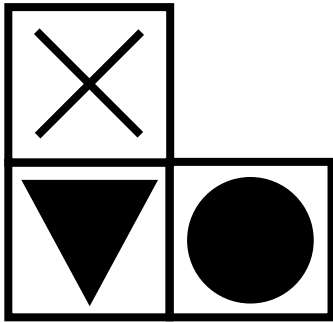


Grid

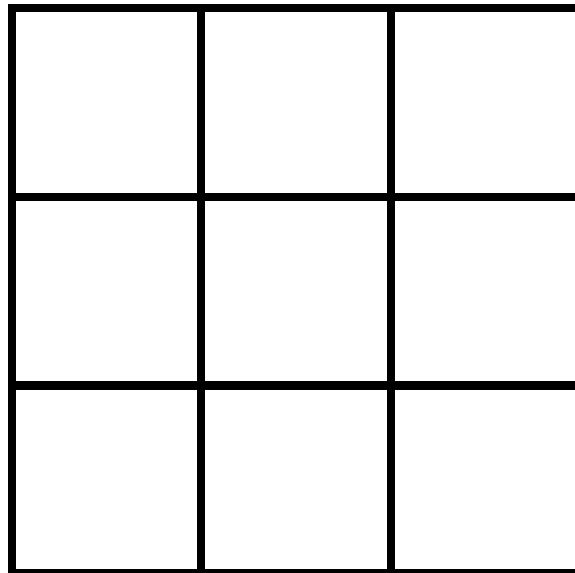


Pattern 48

Clues

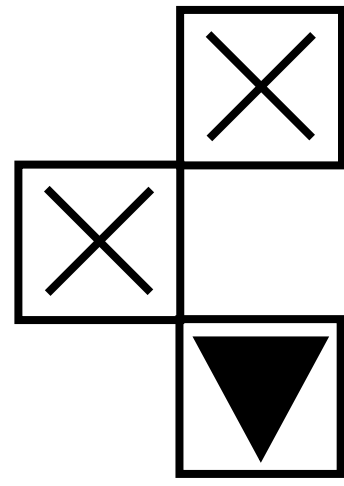
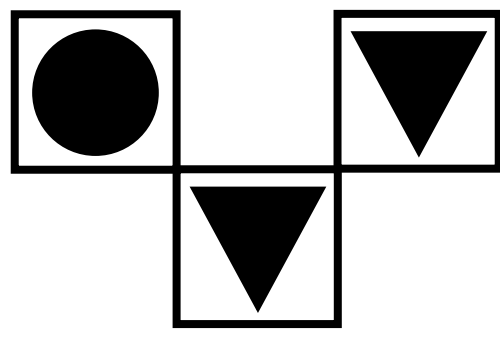
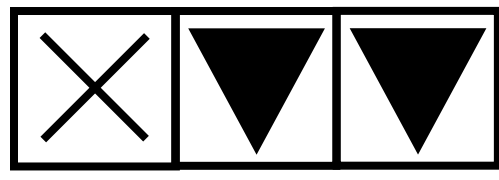


Grid

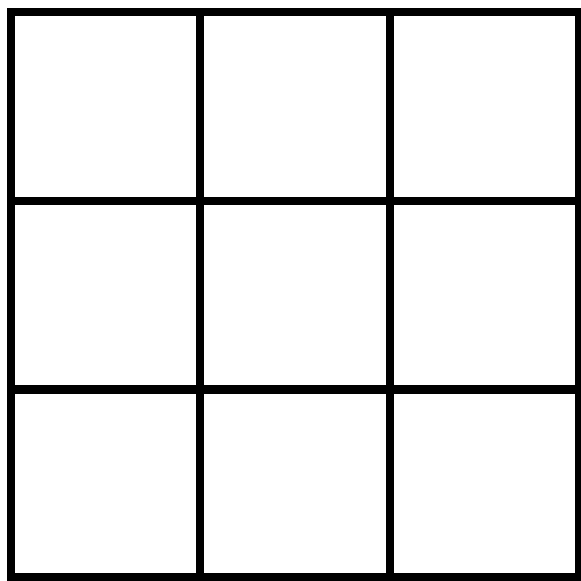


Pattern 49

Clues

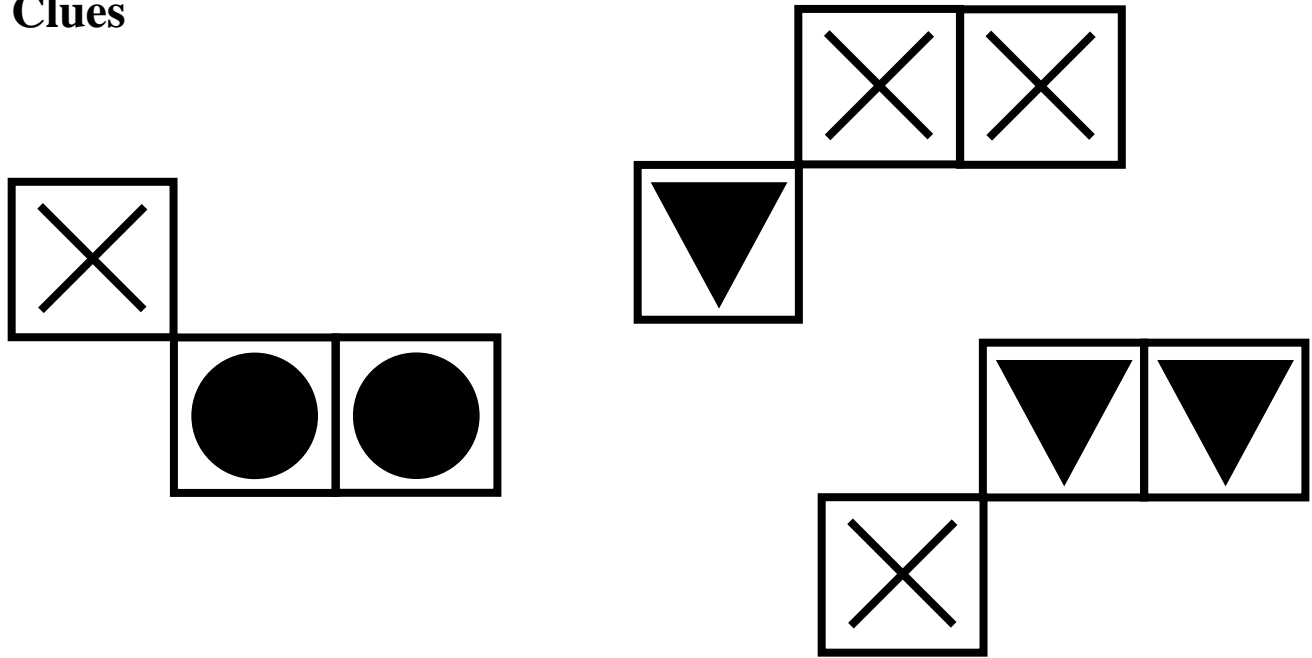


Grid

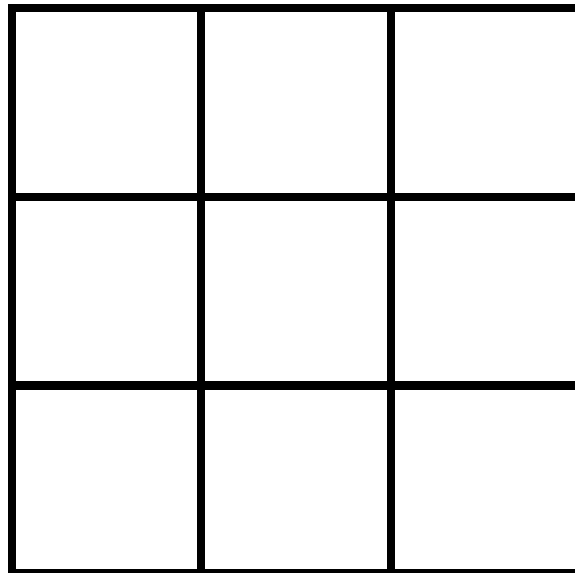


Pattern 50

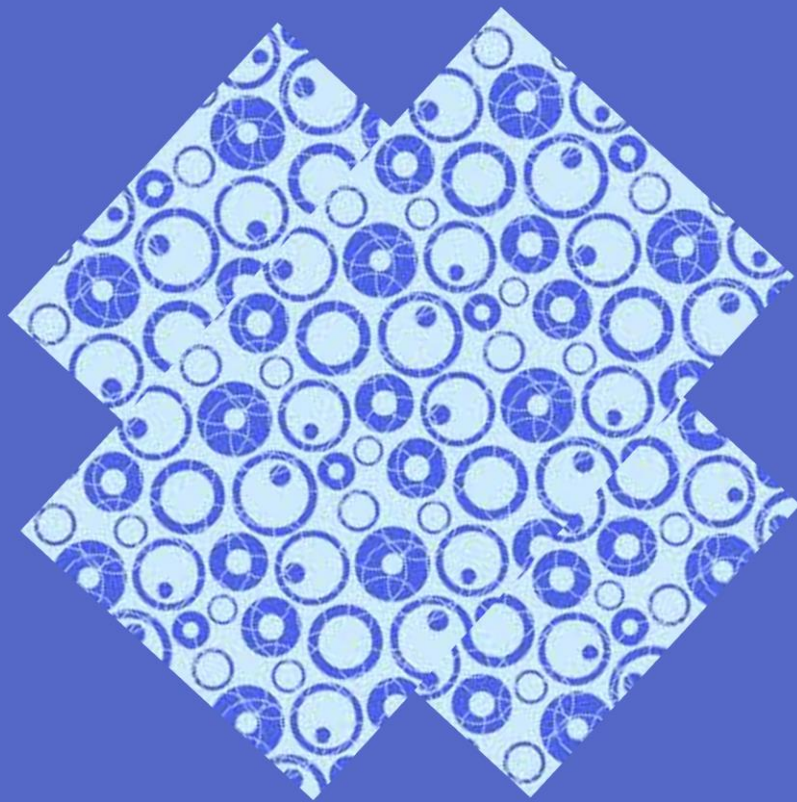
Clues



Grid

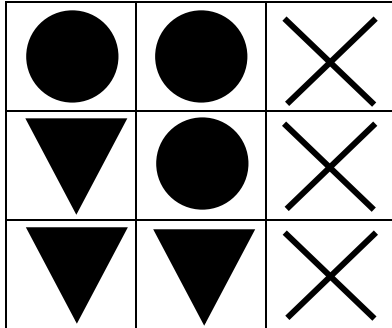


Pattern Grid un-Lock Solutions

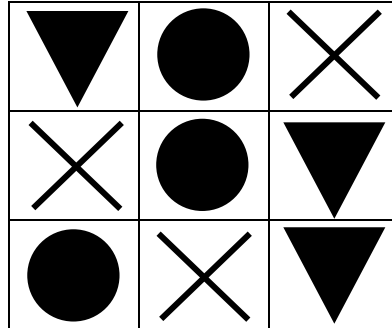


Pattern Grid-unLock Solutions

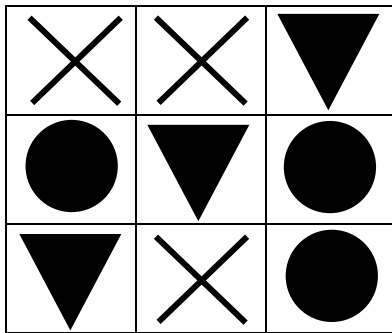
Pattern 1



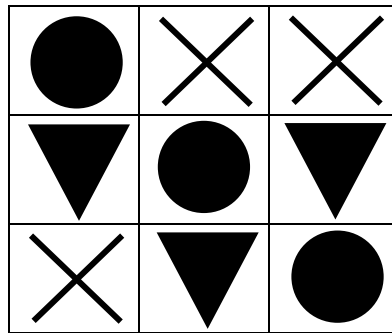
Pattern 2



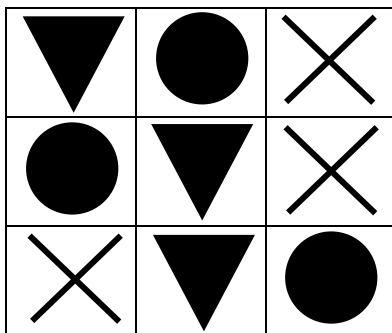
Pattern 3



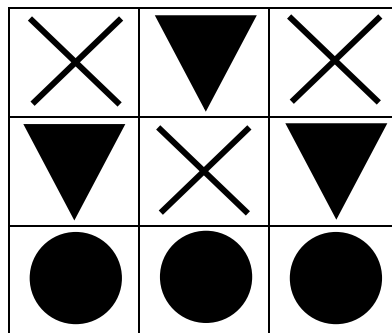
Pattern 4



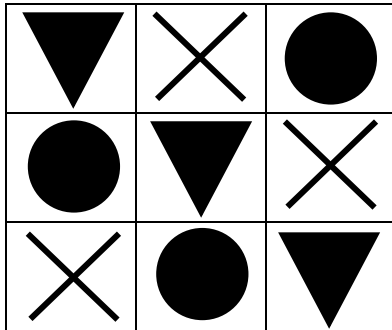
Pattern 5



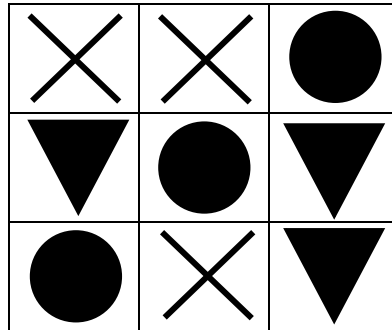
Pattern 6



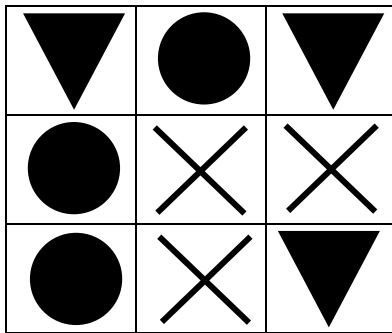
Pattern 7



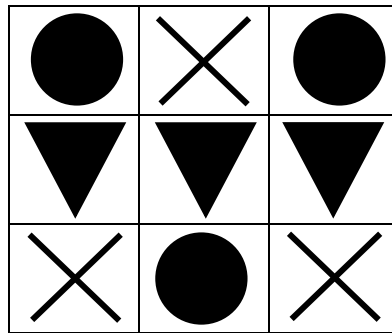
Pattern 8



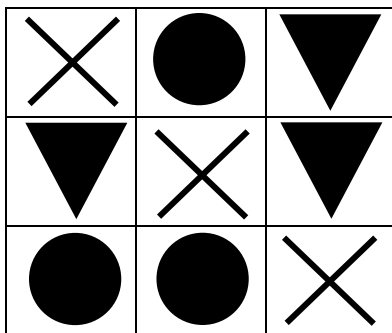
Pattern 9



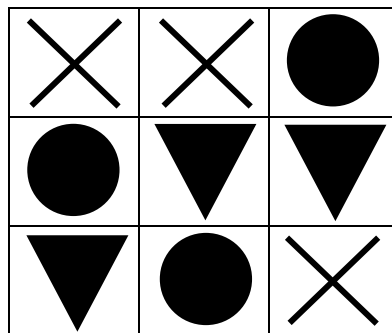
Pattern 10



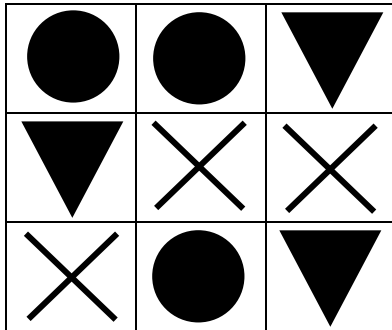
Pattern 11



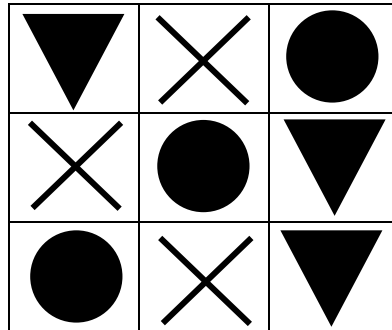
Pattern 12



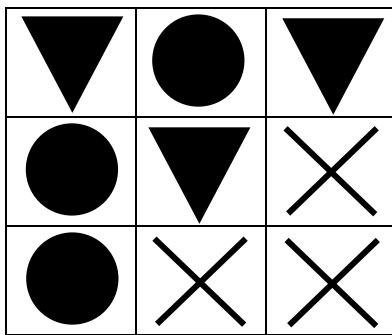
Pattern 13



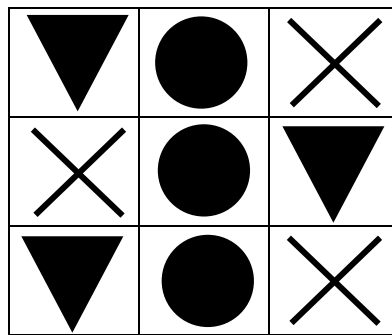
Pattern 14



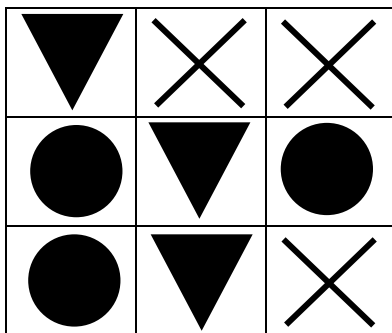
Pattern 15



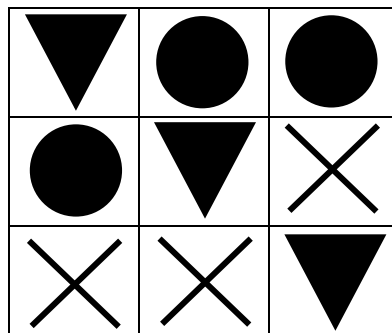
Pattern 16



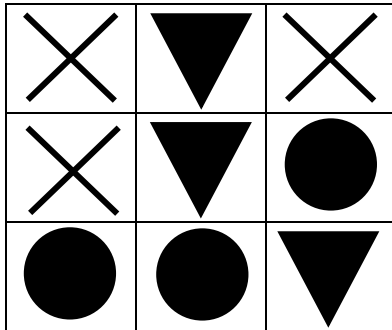
Pattern 17



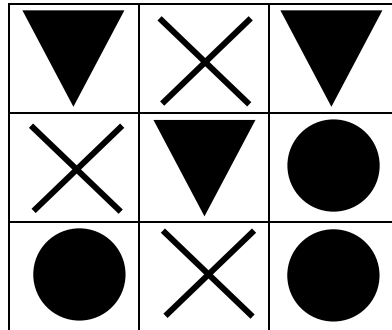
Pattern 18



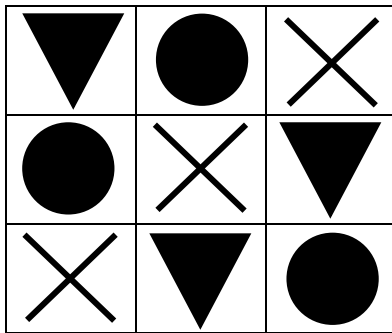
Pattern 19



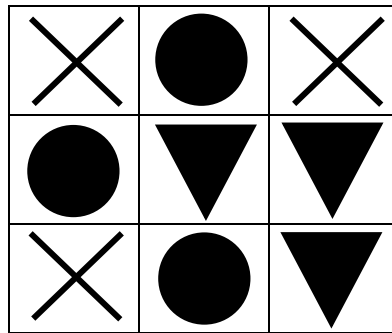
Pattern 20



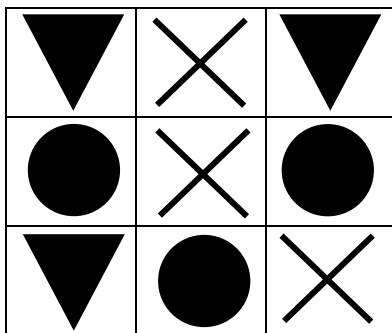
Pattern 21



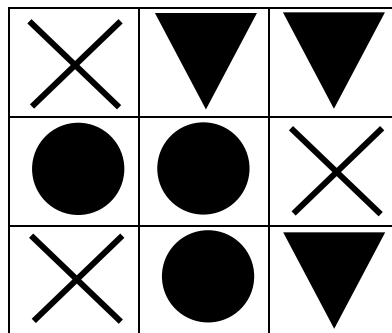
Pattern 22



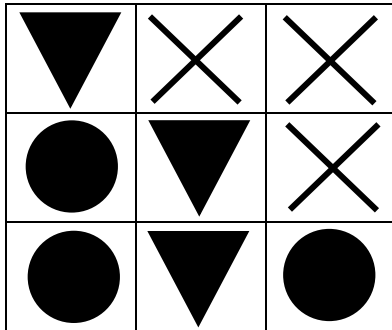
Pattern 23



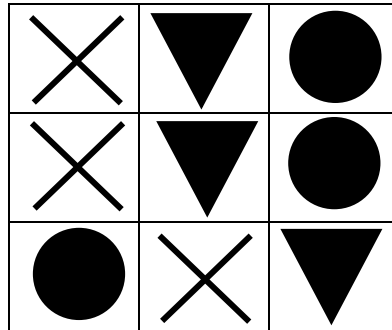
Pattern 24



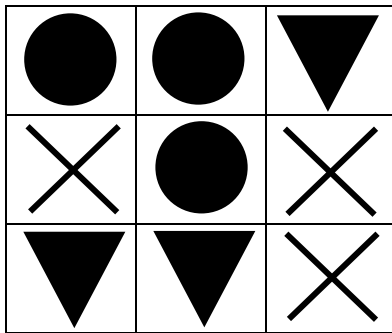
Pattern 25



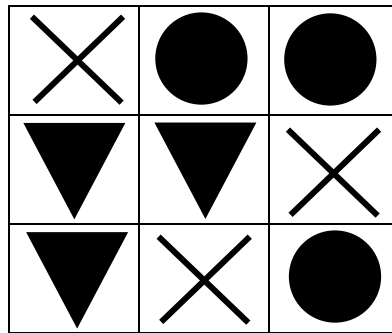
Pattern 26



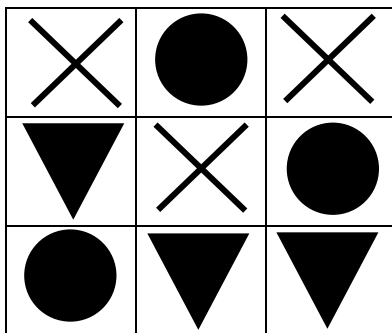
Pattern 27



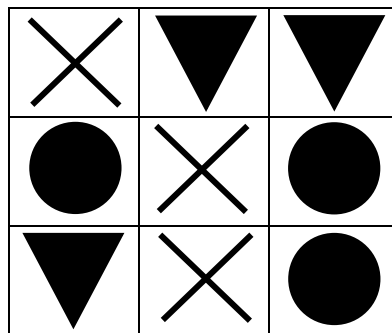
Pattern 28



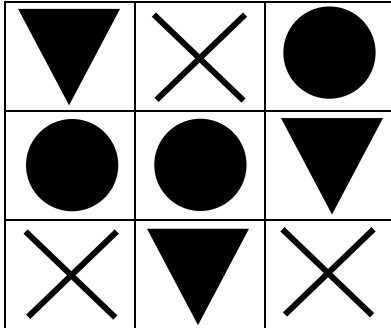
Pattern 29



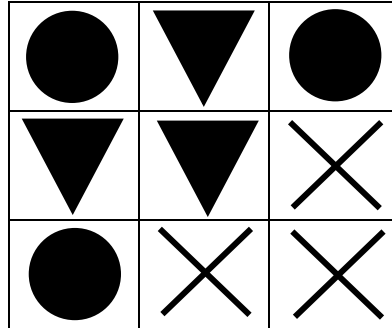
Pattern 30



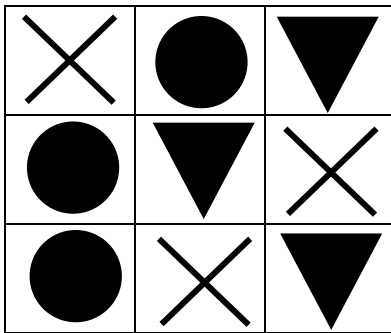
Pattern 31



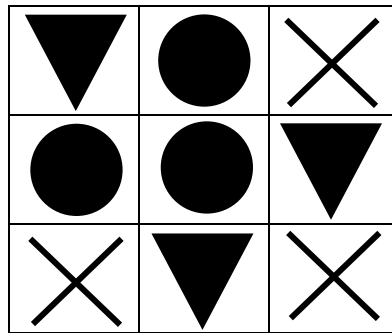
Pattern 32



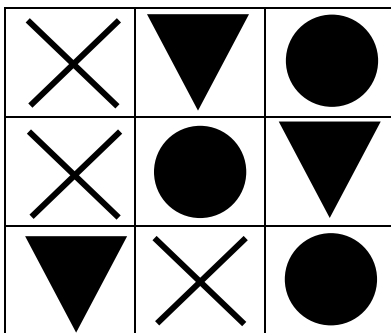
Pattern 33



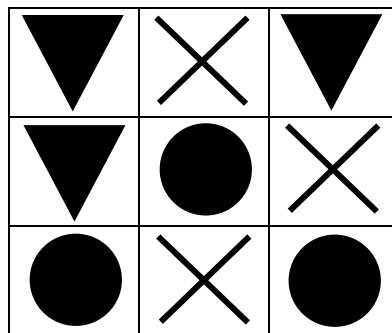
Pattern 34



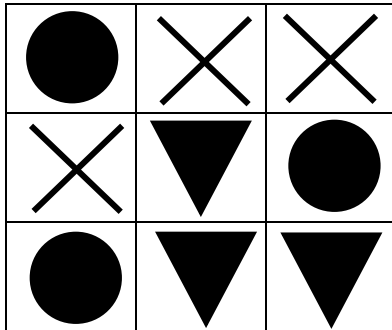
Pattern 35



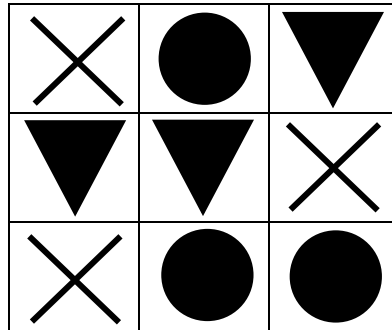
Pattern 36



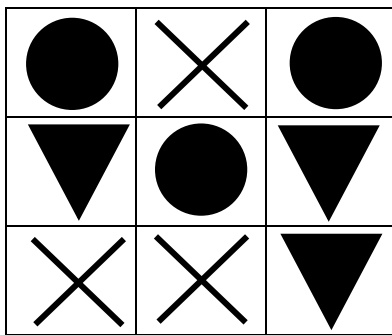
Pattern 37



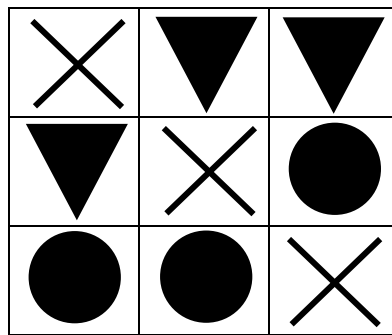
Pattern 38



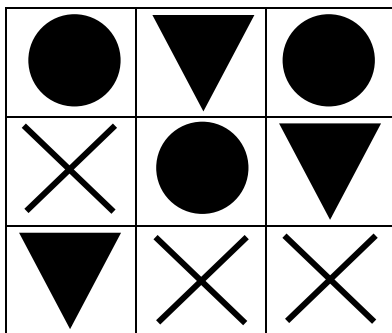
Pattern 39



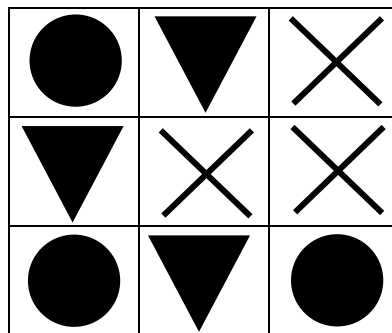
Pattern 40



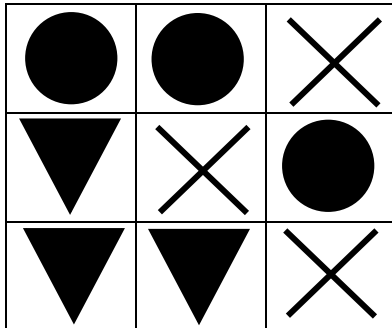
Pattern 41



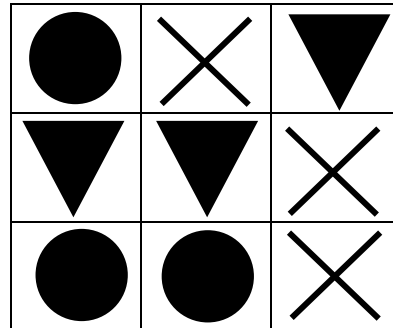
Pattern 42



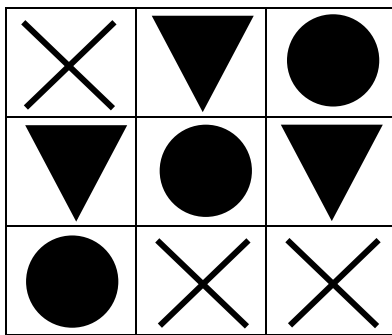
Pattern 43



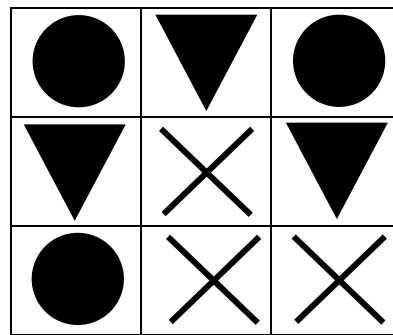
Pattern 44



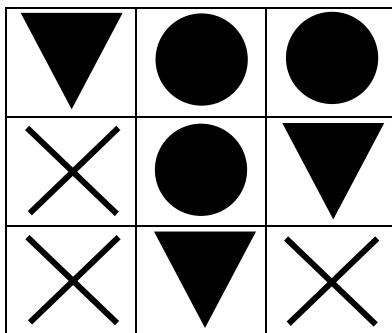
Pattern 45



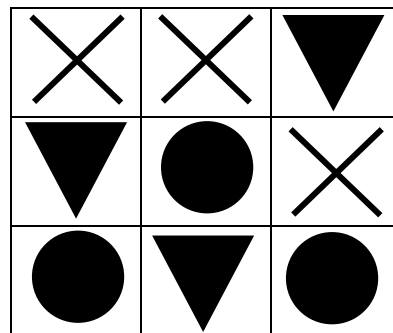
Pattern 46



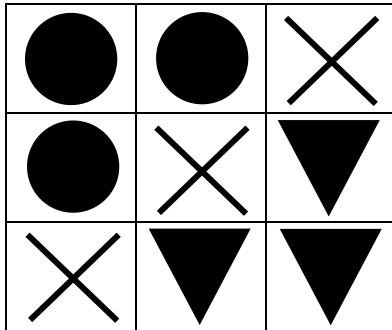
Pattern 47



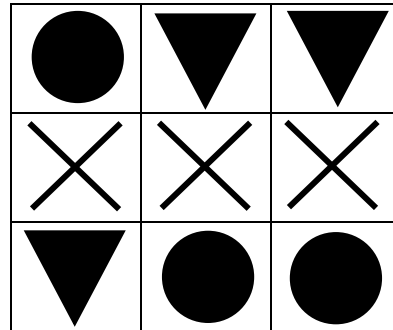
Pattern 48

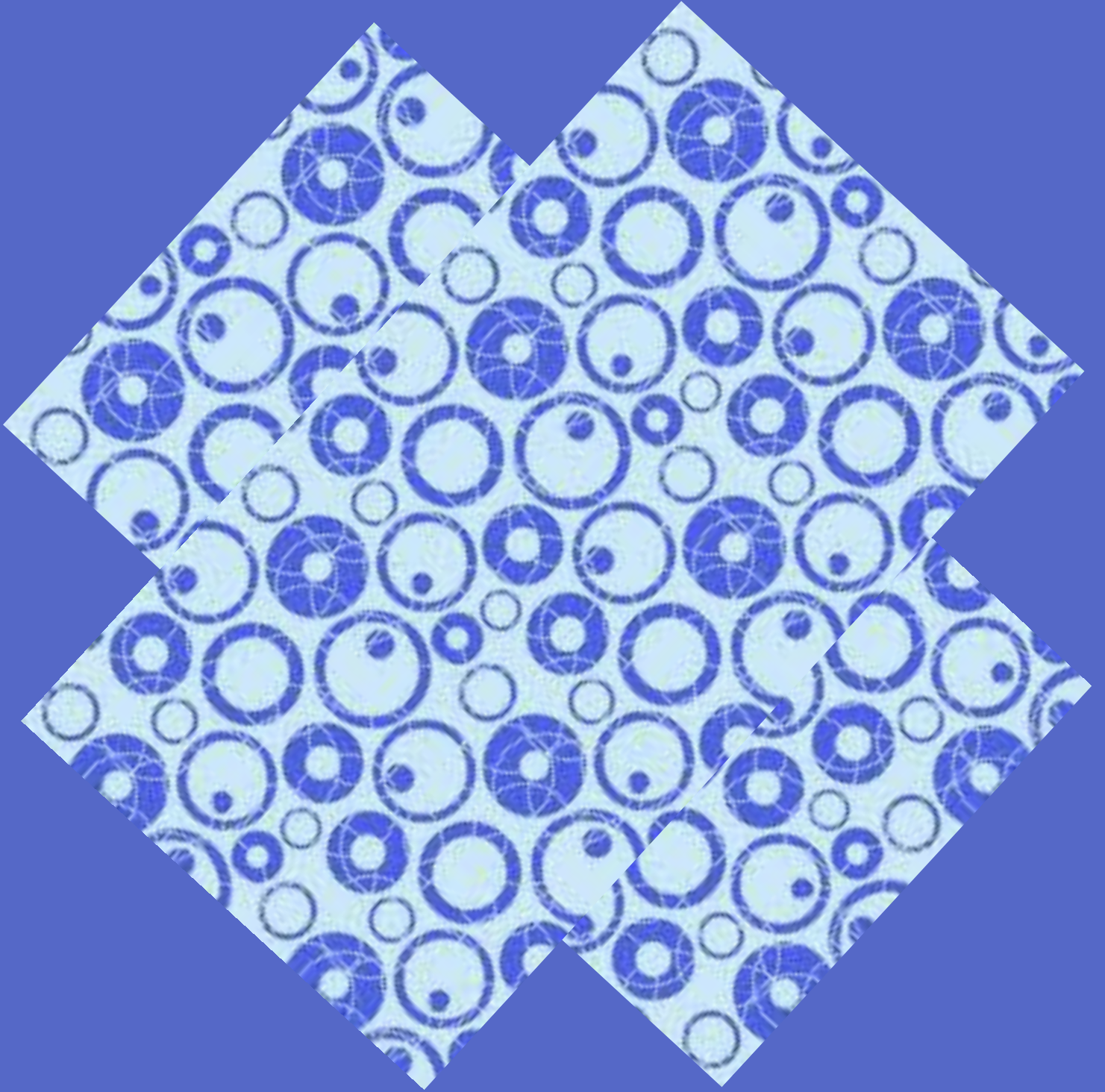


Pattern 49



Pattern 50





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