

The logo for H&T Driver Rehabilitation Specialists, LLC is positioned in the top left corner of a graphic header. The header itself features a vibrant, abstract background of overlapping geometric shapes in shades of blue, purple, and red, creating a sense of depth and movement. The letters 'H&T' are rendered in a large, white, serif font.

# H&T

Driver Rehabilitation Specialists, LLC

# Drive Mindful, Drive Skillful

## A Cognitive Training Guide

Created by Amanda Ambrosy

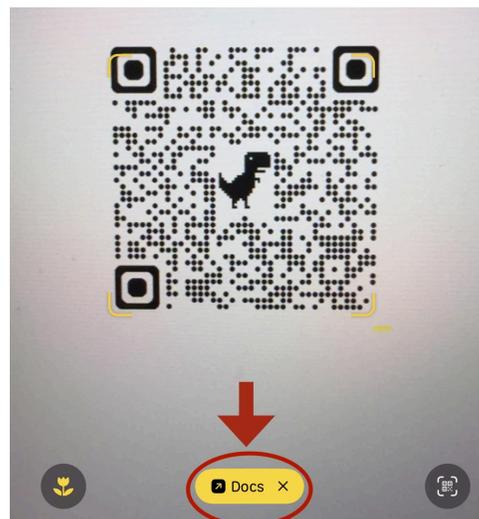
Reviewed by Christopher Thompson, OTR, MSOT, CDRS

**Please Note:** This program contains many QR codes. Most phones and tablets are able to scan QR codes through their camera app. Follow these instructions for opening each webpage.

1. Open camera app on your device



2. Aim camera at QR Code and click on the pop up.



If you are unable to scan the QR codes, please locate this program on our website (<https://www.htdriverrehab.com/>) and click the following link for access to all webpages.

<https://shorturl.at/oOEV4>

## BEFORE YOU BEGIN

Please take the pre-survey before completing any exercises/ training with H&T Driver Rehabilitation Specialists. You can scan the QR code below with your phone camera to access the survey.

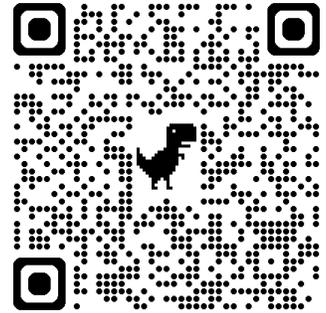


You will be asked to complete another survey at the conclusion of the program. We ask you to provide your name on the surveys to compare results and ensure the program was effective. This program is independent of your evaluation with H&T Driver Rehabilitation Specialists, and participation in the survey will not affect your evaluation scores in any way. The purpose of the survey is to assess the effectiveness of the program. It should take less than 10 minutes to complete and is voluntary. However, your input will help develop meaningful and effective resources for you and for future clients. The survey may be completed by the client or by a caregiver, family member, or support person providing responses based on the client's input if needed.

# INTRODUCTION

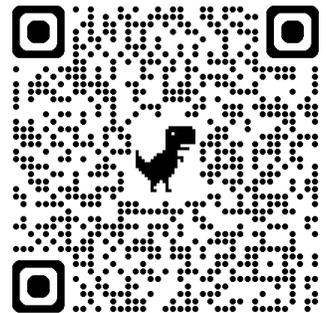
## I. Overview

This program was created by an occupational therapy student for their doctoral capstone project. For information on the program and its creation, please scan the QR code.



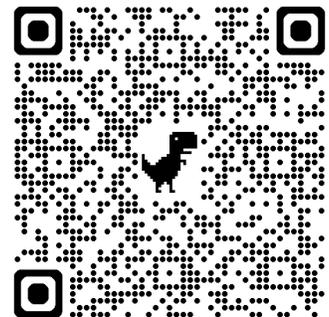
## II. Cognition and Vision's Role in Driving

Driving requires a complex combination of cognitive and visual skills to complete. For information on their role in driving, please scan the QR code.



## III. Cognitive Training and Selected Games

This is a 2-week evidence-based program containing exercises that have been shown to improve or maintain cognition. For information on cognitive training and the games selected for this program, please scan the QR code.



# PROGRAM

Research varies greatly on how often cognitive training should occur for the best results. However, many studies with positive results had their participants complete exercises between 2-5x a week, with the maximum usually being for 1 hour. It is also important to note that being active and exercising facilitates brain health and function, and therefore has a positive effect on higher level cognition as well (Zhou et al., 2020).

## Weekly Progression (complete each game for 20-30 minutes)

Day 1: Memory Matrix, N-Back

Day 2: Match-3, Chess

Day 3: Hidden-object, Sudoku

Day 4: Sudoku, Chess

Day 5: Memory Matrix, N-Back

## Games and How to Progress Through Them

### Memory Matrix:

- You will need:
  - Another person.
  - 4 pieces of paper.
    - Draw a 3x3 grid on two pieces of paper, and a 3x4 grid on the other two.
  - 5 quarters and 5 pennies.
  - Something to hide your page from the other person (another piece of paper, cardboard, etc.).
- Role of the partner:
  - You need one 3x3 grid and one 3x4 grid. Hide your paper from the participant and place the quarters/pennies on different squares according to the *progression* below. Reveal your paper for 5 seconds, then cover it again.
- Role of the participant:

- You need one 3x3 grid and one 3x4 grid. Memorize where your partner places the coins, and recreate them on your paper.
- Progression: Move the coins after each round, and each time the participant gets 5 in a row correct, progress to the next level.
  1. Start with the smaller grid and place 3 quarters.
  2. Place 4 quarters on the smaller grid.
  3. Place 4 quarters on the larger grid.
  4. Place 5 quarters on the larger grid.
  5. Place 2 quarters and a penny on the smaller grid.
  6. Place 2 quarters and 2 pennies on the smaller grid.
  7. Place 2 quarters and 2 pennies on the larger grid.
  8. Place 2 quarters and 3 pennies on the larger grid.
  9. If all previous levels are achieved with 5/5 accuracy, complete all levels again but decrease the amount of time your page is shown.

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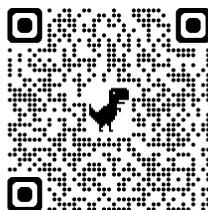
### **N-Back:**

- You will need:
  - Another person
  - A deck of cards.
- The letter “N” in N-Back is a place holder for the number of cards/letters that need to be recalled before the current card/letter. For example, for 1-Back, you need to recall whether the card 1 before the current card matches. For 2-Back, you need to recall whether the card 2 before the current card matches. Read the instructions below based on your role in the program and watch the video example for further clarification.

Video Example



Participant Instructions



Partner Instructions



- You may continue to progress the game by adding in the face cards, increasing the N-Back (increase the number of cards back they need to recall), and attending to both the suits and the numbers (tapping when either match the N-back).

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### **Match-3:**

- Download the game “Candy Crush Saga” in your phone’s app store. It is free. The game will walk you through how to play. Your goal is to advance through the levels by completing each objective!

Apple:



Android:



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### **Chess:**

Chess is a very complex game, with multiple moving pieces. Please go to Appendix A of this packet (towards the end) and remove the “chess board” and “chess pieces” pages. Cut out each individual piece so you may begin practicing and visualizing the game.

- For the first day, focus on learning the pieces and their moves. In Appendix A, you will also find Knowledge Check 1. Scan the QR code on this page to review the first set of chess game rules. Then, when you feel you are ready, complete the first knowledge check. It is recommended that you write your answers on a separate piece of paper so you can complete the knowledge check again at a later time.
- On the second day, first review what you learned on day 1 by completing the first knowledge check again. Then, read up to the next knowledge check. When you feel you are ready, complete the second knowledge check. Practice moving each piece. You can do so by practicing with a partner, or playing both sides of the chess board.

- On the third day (week 2), review the game pieces and rules you learned last week. Then, begin playing an opponent!
- As you grow more comfortable with the game, you may read the rest of the packet provided by [chess.com](https://www.chess.com) to begin learning more advanced tactics. You can also find more in-depth explanations of each step at the same link. Scan the QR Code below for more information.



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### **Hidden Object:**

- Complete the hidden object games in Appendix B provided by [Printablee.com](https://www.printablee.com) and [woojr.com](https://www.woojr.com). Your task for puzzles 1A-3C is to count the number of each item provided at the bottom. For 4A-4C try to locate and color in each item listed on the right. Begin at 1A, and progress through the puzzles after you complete each with 100% accuracy.

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### **Sudoku:**

Your task in sudoku is to fill each grid with numbers 1-4. Each row, column, and grid can only have each number once. You will use the Sudoku puzzles in Appendix C, provided by the website Math=Love, to complete this activity.

- Start with pages titled 4x4 Sudoku.
- After completing all 4x4 puzzles, move to the 6x6 puzzles, and so on, until all puzzles are complete. As the grid gets bigger, so will the numbers required to fill the boxes. Read the instructions at the top of each page to see what numbers should be used to fill each box.
- Please scan the QR code for an example of a 4x4 grid.



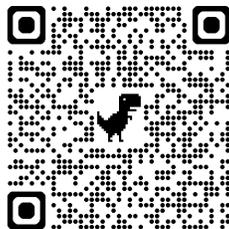
## THANK YOU!

After completing the 2-week program, we would greatly appreciate your feedback in the post-survey. Scan the QR code below with your phone camera to access the survey.



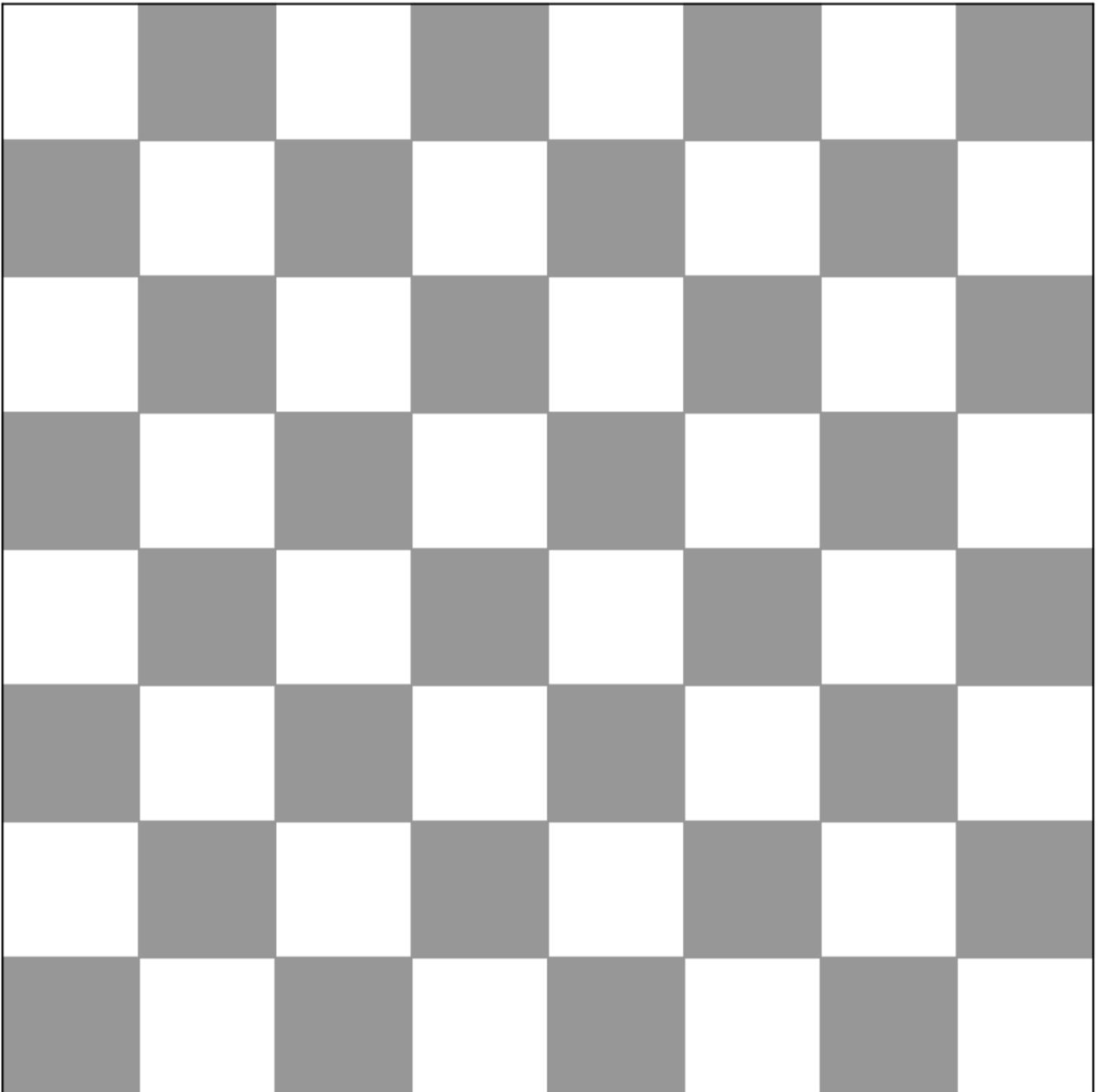
We ask you to provide your name on the surveys to compare results and ensure the program was effective. This program is independent of your evaluation with H&T Driver Rehabilitation Specialists, and participation in the survey will not affect your evaluation scores in any way. The purpose of the survey is to assess the effectiveness of the program. It should take less than 10 minutes to complete and is voluntary. However, your input will help develop meaningful and effective resources for you and for future clients. The survey may be completed by the client or by a caregiver, family member, or support person providing responses based on the client's input if needed.

Scan the QR code below to access references for this program.



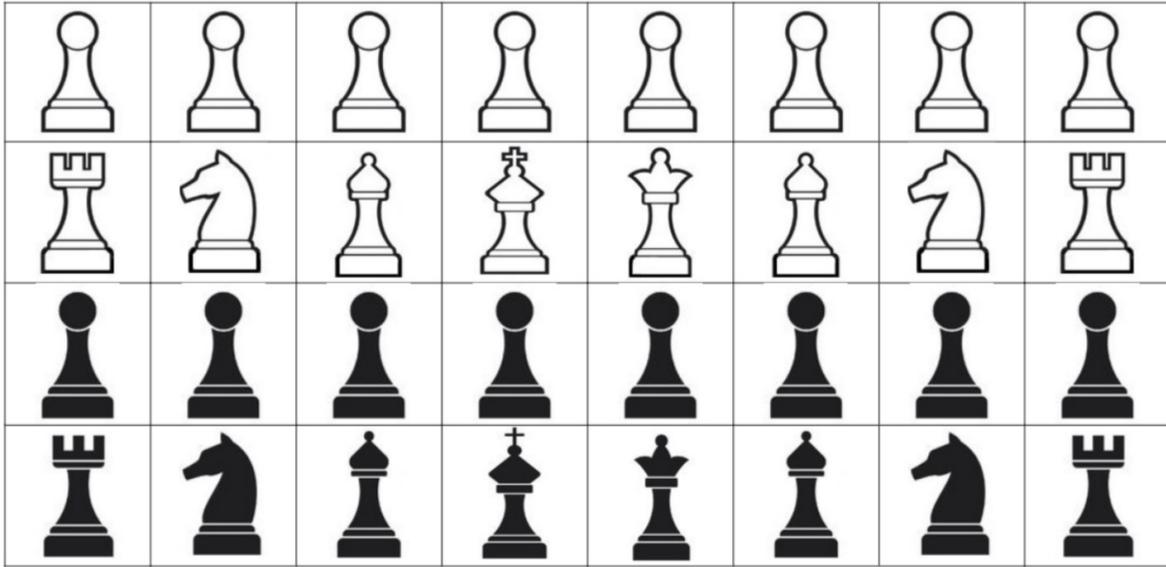
# Appendix A

## Chess Board



# Appendix A

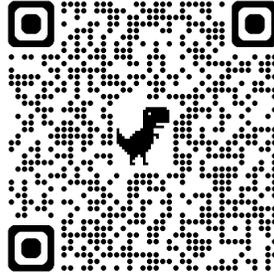
## Chess Pieces



## Appendix A

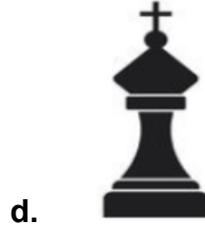
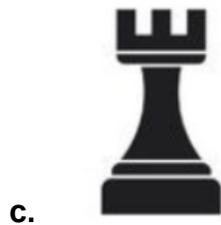
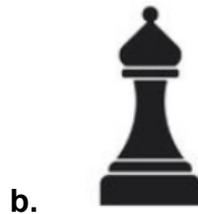
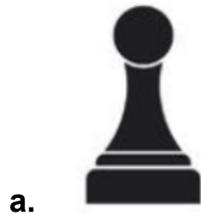
### Knowledge Check 1

QR code to chess rules:



**After reading the rules, check your understanding by answering the following questions.** It is recommended that you fill out the answers on a separate sheet of paper, so that you may use this knowledge check multiple times.

1. Label each piece below.



2. For both players, what color square should be in the bottom right corner?
3. When initially setting up the board, which pieces should fill the second row?
4. When initially setting up the board, which pieces are placed in the corners of the board (first row)?
5. When initially setting up the board, which pieces are placed next to the Rooks?
6. When initially setting up the board, which pieces are placed next to the Knights?
7. After setting up each of the previous pieces, there should be two spaces left in the middle of the bottom row, one colored and one not. Which piece is placed on the colored space?
8. After setting up each of the previous pieces, there should be two spaces left in the middle of the bottom row, one colored and one not. Which piece is placed on the non-colored space?
9. On the pawn's first move, which direction can it move?
10. Which direction can the pawn capture another opponent's piece?
11. What direction does the knight move in?
12. What direction can the bishop move?
13. What direction can the rook move?

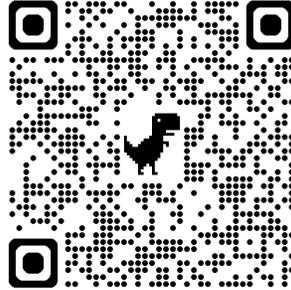
Scan the QR code below for answers to knowledge check 1.



## Appendix A

### Knowledge Check 2

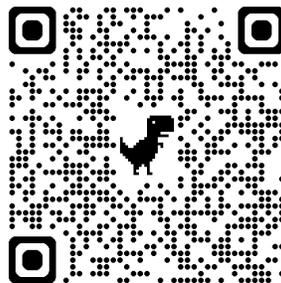
QR code to chess rules:



After reading the rules, check your understanding by answering the following questions.

1. Which player ALWAYS starts the game?
2. True or False: You can land on a square occupied by the other player's piece.
3. What does the term "check" mean?
4. What is the goal of the game? How do you win?

Scan the QR code below for answers to knowledge check 2.

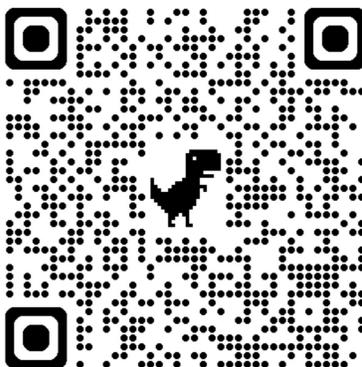


# Appendix B

## Hidden Object

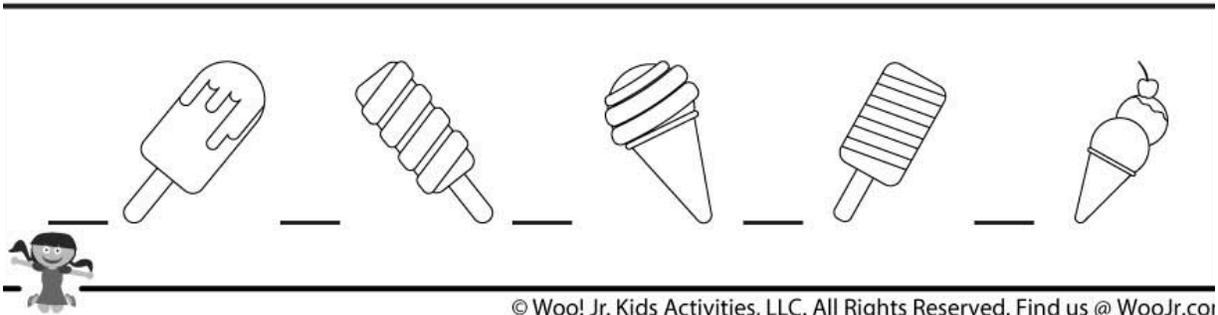
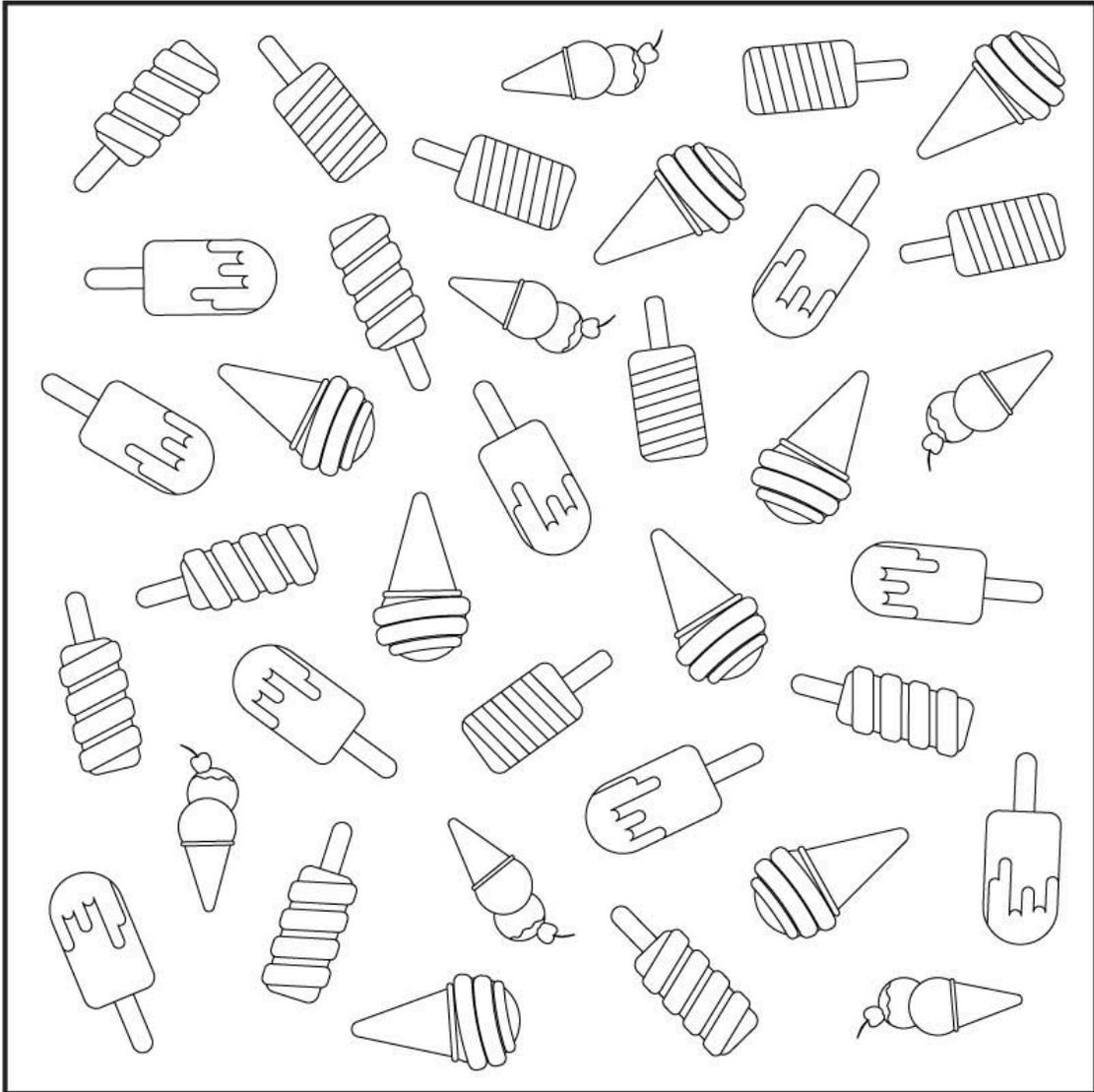
The following pages contain the hidden object related puzzles.

Scan the QR code below for answers to the puzzles. Please do not check your answer until you believe you have completed the entire puzzle.



# Appendix B

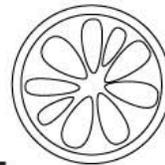
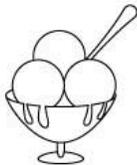
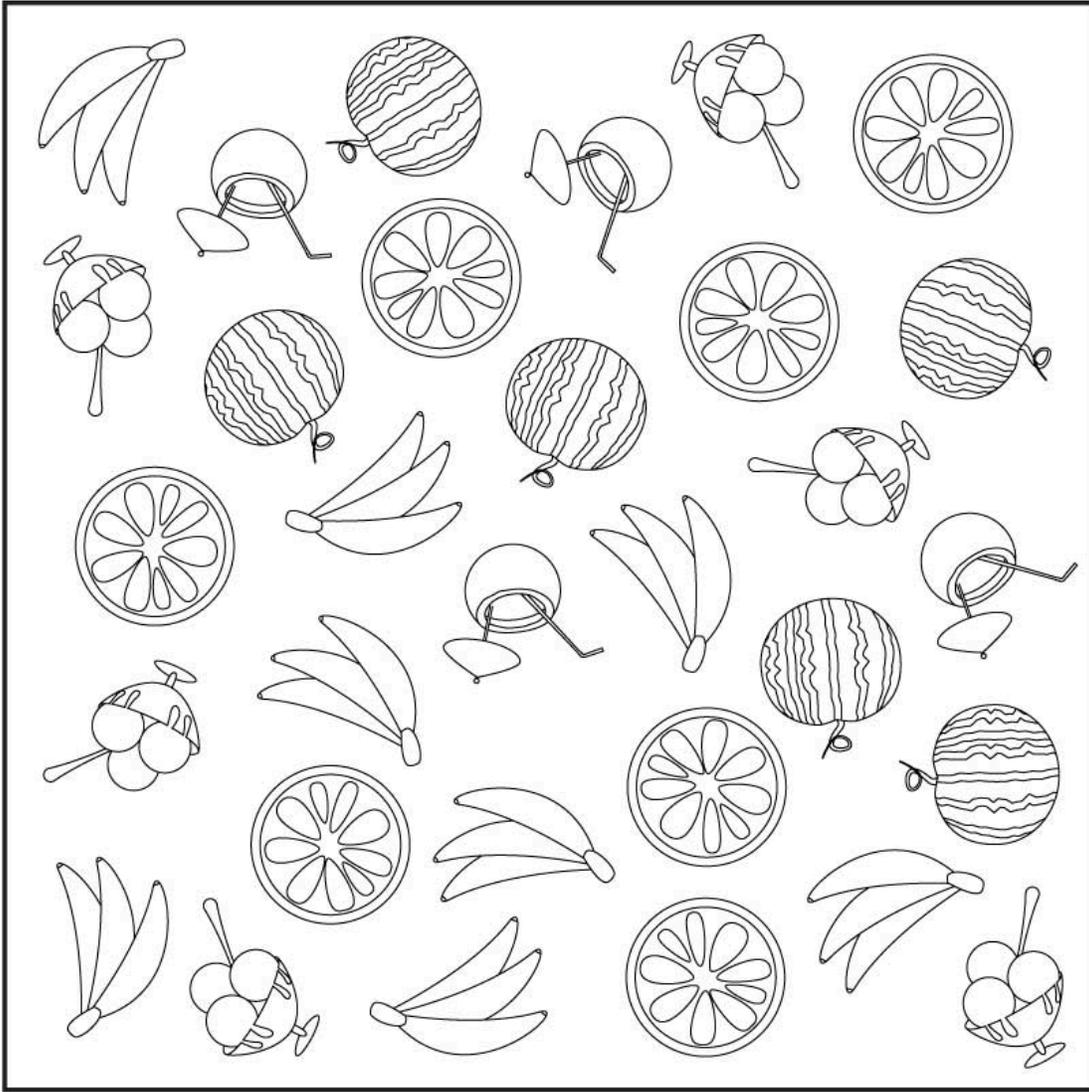
## Puzzle 1A





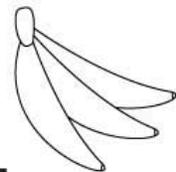
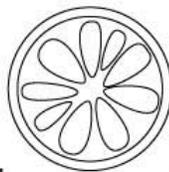
# Appendix B

## Puzzle 1C



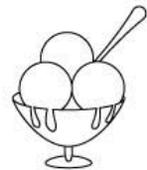
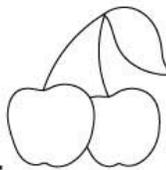
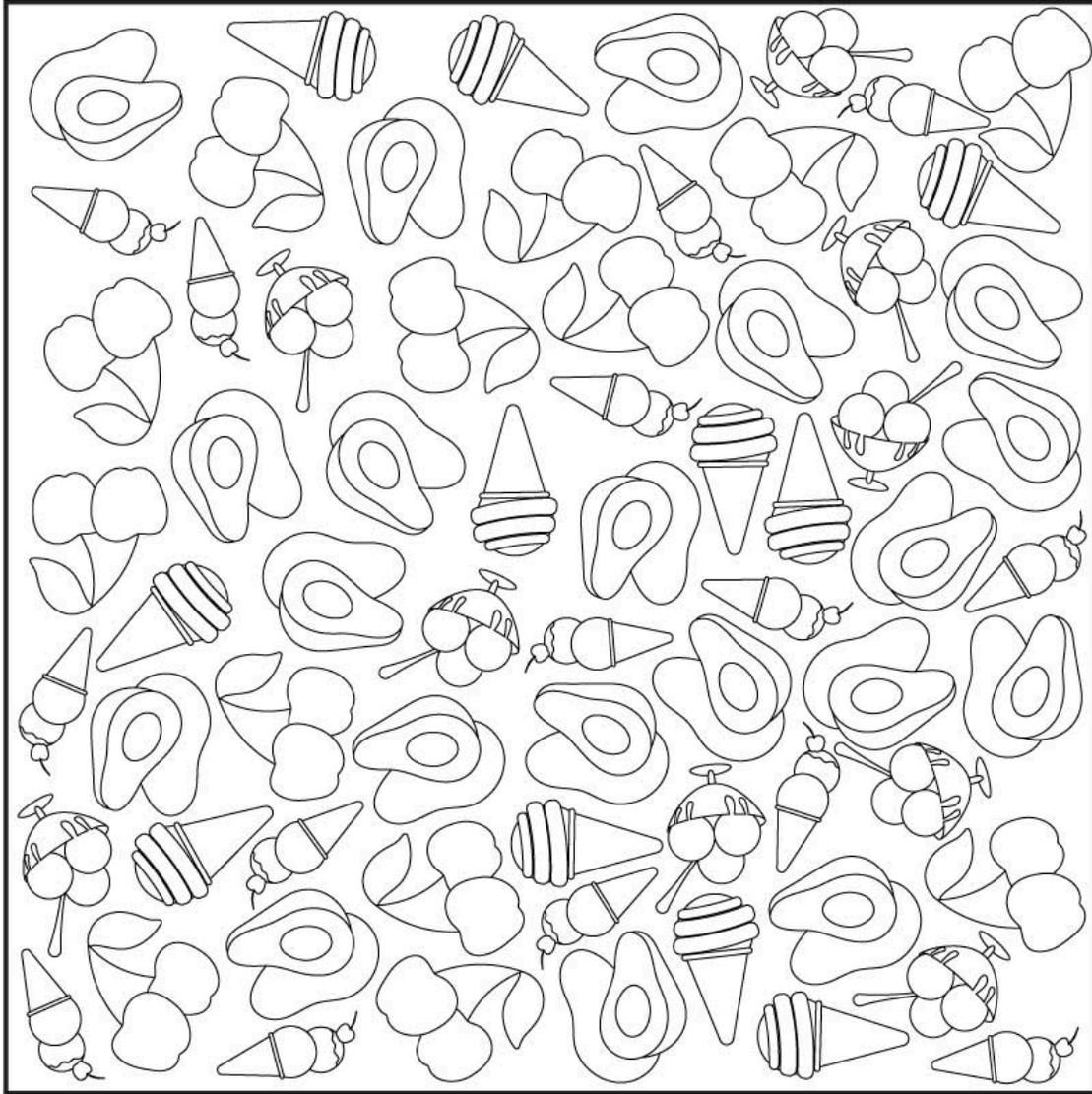
# Appendix B

## Puzzle 2A



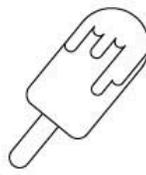
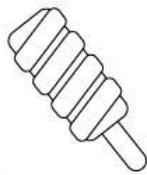
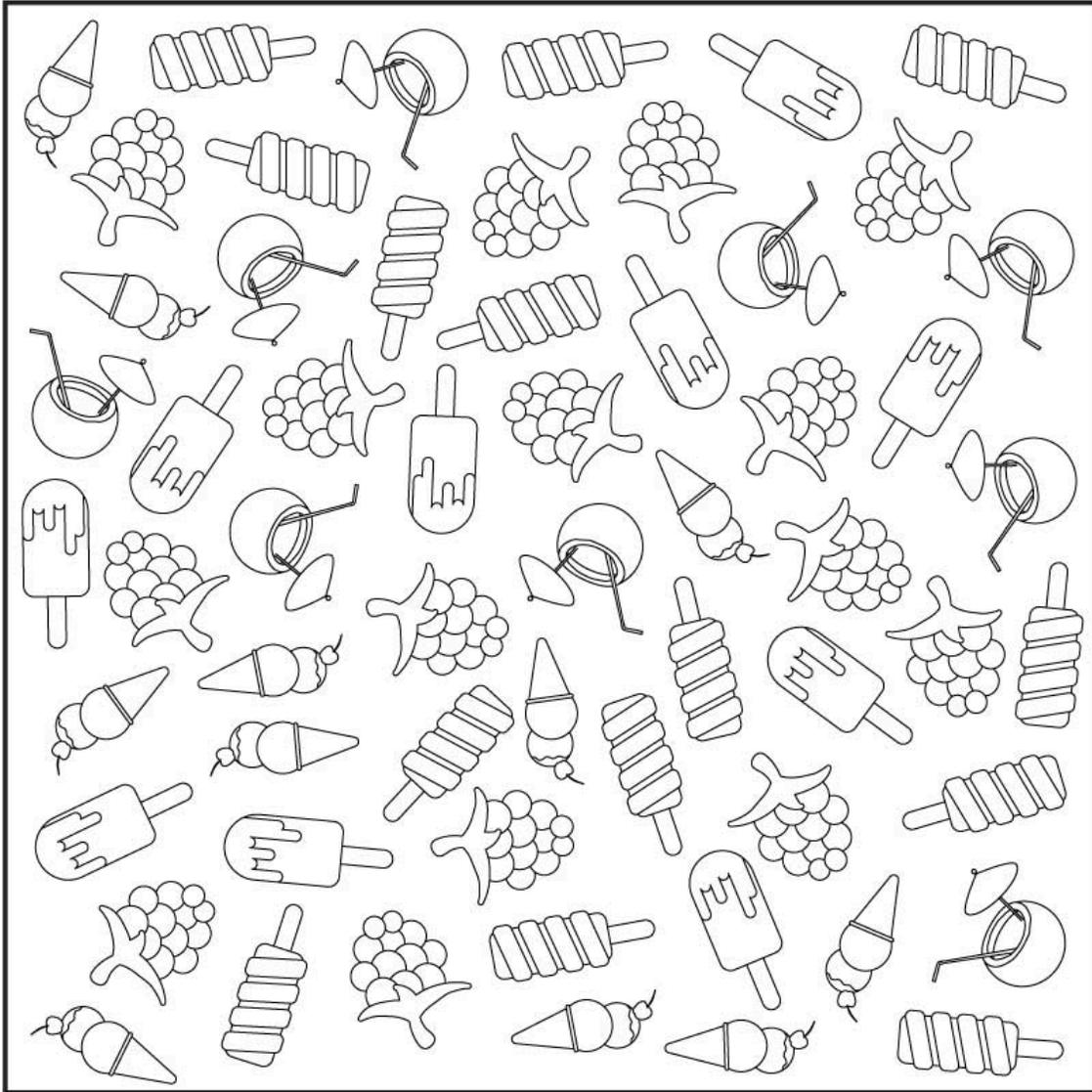
# Appendix B

## Puzzle 2B



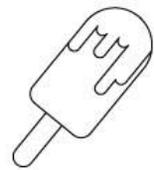
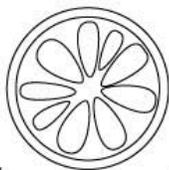
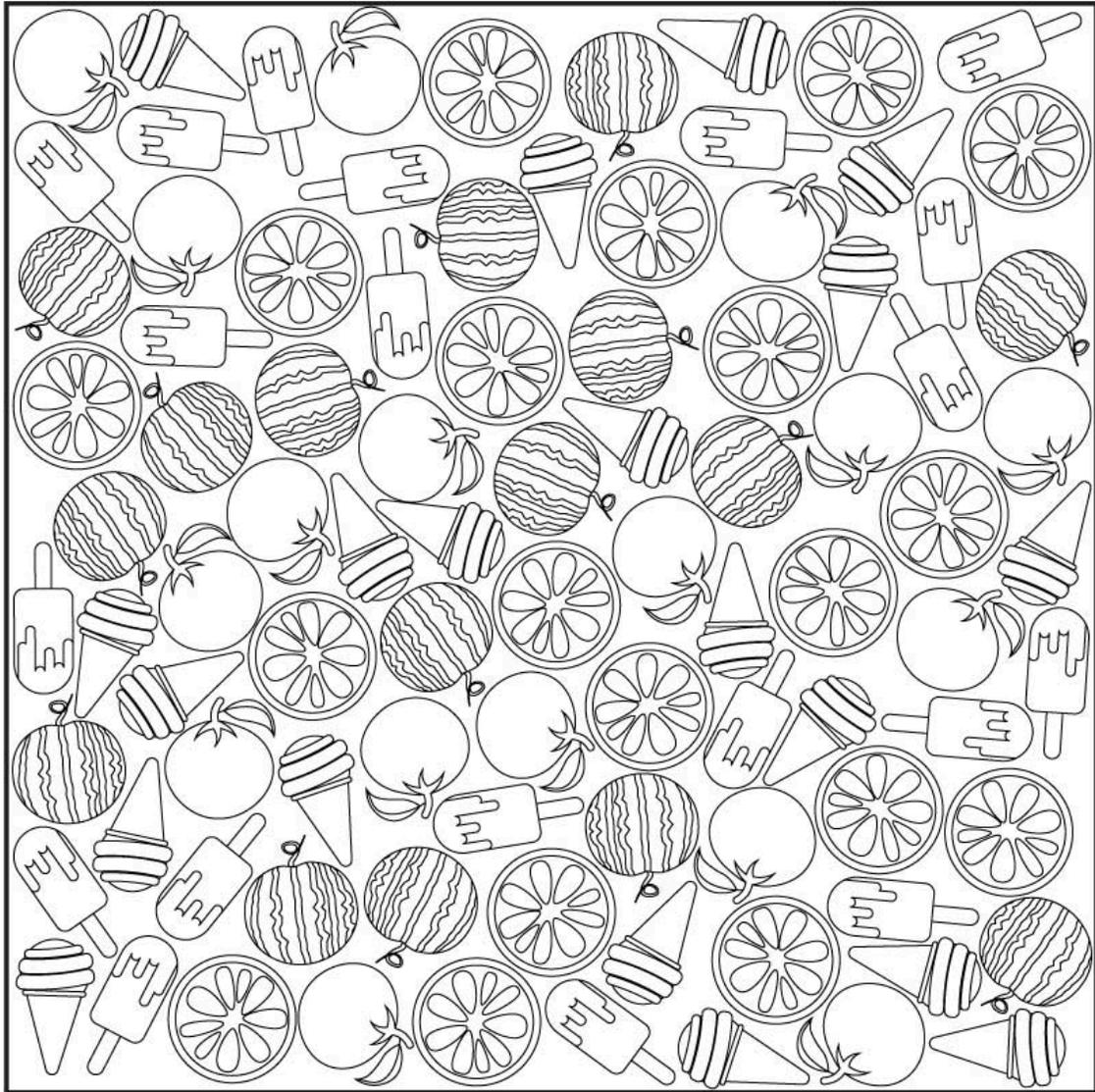
# Appendix B

## Puzzle 2C



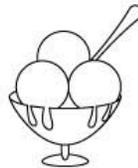
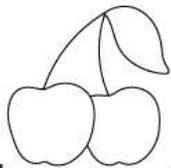
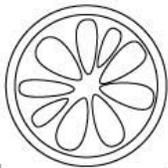
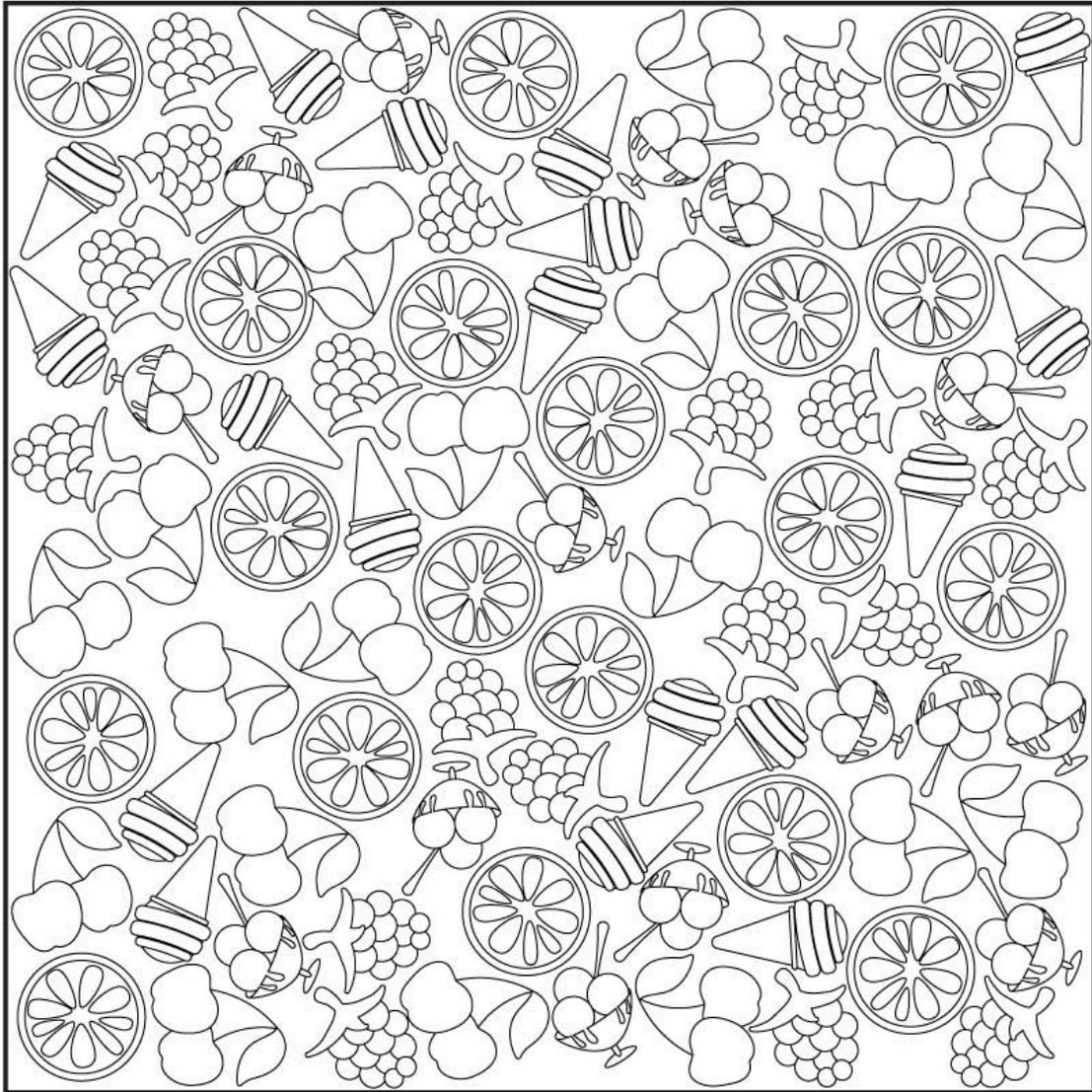
# Appendix B

## Puzzle 3A



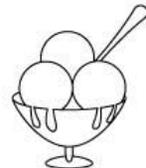
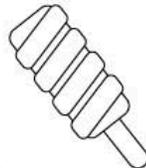
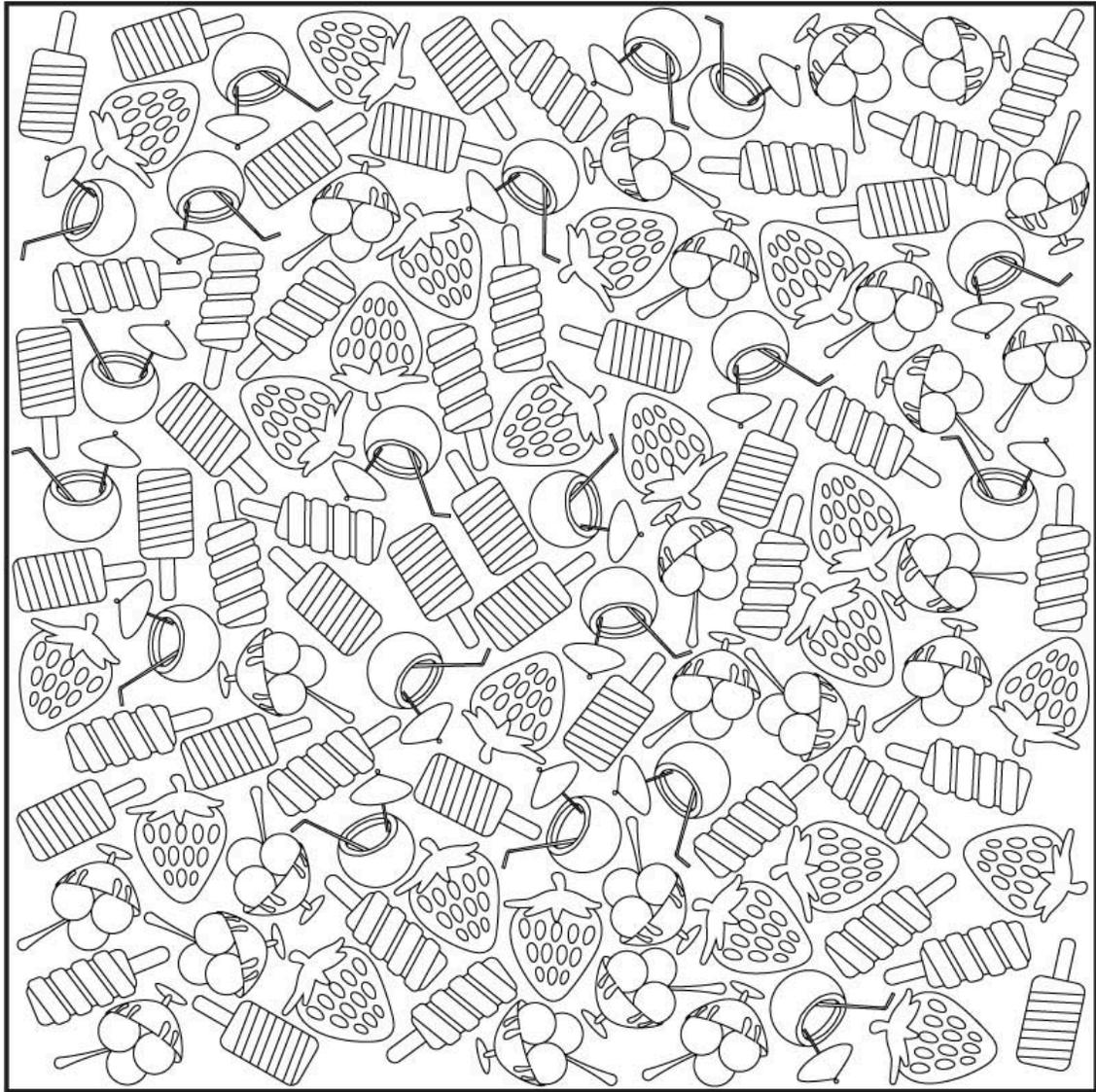
# Appendix B

## Puzzle 3B



# Appendix B

## Puzzle 3C

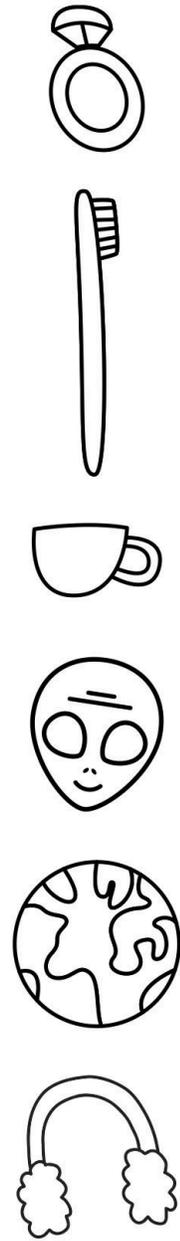


# Appendix B

## Puzzle 4A

# Hidden Object!

Can you find the  
Hidden Object?



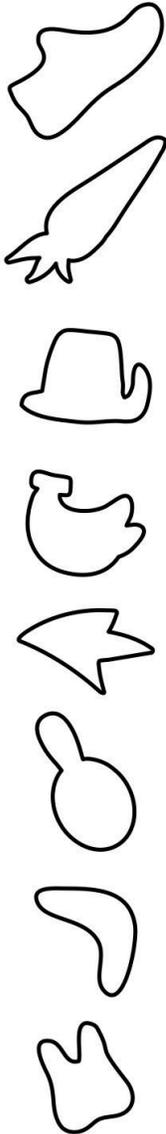


# Appendix B

## Puzzle 4C

# HIDDEN PICTURES!

Can you find the hidden picture?

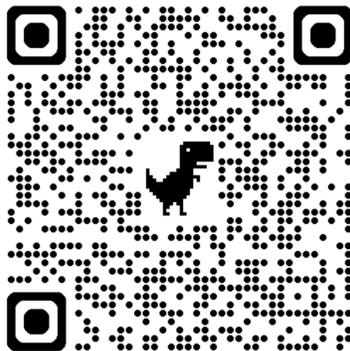


# Appendix C

## Sudoku

The following pages contain the Sudoku puzzles.

Scan the QR code below for answers to the Sudoku puzzles. Please do not check your answer until you believe you have completed the entire puzzle.



# 4X4 SUDOKU

Complete the grids below so that each row, each column, and each outlined square contains the numbers 1-4 exactly once.

PUZZLE - 1

	1	3	
3		2	
4			3
	3		2

PUZZLE - 2

2			1
	3		2
	1	2	
4		1	

PUZZLE - 3

2		3	
	1	2	
4			3
	3		2

PUZZLE - 4

3		4	
4			3
	3	2	
	4		1

# 4X4 SUDOKU

Complete the grids below so that each row, each column, and each outlined square contains the numbers 1-4 exactly once.

PUZZLE - 5

	3		2
		4	3
2		3	
3	4		

PUZZLE - 6

		1	3
	1	2	
4			1
1	3		

PUZZLE - 7

4			2
	2	4	
		1	3
1	3		

PUZZLE - 8

	3	2	
	4		3
4		3	
3			2

# 6X6 SUDOKU PUZZLES

Complete the grids so each row, each column, and each outlined 2x3 rectangle contains the numbers 1- 6 exactly one time each.

3		6		5	
			6		2
	5			4	3
2	4	3			
	3			2	6
4			3		

		1		5	6
	3			2	
	2			1	
5			2	4	3
1	6	4			
3			1	6	4

3		5	1	4	
				5	
4	5	1	3	6	
	6		5		
					5
		4	6	2	1

5	3	4	2	6	1
		1	4	5	
	2	3	5		4
4					
			3		5

# 6X6 SUDOKU PUZZLES

Complete the grids so each row, each column, and each outlined 2x3 rectangle contains the numbers 1- 6 exactly one time each.

	5	3	1		
	6	2			
3	1	5	4	6	
		6	5	1	
6		4		5	
5			6		

2	1	6			
4	5	3			
	6			4	5
			1		
6		1	2	5	3
					1

4		3			
	1		3	4	6
	4	5			1
6	2				
		4	2		5
	5	6	1		

1				2	3
	2	5			
	1		3	6	2
	3			5	
			6		4
4		3	2		5

# 9x9 SUDOKU PUZZLES

Complete the grids so each row, each column, and each outlined 3x3 square contains the numbers 1- 9 exactly one time each.

	5	4			9		7	
6	7	1		2	8	3	4	
	8		7	4		5	6	
1		5		9	7	8	3	4
8		3	2		4	9		7
9	4				3	6		5
7	9		4	3		2		1
4	3		9	1		7		
	1		8	7	2	4		3

# 9x9 SUDOKU PUZZLES

Complete the grids so each row, each column, and each outlined 3x3 square contains the numbers 1- 9 exactly one time each.

		4	1	7	8	3		9
8				5	9		4	
			2	4			1	8
	4	2	5	6		1	8	3
1			8	9		4		
	3	8	4	1	2		6	7
6			9	2	4	5	7	
4		1	7	3	5	8	9	
7	9	5	6	8		2	3	

# 9x9 SUDOKU PUZZLES

Complete the grids so each row, each column, and each outlined 3x3 square contains the numbers 1- 9 exactly one time each.

	2		6	9	4	3	1	8
1	6			3	7			9
3				2	5	4		7
2		6	9	5	3	1	7	
5	3			8			9	2
4		9		6	2	8	3	
6	4	1		7		2	8	3
	7	2						
9		3	2	1	8	7	4	

# 9x9 SUDOKU PUZZLES

Complete the grids so each row, each column, and each outlined 3x3 square contains the numbers 1- 9 exactly one time each.

3	9	6	8	2		5	7	4
	5	7	6	3	4	8	9	
1	4		9	7	5	2	3	6
		5	3	4				
6	3			1	9			
	1	4	5	8	2	3		7
	8			6	3			
4	2			9			5	
7		9	4	5	8		2	3

# 16x16 SUDOKU PUZZLE

Complete the grid so each row, each column, and each outlined 4x4 square contains the numbers 1- 16 exactly one time each.

8	9			15	16	6	3	11	7	14	2	10	12		13
2	16		10	13	9			12	5	1	6	3	14		4
		11	13			12	8	3	10	4	16	15		9	6
3	12	6	14	10	4	5		13		15	9				
1	14	12	9	5	6	4		8	13	2		11	10		
4	7			16		1		14				6			8
	15		5	8		11		6			12			14	3
		13		14	3	9			1		5	2		7	12
		7	3	6	10		15	1	9		14	12	8		2
12	1		16	11	7	2	14			6			3	10	
5	2			4		3	9		12	11	7			1	16
14	6					8	1				13	7	11	15	9
15	13		7			10	4					1	16		14
	3			7	1	15	5	9	6	10		8	13		
	4	1	6	2	8		16		14	12	15				
9		2	8		11	14		5		13	1	4	15	12	7