

Color Me a Secret !

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一、活動緣起

你有沒有試過透過彩色玻璃紙看世界？原本清楚可見的顏色，換一片玻璃紙後，竟然可能變暗、變得不容易分辨，甚至像「隱身」了一樣！本活動從光與顏色的有趣現象出發，先讓大家化身「色彩偵探」，觀察紅、綠、藍色濾片如何改變我們看到的顏色；接著把這個科學原理變成解密工具，找出藏在彩色圖卡中的神秘數字 x ，再把 x 帶進適合自己年齡的數學題目中完成挑戰。最後還有終極解密任務，選對濾片、破解越多題，就能挑戰更高等級的獎勵！讓我們一起用顏色找線索、用數學解秘密！

Have you ever looked at the world through colored filters? A color that looks clear at first may become darker, harder to distinguish, or even seem to “disappear” through a different filter. In this activity, you will first become a Color Detective and explore how red, green, and blue filters change what you see. Then, use the same science as a decoding tool to reveal a hidden number, x , and use it to solve a math challenge suited to your level. Finally, take on the Color Challenge: choose the correct filter, crack the secret, and see how many challenges you can solve. Find clues with colors and solve secrets with math!

二、科學與數學原理

1. 白光與彩色玻璃紙 (White Light & Colored Cellophane)

白光包含各種色光。白光通過彩色玻璃紙時，玻璃紙主要讓與自己相同顏色的色光穿透，其他色光則被吸收，因此我們會看到與玻璃紙相同顏色的光。

White light contains different colors of light. Colored cellophane mainly allows light of the same color to pass through while absorbing other colors.

2. 色彩與對比 (Color and Contrast)

經過彩色玻璃紙後，某些色塊與周圍區域的明暗或色彩差異會變小，看起來就像「隱身」了。

Light filters through the colored cellophane, some colors become more similar in brightness or appearance. Their contrast becomes weaker, so they may seem to “disappear.”

3. 數學解密 (Math Decoding)

彩色玻璃紙能幫助我們取得隱藏的數學資訊；找出關鍵數值 x 後，還要理解題意並運用運算或推理，才能得到最後答案。

Colored Cellophane help reveal hidden mathematical information. After finding x , you still need calculation or reasoning to solve the problem.

三、闖關流程

闖關流程 Mission Flow

Color Me a Secret!

看見顏色 × 找出數字 × 解開秘密
See the colors. Find the numbers. Unlock the secret!

第一關 Color Detective 色彩偵探——誰不見了？



- 1 觀察紅、綠、藍、白、黑五種色塊。
Look at the five color blocks: red, green, blue, white, and black.
- 2 分別透過紅、綠、藍三種彩色玻璃紙觀看同一張觀察卡。
View the same card through red, green, and blue cellophane.
- 3 找一找：換了玻璃紙後，哪些顏色變得不容易辨認？
Find out: Which colors become harder to see through each cellophane?
- 4 想一想：顏色真的消失了嗎？
Think: Did the colors really disappear?

原來，顏色沒有消失，只是被玻璃紙藏起來了！
The colors are still there — they're just hidden by the cellophane!

第二關 Secret Number 神秘數字——找出 X！



- 1 抽取符合自己學習階段的數學解題卡。
Pick a math challenge card that matches your level.
- 2 選擇適合的彩色玻璃紙，找出藏在圖卡中的神秘數字 X。
Choose the right color cellophane and reveal the hidden number X.
- 3 把 X 帶入題目，利用數學運算或推理解出答案。
Use X in the problem and solve it with math.
- 4 向關主說出答案，完成解密！
Tell the station guide your answer and complete the mission!

If $X + 5 = 13$
 $X = ?$

$X = 8!$

終極挑戰 Color Challenge 選對顏色，破解密碼！



- 1 任選一張圓點解謎卡。
Choose one secret card.
- 2 判斷哪一種彩色玻璃紙能讓秘密現形；每題只有一次選擇機會。
Decide which color cellophane will reveal the secret. You get only one choice for each card.
- 3 選對玻璃紙並正確回答，就成功破解一題；最多可連續挑戰三題。
Choose the correct cellophane and answer correctly to solve one challenge. You may try up to three challenges.
- 4 破解一題、兩題或三題，可獲得不同等級的獎勵。
Solve one, two, or three challenges to earn different levels of rewards.



**挑戰成功，
獲得獎勵！**
Solve to get your reward!

答對 1 題
Solve 1 card

★
第一級獎勵
Level 1 Reward

答對 2 題
Solve 2 cards

★★
第二級獎勵
Level 2 Reward

答對 3 題
Solve 3 cards

★★★
第三級獎勵
Level 3 Reward

**OBSERVE → DECODE →
SOLVE → CHALLENGE**

Science × Math = More Fun!