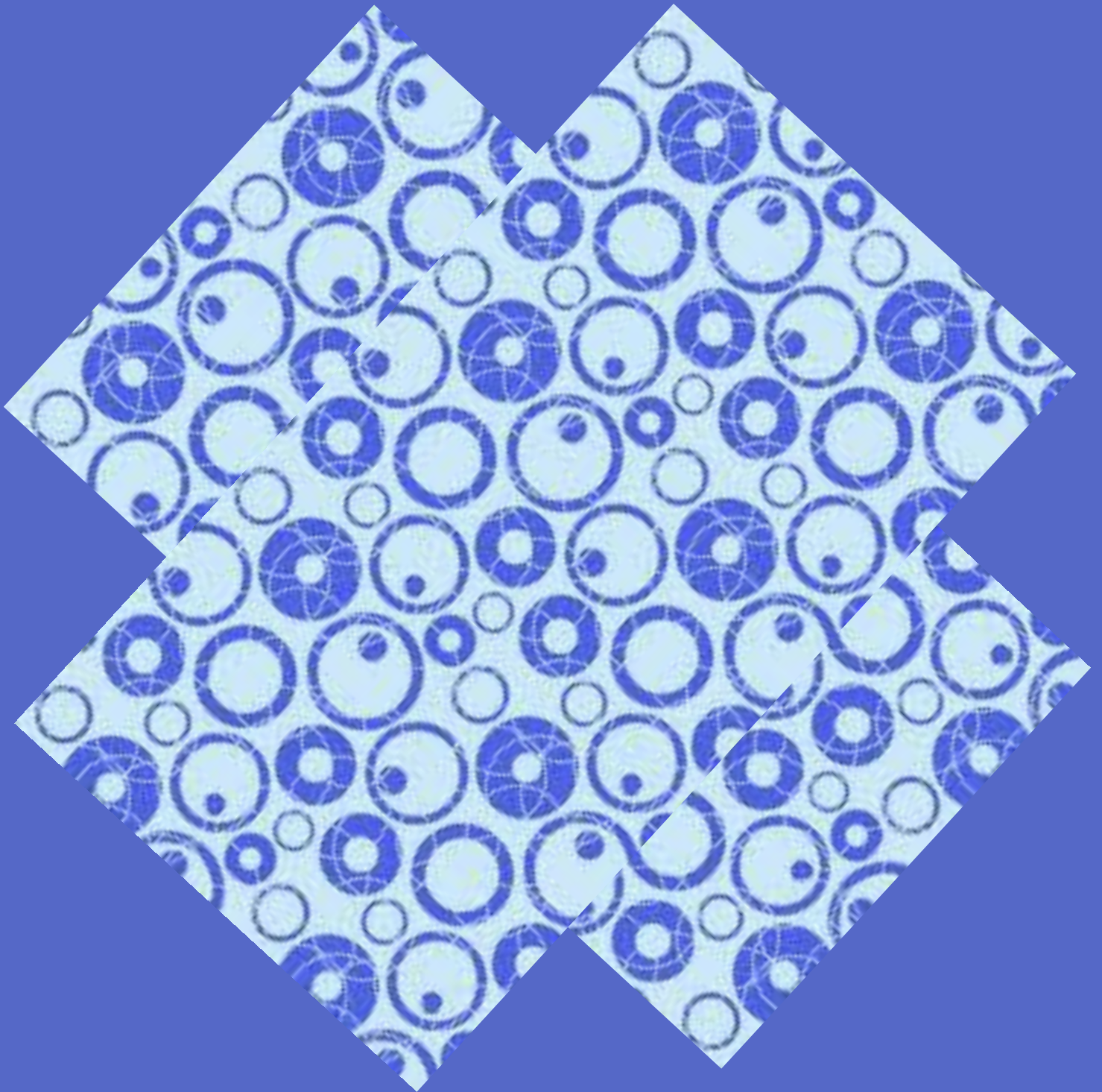# Pattern Grid-unLocks

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.
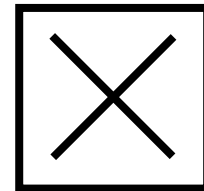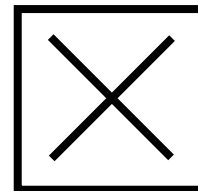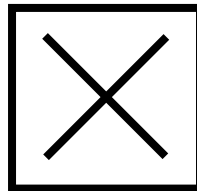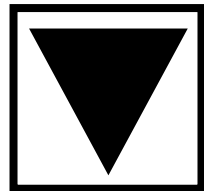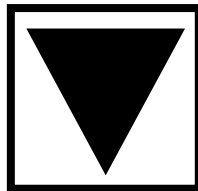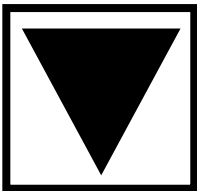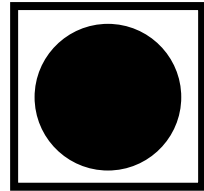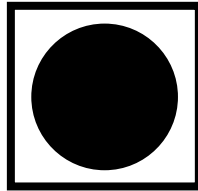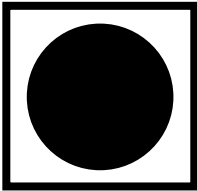
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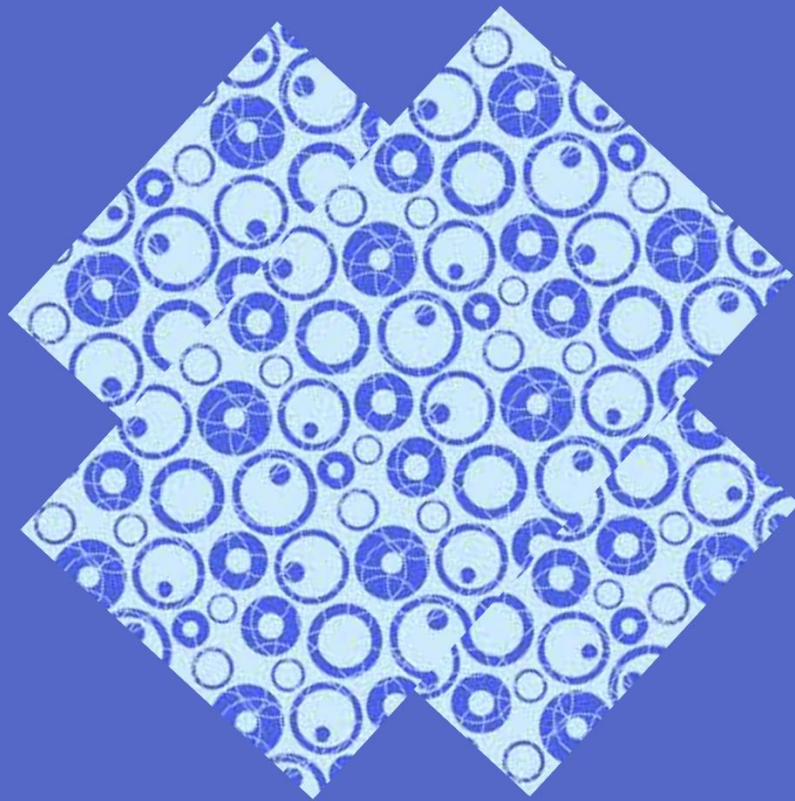
Pattern 1

Clues
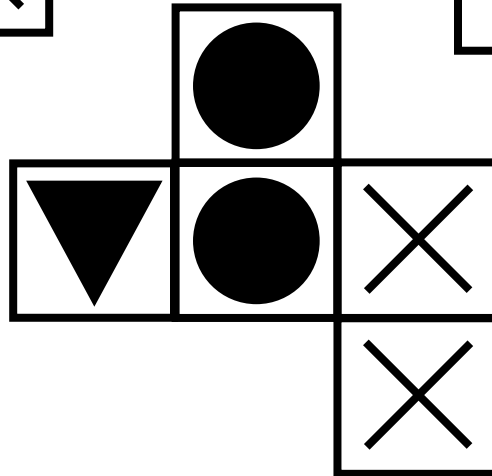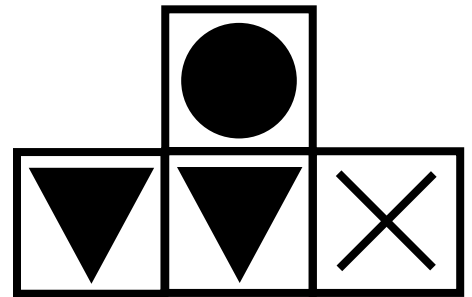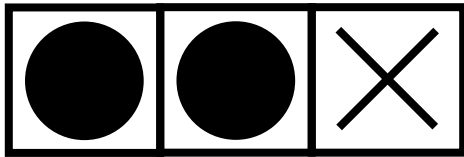
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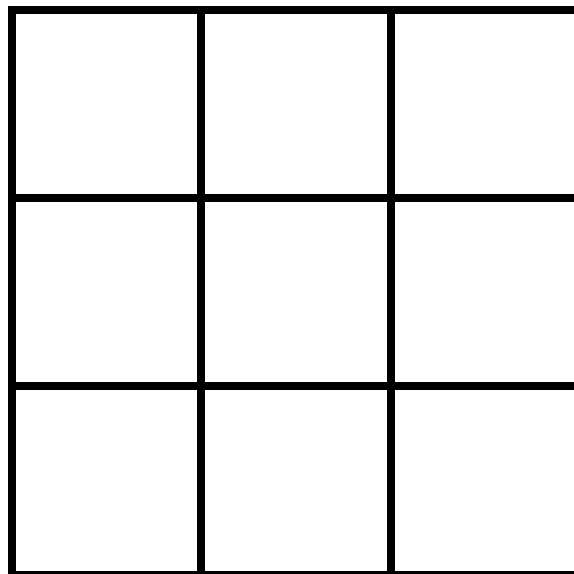
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Clues
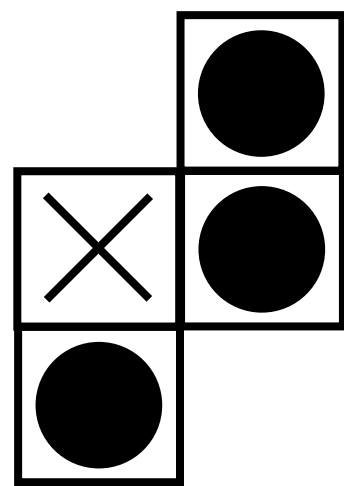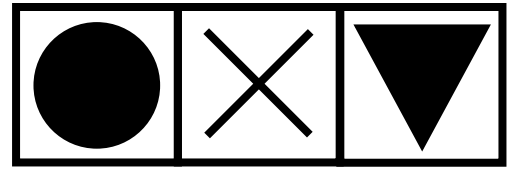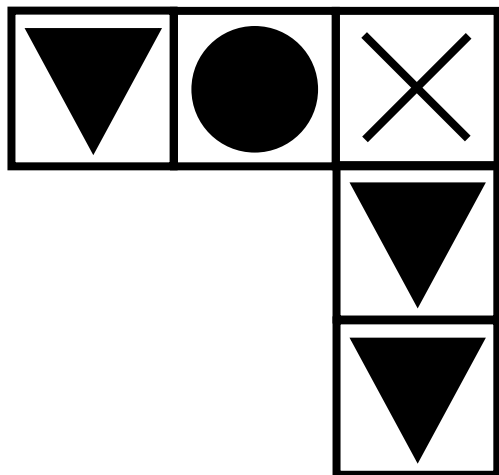
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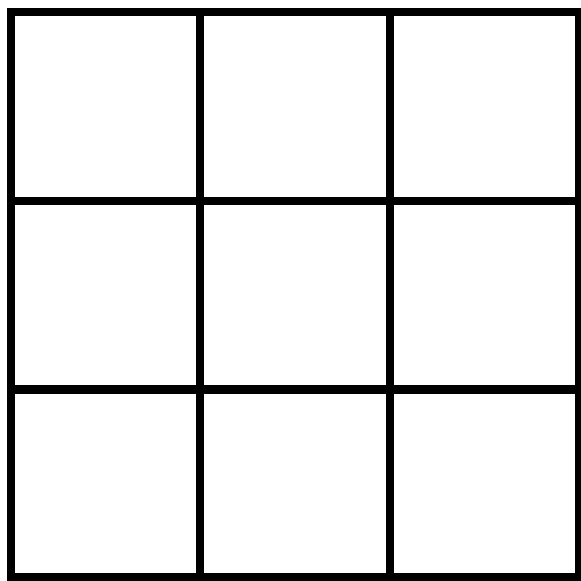
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Clues
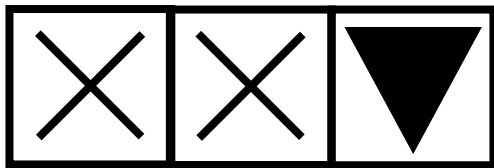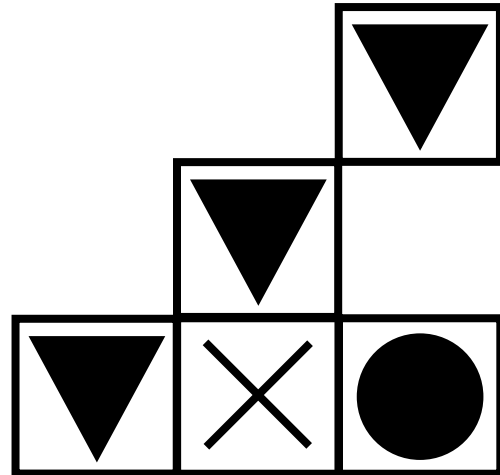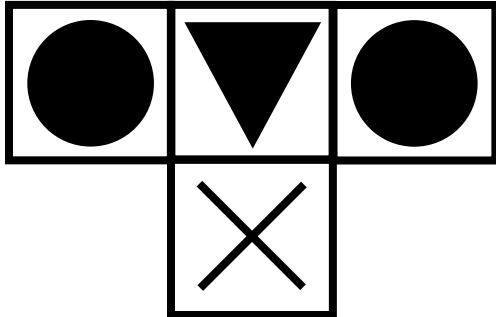
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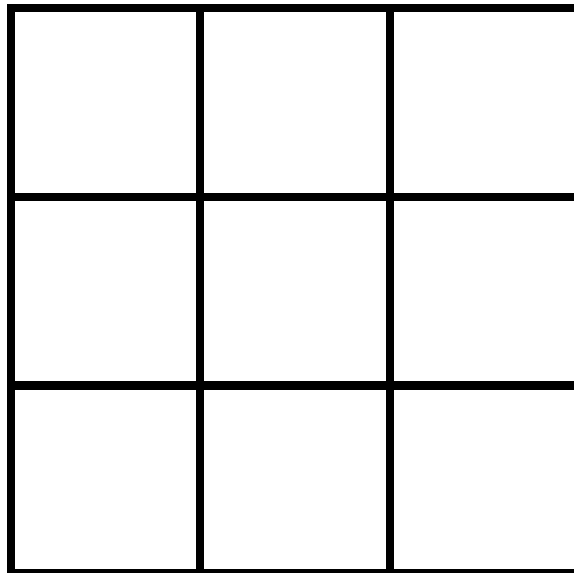
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Clues
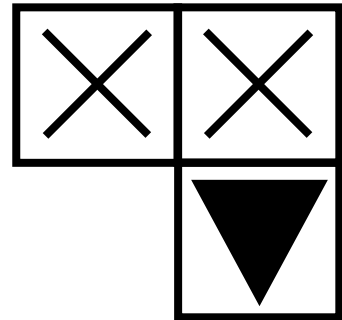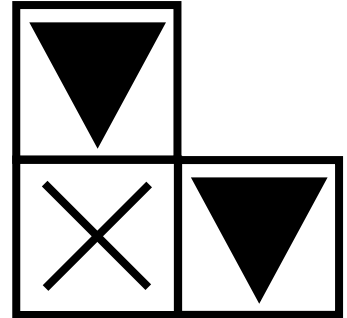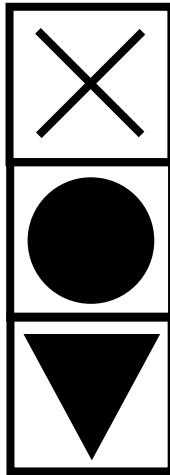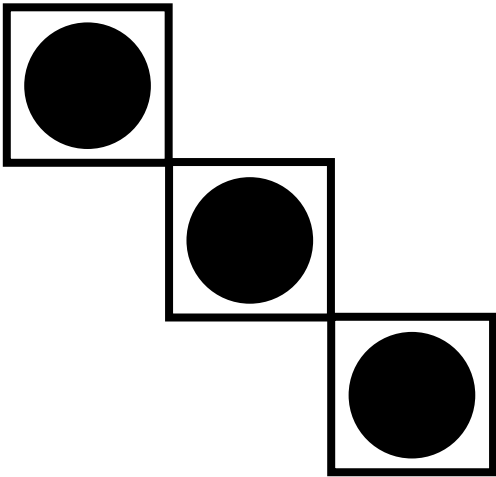
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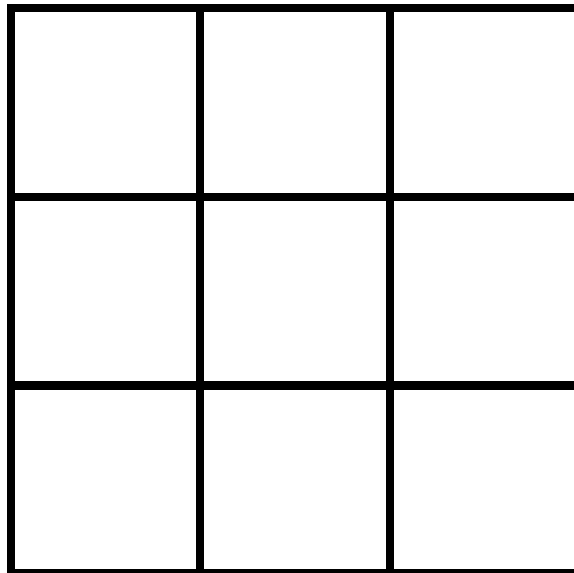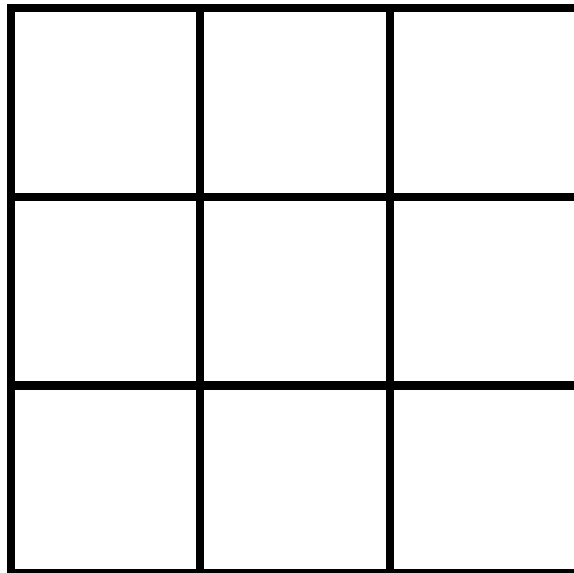
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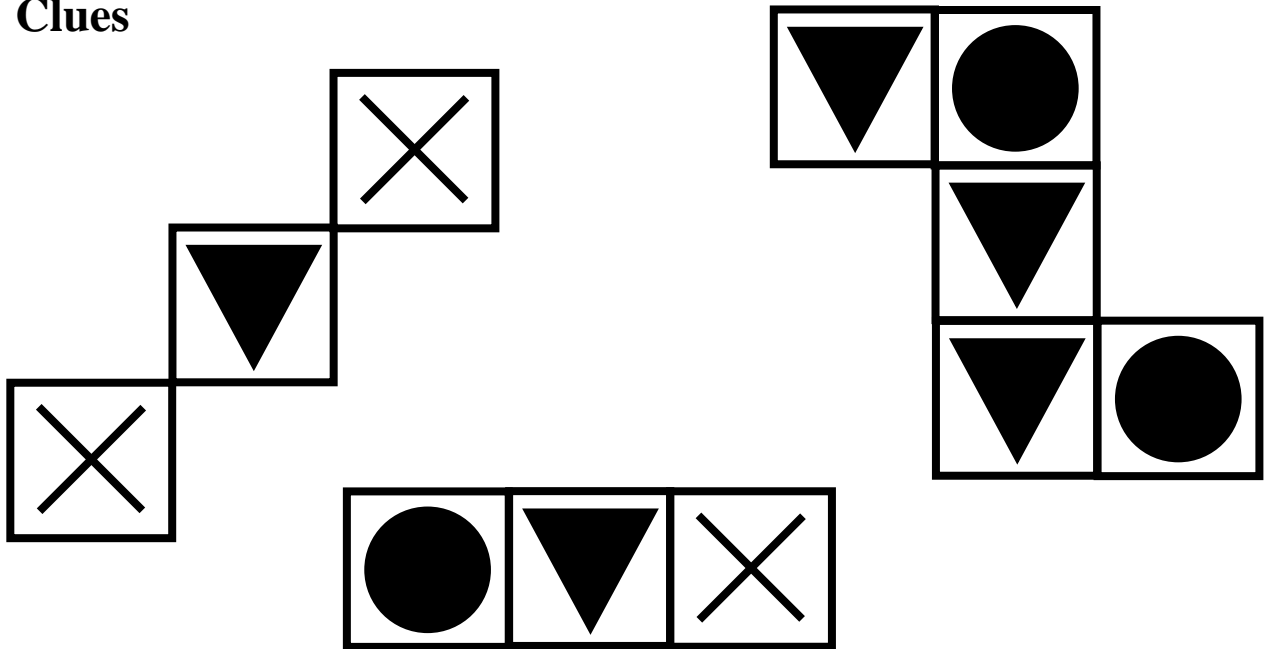
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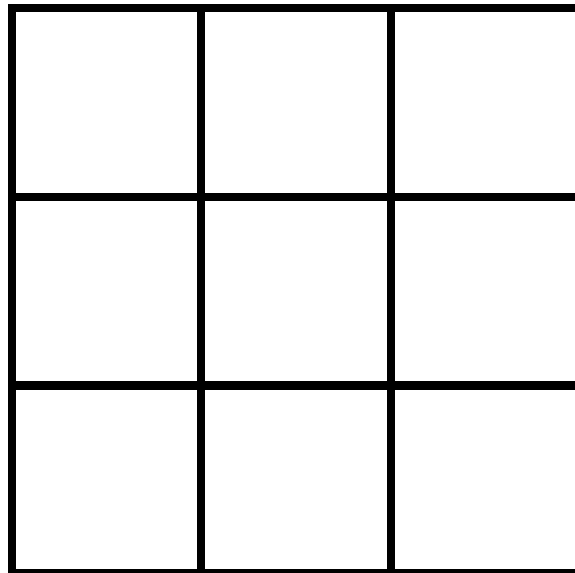
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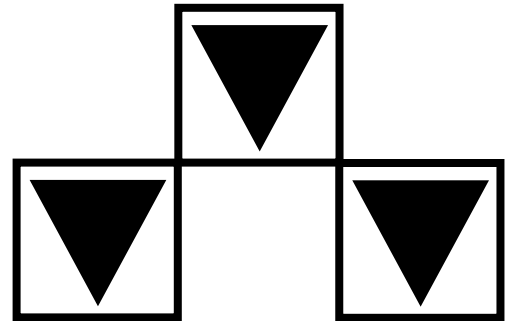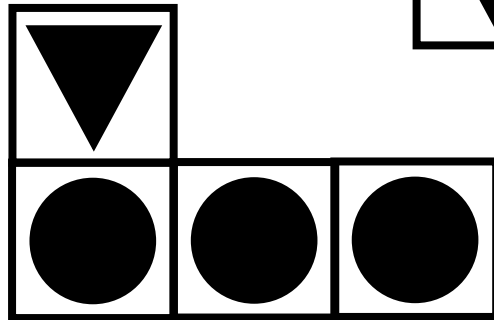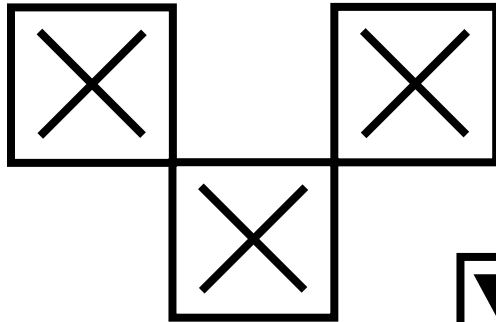
Grid

Pattern 7

Clues
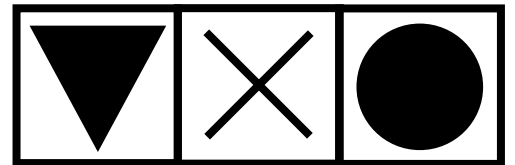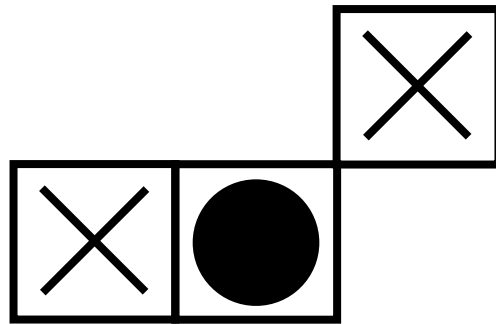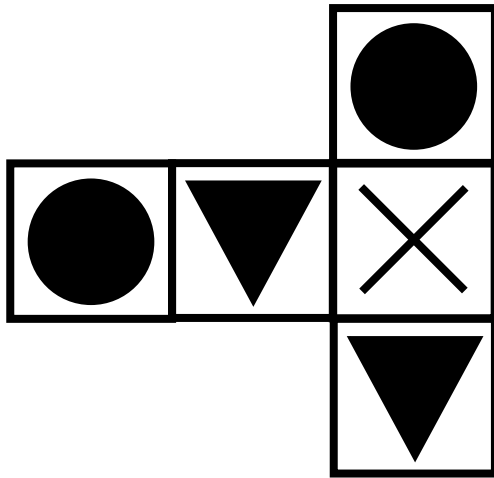
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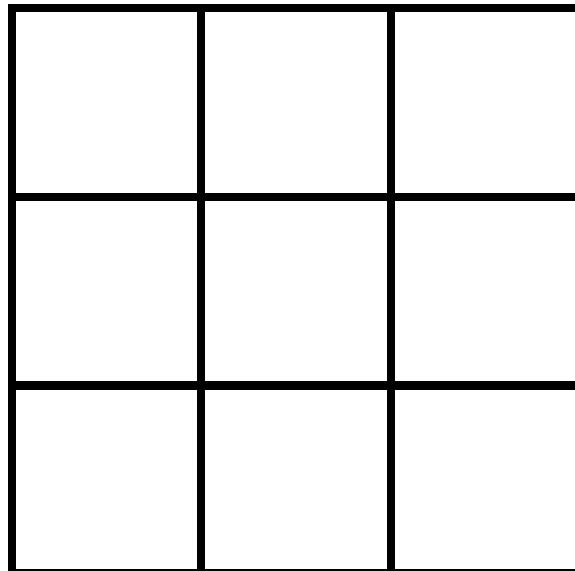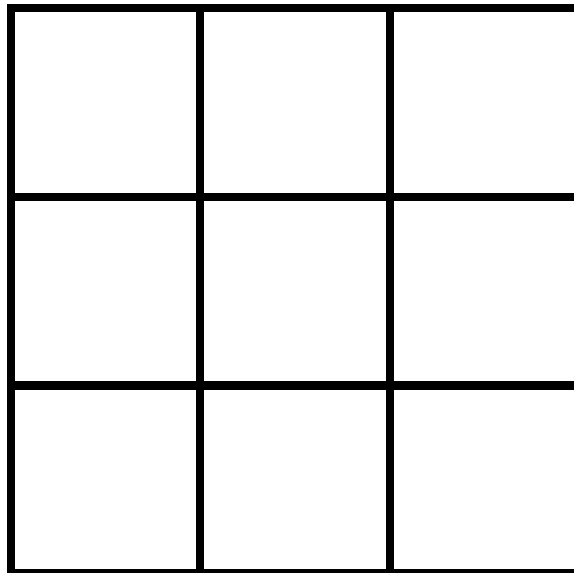
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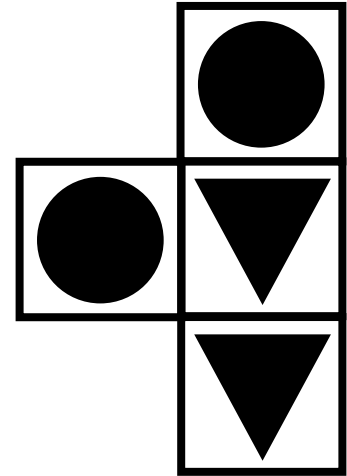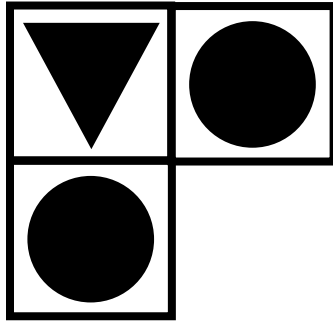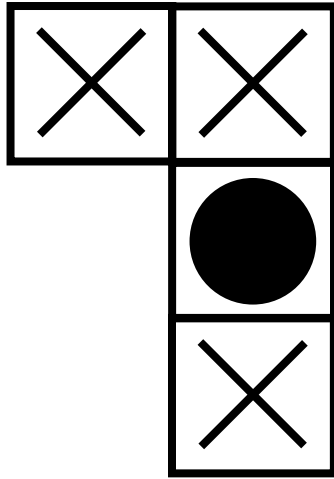
Grid

Pattern 9

Clues
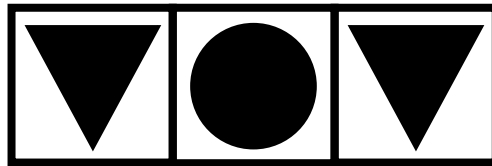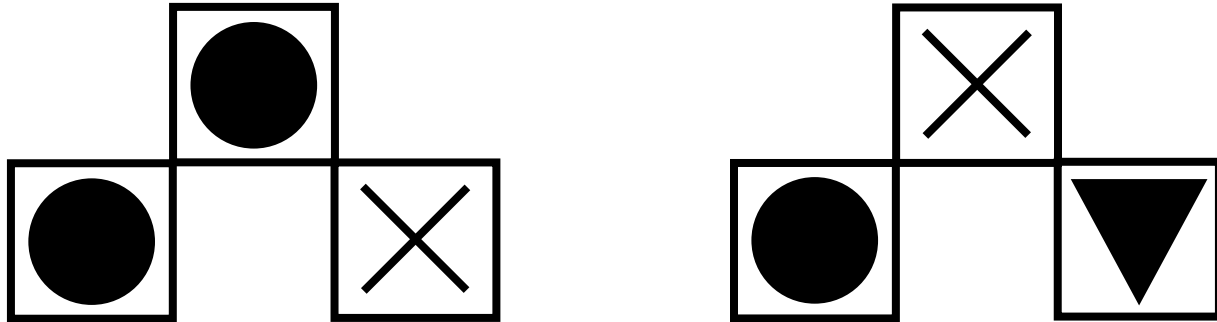
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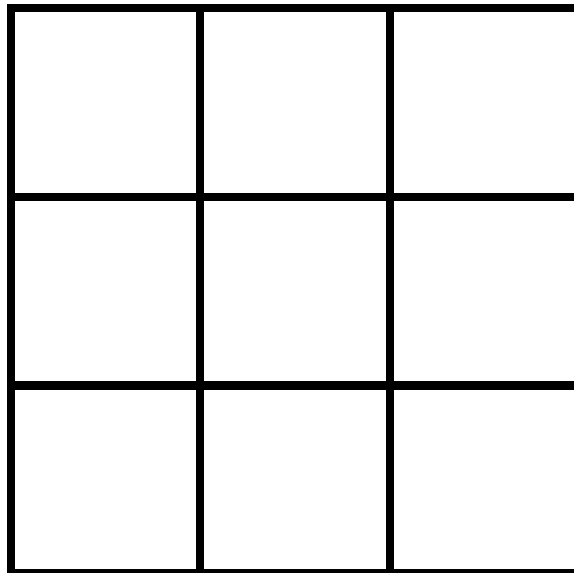
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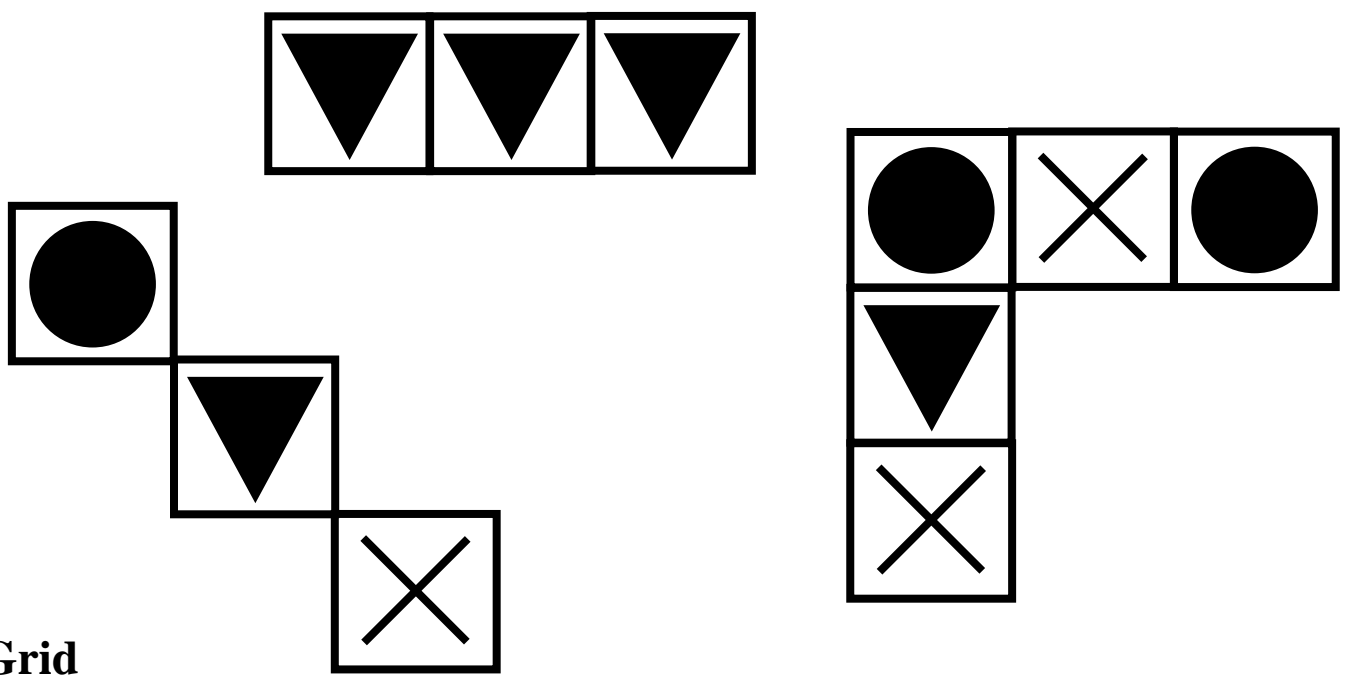
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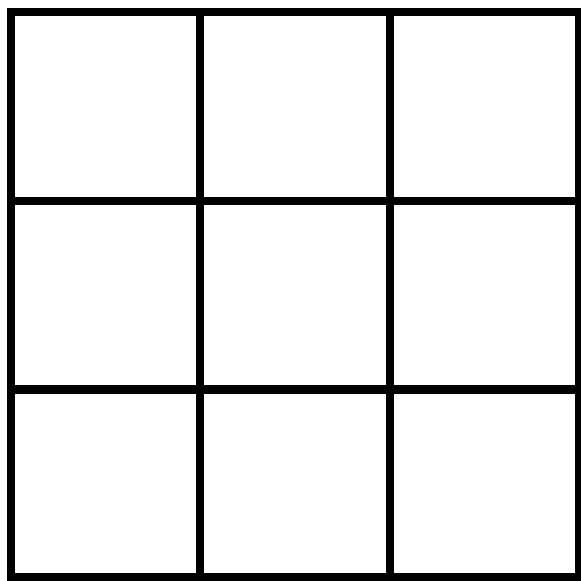
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Clues
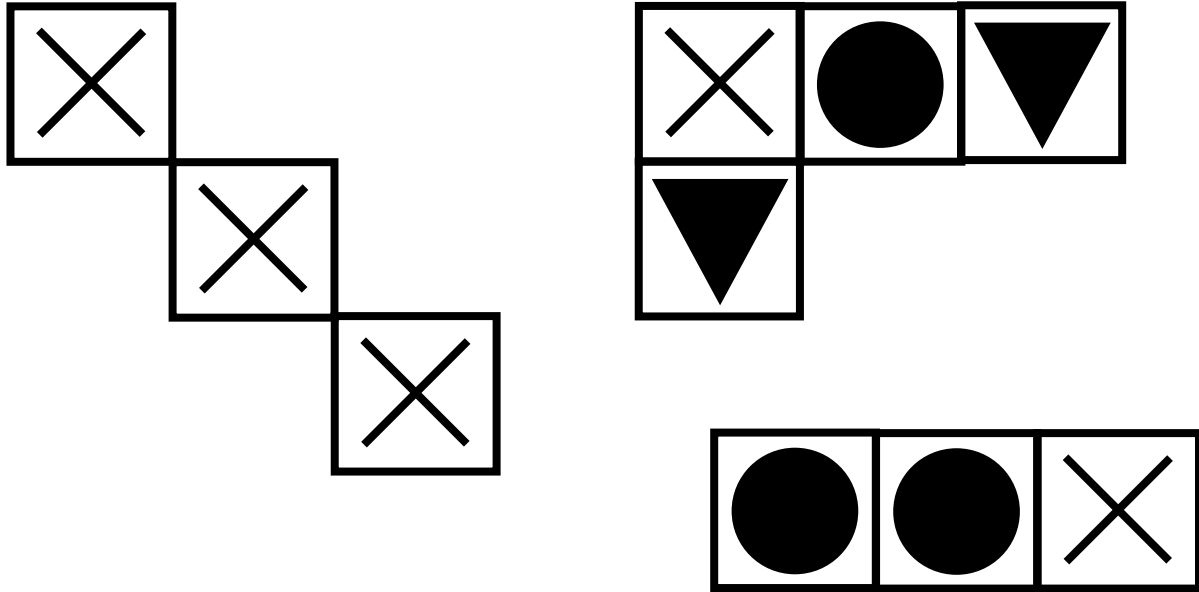
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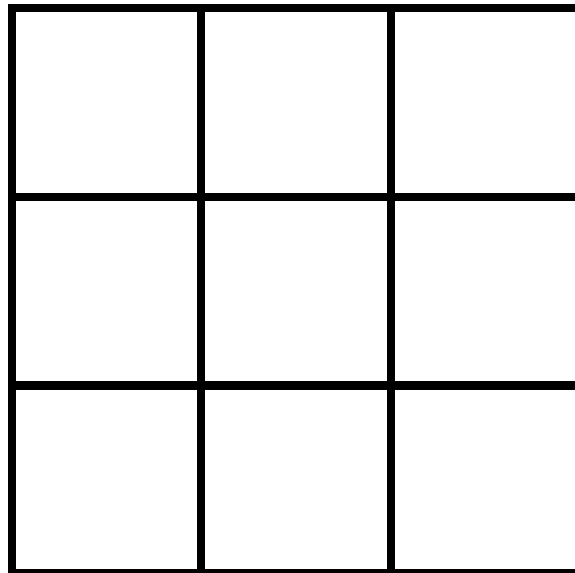
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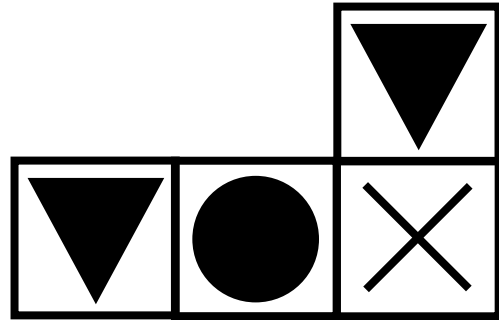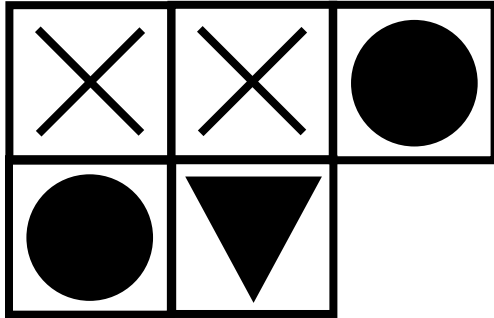
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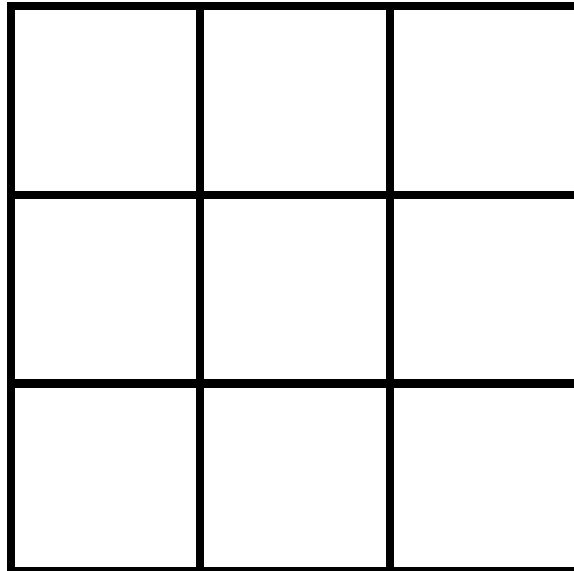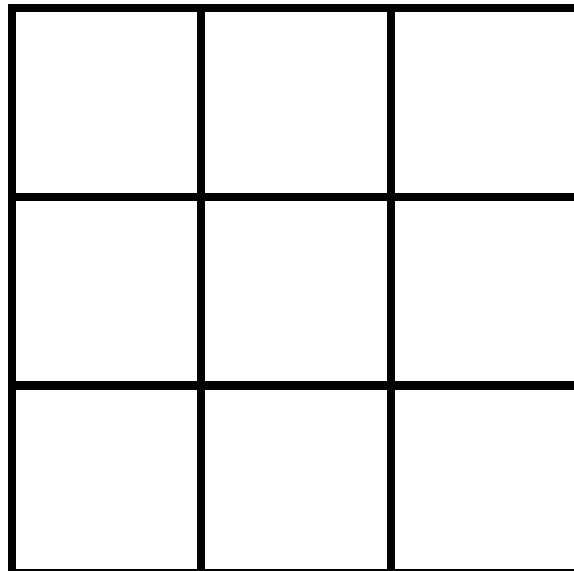
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Clues
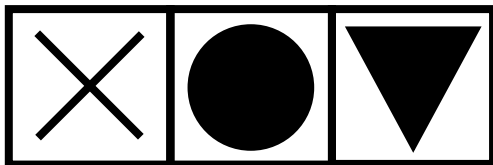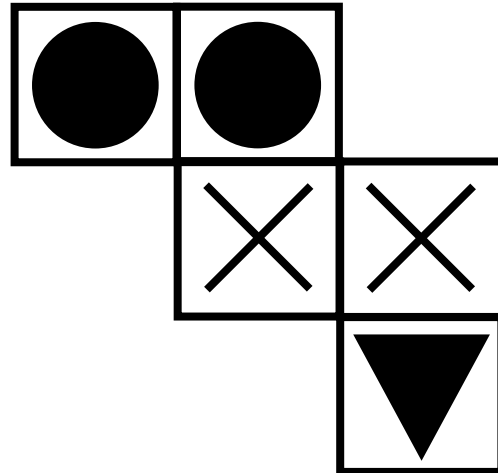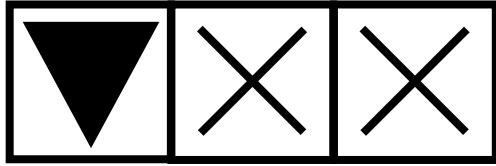
Grid

Pattern 14

Clues
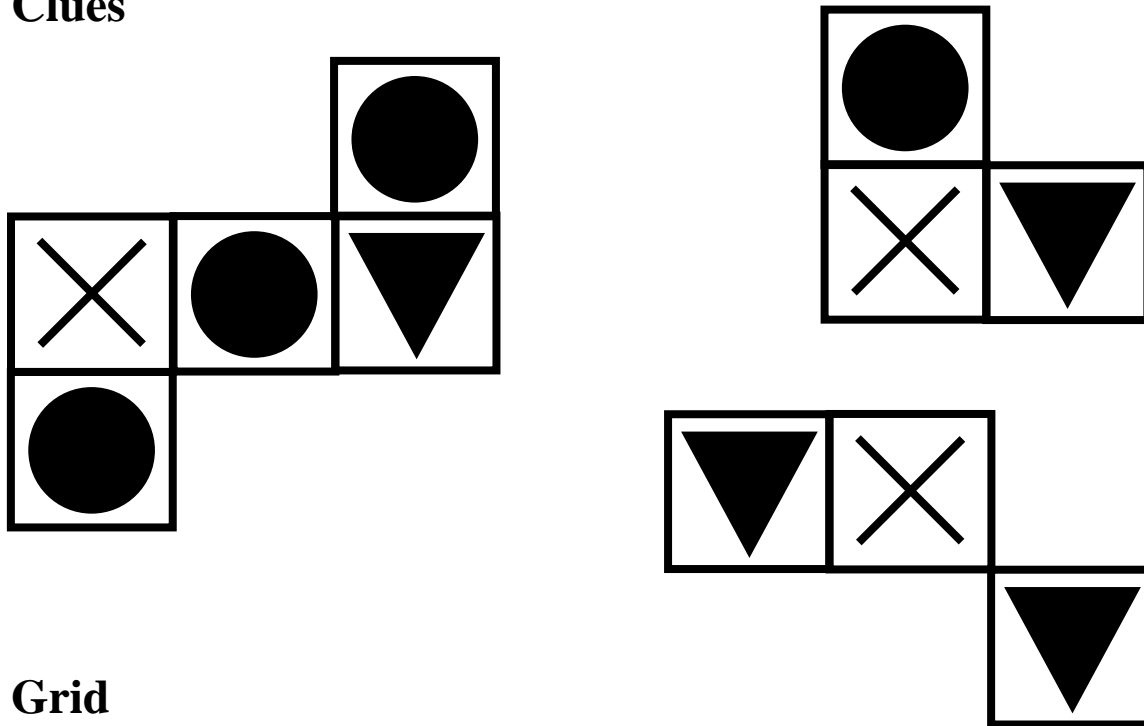
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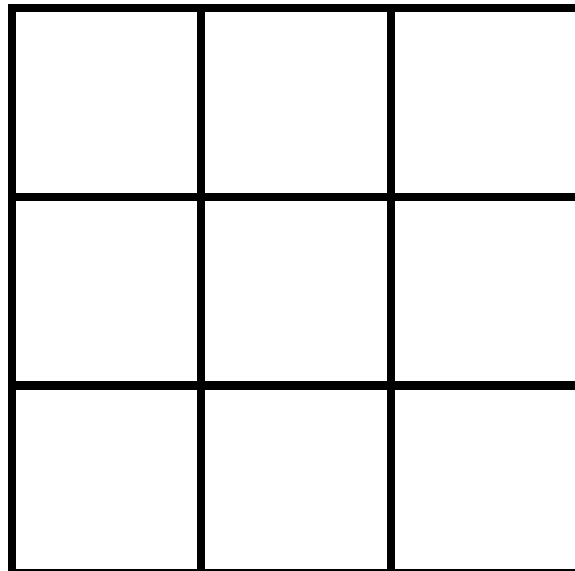
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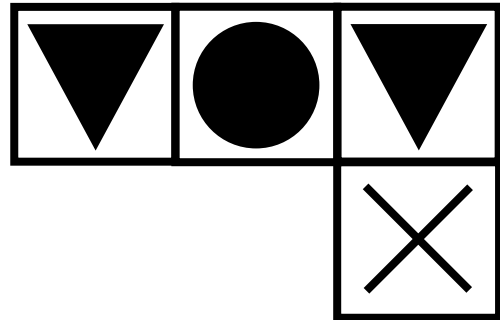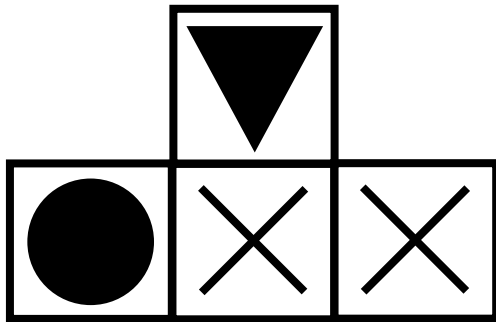
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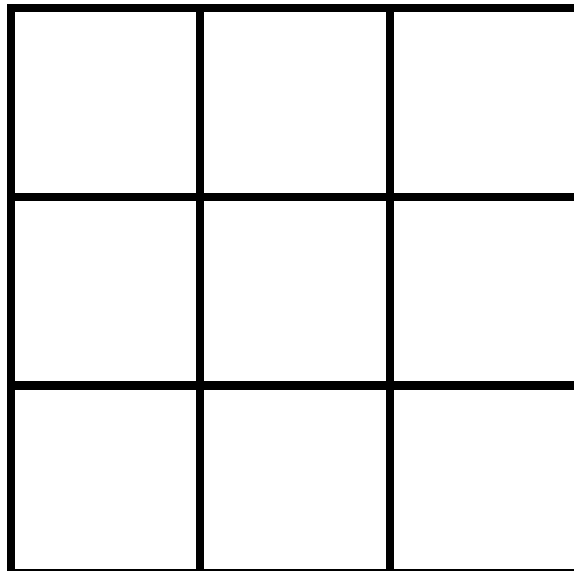
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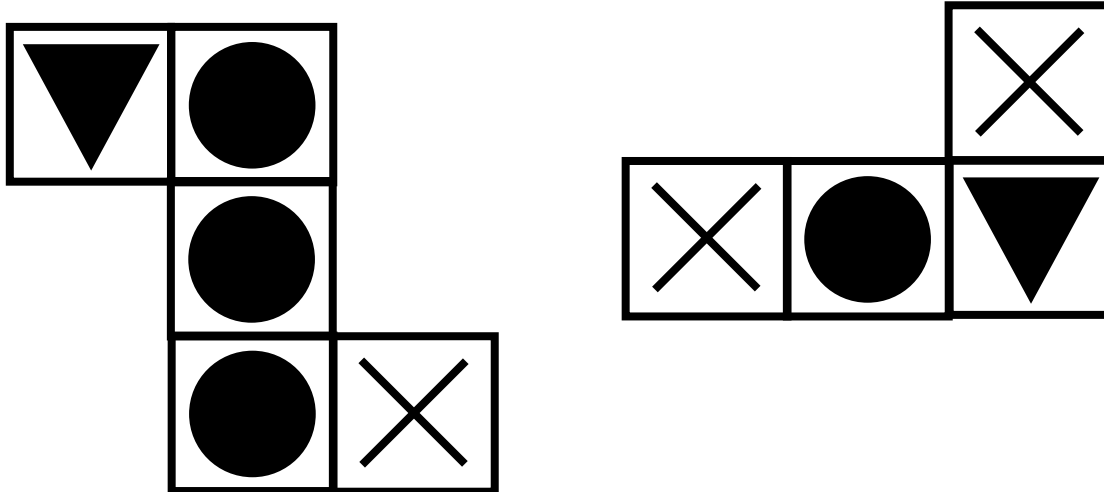
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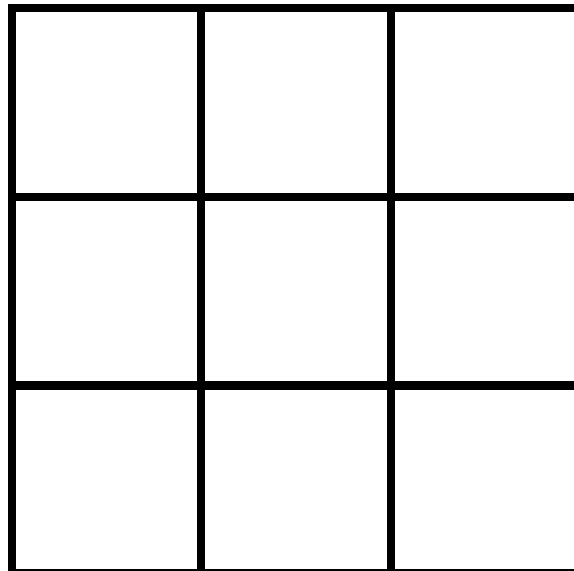
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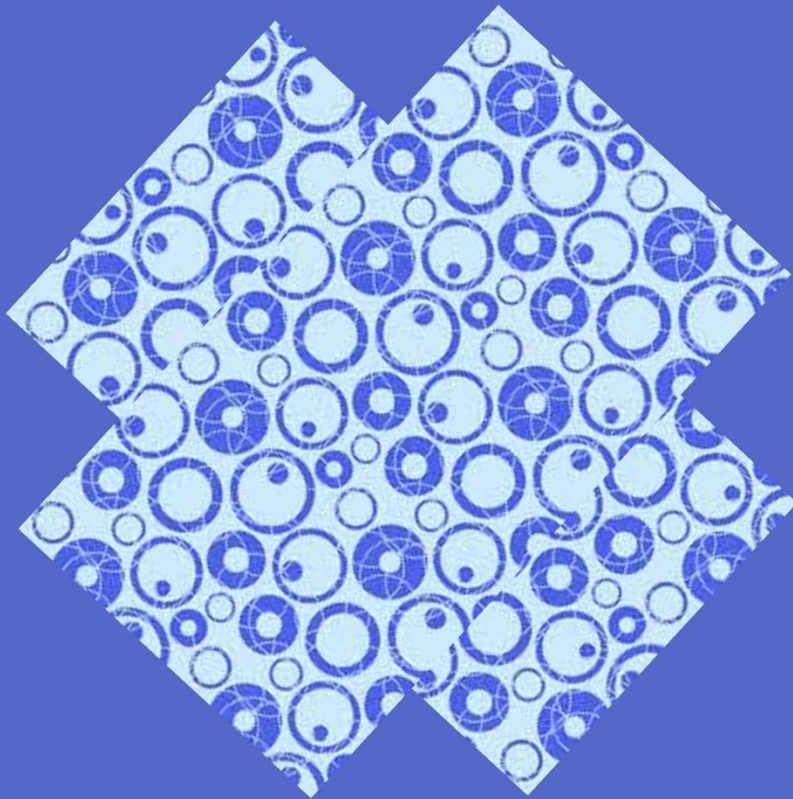
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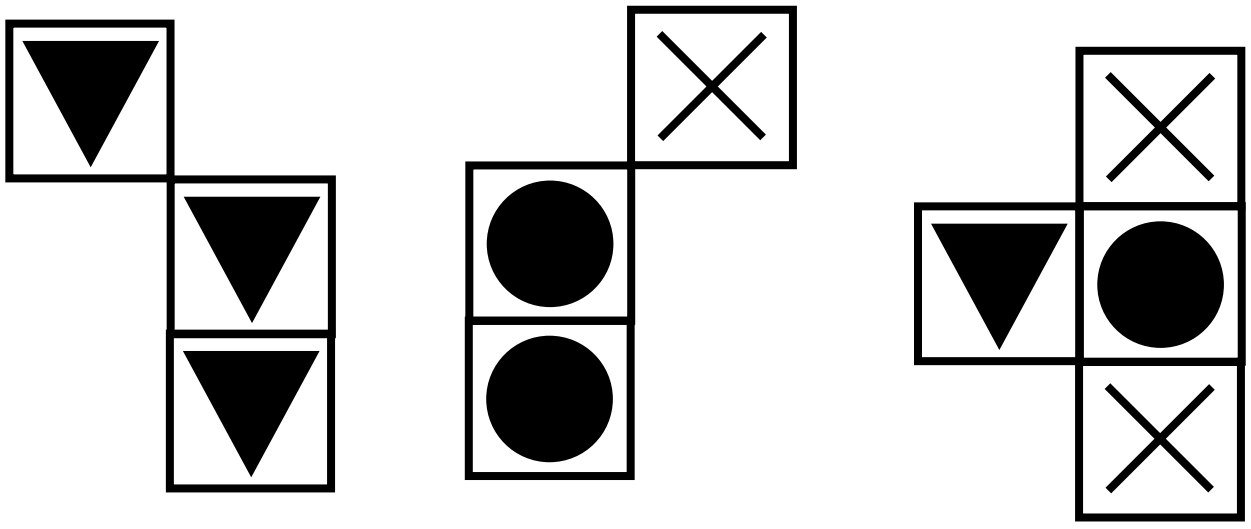
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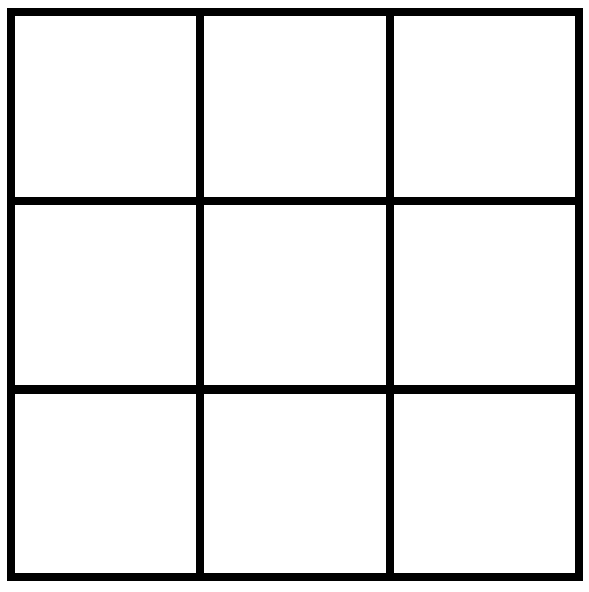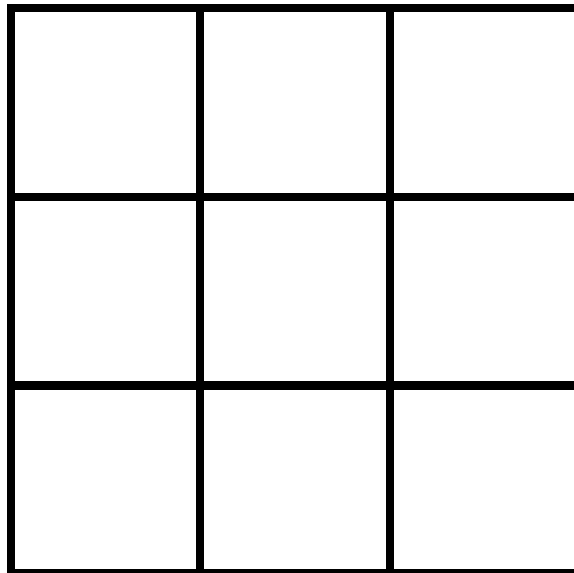
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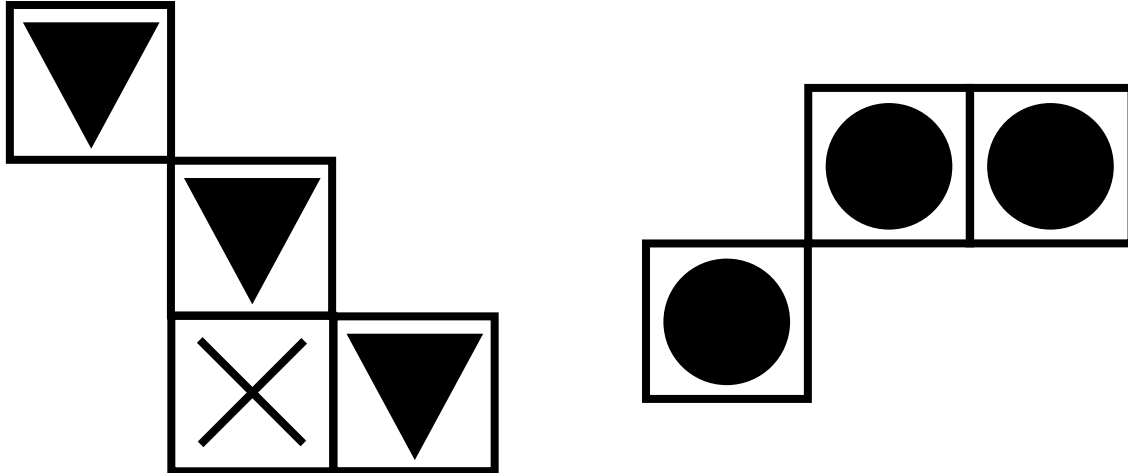
Grid

Pattern 19

Clues
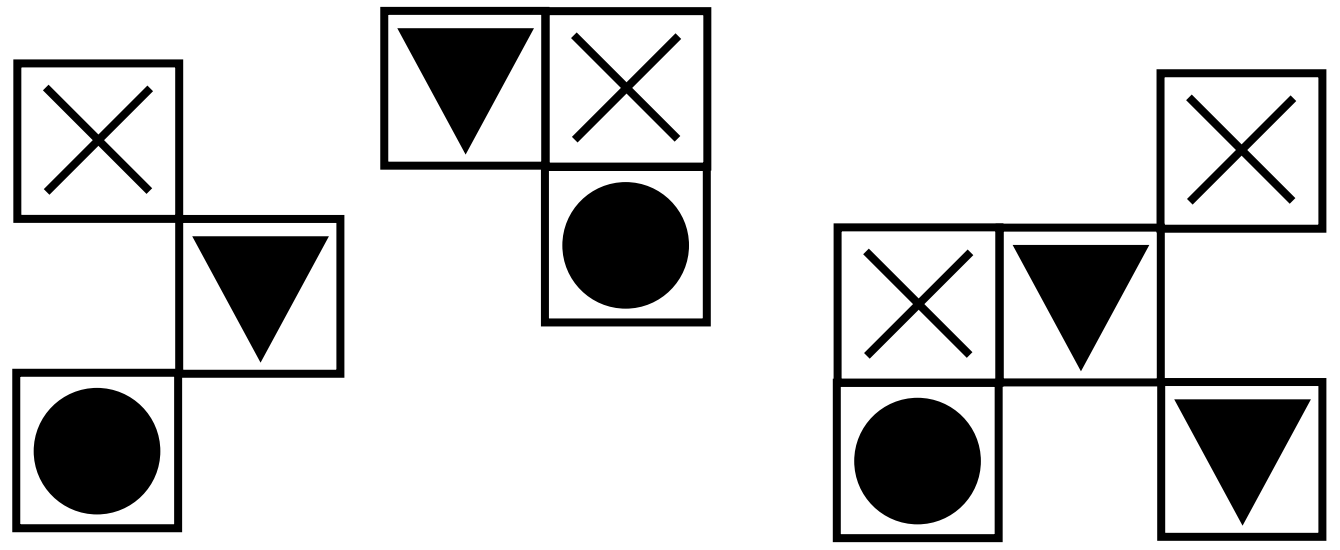
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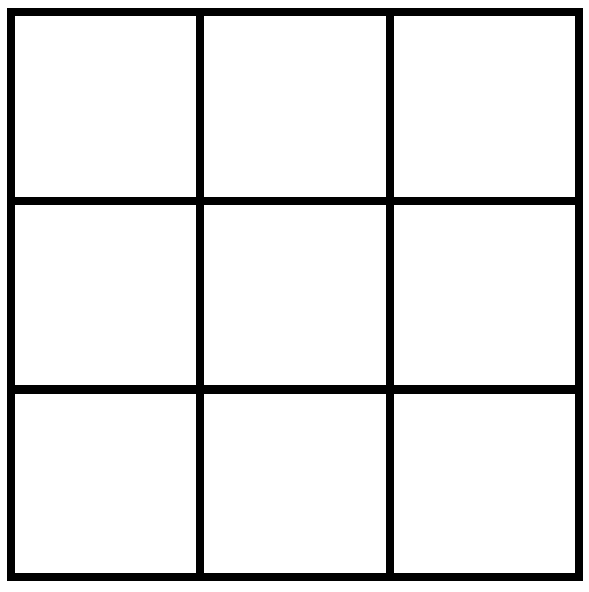
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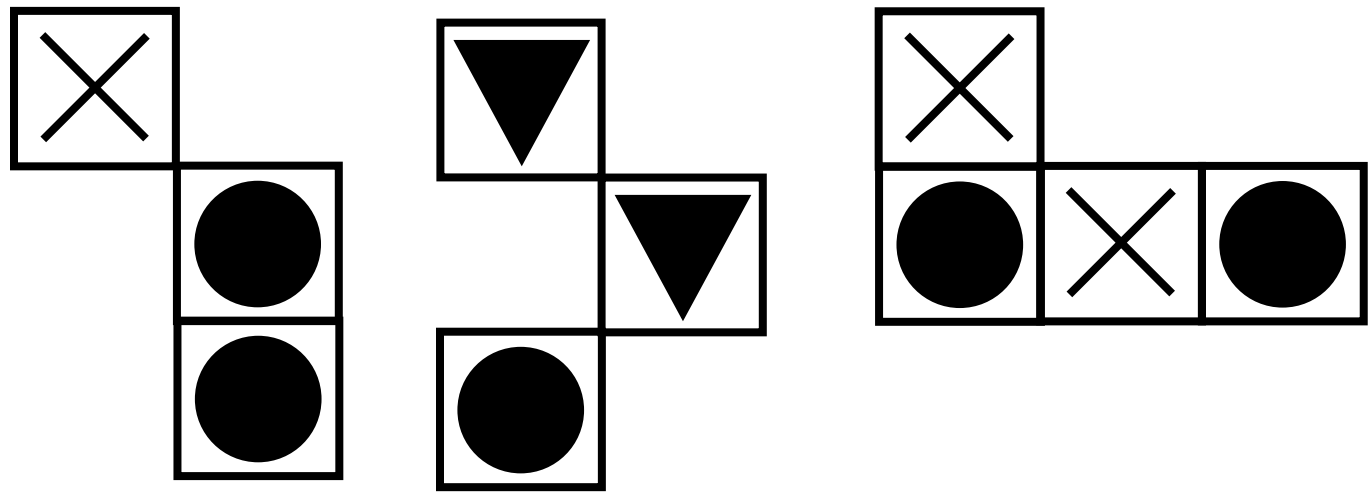
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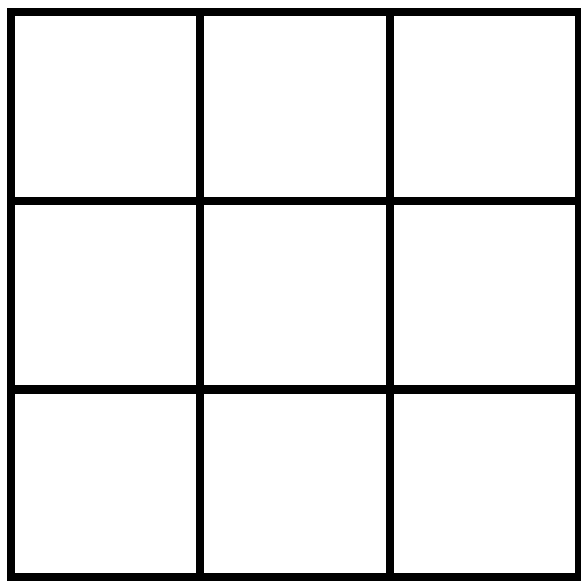
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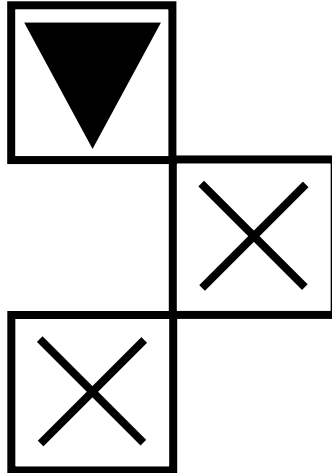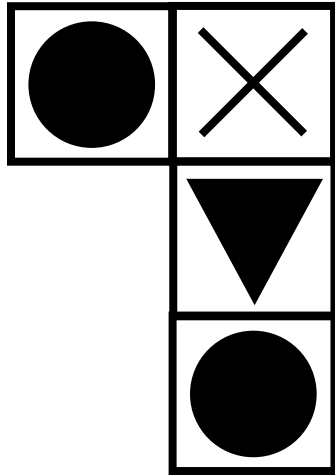
Grid

Pattern 22

Clues
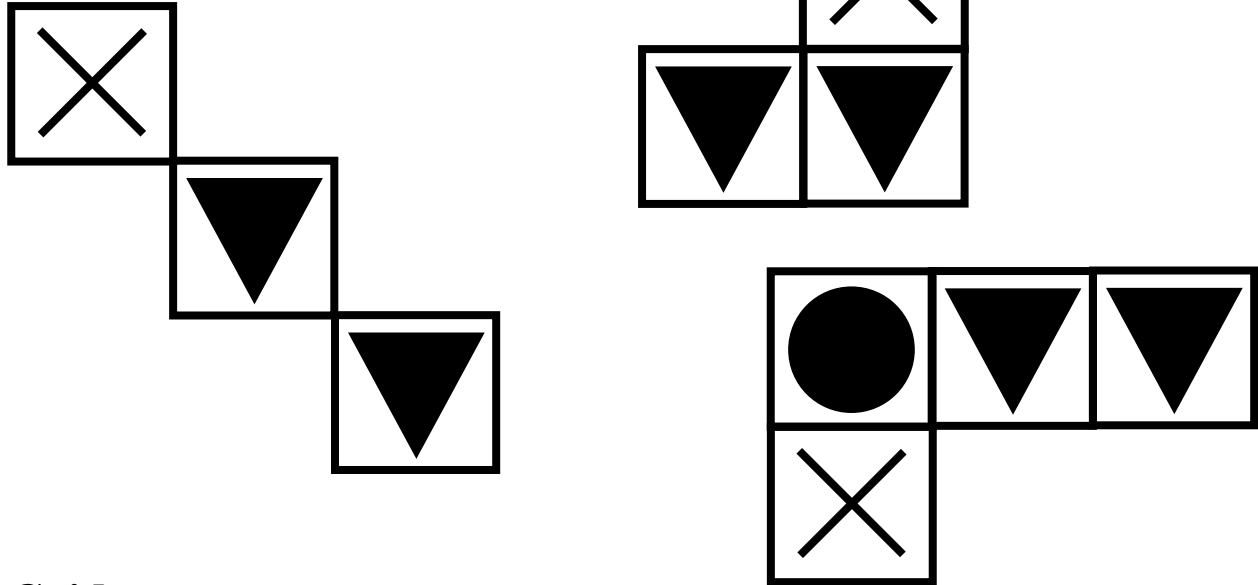
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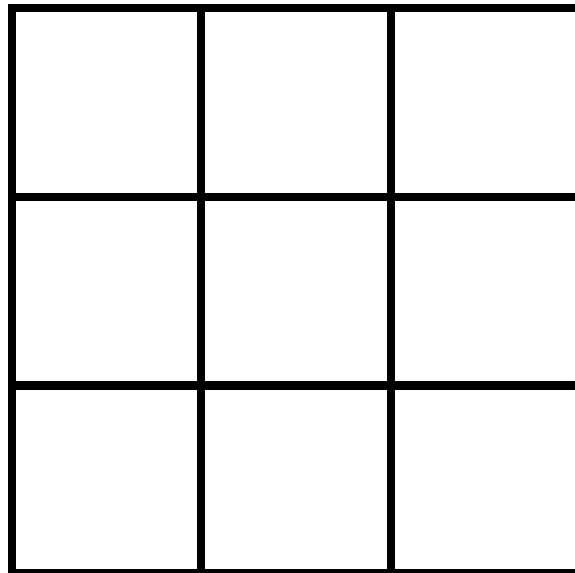
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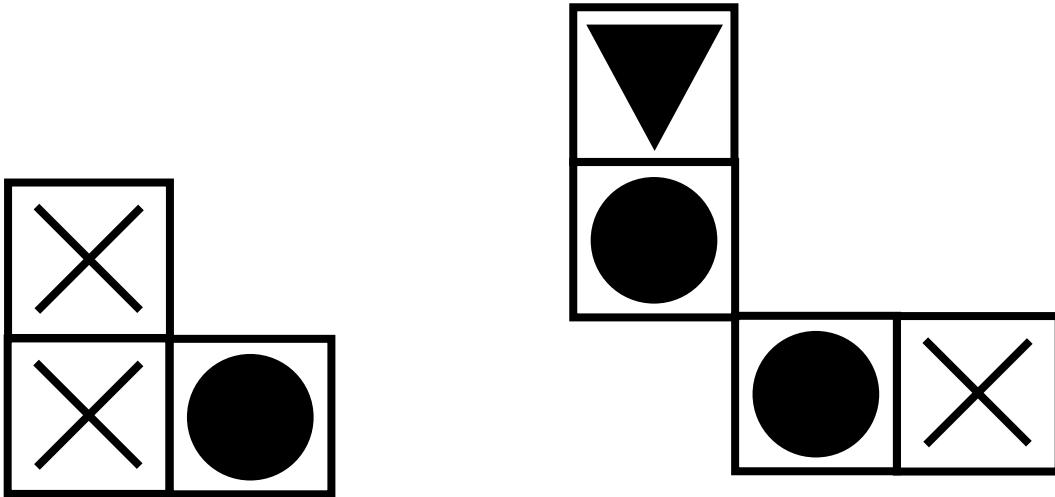
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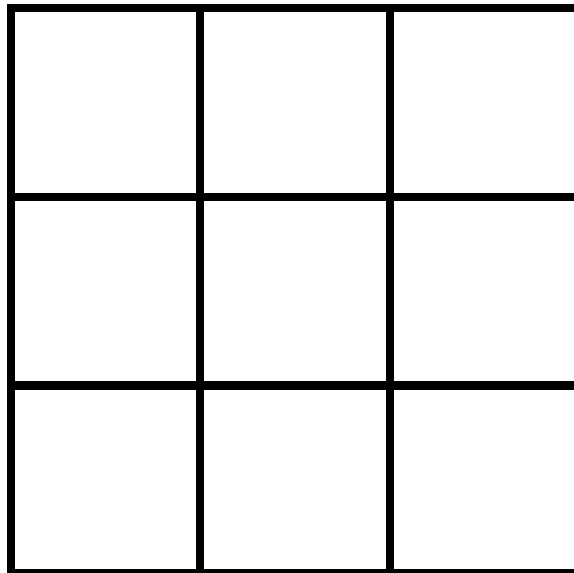
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Clues
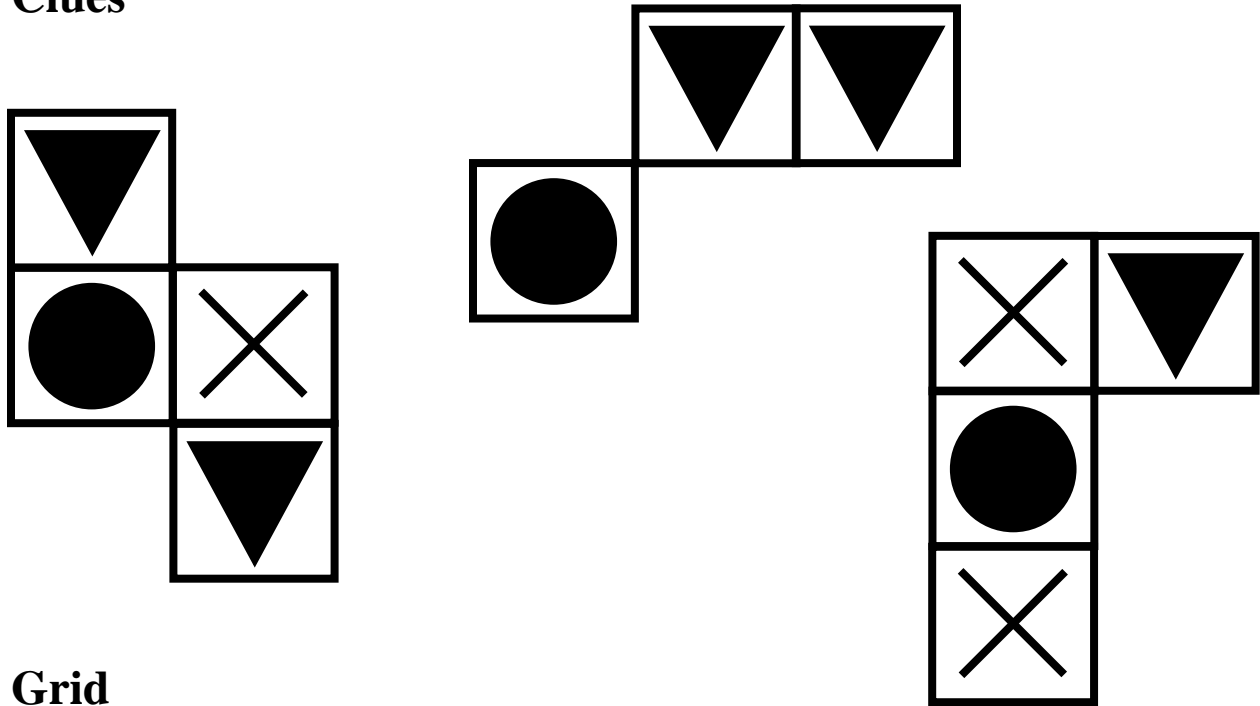
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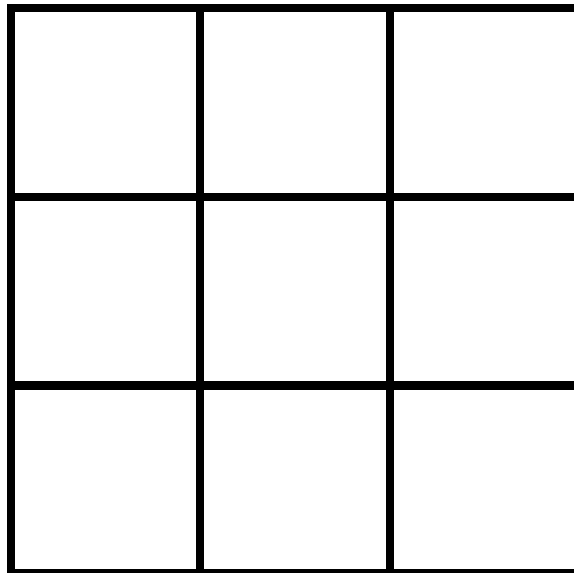
Pattern 25

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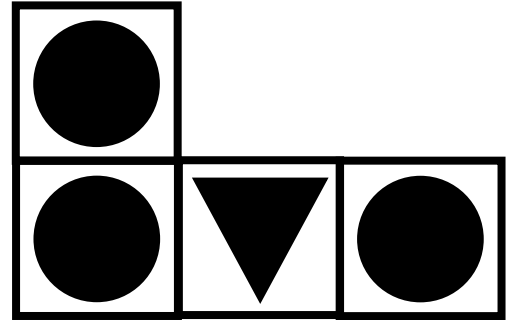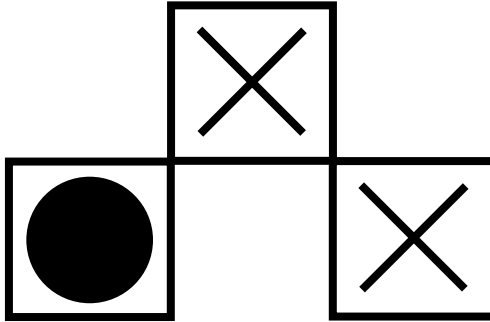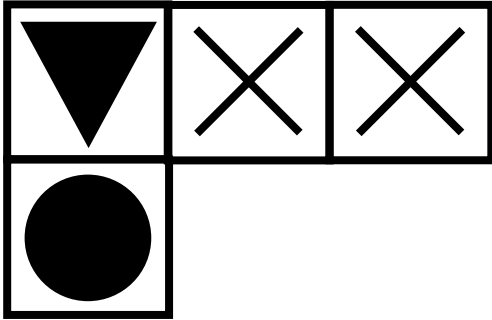
Grid
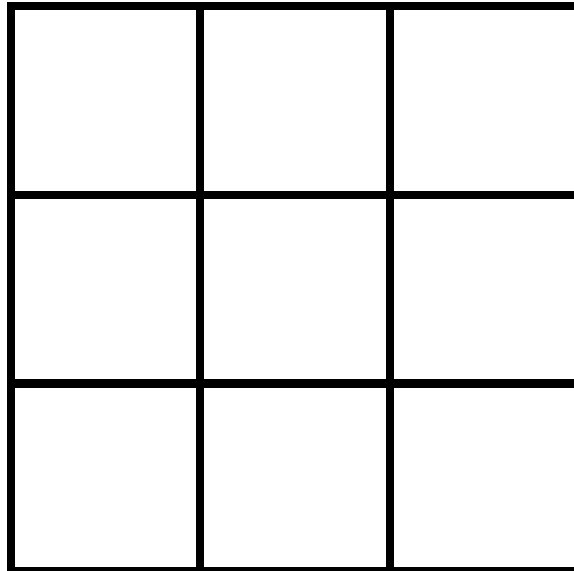
Pattern 26

Clues
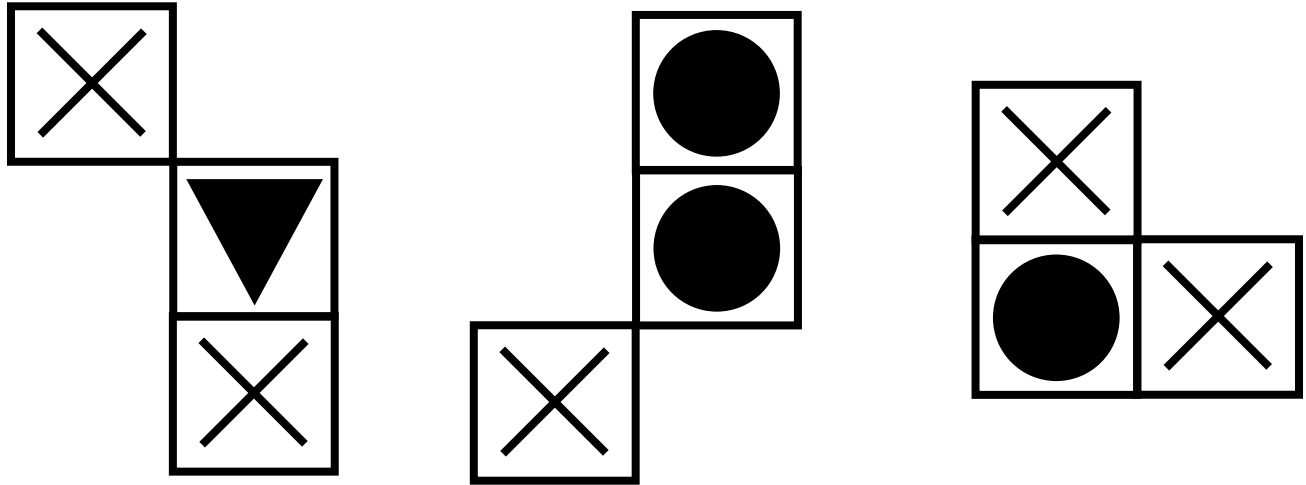
Grid

Pattern 27

Clues
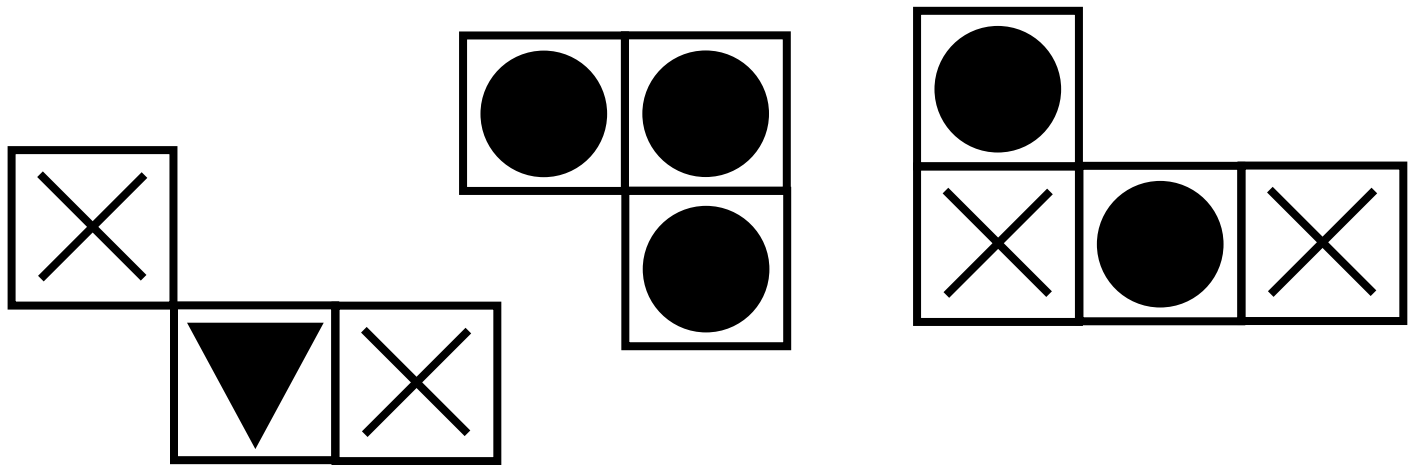
Grid
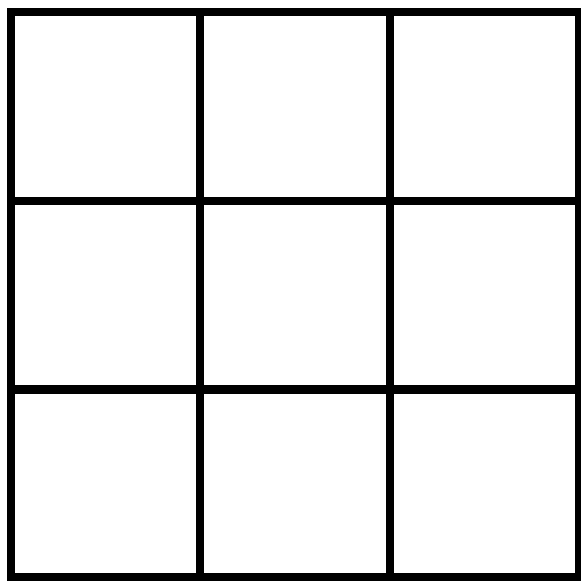
Pattern 28

Clues
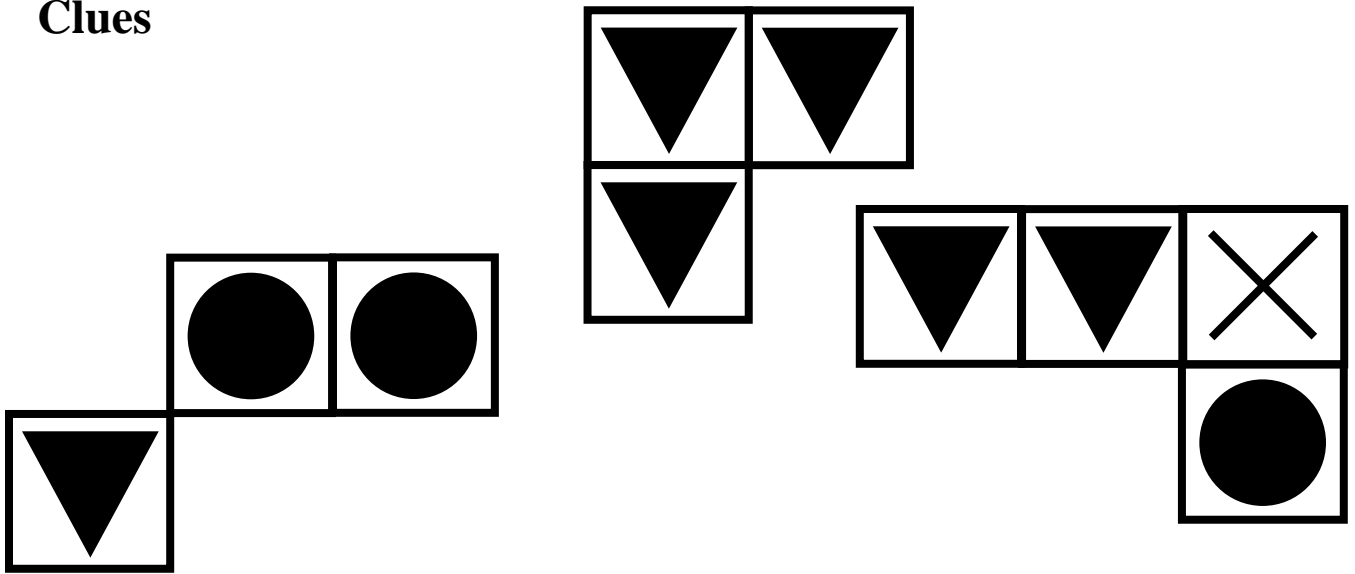
Grid

Pattern 29

Clues
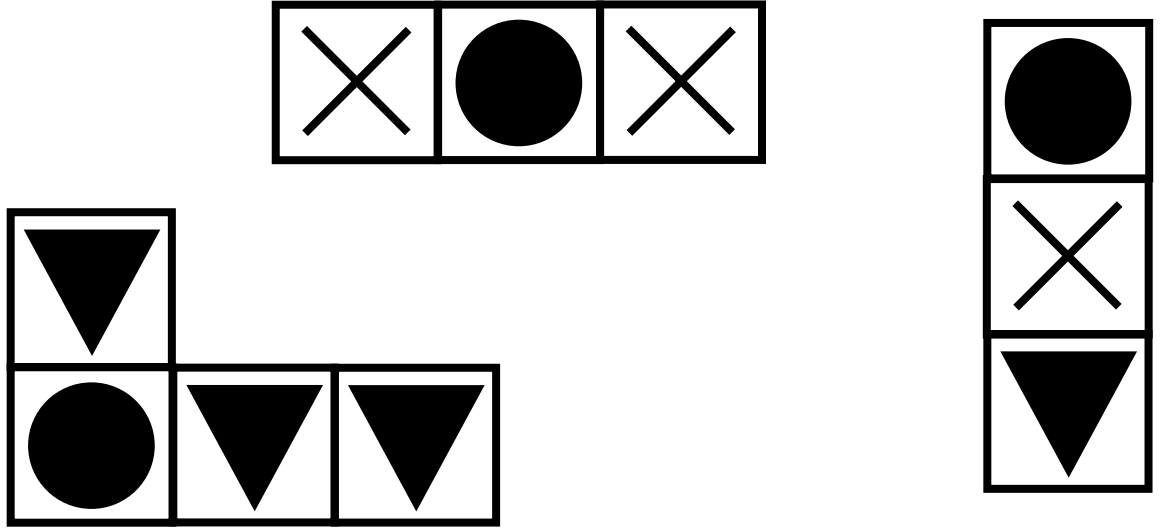
Grid
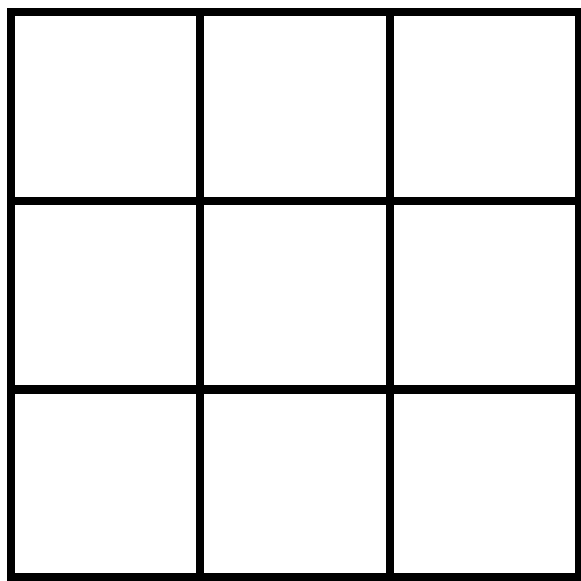
Pattern 30

Clues
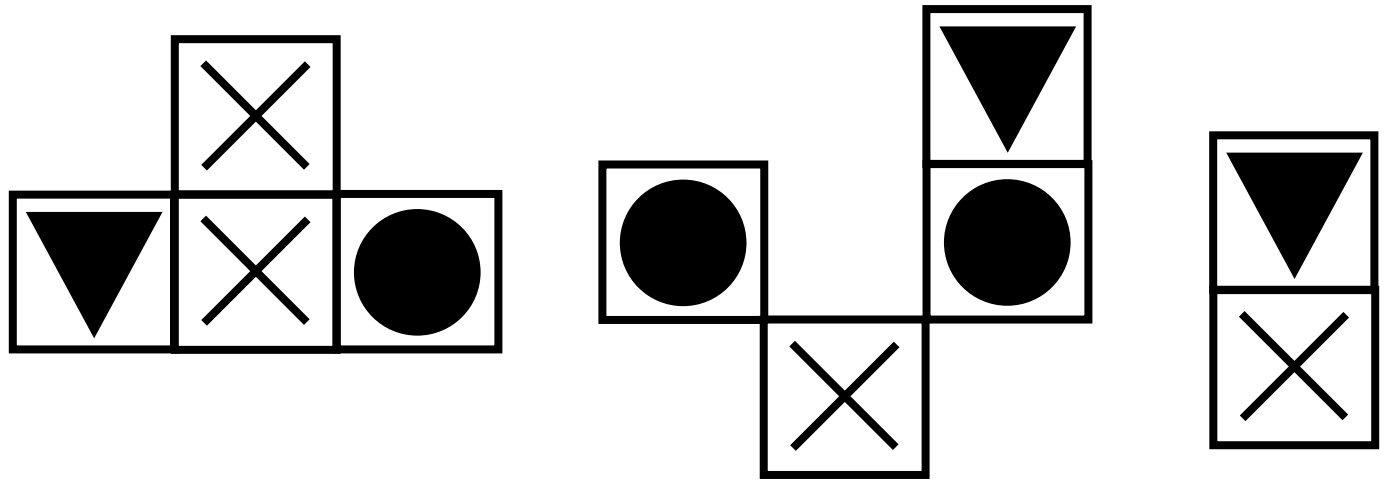
Grid
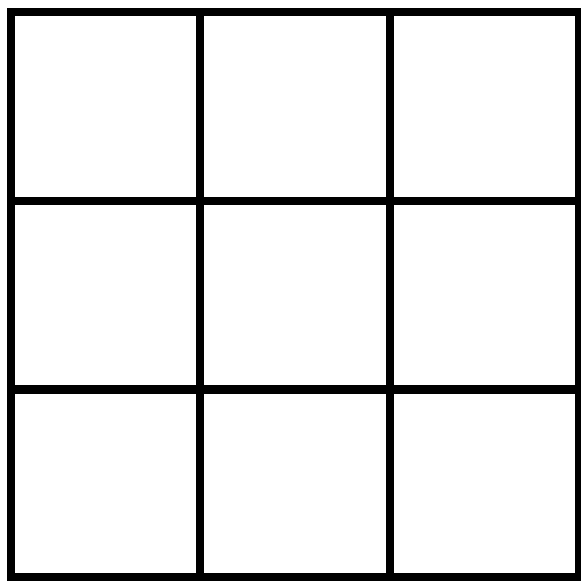
Pattern 31

Clues
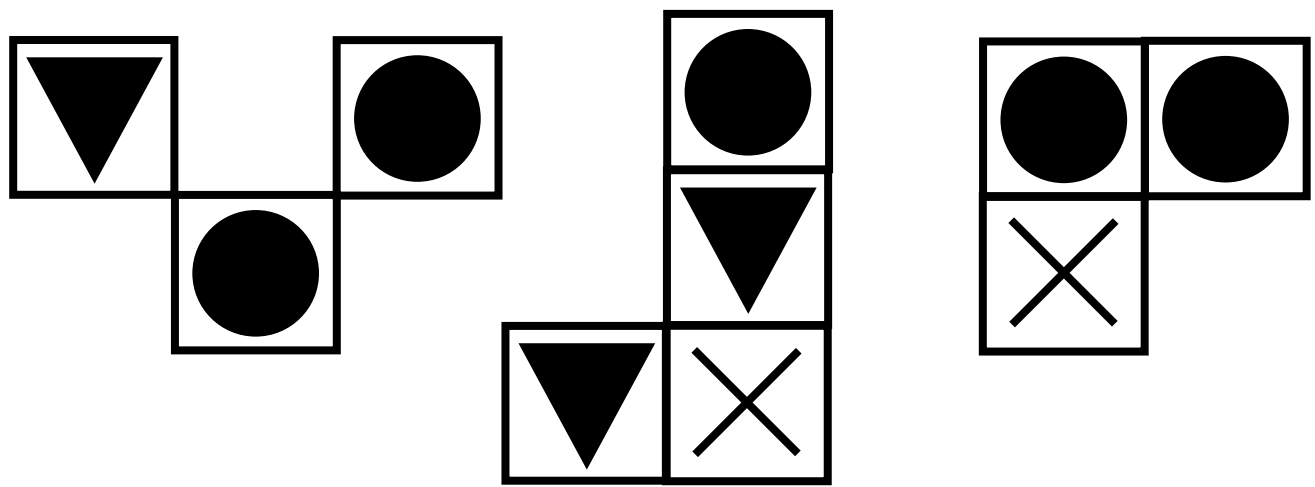
Grid
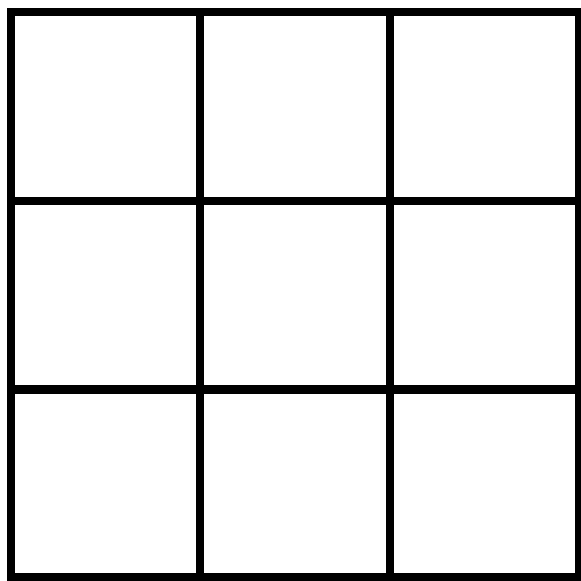
Pattern 32

Clues
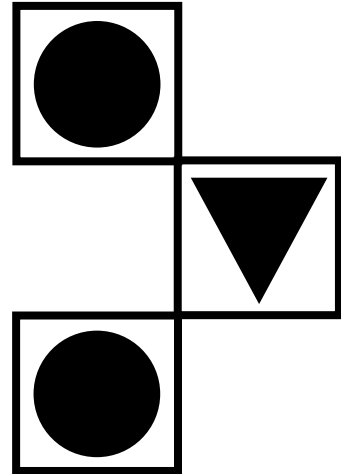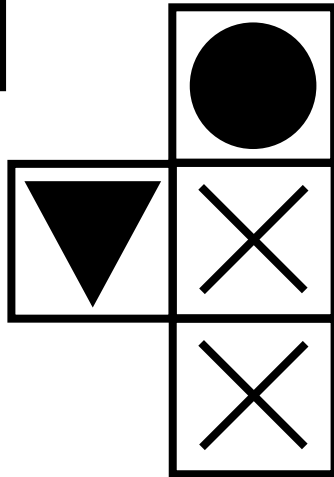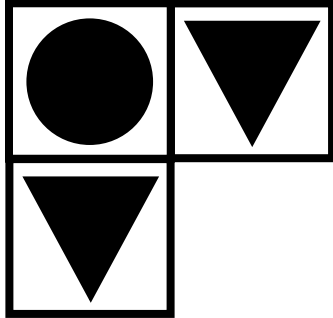
Grid
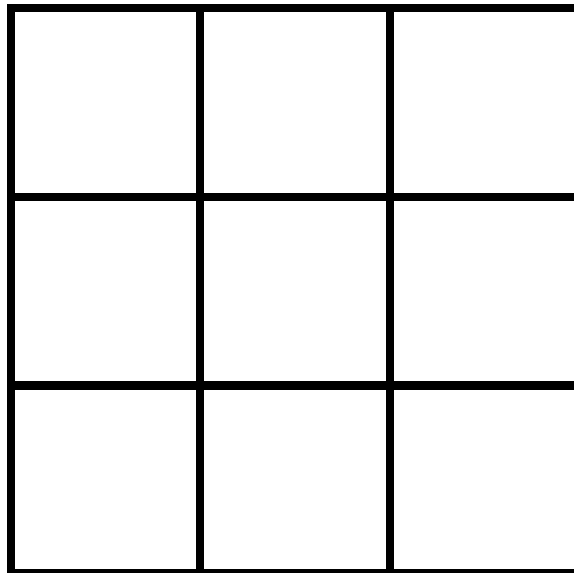
Pattern 33

Clues
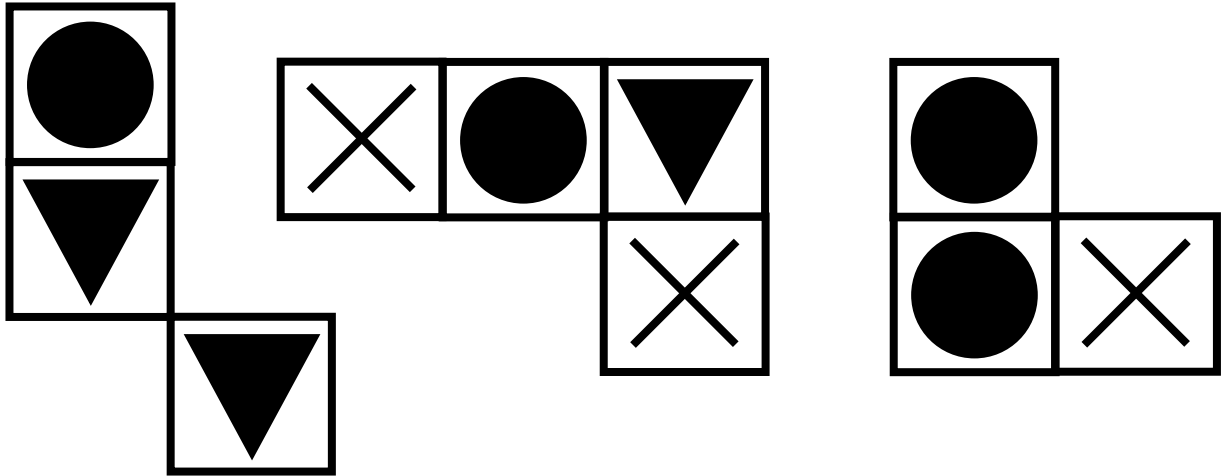
Grid
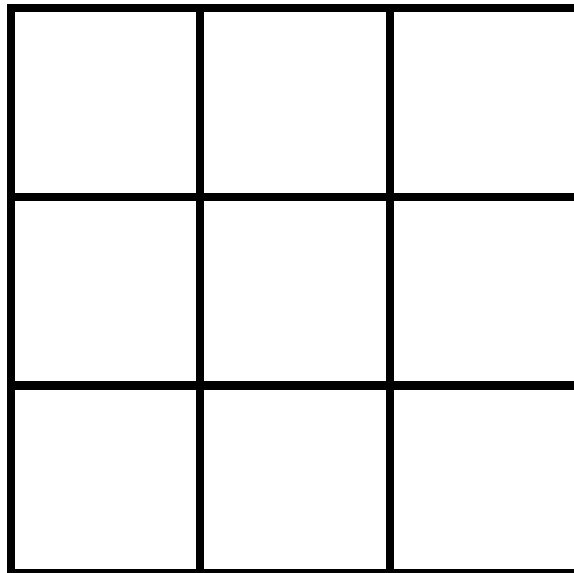
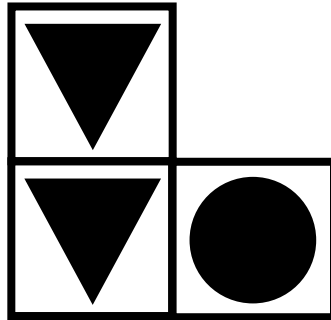# Pattern 34
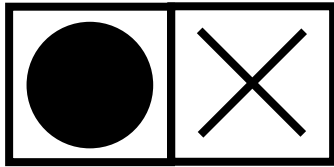
Clues
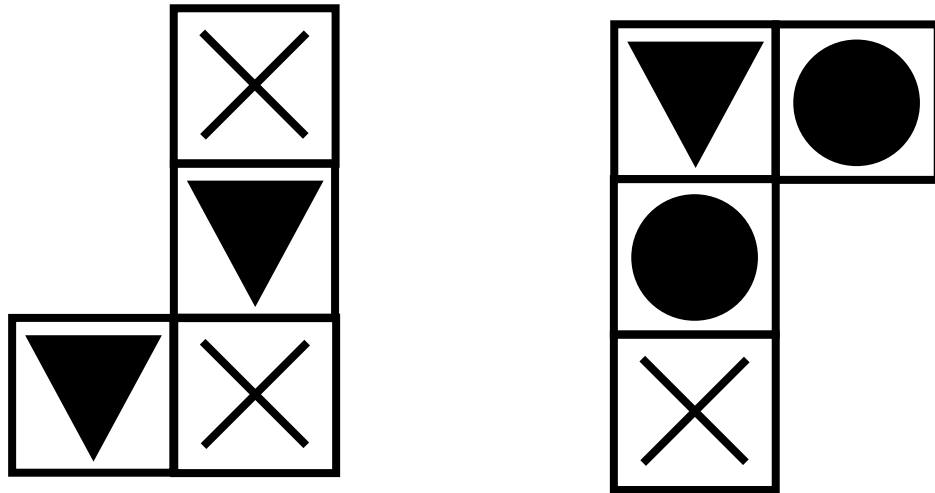
Grid
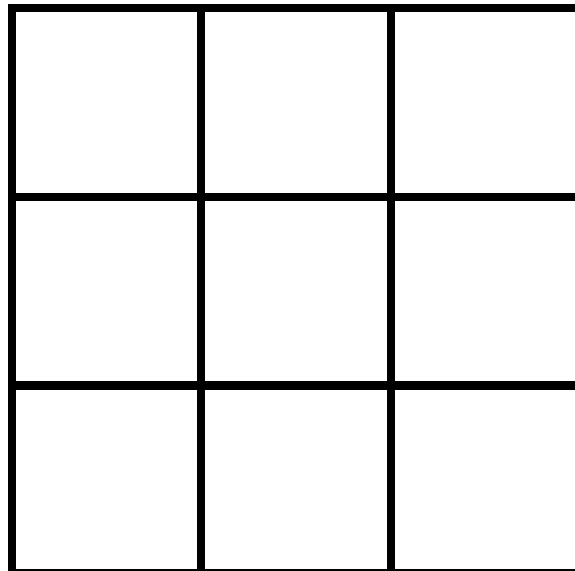
Set 3: Super Stumper Puzzles
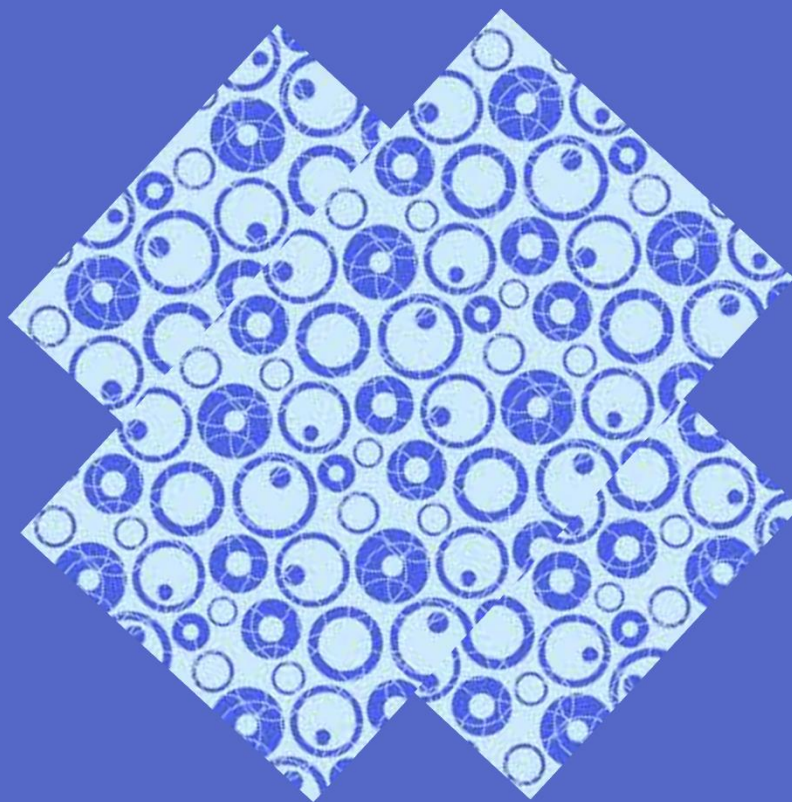
Pattern 35

Clues
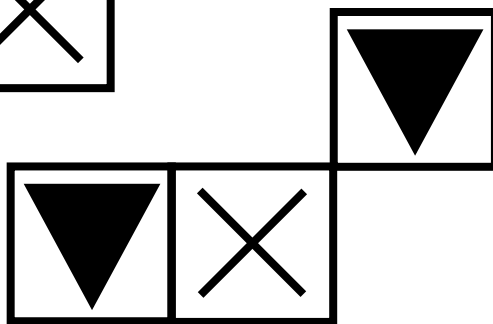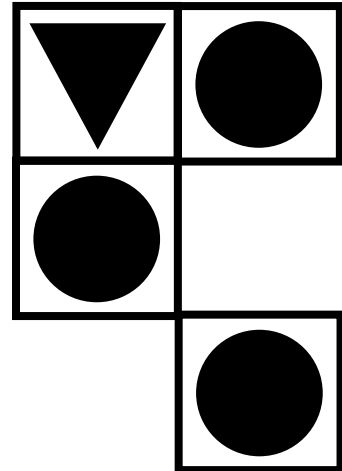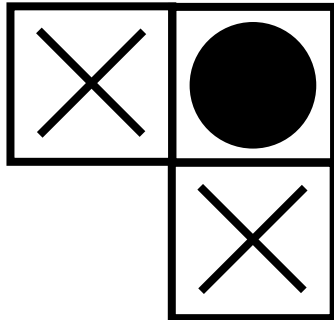
Grid

Pattern 36

Clues
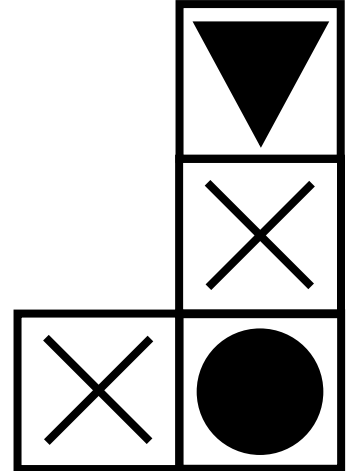
Grid
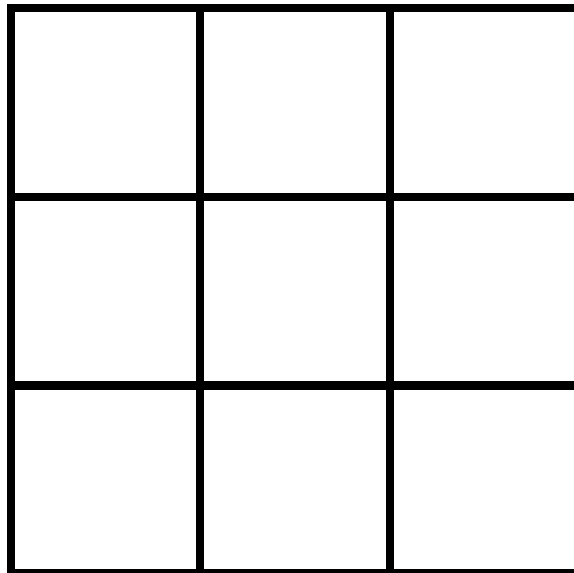
Pattern 37

Clues
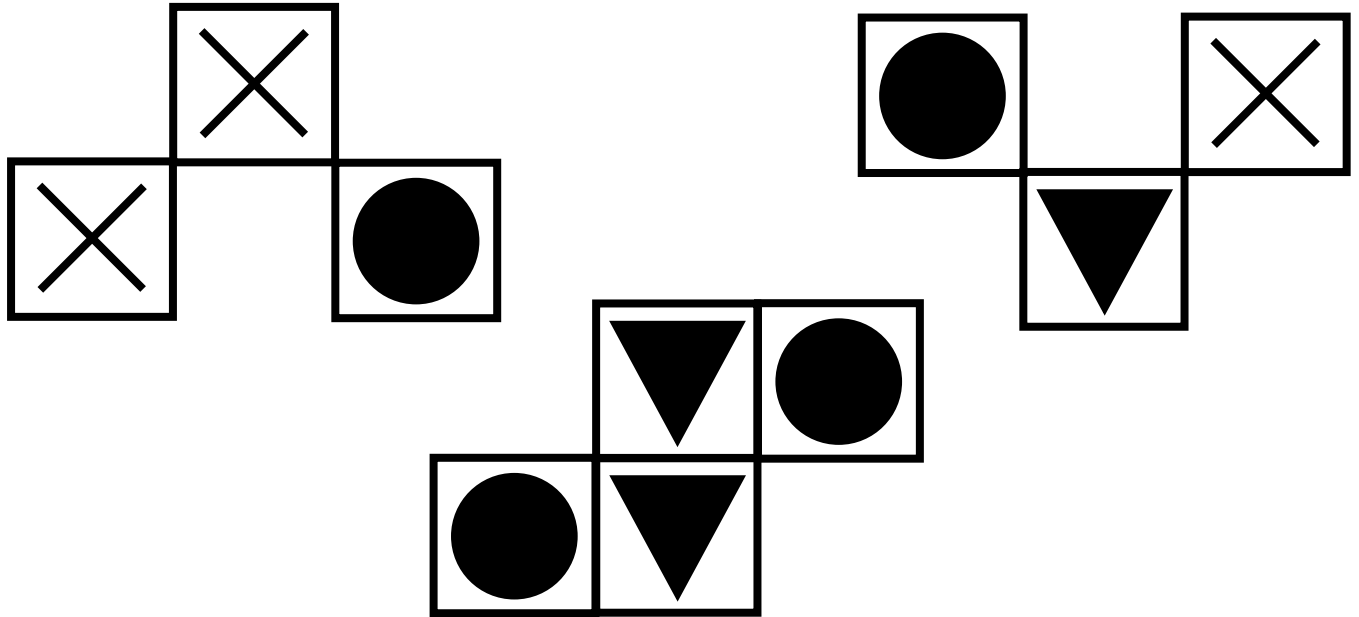
Grid
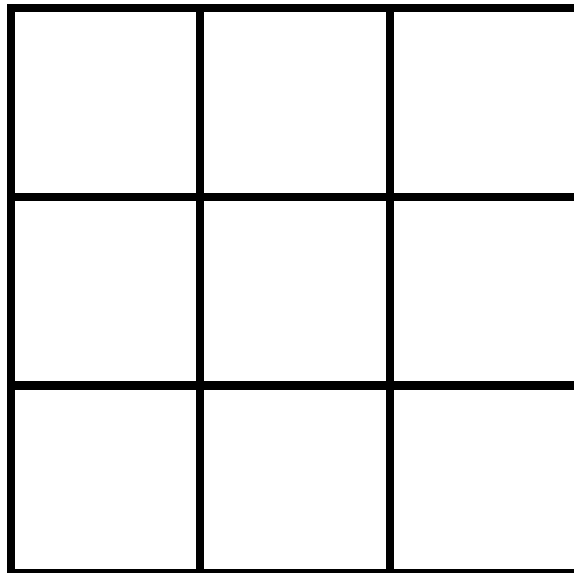
Pattern 38

Clues
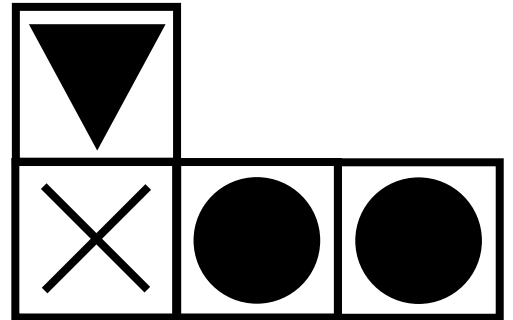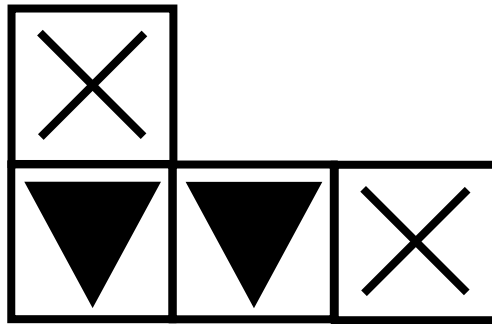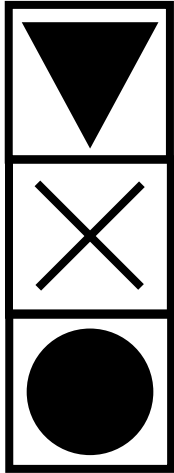
Grid

Pattern 39

Clues
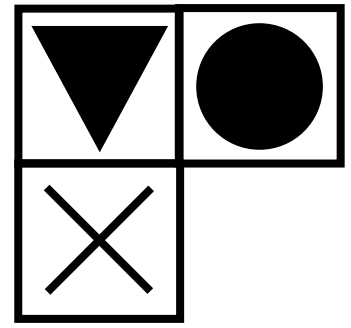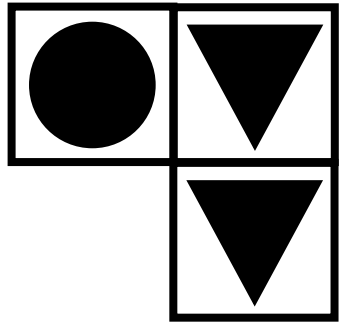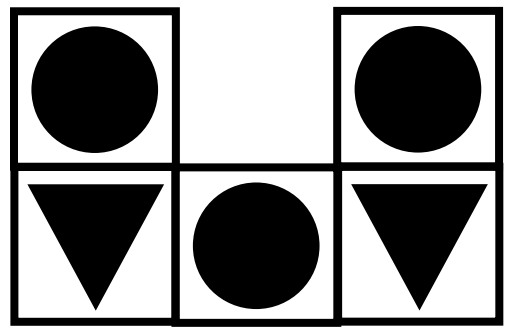
Grid
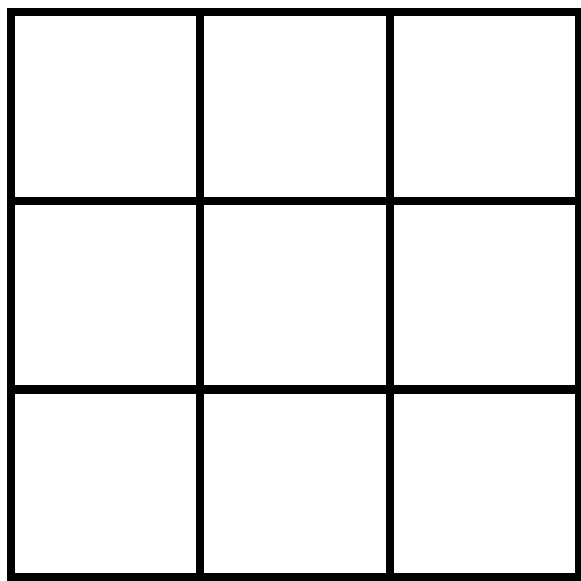
Pattern 40

Clues
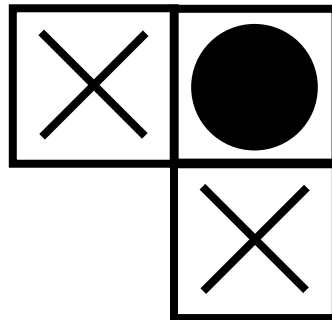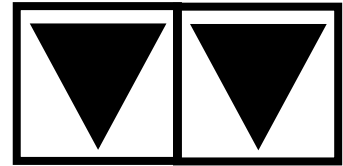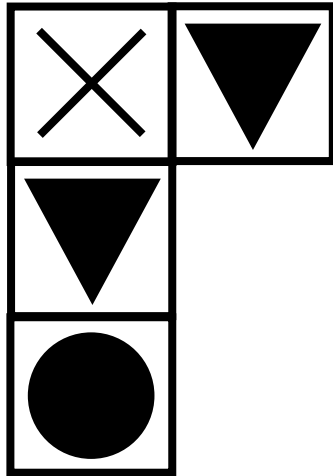
Grid
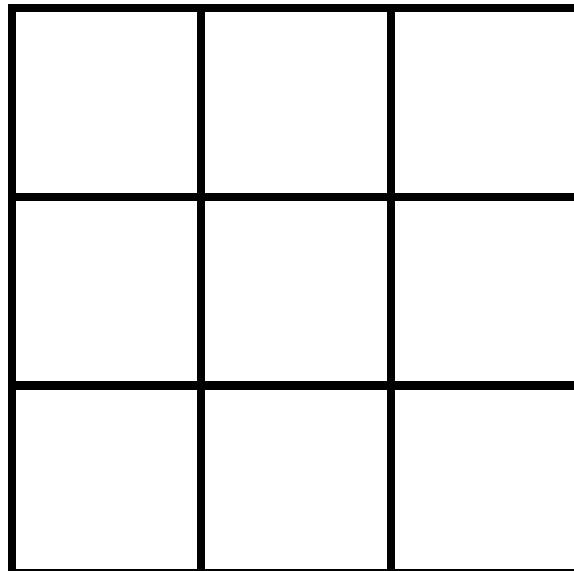
Pattern 41

Clues
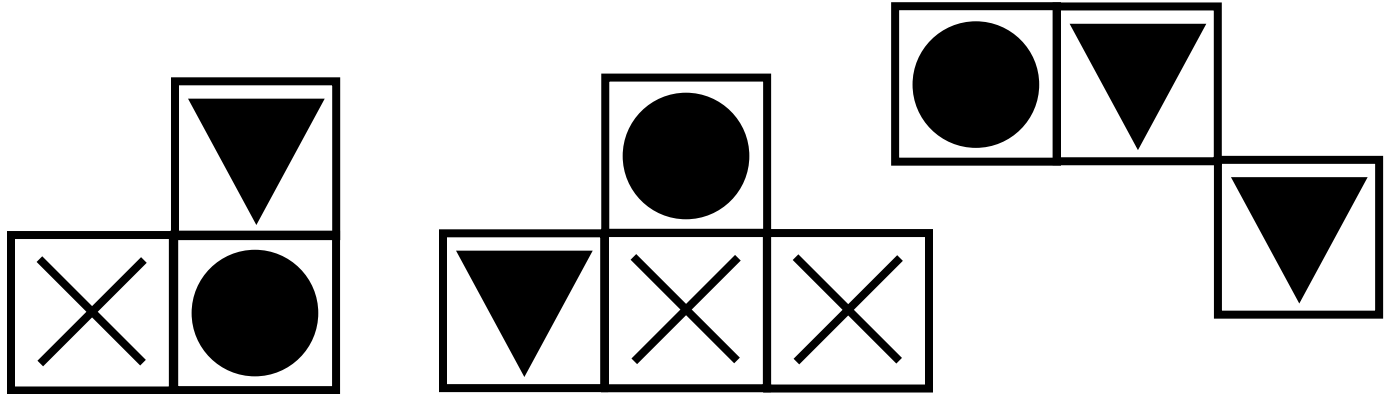
Grid

Pattern 42

Clues
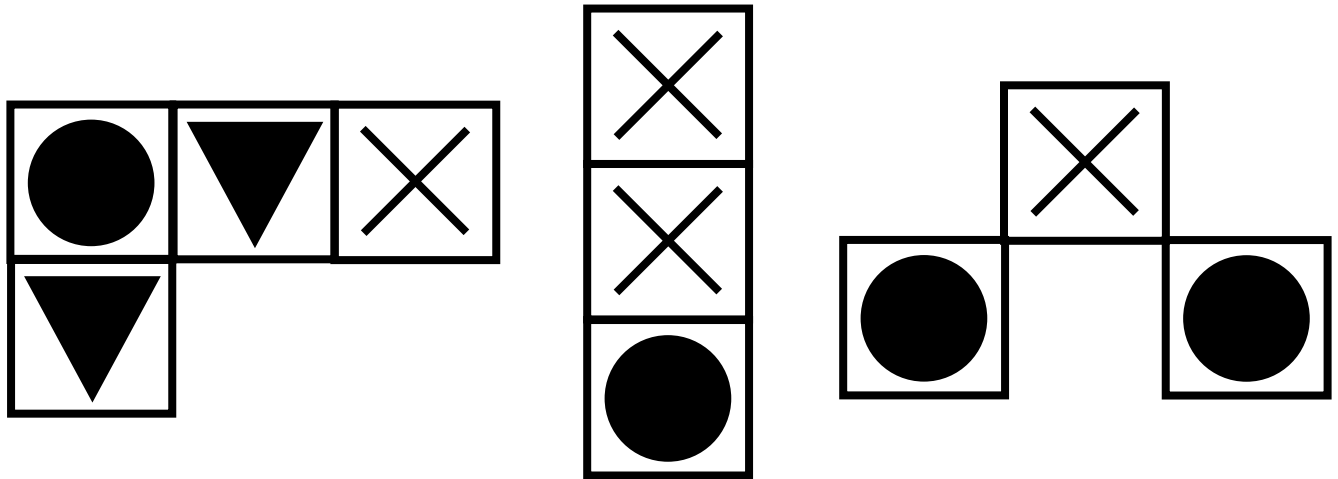
Grid
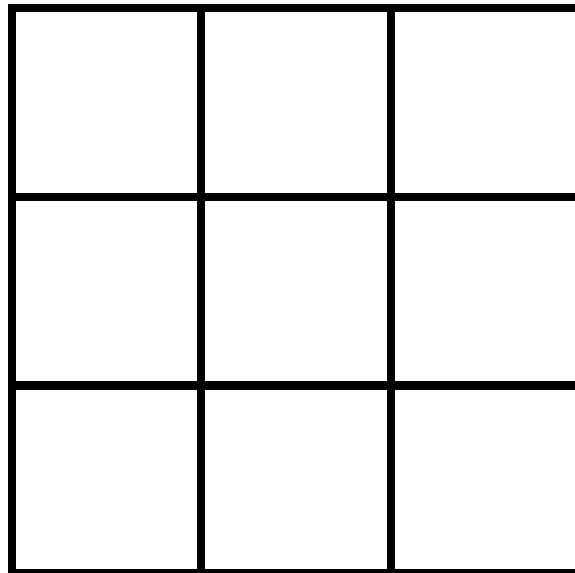
Pattern 43

Clues
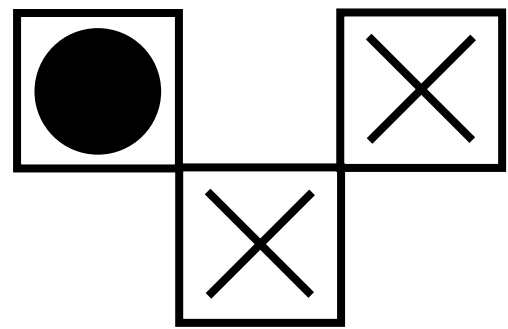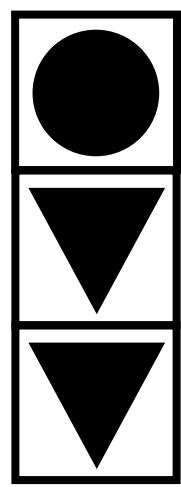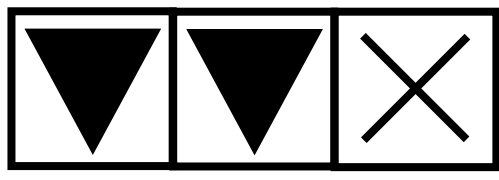
Grid
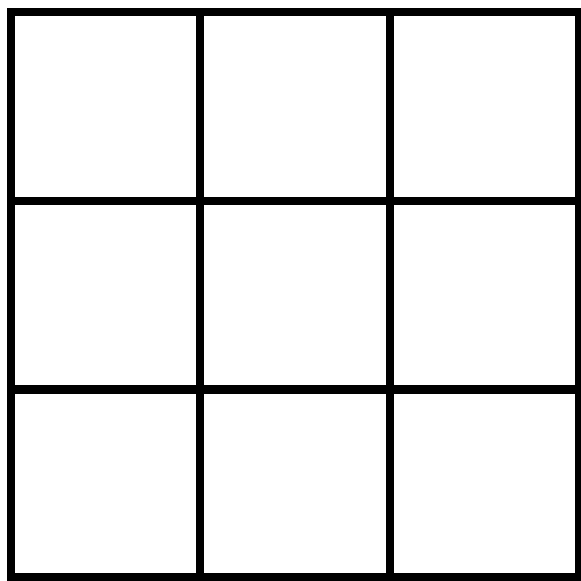
Pattern 44

Clues
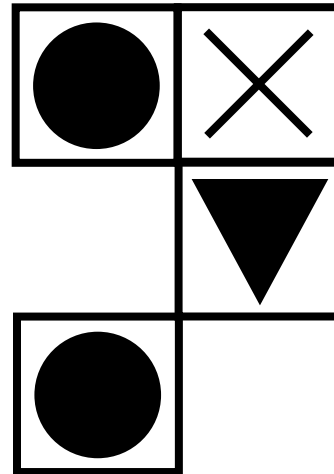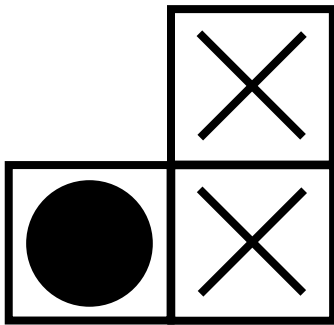
Grid
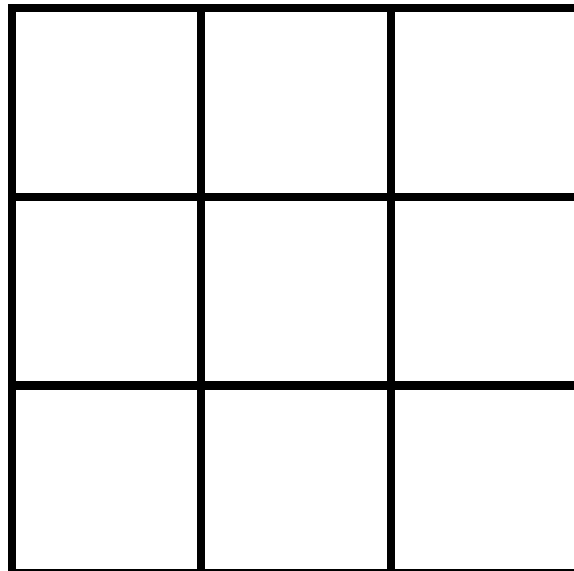
Pattern 45

Clues
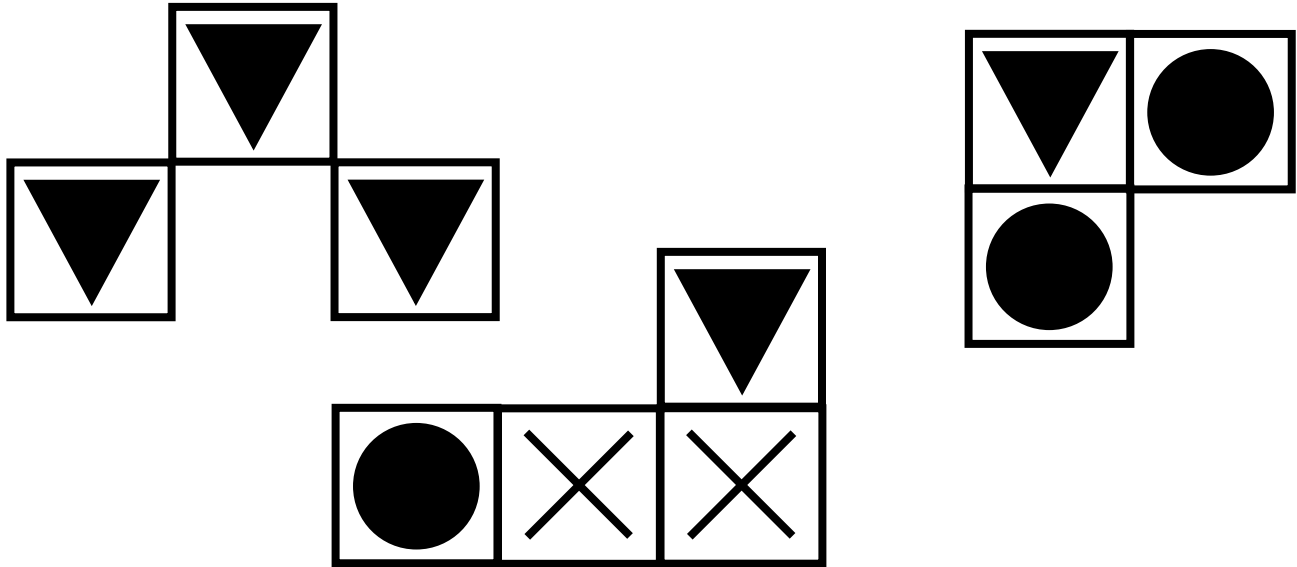
Grid
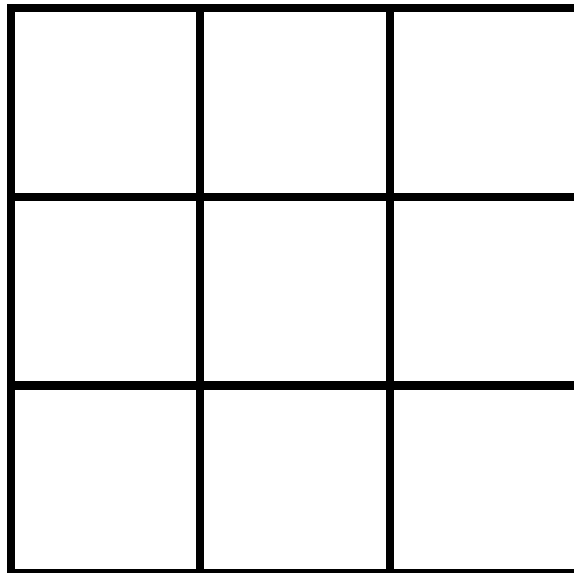
Pattern 46

Clues
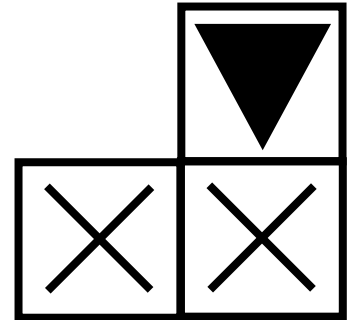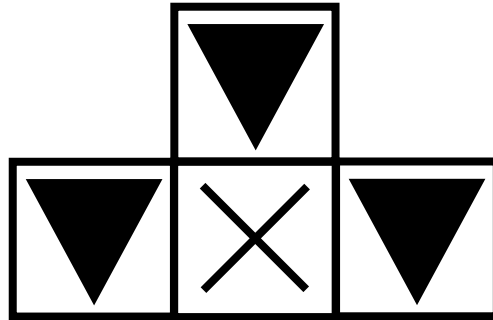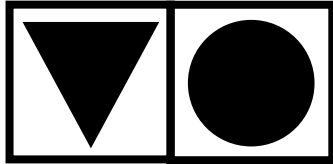
Grid
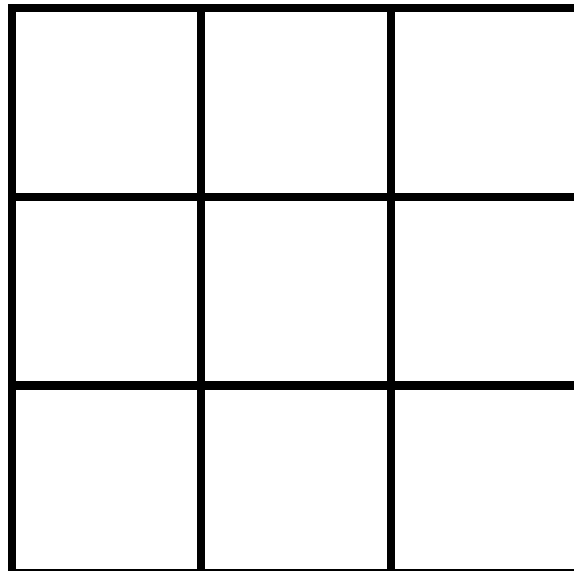
Pattern 47

Clues
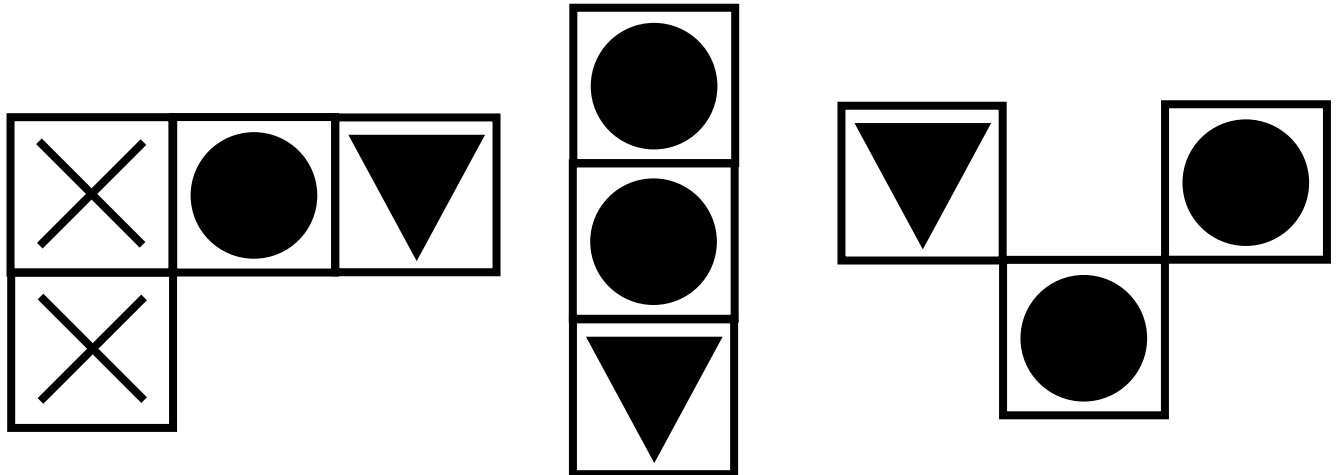
Grid
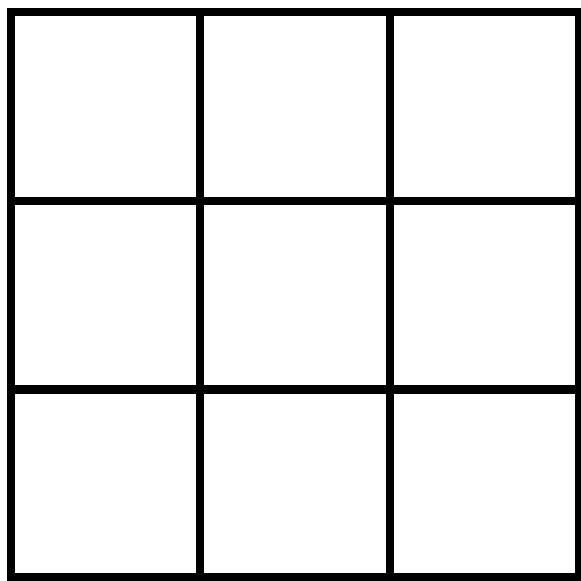
Pattern 48

Clues
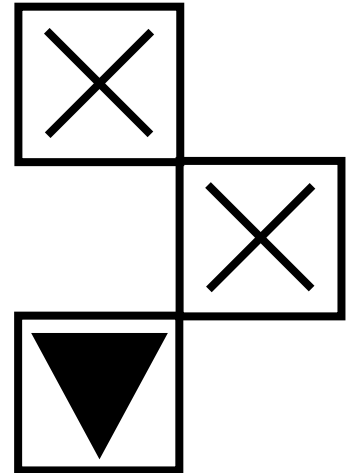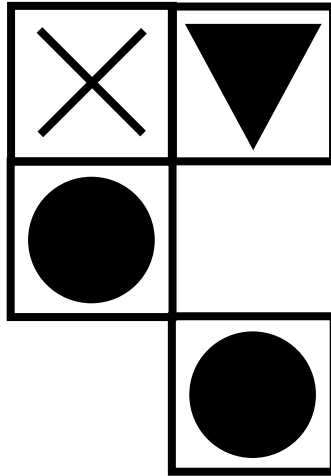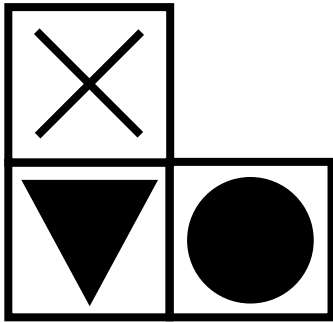
Grid
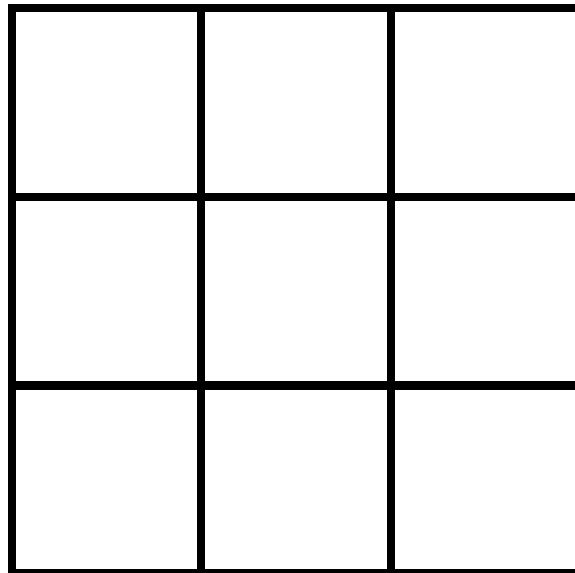
Pattern 49

Clues
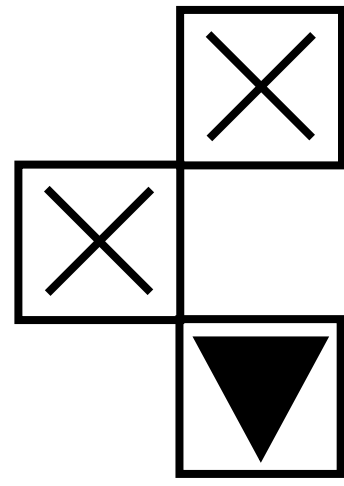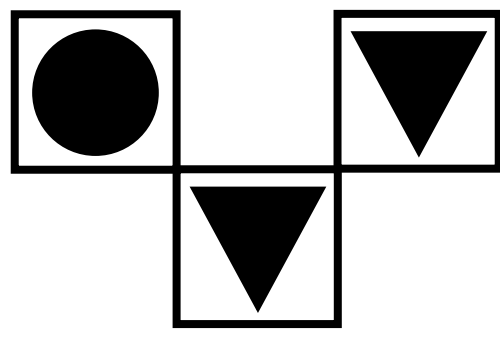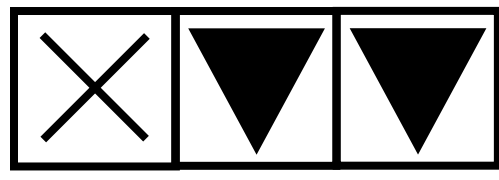
Grid
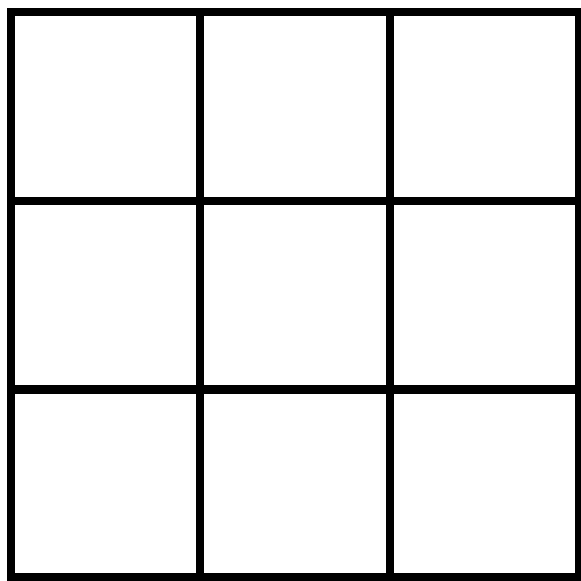
Pattern 50

Clues
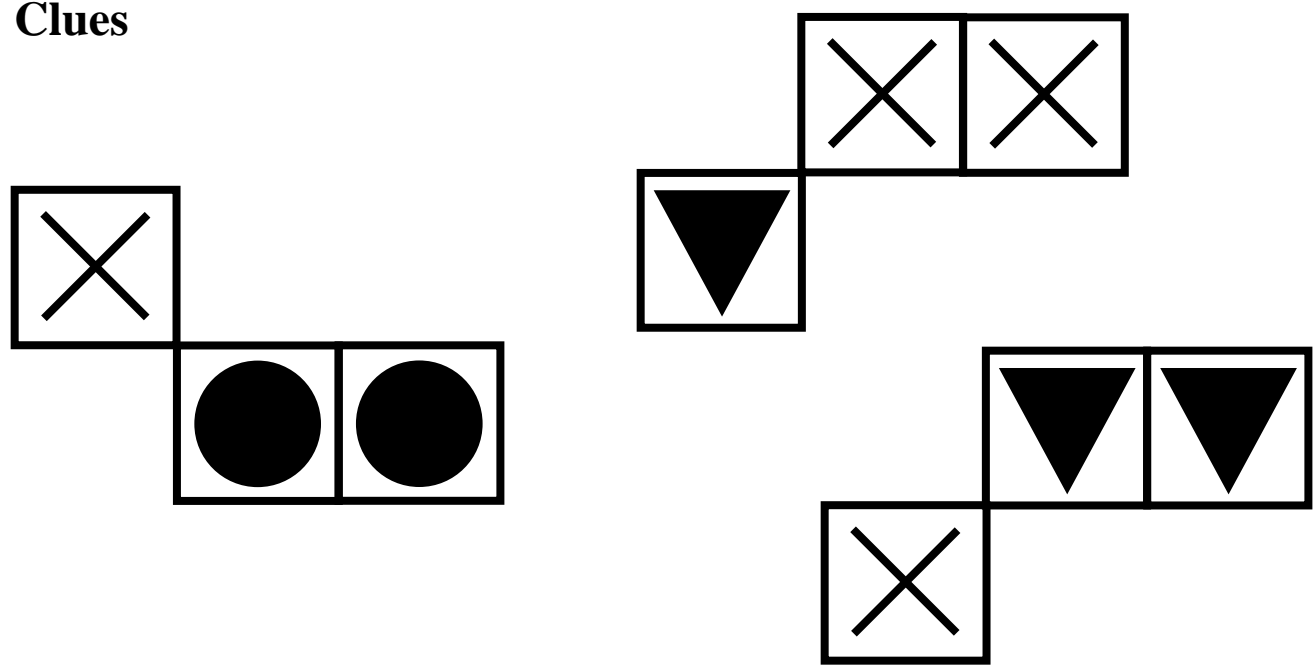
Grid
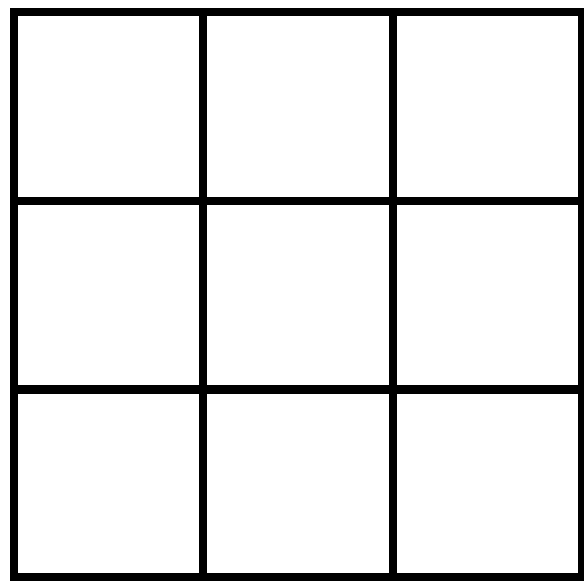
Pattern Grid un-Lock Solutions
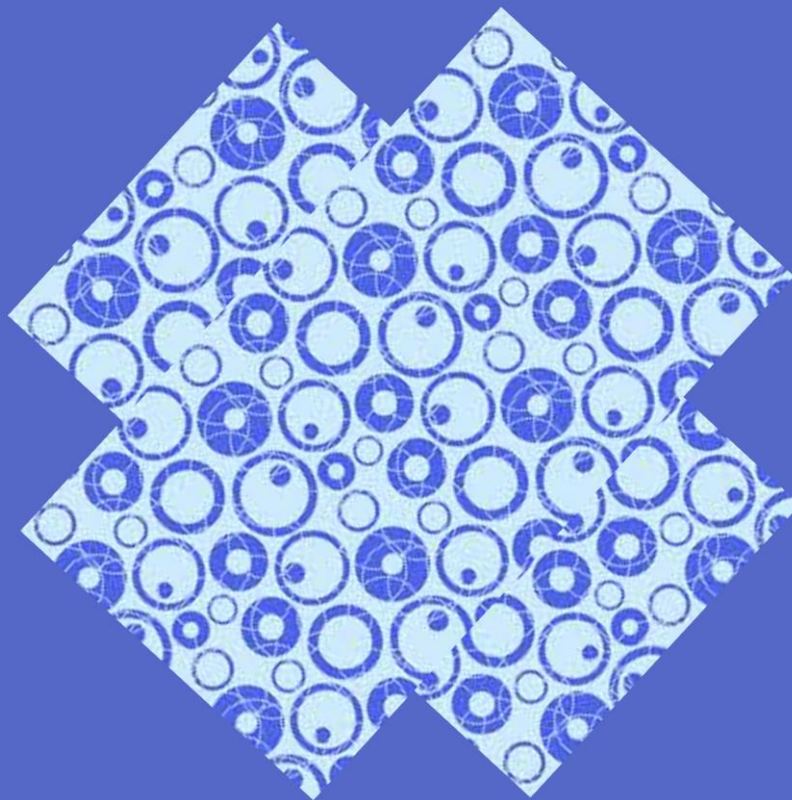
Pattern Grid-unLock Solutions

Pattern 1

●	●	✕
▼	●	✕
▼	▼	✕
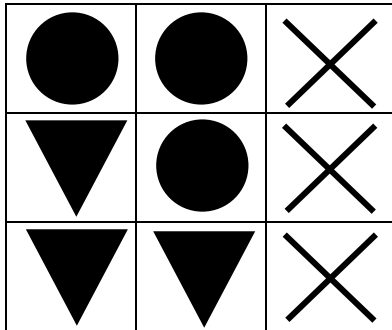
Pattern 2

▼	●	✕
✕	●	▼
●	✕	▼
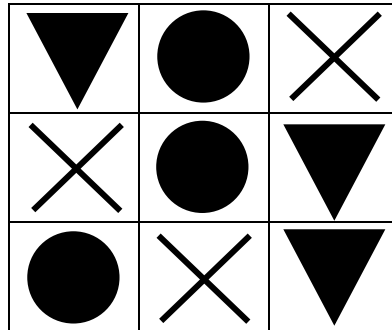
Pattern 3

✕	✕	▼
●	▼	●
▼	✕	●
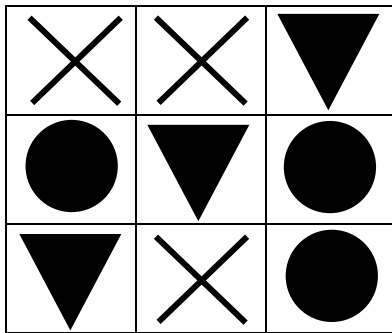
Pattern 4

●	✕	✕
▼	●	▼
✕	▼	●
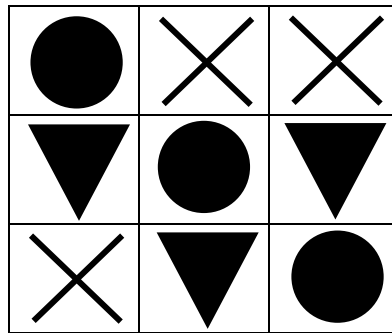
Pattern 5

▼	●	✕
●	▼	✕
✕	▼	●
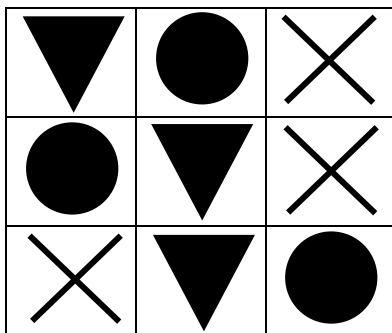
Pattern 6

✕	▼	✕
▼	✕	▼
●	●	●
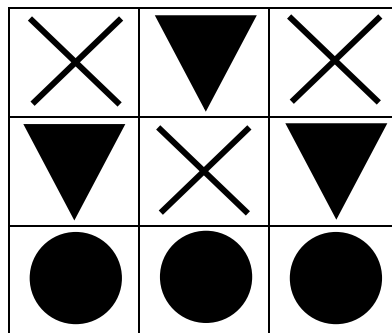
Pattern 7
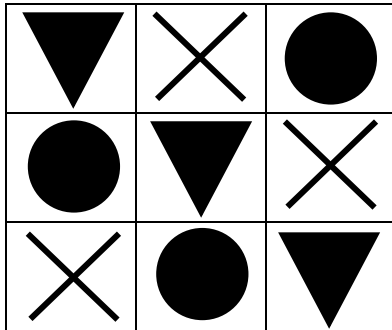
Pattern 8
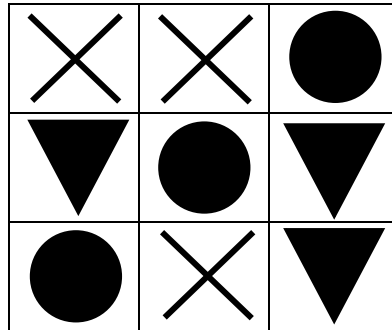
Pattern 9
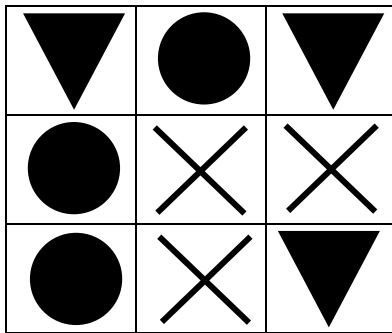
Pattern 10
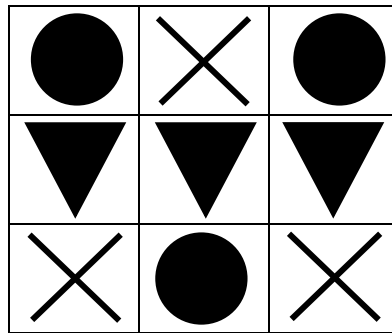
Pattern 11
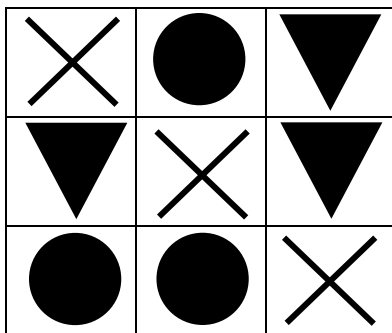
Pattern 12
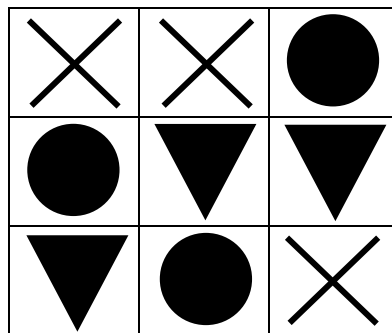
Pattern 13
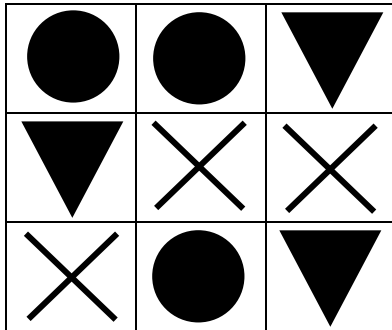
Pattern 14
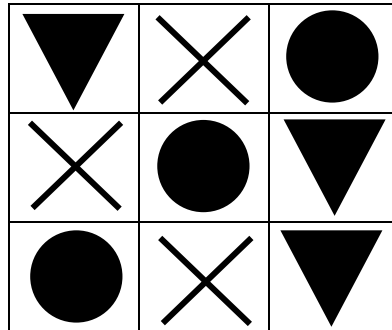
Pattern 15
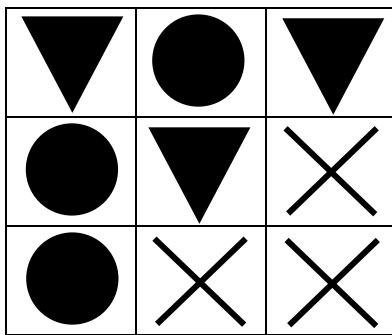
Pattern 16
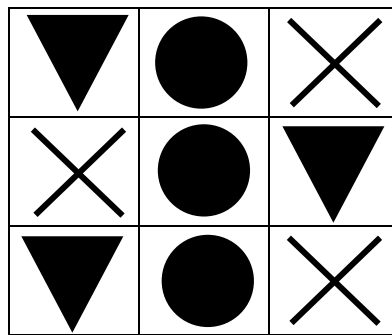
Pattern 17
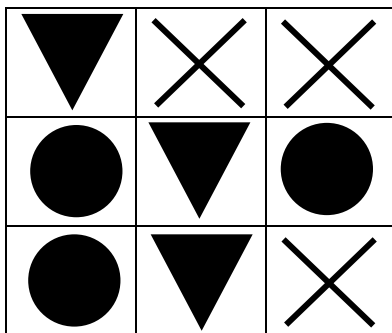
Pattern 18
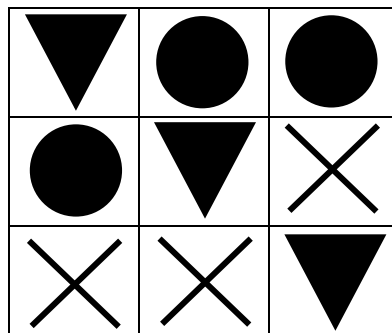
Pattern 19

✕	▼	✕
✕	▼	●
●	●	▼
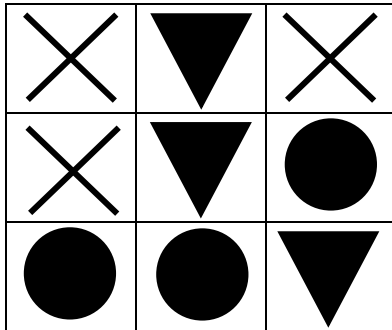
Pattern 20

▼	✕	▼
✕	▼	●
●	✕	●
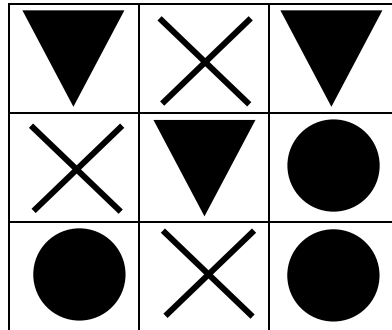
Pattern 21

▼	●	✕
●	✕	▼
✕	▼	●
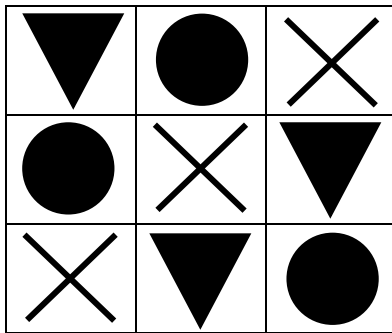
Pattern 22

✕	●	✕
●	▼	▼
✕	●	▼
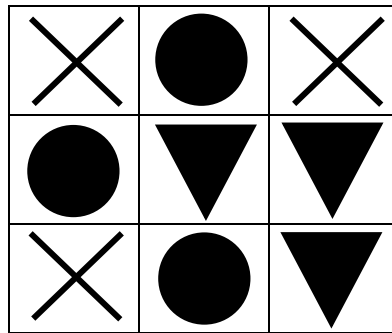
Pattern 23

▼	✕	▼
●	✕	●
▼	●	✕
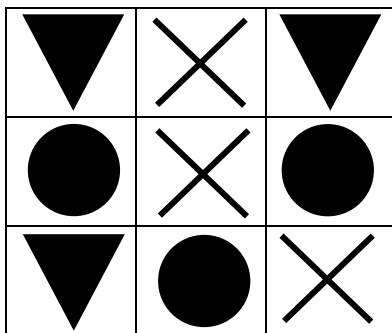
Pattern 24

✕	▼	▼
●	●	✕
✕	●	▼
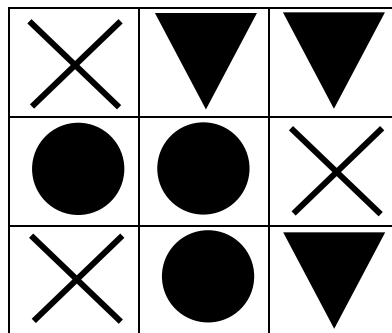
Pattern 25

▼	✕	✕
●	▼	✕
●	▼	●
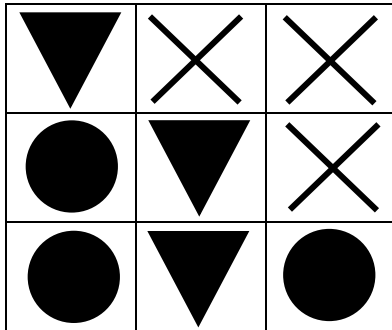
Pattern 26

✕	▼	●
✕	▼	●
●	✕	▼
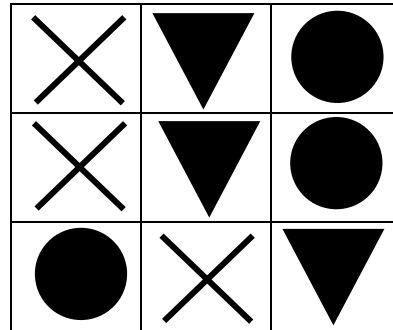
Pattern 27

●	●	▼
✕	●	✕
▼	▼	✕
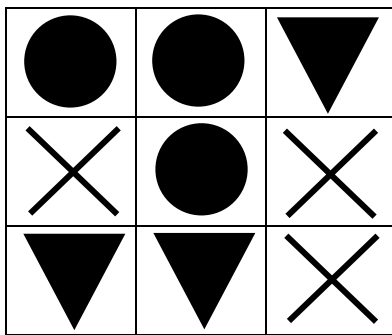
Pattern 28

✕	●	●
▼	▼	✕
▼	✕	●
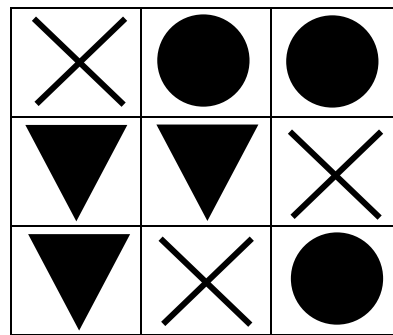
Pattern 29

✕	●	✕
▼	✕	●
●	▼	▼
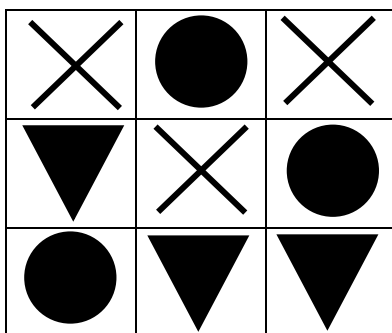
Pattern 30

✕	▼	▼
●	✕	●
▼	✕	●
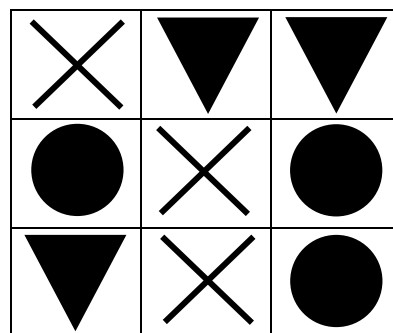
Pattern 31

▼	✕	●
●	●	▼
✕	▼	✕
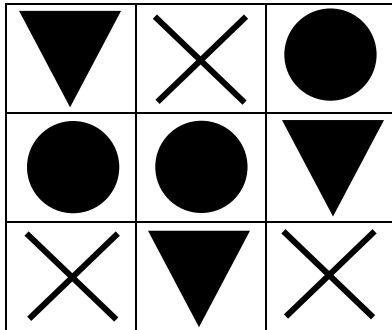
Pattern 32

●	▼	●
▼	▼	✕
●	✕	✕
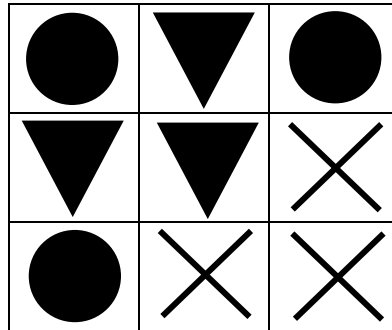
Pattern 33

✕	●	▼
●	▼	✕
●	✕	▼
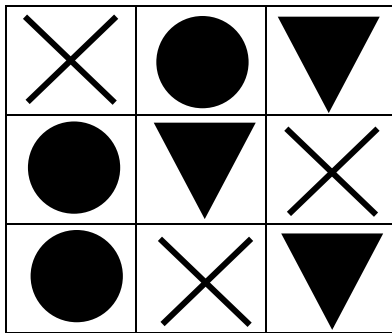
Pattern 34

▼	●	✕
●	●	▼
✕	▼	✕
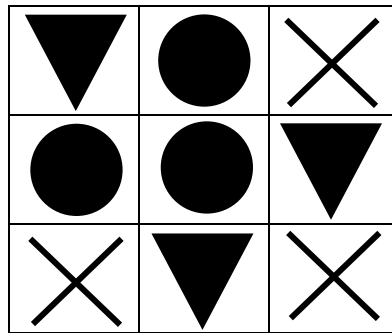
Pattern 35

✕	▼	●
✕	●	▼
▼	✕	●
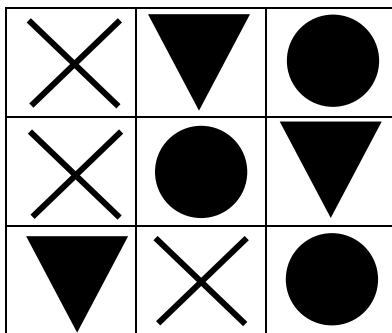
Pattern 36

▼	✕	▼
▼	●	✕
●	✕	●
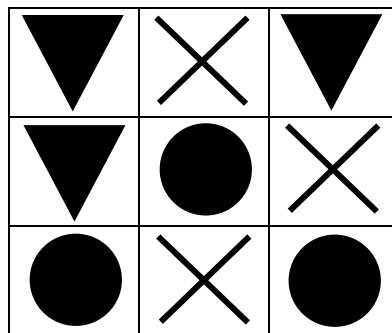
Pattern 37

●	✕	✕
✕	▼	●
●	▼	▼
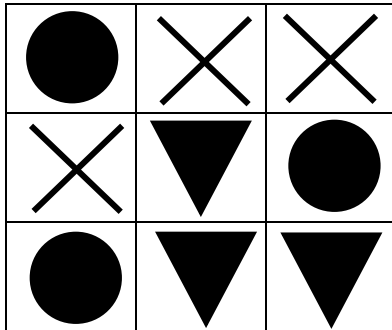
Pattern 38

✕	●	▼
▼	▼	✕
✕	●	●
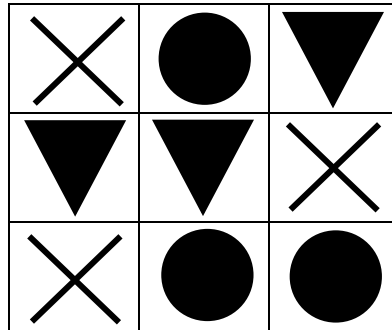
Pattern 39

●	✕	●
▼	●	▼
✕	✕	▼
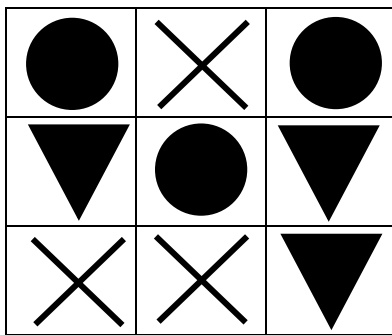
Pattern 40

✕	▼	▼
▼	✕	●
●	●	✕
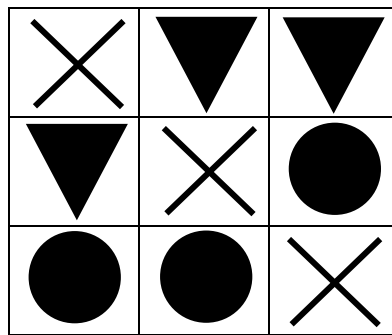
Pattern 41

●	▼	●
✕	●	▼
▼	✕	✕
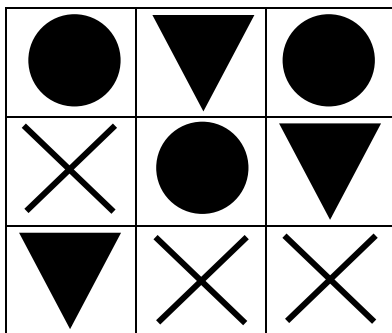
Pattern 42

●	▼	✕
▼	✕	✕
●	▼	●
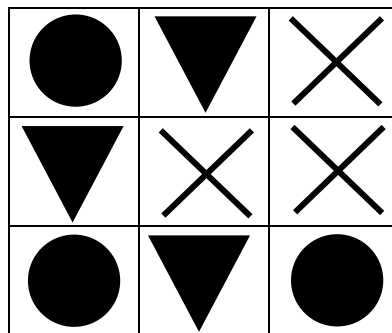
Pattern 43
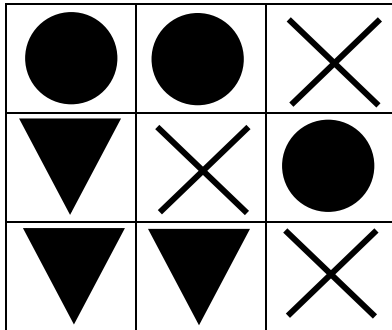
Pattern 44
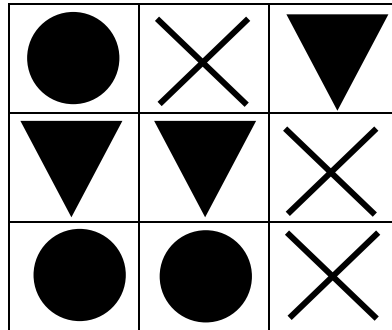
Pattern 45
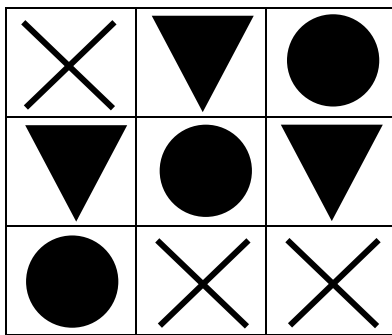
Pattern 46
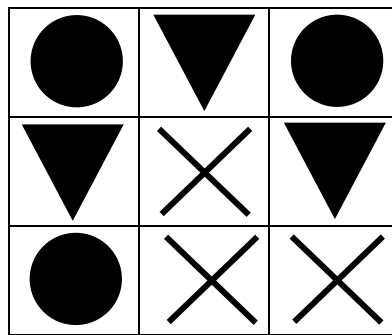
Pattern 47
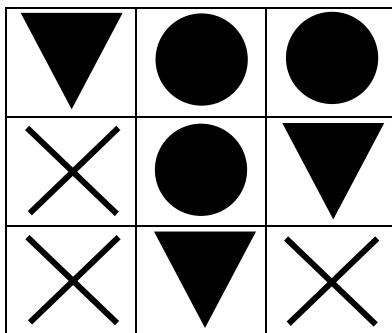
Pattern 48
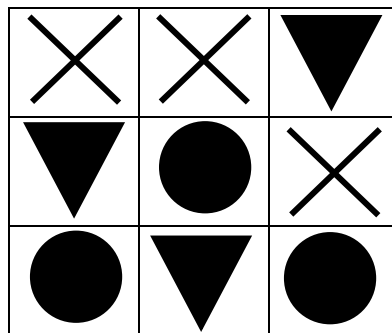
Pattern 49
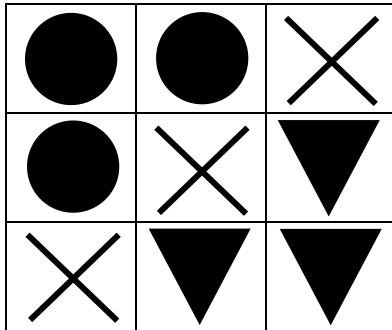
Pattern 50

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