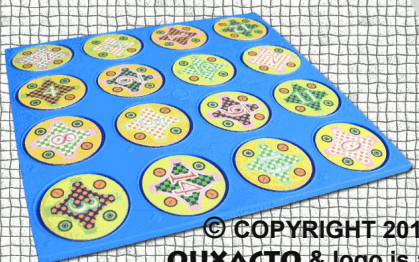
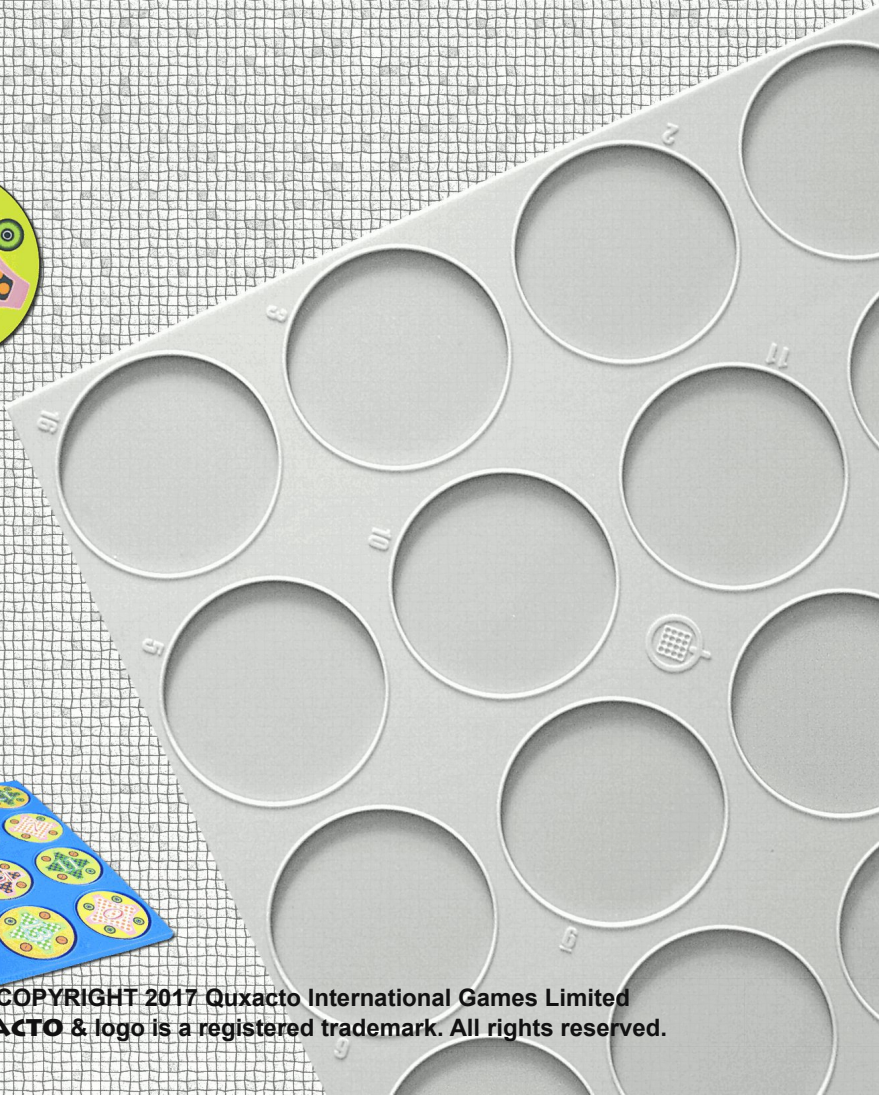
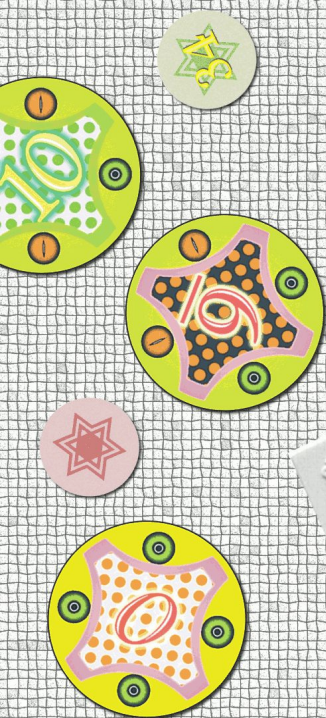




「幻方神算」 遊戲教學指南  
MELENCOLIA GAMES TEACHING GUIDE







## 序言


本教學指南提供了與所有「幻方神算」相關的認知技能及學術參考。教師可以根據每個「幻方神算」遊戲設計課程活動，以便學生在數學和計算機科學領域中學習，讓學生取得所需的經驗、讓他們建立具邏輯性和批判性的思考方法、懂得分析和解決問題、及培養人與人溝通的能力。學生通過玩特定遊戲可獲得認知技能提升。學習學術範圍列出不同教育水平相關的數學和計算學主題。教師可利用遊戲來說明簡單和複雜的數學概念，讓學生進一步分析或編寫程式。基於教師們的不同教學風格，教學內容需根據學生年齡和能力進行區分和修改。



## Preface

This teaching guide provides a complete reference of the relevant studies related to all available games under the MELENCOLIA Games Collection. Educators can design course activities based on each MELENCOLIA game in the classroom to facilitate learning in areas of mathematics and computer science. The Cognitive Skill Coverage section describes in what types of improvement can students acquired by playing the particular game. The Academic Learning section lists the relevant mathematical and computational topics of each game based on the education levels of students. Educators can use the games to illustrate simple and complex mathematical concepts or to facilitate students to conduct further analysis in the form of group projects or programming assignments. While preparing for classroom activities, teachers should allow room for differentiation and alteration according to the age and ability of their students.





## 認知技能簡述

### Applicable Cognitive Skills Summary



#### 情境記憶 **Contextual Memory**

是對特定記憶的資源和情況有意識的回憶。

The conscious recall of the source and circumstances of a specific memory.



#### 模式識別 **Pattern Recognition**

從過去的知識中檢索信息，認出特定事件，地點或其他信息的能力。

The ability to retrieve information from recognized events, places, patterns or other information.



#### 環境適應 **Updating**

是以靈活和適應的方式作出反應的能力，以便跟上環境的變化。

The ability to respond in an adaptive manner in order to keep up with the changes in the environment.



#### 擬備規劃 **Planning**

是指在腦中提前思考和預測執行任務之正確方法的能力。

The ability to think ahead and to mentally anticipate the correct way of executing a task.



#### 手眼協調 **Hand-eye Coordination**

是指手和眼同步協調之敏感度。

The level of sensitivity with which the hand and eye are synchronized.



#### 短期記憶 **Short-term Memory**

是指為了執行複雜認知任務時，如語言理解，學習和推理，所需的暫時信息存儲和處理。

The ability to hold a small amount of information in a readily, available state for a short period of time.



#### 認字聯想 **Naming**

從詞彙庫裡搜索詞彙和詞義的能力。



The basic ability to retrieve a word from our semantic lexicon.



#### 宏觀記憶 **Working Memory**

是指能夠把暫存記憶作出改變，從而執行複雜的認知任務。

Refers to the temporary storage and manipulation of the information necessary for complex cognitive tasks.







## 分散注意 **Divided Attention**

在同一時間內能夠成功地履行多個動作，同時注意兩個或兩個以上的信息渠道/模式的能力。

The ability to execute more than one action at a time, while paying attention to a few channels of information.



## 處理速度 **Processing Speed**

是指能夠流利地進行簡單或有難度任務的能力。

The ability to perform a series of simple or complex tasks in a timely manner.

## 思路轉移 **Shifting**

是指能夠將集中力從一個信息渠道重新移到另一個信息渠道。

A mental process during which people redirect their attention from one channel of information to another.



## 事混抑制 **Inhibition**

是指在執行任務時能夠省略沒關連的信息或抑制不相關反應的能力。

The ability to ignore irrelevant stimuli or suppress irrelevant reactions while performing a task.

## 空間意識 **Spatial Perception**

是指有能力評估事物如何在空間安排及探索該事物與環境之間的關係。

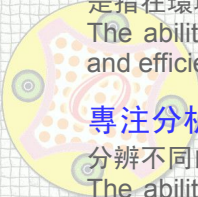
The ability to evaluate how things are arranged in space and to investigate their relations in the environment.



## 視訊掃描 **Visual Scanning**

是指在環境中高效速地找到相關信息的能力。

The ability to actively find relevant information in the surroundings quickly and efficiently.



## 專注分析 **Focus**

分辨不同的視覺和聽覺刺激，以執行優先次序的能力。

The ability to sort different visual and auditory stimuli in order to prioritize actions.

## 非字記憶 **Non-verbal Memory**

能夠存儲和檢索非言語信息的能力。

The ability to store and retrieve non-verbal information by nature.



## 應變速度 **Response Time**

是指在處理簡單刺激時，能夠作出有效和迅速的回應。

The ability to perceive and process a simple stimulus and respond to it.