Pencil-and-Paper Games

Description

A collection of pencil-and-paper games that can be used in a program or adapted for passive programming in your libraries

Space Considerations

Any type of space with seating for participants

Competencies

- Creative and imaginative thinking
- Logic and sequencing
- Following directions
- Problem solving
- Teamwork
- Strategic thinking

Materials

- Pen or pencil
- Paper
- Timer or stopwatch (optional)

Implementation

Select pencil-and-paper games from our list and modify as desired to fit the number of participants in your program.

Safe Cracker

Description: One player has to guess their opponent's secret four-digit code
Players: 2

1. The first player secretly writes down a four-digit number using any number from 0 to 9, but a number can only be used once (e.g. 7459 is ok, but 7454 is not because it reuses the number 4)
2. Draw a grid containing 4 columns and 10 rows or print out the Safe Cracker template
3. The second player has to guess what the secret number is and writes their guess in the first (bottom) row of the grid
4. The first player marks the guess with the following symbols:
   - an asterisk (*) for a number that is correct and in the right spot
   - a checkmark (√) for a number that is correct but in the wrong spot
   - an x for an incorrect number
5. The second player continues to guess the code, using the information from previous attempts to revise their selection of numbers, and writes it on the next row up in the grid
6. If the second player gets the code right before reaching the top of the grid, they have cracked the code

|			
4*	1*	5*	7*
4*	7√	1√	5√
3ˣ	4√	7√	1√
2ˣ	6ˣ	8ˣ	4√

In this example, the second player has cracked the code (4157) on the fourth row, using information gathered from the previous three guesses.

Go-Moku

Description: A strategy game where players attempt to get five in a row before their opponent

Players: 2

1. Draw a playing grid with 19 vertical and 19 horizontal lines, or print out the Go-Moku template
2. Participants decide who will be X and who will be O, and who will go first (Rock Paper Scissors is usually a good way to determine starting order)
3. The object of the game is to get five in a row, either horizontally, vertically or diagonally
4. Players take turns writing their symbols in the grid, trying to complete a series of five in a row while also blocking their opponent from doing so
5. The first player to get five in a row wins the game
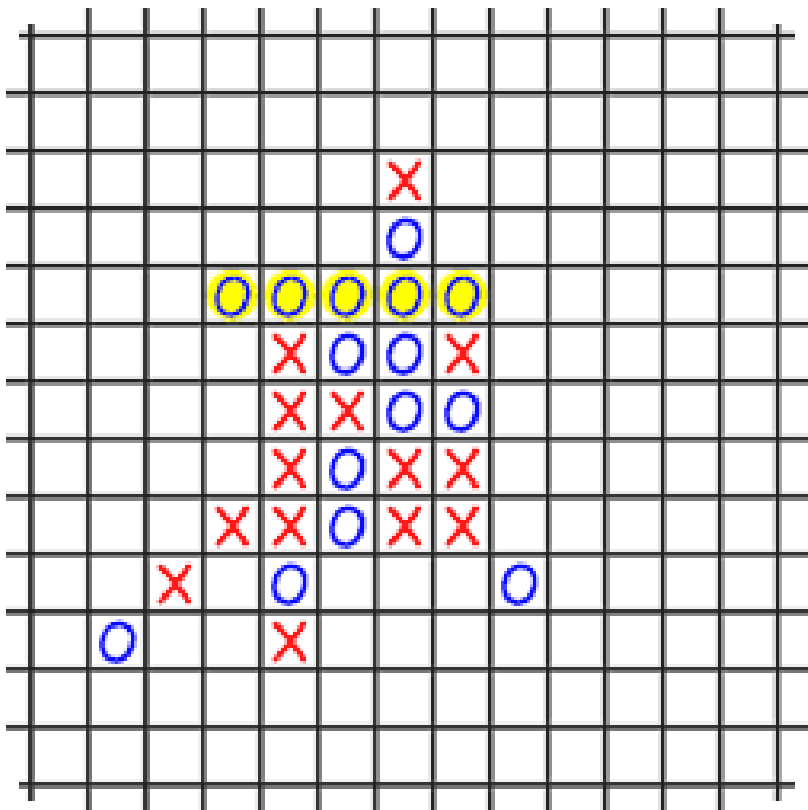
A game of Go-Moku in which O managed to mark five in a row

It's a Line Up

Description: A strategy game in which players need to create a line of four in a row before their opponent
Players: 2

1. Draw a 42-square grid (seven across by six down) or use the It's a Line Up template
2. Participants decide who will be X and who will be O, and who will go first
3. The object of the game is to make a line of four before your opponent—the line could be horizontal, vertical or diagonal
4. Players take turns writing their symbols in the grid, but each player must build up from the bottom of the grid (Imagine that each grid is governed by the law of gravity and that symbols fall down each column until they reach either the bottom of the grid or a previously drawn symbol)

		X				
		X	O			

An example of a game in progress. Notice the "law of gravity"—the X is placed above the O.

|						
			X			
			O			
		X	X			
	O	X	O		O	

In this example, the O is placed on the bottom of the grid since there are no other symbols in this column yet.

Snake

Description: Players try to avoid closing a box, which represents a snake biting its own tail
Players: 2

1. Make a grid of 100 dots, with 10 rows and 10 columns (or use the Snake template)
2. The first player connects any two dots next to each other with a horizontal or vertical line (no diagonal lines)
3. The next player must connect one end of first line to another dot (the lines can be added to either end of the snake)
4. Players continue to alternate turns as the line grows and creates a "snake" through the grid
5. The line must be continuous, so branches or crossing over from one part of the snake to another is not allowed
6. Players try to avoid being the person to connect either end of the snake to itself
7. The first person who can't connect the snake to an adjacent dot—and instead has to make the snake bite itself—loses the game
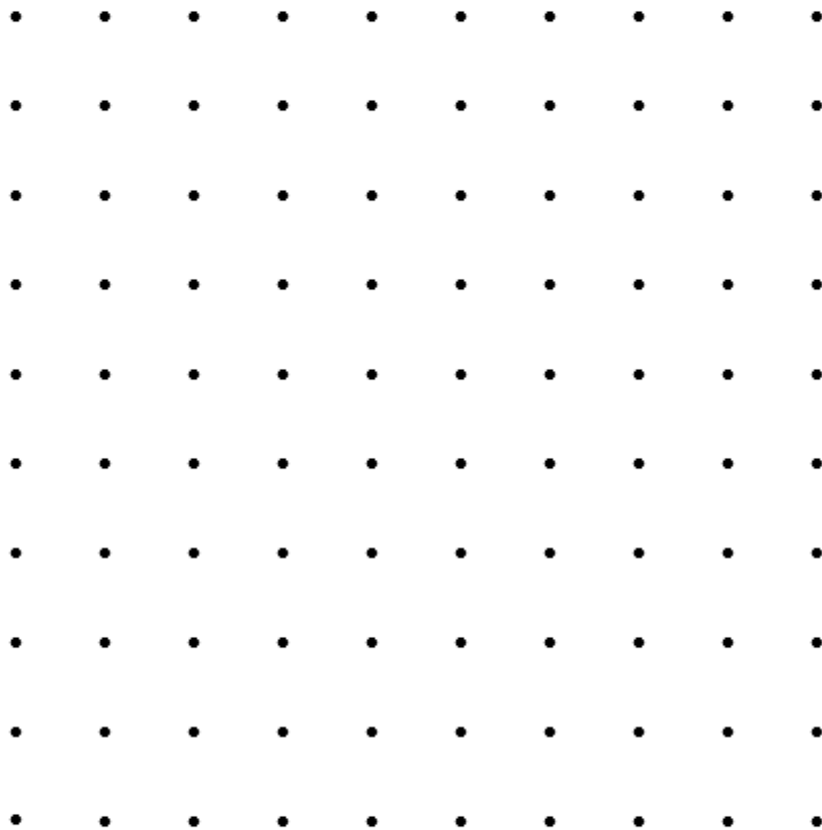
Dots and Boxes

Description: Players take turns trying to form squares by joining dots on a grid
Players: 2

1. Draw a 64-dot grid (8 dots across by 8 dots down) or use the Dots and Boxes template
2. For younger players, the grid can be 25 dots (5 across by 5 down)
3. Players take turns joining any two adjacent dots with a vertical or horizontal line (no diagonal lines)
4. When one player is able to draw a line that completes a box, they put their initial in the box and they get to take another turn
5. More squares are made as the game progresses and play continues until it is impossible to complete any more squares
6. The winner is the player who has the most squares at the end of the game

Example of a game played on 3 x 3 grid. The red represents the move(s) taken that turn.
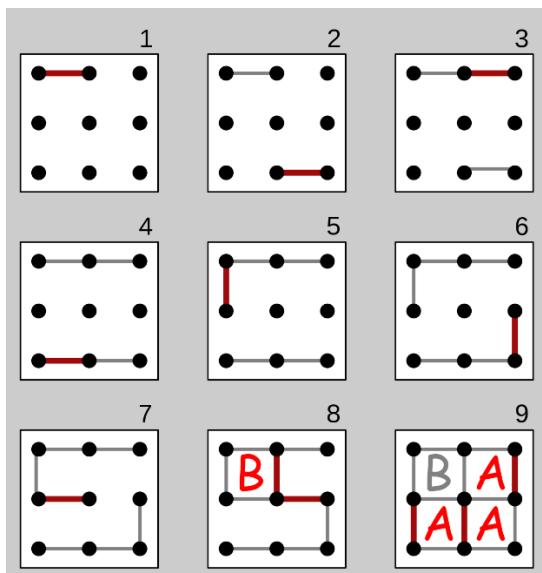
Book Suggestions

Mr. Lemoncello's Library Olympics by Chris Grabenstein
Extreme Abilities: Amazing Human Feats and the Simple Science Behind Them by Galadriel Watson
Bird & Squirrel: All Tangled Up by James Burks

Images and Templates

Safe Cracker

How to play:

- The first player secretly writes down a four-digit number using any number from 0 to 9, but a number can only be used once (e.g. 7459 is ok, but 7454 is not because it reuses the number 4)
- The second player has to guess what the secret number is and writes their guess in the first (bottom) row of the grid
- The first player marks the guess with the following symbols:
    - an asterisk (*) for a number that is correct and in the right spot
    - a checkmark (√) for a number that is correct but in the wrong spot
    - an x for an incorrect number
- The second player continues to guess the code, using the information from previous attempts to revise their selection of numbers, and writes it on the next row up in the grid
- If the second player gets the code right before reaching the top of the grid, they have cracked the code
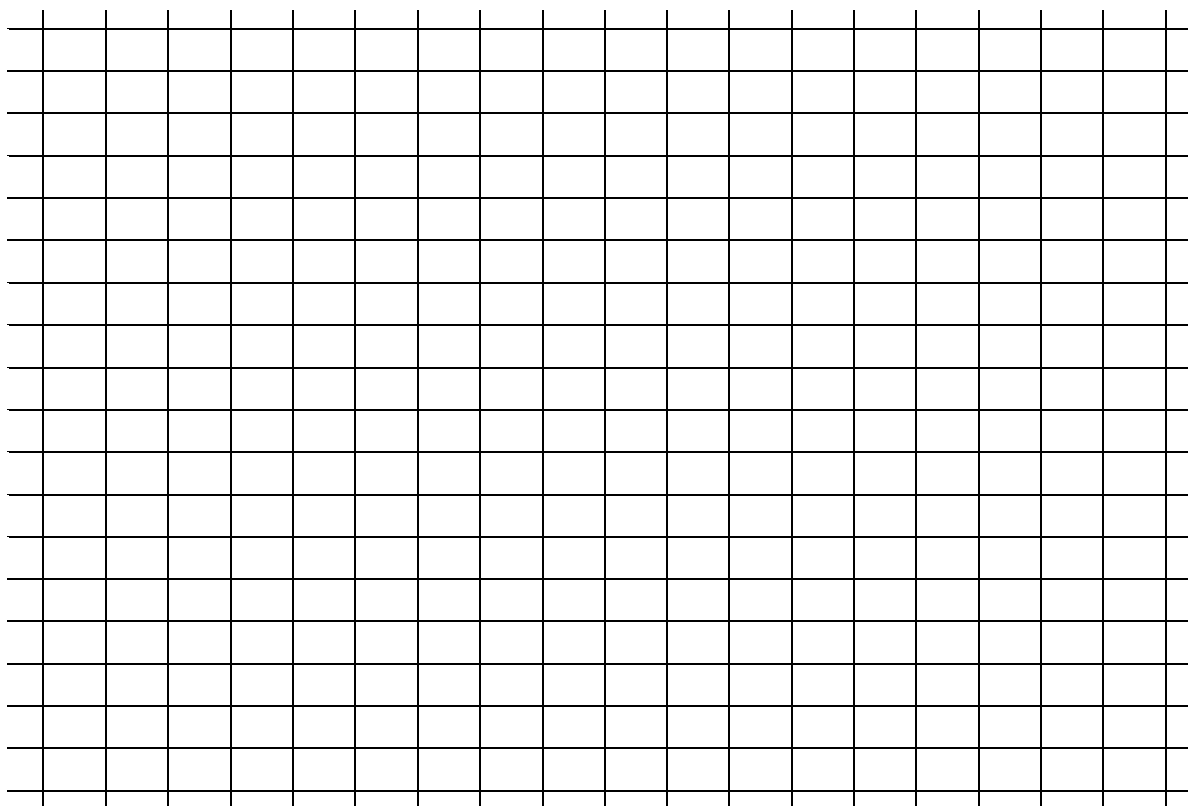
Game 1

SAFE CRACKER			

Game 2

SAFE CRACKER			

Go-Moku

How to play:

- Participants decide who will be X and who will be O, and who will go first
- The object of the game is to get five in a row, either horizontally, vertically or diagonally
- Players take turns writing their symbols in the grid, trying to complete a series of five in a row before their opponent
- The first player to get five in a row wins the game

It's a Line Up

How to play:

- Participants decide who will be X and who will be O, and who will go first
- The object of the game is to make a line of four before your opponent—the line could be horizontal, vertical or diagonal.
- Players take turns writing their symbols on the grid, but each player must build up from the bottom of the grid (Imagine that each grid is governed by the law of gravity and that symbols fall down each column until they reach either the bottom of the grid or a previously drawn symbol)

Game 1

Game 2

Game 3

Game 4

Snake

How to play:

- The first player connects any two dots next to each other with a horizontal or vertical line (no diagonal lines)
- The next player must connect one end of first line to another dot
- Players continue to alternate turns as the line grows and creates a "snake" through the grid
- The lines can be added to either end of the snake
- The line must be continuous, so branches or crossing over from one part of the snake to another is not allowed
- Players try to avoid being the person to connect either end of the snake to itself
- The first person who can't connect the snake's head to an adjacent dot—and instead has to make the snake bite itself—loses the game
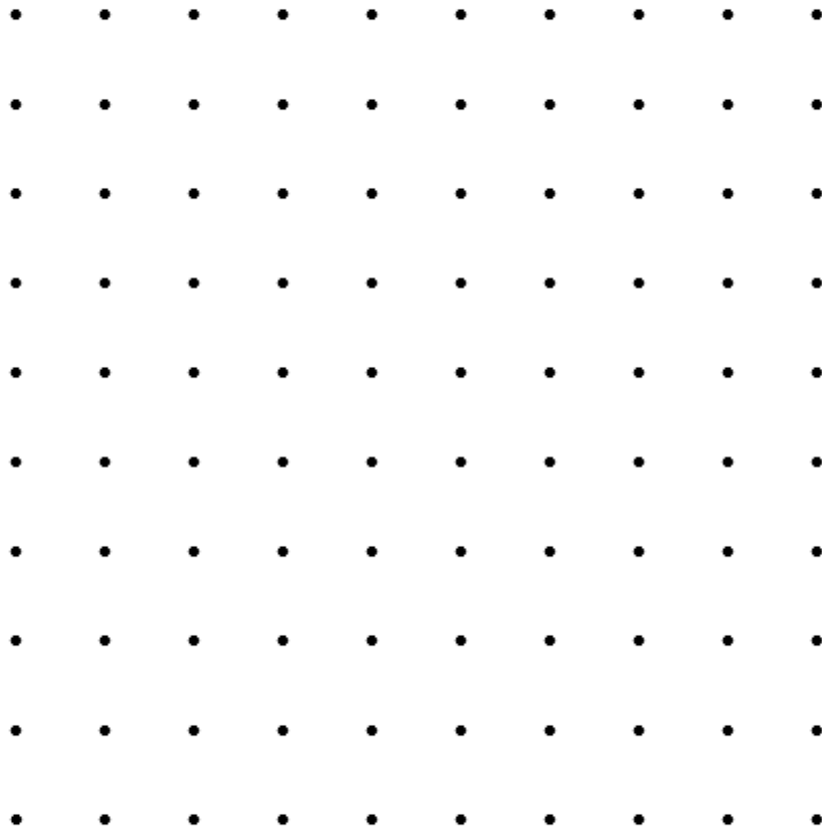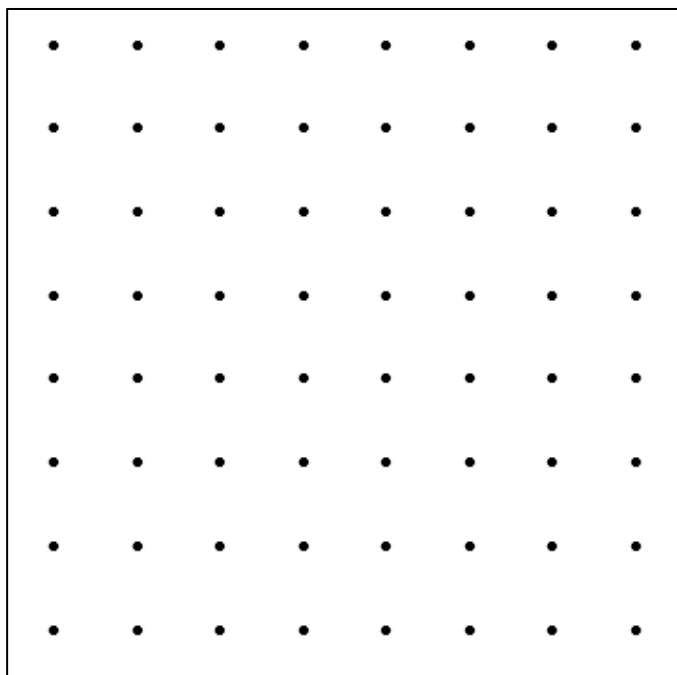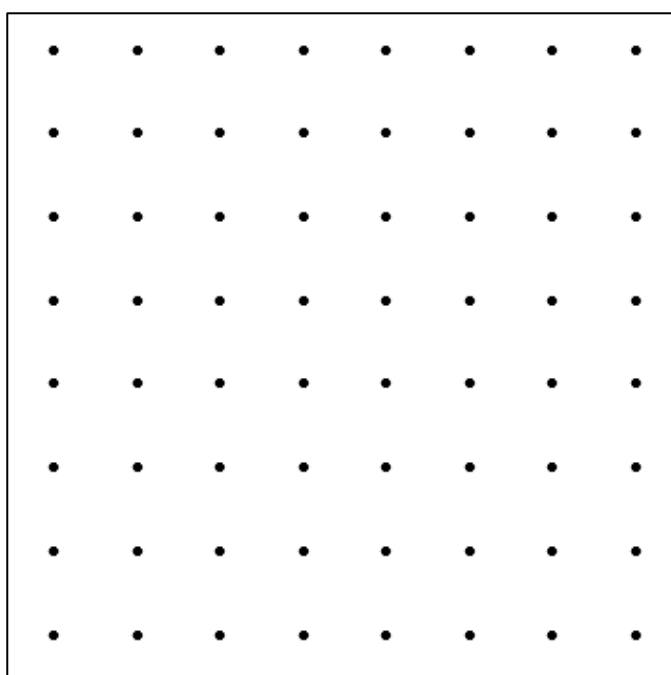
Dots and Boxes

How to play:

- Players take turns joining any two adjacent dots with a vertical or horizontal line (no diagonal lines)
- When one player is able to draw a line that completes a box, they put their initial in the box and they get to take another turn
- More squares are made as the game progresses and play continues until it is impossible to complete any more squares
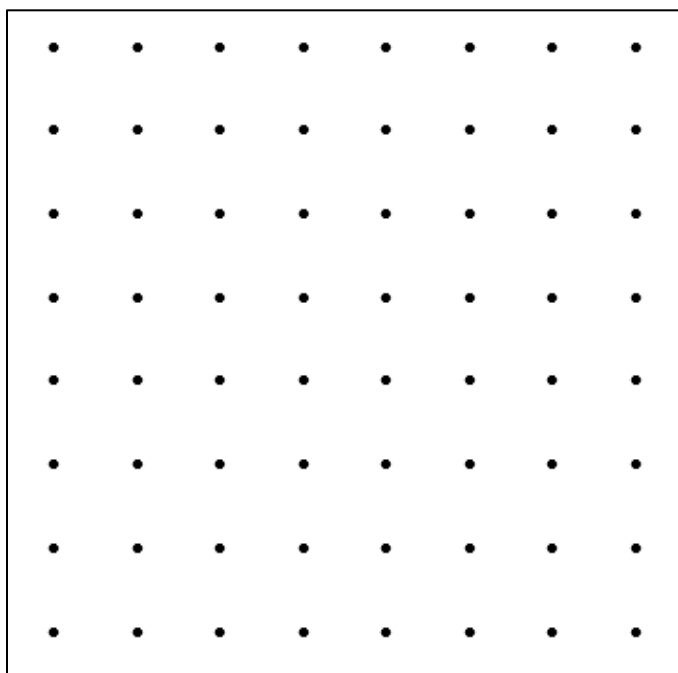- The winner is the player who has the most squares at the end of the game

Game 1

Game 2

Game 3

Game 4