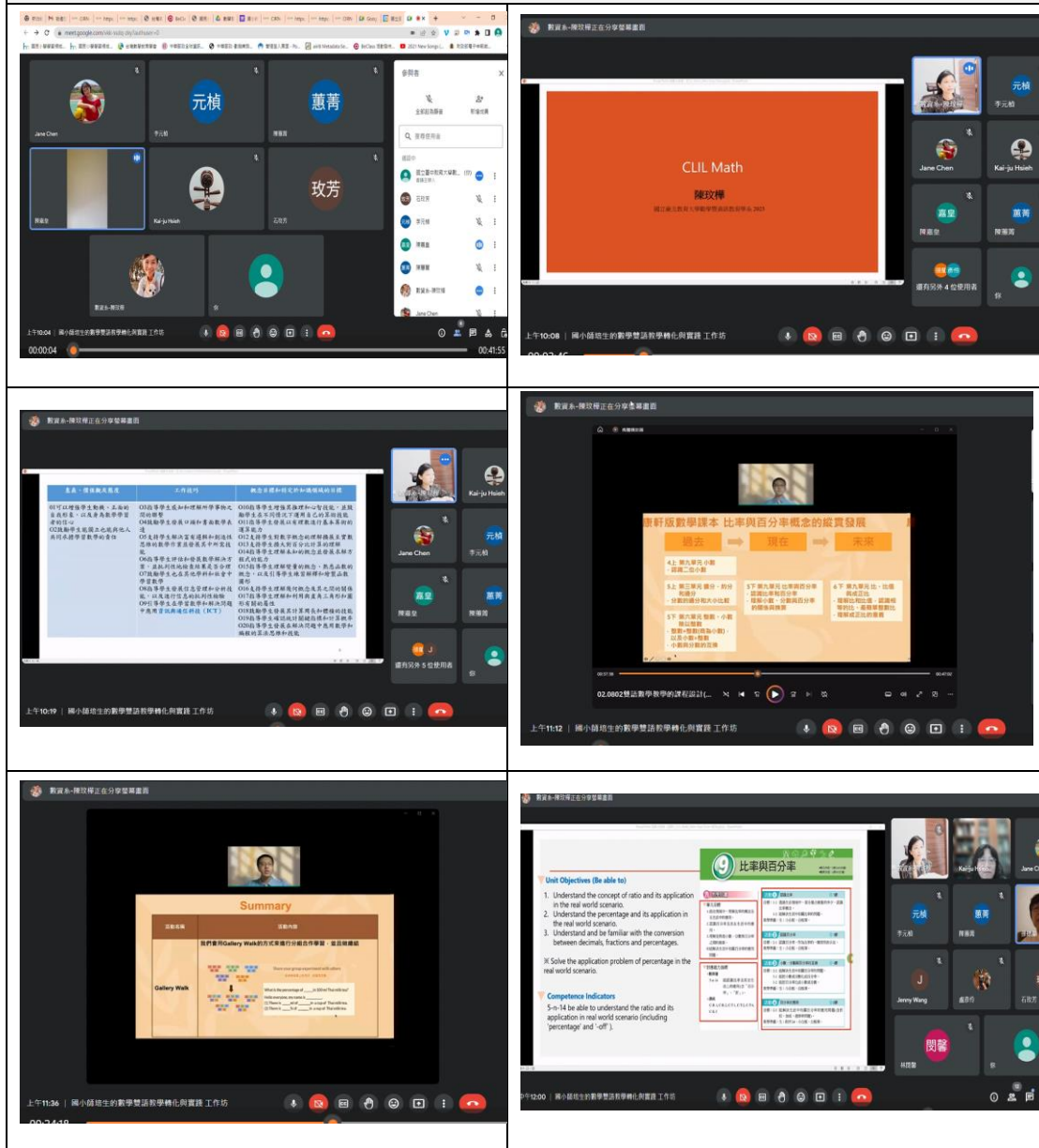


四、子計畫 4

(一)舉辦在職教師雙語數學素養教材推廣工作坊

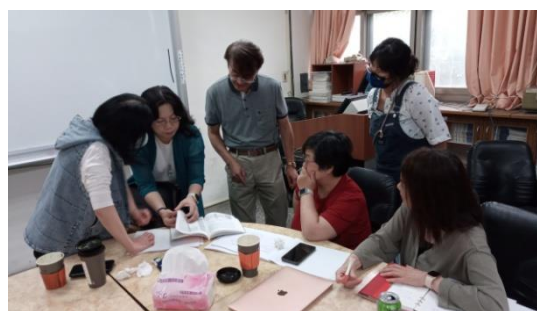
子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	國小師培生的數學雙語教學轉化與實踐
活動時間	112 年 3 月 26 日
活動地點	國立臺中教育大學數學樓 C104a 會議室
參與對象	數學專業領域教師

活動辦理照片



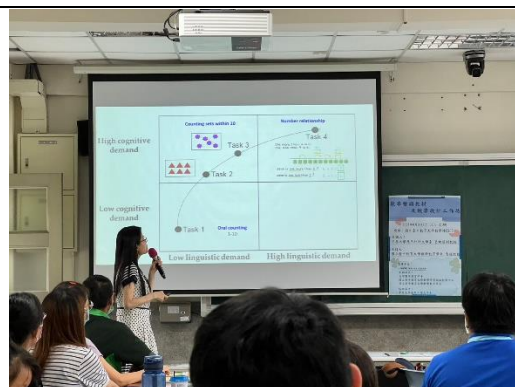
子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	規劃教學案例產出之說明
活動時間	112 年 5 月 20 日
活動地點	國立臺中教育大學數學樓 C104a 會議室
參與對象	數學專業領域教師

活動辦理照片



子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學雙語教材及設計工作坊
活動時間	112 年 6 月 3 日
活動地點	國立臺中教育大學數學樓 C104a 會議室
參與對象	數學專業領域教師

活動辦理照片



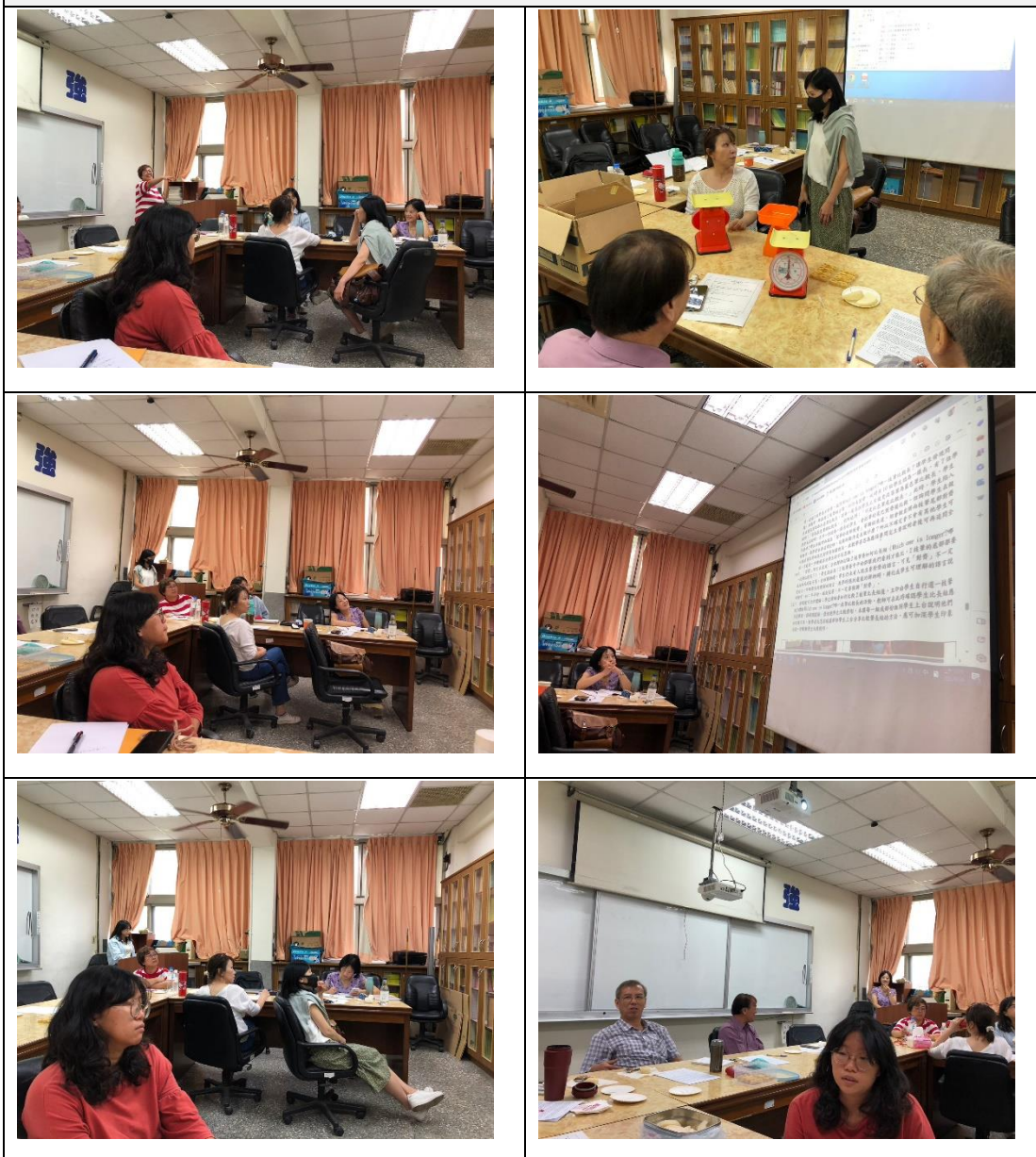
子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學雙語教學案例撰寫討論
活動時間	112 年 8 月 24 日
活動地點	國立臺中教育大學數學樓 C104a 會議室
參與對象	數學專業領域教師

活動辦理照片



子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學雙語教學案例撰寫討論
活動時間	112 年 9 月 24 日
活動地點	國立臺中教育大學數學樓 C104a 會議室
參與對象	數學專業領域教師

活動辦理照片



子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學雙語教學案例撰寫成果發表會
活動時間	112 年 10 月 28 日
活動地點	國立臺中教育大學求真樓 K107 會議室
參與對象	數學專業領域教師、師資生、學程生
活動辦理照片	
	
	
	

(二)師資生數學素養教材推廣工作坊

子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學閱讀教學活動 1
活動時間	111 年 9 月 27 日
活動地點	國立臺中教育大學數學樓 C205 教室
參與對象	師培生

活動辦理照片



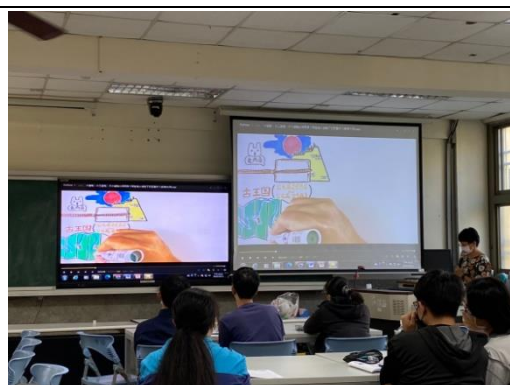
子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學閱讀教學活動 2
活動時間	111 年 10 月 4 日
活動地點	國立臺中教育大學數學樓 C205 教室
參與對象	師培生

活動辦理照片



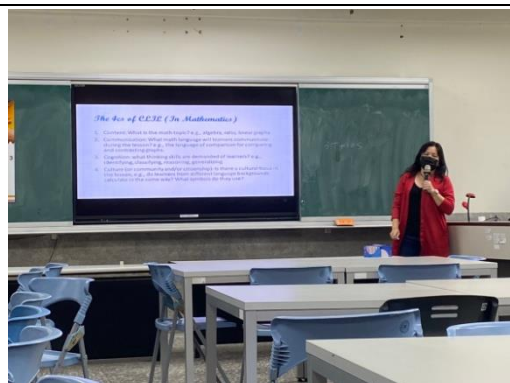
子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學有效教學活動工作坊 1
活動時間	111 年 10 月 11 日
活動地點	國立臺中教育大學數學樓 C205 教室
參與對象	師培生

活動辦理照片



子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學雙語教學活動設計 3
活動時間	111 年 10 月 18 日
活動地點	國立臺中教育大學數學樓 C205 教室
參與對象	師培生

活動辦理照片



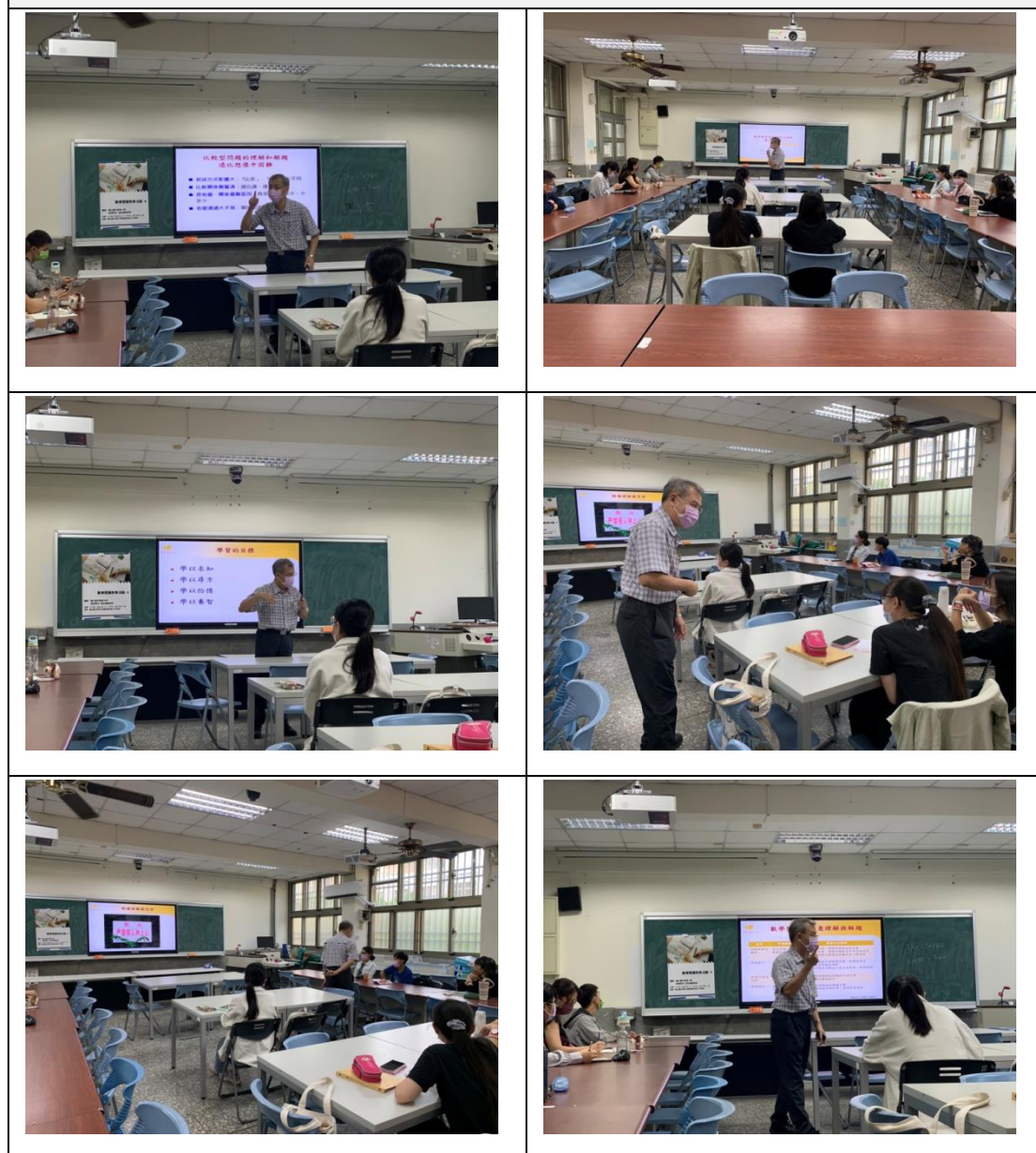
子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學有效教學活動 2
活動時間	111 年 10 月 25 日
活動地點	國立臺中教育大學數學樓 C205 教室
參與對象	師培生

活動辦理照片



子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學雙語教學活動設計 4
活動時間	111 年 11 月 1 日
活動地點	國立臺中教育大學數學樓 C205 教室
參與對象	師培生

活動辦理照片



子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學有效教學活動 3
活動時間	111 年 11 月 15 日
活動地點	國立臺中教育大學數學樓 C205 教室
參與對象	師培生

活動辦理照片



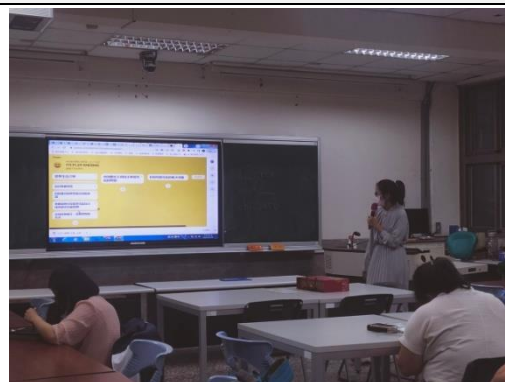
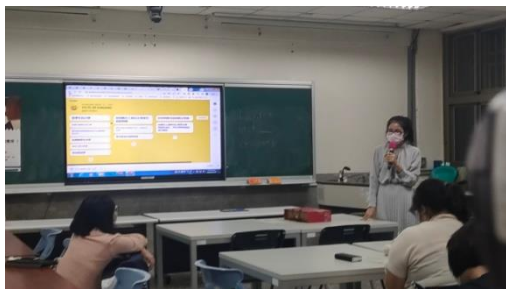
子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	數學有效教學活動 4
活動時間	111 年 11 月 22 日
活動地點	國立臺中教育大學數學樓 C205 教室
參與對象	師培生

活動辦理照片



子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	科技輔具在教學上的應用 1
活動時間	111 年 11 月 29 日
活動地點	國立臺中教育大學數學樓 C205 教室
參與對象	師培生

活動辦理照片



子計畫名稱	子計畫 4.增進師培生數學素養專業職能
執行單位	國立臺中教育大學
活動名稱	科技輔具在教學上的應用 2
活動時間	111 年 12 月 6 日
活動地點	國立臺中教育大學數學樓 C205 教室
參與對象	師培生

活動辦理照片



(三)ICT 融入數學教學工作坊

子計畫名稱	子計畫 4.小學數學教學活動設計工作坊
執行單位	國立臺中教育大學數學教育學系
活動名稱	科技融入數學教學 1
活動時間	112 年 04 月 26 日(三)下午 2:00-4:00
活動地點	國立臺中教育大學數學樓 2 樓 C205 教室
參與對象	本校在學師資生/學程生、大五實習生與教師專業碩士學位學程研究生等

活動辦理照片



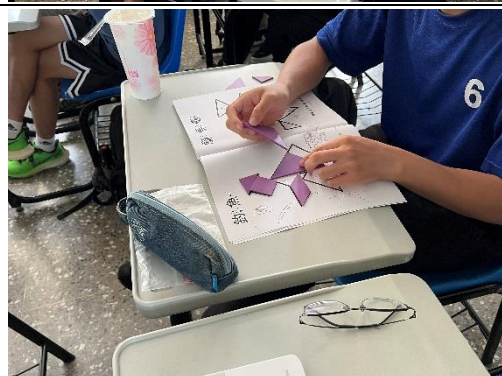
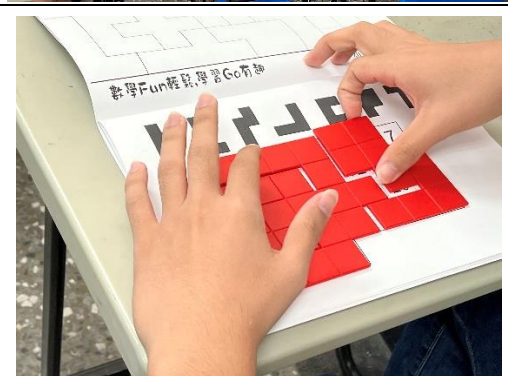
子計畫名稱	子計畫 4. 小學數學教學活動設計工作坊
執行單位	國立臺中教育大學數學教育學系
活動名稱	科技融入數學教學 2
活動時間	112 年 05 月 24 日(三)下午 2:00-4:00
活動地點	國立臺中教育大學數學樓 2 樓 C205 教室
參與對象	本校在學師資生/學程生、大五實習生與教師專業碩士學位學程研究生等

活動辦理照片



子計畫名稱	子計畫 4. 小學數學教學活動設計工作坊
執行單位	國立臺中教育大學數學教育學系
活動名稱	ICT 融入數學教學工作坊 3
活動時間	112 年 10 月 23 日(一)下午 2:00-4:00
活動地點	國立臺中教育大學數學樓 3 樓 C303 教室
參與對象	本校在學師資生/學程生

活動辦理照片



ICT 重點放在資訊設備像是平板在教室裡的應用，反應出師培生對教學實務分析後產生的學習效果，另外透過教學設備的操作分析，可以提供師培生獲得、分析與反應教學實務中 ICT 的特色。學生以省思、教師的察覺與課程分析的方式作架構，進行有關、系統、嚴格和學科的意義作連結，有效的省思是種解題的分析方法，是教師直接將注意力放在實務上特別細節的教學，給予這些細節感覺和理由，並使用這些細節的分析去發展 ICT 如何解決教室困境的假設。

子計畫名稱	子計畫 4. 小學數學教學活動設計工作坊
執行單位	國立臺中教育大學數學教育學系
活動名稱	ICT 擬題與解題 4
活動時間	112 年 11 月 20 日(一)下午 13:30-15:30
活動地點	國立臺中教育大學數學樓 3 樓 C303 教室
參與對象	本校在學師資生/學程生

活動辦理照片

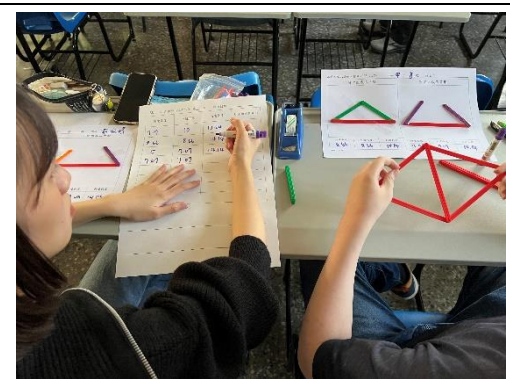
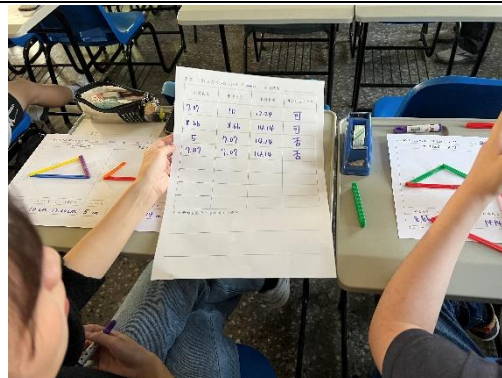
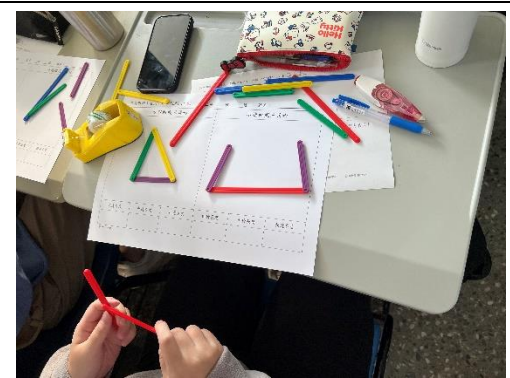


本活動基於 ICT 的數學教學和學生學習的特點進行了系統性的回顧，並對 ICT 與數學學習之間的相互作用進行了深入的分析與討論。詳細介紹 ICT 的數學活動的教學和學習過程。它解決了基於 ICT 的數學教學對學生學習影響的研究空白，明確地確定了 ICT 和數學學習之間的相互作用。學生以省思、教師的察覺與課程分析的方式作架構，進行有關、系統、嚴格和學科的意義作連結，教師直接將注意力放在實務上特別細節的教學，給予這些細節感覺和理由，並使用這些細節的分析去發展 ICT 如何解決教室困境的假設。

(四) 閱讀與數學素養教材工作坊

子計畫名稱	子計畫 4. 小學數學教學活動設計工作坊
執行單位	國立臺中教育大學數學教育學系
活動名稱	數學閱讀素養 臆測教學-從自然語言到數學語言
活動時間	112 年 11 月 24 日(五)下午 13:30-15:30
活動地點	國立臺中教育大學數學樓 3 樓 C304 教室
參與對象	本校在學師資生/學程生

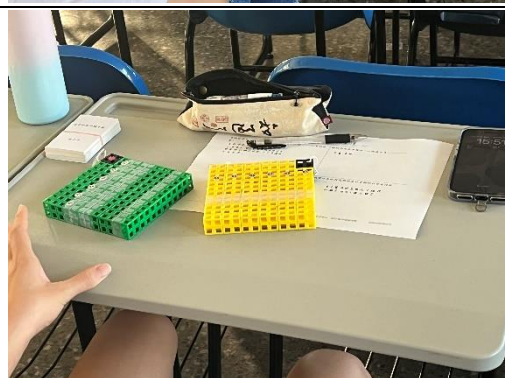
活動辦理照片



閱讀是一種學習的媒介，因沒有交流就無法想到知識。另一方面，學生仍在學習語言，且還在學習如何進行數學交流。話語能力、課堂話語參與和數學學習機會之間如何相關的總體問題。為此須讓學生將交互性話語分析的方法引入數教研究中，並與數學教育中的交互認識論的視角相互協調。從理論和經驗上說明解釋的相關性，並給出在各種情況下有限的話語能力和認知參與如何進行的描述。本活動即透過閱讀和臆測曾金學生此方面的認知並運用於數學解題上。

子計畫名稱	子計畫 4. 小學數學教學活動設計工作坊
執行單位	國立臺中教育大學數學教育學系
活動名稱	數學閱讀素養 學生數學閱讀理解表徵與迷思解讀
活動時間	112 年 12 月 15 日(五)下午 13:30-15:30
活動地點	國立臺中教育大學數學樓 3 樓 C304 教室
參與對象	本校在學師資生/學程生

活動辦理照片



閱讀是一種學習的媒介，因沒有交流就無法想到知識。另一方面，學生仍在學習語言，且還在學習如何進行數學交流。話語能力、課堂話語參與和數學學習機會之間如何相關的總體問題。為此，須讓學生將交互性話語分析的方法引入數學教育研究中，並與數學教育中的交互認識論的視角相互協調。從理論和經驗上說明解釋的相關性，並在各種情況下有限的話語能力和認知參與如何進行的描述。本活動即透過閱讀和臆測學生此方面的認知並運用於數學解題上。

(五)辦理雙語教學活動設計競賽

【110 學年度】

1. Try,try,triangle
2. 整數的四則運算-Brackets first!括號先算
3. Wow！真有臆數!
4. 每時每刻，分秒必針 - yu chin chen
5. Let's go to the Fashion Store!
6. We can pay!

【111 學年度】

1. 一克千斤
2. 聖裝打扮
3. 認識形狀

【附件 4】

110 學年度數學教學演示競賽活動 比賽（教案）設計格式範例

壹、設計理念

在國際化的浪潮下，為了厚植並強化國人英語的軟實力，政府將藉此全面啟動雙語化教學（國家發展委員會，2018）。本教案之教學活動以數學學科內容為主，英語為輔，期望學生能在提升數學素養的同時，具備基本英語溝通能力。

此單元學習重點為全等三角形圖形之判斷，幾何圖形的學習強調表徵、操作，注重學習的歷程。本教案讓學生從操作中，透過平移、旋轉、翻轉等方法，找出全等的三角形，發現適宜的解題策略，藉此提升學生對於全等幾何圖形的認知。

108 課綱中，強調情境導向素養教學，注重學生的知識、能力、態度。設計者連結生活情境，希望透過程序性知識，提升學生幾何操作能力，以培養學生運用數學語言溝通的能力，尊重、包容他人不同想法之態度。

貳、教學分析

一、教材分析

第一節課

內容：以操作自製圖卡認識全等的意義，以及如何透過平移的操作歷程，得知三角形是否全等。

認知：知道如何判斷三角形是否全等，能夠操作圖形，運用平移的方式將兩三角形疊合。

溝通：能使用數學語言以及簡單的英文語句表達自身的想法。

文化：樂於與他人良好互動與溝通以解決問題，並欣賞問題的多元解法。

第二節課

內容：以操作自製圖卡說明如何透過平移及旋轉的操作歷程，得知三角形是否全等。

認知：能夠操作圖形，運用平移與旋轉的方式將兩三角形疊合。

溝通：能使用數學語言以及簡單的英文語句表達自身的想法。

文化：樂於與他人良好互動與溝通以解決問題，並欣賞問題的多元解法。

第三節課

內容：以操作自製圖卡說明如何透過平移、旋轉或翻轉的操作歷程，得知三角形是否全等。

認知：能夠操作圖形，運用平移、旋轉與翻轉的方式將兩三角形疊合。

溝通：能使用數學語言以及簡單的英文語句表達自身的想法。

文化：樂於與他人良好互動與溝通以解決問題，並欣賞問題的多元解法。

第四節課

內容：以操作自製圖卡說明如何透過平移、旋轉或翻轉的操作歷程，得知三角形是否全等。

認知：能夠操作圖形，運用平移、旋轉與翻轉的方式將兩三角形疊合。

溝通：能使用數學語言以及簡單的英文語句表達自身的想法。

文化：樂於與他人良好互動與溝通以解決問題，並欣賞問題的多元解法。

二、學生分析

學生已具備以下英語文能力：

1. 角、邊、頂點的英文
2. 能聽懂與說出基本英文語句

學生已具備以下數學能力：

1. 知道三角形的基本構造
2. 對幾何圖形進行操作

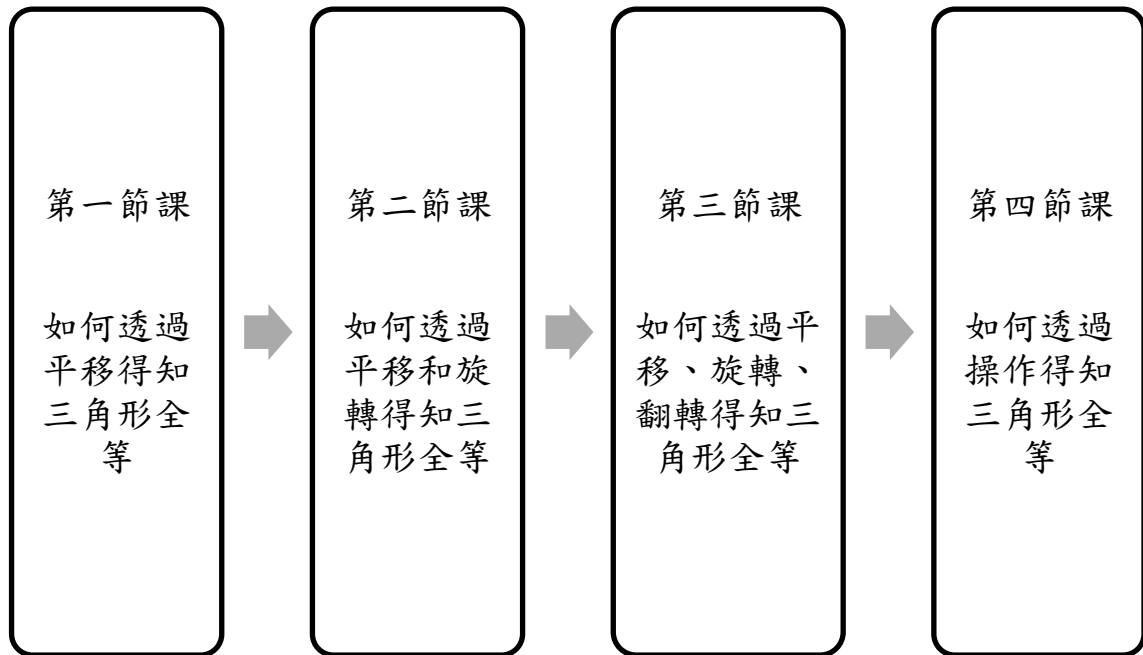
三、教學方法分析

問題導向教學法(Problem-Based Learning)：教師透過提問，引導學生思考三角形應如何操作，才能證明兩個三角形全等。

情境式教學法(Situated Learning)：前三節課以雙人對話情境佈題，讓學生思考情境中的兩人對於「情境中的兩個形體是否全等」的敘述是否合理，並驗證自己想法。

四、課程概念架構圖

指標/單元名稱/活動/策略/評量方式 (可依上列項目自行繪製概念架構圖)



本單元

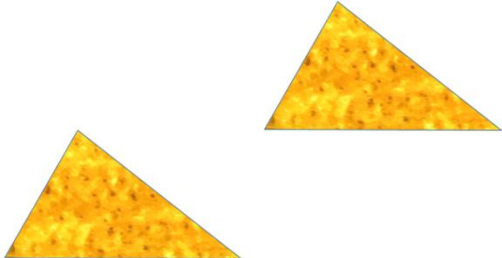
S-4-6 平面圖形的全等：以具體操作為主。形狀大小一樣的兩圖形全等。能用平移、旋轉、翻轉做全等疊合。全等圖形之對應角相等、對應邊相等。

後續

S-5-1 三角形與四邊形的性質：操作活動與簡單推理。含三角形三內角和為180度。三角形任意兩邊和大於第三邊。平行四邊形的對邊相等、對角相等。

S-5-4 線對稱：線對稱的意義。「對稱軸」、「對稱點」、「對稱邊」、「對稱角」。由操作活動知道特殊平面圖形的線對稱性質。利用線對稱做簡單幾何推理。製作或繪製線對稱圖形。

參、教學活動設計

單元名稱	三角形	適用年級	國小四年級		
課程名稱	Try, try, triangle!	教學時間	共 4 節		
教材版本	參考 109 四上各版本教科書後自編				
教學準備	圖卡(教具)、學習附件(學具)				
能力指標/學習表現		分年細目/學習內容		單元教學目標	
<p>數學領域： s-II-2 認識平面圖形全等的意義。</p> <p>英語文領域： ◎ 1-II-7 能聽懂課堂中所學的字詞。 ◎ 1-II-10 能聽懂簡易句型的句子。 ◎ 2-II-3 能說出課堂中所學的字詞。 6-II-1 能專注於教師的說明與演示。 6-II-2 積極參與各種課堂練習活動。 6-II-3 樂於回答教師或同學所提的問題。 7-II-2 能妥善運用情境中的非語言訊息以幫助學習。</p>		<p>數學領域： S-4-6 平面圖形的全等：以具體操作為主。形狀大小一樣的兩圖形全等。能用平移、旋轉、翻轉做全等疊合。全等圖形之對應角相等、對應邊相等。</p> <p>英語文領域： ◎ Ac-II-2 簡易的生活用語。 B-II-1 第二學習階段所學字詞及句型的生活溝通。</p>		<p>第一節課 以操作自製圖卡認識全等的意義，以及如何透過平移的操作歷程，證明三角形是否全等。</p> <p>第二節課 以操作自製圖卡說明如何透過平移及旋轉的操作歷程，證明三角形是否全等。</p> <p>第三節課 以操作自製圖卡說明如何透過平移、旋轉或翻轉的操作歷程，證明三角形是否全等。</p> <p>第四節課 以操作自製圖卡說明如何透過平移、旋轉或翻轉的操作歷程，證明三角形是否全等。</p>	
單元教學目標		教學內容		時間	評量方式
透過平移後疊合三角形，了解三角形全等		<p>I. Warm up 情境引導： 教師拿出兩個三角形教具(大)。</p> 		2'	

教師：這裡有兩塊餅乾(三角形)，Peter 說它們是一樣，但 Kevin 說：「哪有！它們明明就不一樣」，你們認為誰的說法是對的？

There are two triangle cookies. Peter says, "They are the same." but Kevin says, "No! They are not the same." Who is right, Peter or Kevin?



學生可能回答：Peter/Kevin 對。
Peter/Kevin is right.

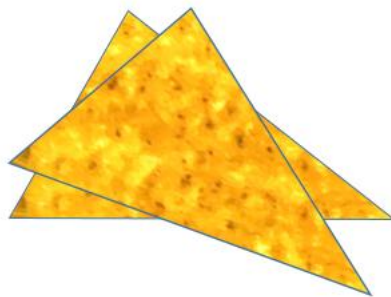
II. Presentation

全等概念引導：

教師：如何判斷它們是不是一模一樣？How do we know?

學生可能回答：疊起來就一樣大

(教師把兩三角形疊在一起，但不對齊邊角)



教師：Like this? 是這樣疊嗎？

學生：No~~

教師：How to do?

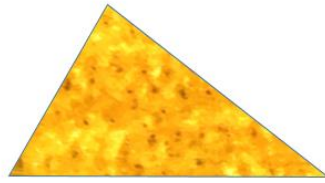
(教師發下三角形學具，請每位學生操作說明)

口語評量：請
學生試著回答
教師提問

35'
(5')

口語評量：學
生回答教師提
問

這兩個三角形一模一樣)



(學生操作的結果)

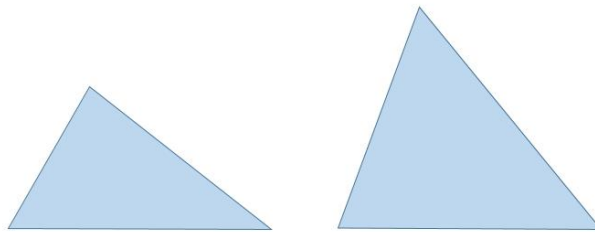
教師：疊的時候要注意哪些地方？What should we focus on?

學生：每個地方都要疊到。Everywhere.

教師：每個地方是哪些地方？需要注意角嗎？需要注意邊長嗎？需要注意頂點嗎？

Should we focus on angle(s)? Should we focus on side(s)? Should we focus on vertex(es)?

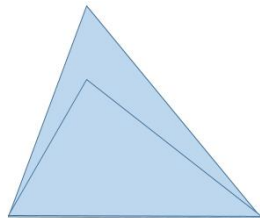
學生可能回答：需要注意角、邊、頂點。



教師：操作看看，請問這兩個三角形是否一模一樣？Are they the same? Can you try?

(學生操作)

學生：有些邊一樣，但其他地方不一樣



教師：那他們可以算一模一樣嗎？Are they all the same?

學生：No!

教師：所以我們疊合三角形時，需要注意角、邊、頂點，如果它們完全疊合，那這兩個三角形就全等。

So, we have to focus on angles, sides, and the

實作評量：請學生操作
口語評量：學生回答教師提問

實作評量：請學生操作

口語評量：學生回答教師提問，判斷是否一模一樣

vertexes when we overlap the two triangles. If they are all the same, they are congruent.

活動一：

(教師在黑板上貼兩個三角形)



教師提問：這兩個三角形是否全等？你怎麼知道的？

Are they congruent? How do you know?

Come to the stage and make a try.

(教師請學生上台操作)

T: You can't take away (示範動作)the triangle from the blackboard. 三角形不能離開黑板

T: What is your idea? Can you try?

(學生操作，把左邊的三角形平移到右邊)



(教師示範平移)

T: ____ moved the triangle onto this triangle.

What she did(重複動作) is called move(平移).

(教師再發下三角形學具，請學生平移)

第一組(水平平移)

T: Now, move this triangle onto that triangle.

Remember, you can't take away (示範動作)the triangle. 三角形不能離開桌面

T: Are the triangles the same?

T: Why? How did you know?

T: We can move this triangle from left to right.

(水平平移)

第二組(垂直平移)

(15')

實作評量：請學生上台操作

實作評量：請學生操作

實作評量：請學生操作



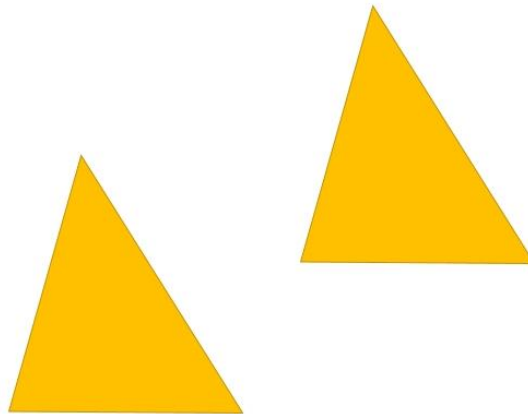
T: Now, move this triangle onto that triangle.
Remember, you can't take away (示範動作)the triangle. 三角形不能離開桌面

T: Are the triangles the same?

T: Why? How did you know?

T: We can move this triangle from top to bottom.
(垂直平移)

第三組(平移)



T: Now, move this triangle onto that triangle.
Remember, you can't take away (示範動作)the triangle. 三角形不能離開桌面

T: Are the triangles the same?

T: Why? How did you know?

T: There are many ways.

Idea 1:先水平平移再垂直平移

T: We can move from left to right and top to bottom. (示範動作)

Idea 2:先垂直平移再水平平移

T: We can move from top to bottom and left to

實作評量：請
學生操作

實作評量：請
學生操作

right. (示範動作)

Idea 3: 直接平移

T: We can move directly. (示範動作)

T: You can choose the way you like.

活動二：教師給予學生五組三角形，請學生透過平移，找出一模一樣的三角形。

教師詢問哪些三角形是一模一樣的。

(教師點學生上台)

T: How did you move? Go on the stage and show us.

(學生透過操作重疊三角形)

教師請其他學生判斷是否正確。

T: Is he or she right? Why?

T: Anything else? 還有沒有其他組全等的三角形？

T: We can find the same triangles by moving.

活動三：三角形的對應點、邊、角教學 (10')



教師：這是角 A、這是角 B、這是角 C……這是角 F。

This is angle A. This is angle B. This is angle C...

教師：所以，角 A 應該要疊到哪一個角？

Which angle should we put on angle A?

學生：角 D

Angle D.

教師：為什麼要把角 A 疊到角 D？

Why should we put angle A on angle D?

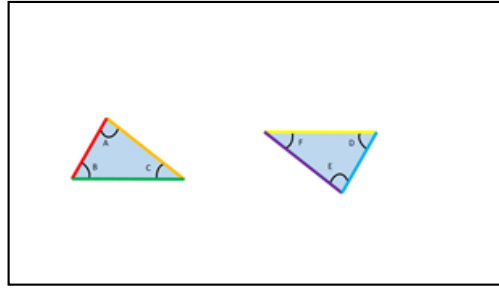
學生：因為它們一樣大

實作評量：請學生上台操作
口語評量：學生回答教師提問

口語評量：學生回答教師提問，說出對應角

	<p>They are the same.</p> <p>教師：黃色的邊，應該要疊到哪個顏色的邊？ Which side should we put on yellow side? 學生：紫色的邊 Purple side. 教師：為什麼要疊到紫色的邊？ Why? 學生：因為它們一樣長。 They are the same.</p> <p>教師：點 a 會疊到哪個點上？ Which point should we put on point a? 學生：點 d。 Point d.</p> <p>III. Wrap up T: We can find the same triangles by moving. T: We can move the triangle from left to right. T: We can move the triangle from top to bottom. T: We can move from left to right or move from top to bottom. You can choose the way(s) you like.</p>		<p>口語評量：學生回答教師提問，說出對應邊</p> <p>口語評量：學生回答教師提問，說出對應點</p> <p>口語評量：學生回答教師提問</p>	
<p>單元教學目標</p>	<p>教學內容</p>	<p>時間</p>	<p>評量方式</p>	<p>備註</p>
<p>透過平移、旋轉後疊合，了解三角形全等</p>	<p>I. Warm up (教師拿出兩個三角形教具) 教師：這裡有兩張相同顏色的色紙(三角形)，Jane 說它們是一樣，但 Eric 說：「哪有！它們明明就不一樣」，你們認為誰的說法是對的？</p> <div> </div> <p>There are two triangle cookies. Jane says, “They</p>	<p>5’</p>		

are the same.” but Eric says, “No! They are not the same.” Who is right, Jane or Eric?



學生可能回答：

Jane/Eric 對。

Jane/Eric is right.

教師：如何判斷它們是不是一樣大？

How do we know?

學生可能回答：疊起來就一樣大。

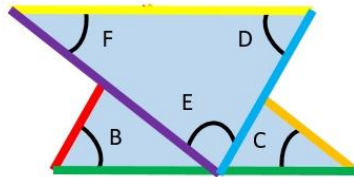
教師：怎麼疊？

How to do it?

學生：利用平移的方式

Move/moving.

(教師平移使三角形重疊)



教師：這樣有一樣大嗎？

Are they congruent?

學生可能回答：一樣/不一樣大

Yes/no.

教師：為什麼不一樣大呢？

Why?

學生：因為它們沒有完全重合

II. Presentation

活動一：(延續本節課的引起動機)

教師：那為什麼有些人覺得一樣大呢？

Why do you think they are the same?

學生：旋轉後就會一樣大

口語評量：學生回答教師提問

口語評量：學生回答教師提問

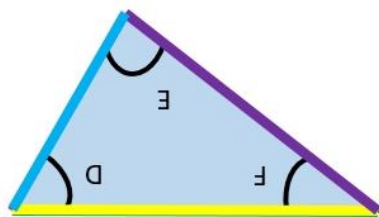
30'
5'

口語評量：學生回答教師提問

教師：怎麼旋轉？

How to spin?

(請學生上台操作)



教師：剛剛覺得不一樣大的同學，現在覺得它們一樣大嗎？

Now, are they the same?

學生：一樣大了

Yes!

教師：為什麼？

Why?

學生：因為它們現在完全疊合

活動二：旋轉後的對應角、邊、頂點

(10')

(教師給予學生兩個能透過平移與旋轉就疊合的三角形)

(教師詢問學生這兩個三角形是否一模一樣)

(學生操作後)

學生可能回答：一樣

教師：這是角 A、這是角 B、這是角 C……這是角 F。

This is angle A. This is angle B. This is angle C...

教師：所以角 A 應該要疊到哪一個角？

Which angle should we put on angle A?

學生：角 D

Angle D.

教師：為什麼要把角 A 疊到角 D？

Why should we put angle A on angle D?

學生：因為它們一樣大

They are the same.

教師：黃色的邊，應該要疊到哪個顏色的邊？

實作評量：請學生上台操作

實作評量：請學生操作，將學具完全疊合

口語評量：學生回答教師提問，回答正確的對應角

口語評量：學生回答教師提

Which side should we put on yellow side?

學生：紫色的邊

Purple side.

教師：為什麼要疊到紫色的邊？

Why?

學生：因為它們一樣長。

They are the same.

教師：點 a 會疊到哪個點上？

Which point should we put on point a?

學生：點 d

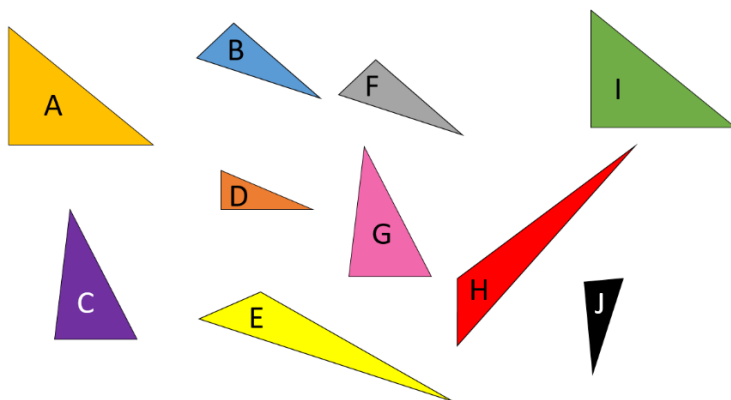
Point d.

教師：所以我們透過平移和旋轉，可以知道這 (15')
兩個三角形全等

So we can move and spin the triangle, then we know they are congruent.

活動三：透過平移和旋轉找出全等三角形

(教師給予學生五組三角形，請學生透過平移和旋轉，找出一模一樣的三角形)



(教師詢問哪些三角形的大小是一模一樣的)

(教師點學生上台)

T: How did you move/spin? Go on the stage and show us.

(學生透過操作重疊三角形)

(教師請其他學生判斷是否正確)

T: Is he or she right? Why?

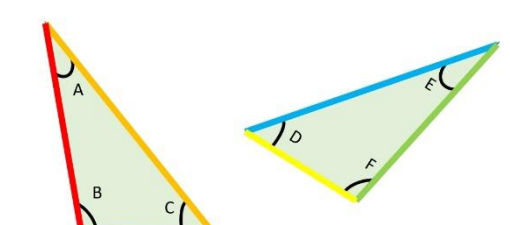
T: Anything else? 還有沒有其他組一模一樣的三角形？

問，回答正確的對應邊

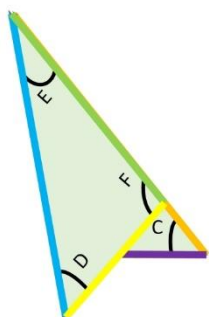
口語評量：學生回答教師提問，回答正確的對應點

實作評量：請學生操作，透過平移和旋轉，找出一模一樣的三角形

實作評量：請學生上台操作，透過平移和旋轉，找出一模一樣的三角形
口語評量：學生回答教師提問，判斷是否正確

	<p>(教師點學生上台)</p> <p>T: How did you move/spin? Go on the stage and show us.</p> <p>(學生透過操作重疊三角形)</p> <p>(教師請其他學生判斷是否正確)</p> <p>T: Is he or she right? Why?</p> <p>T: Anything else? 還有沒有其他組一模一樣的三角形?</p> <p>III. Wrap up</p> <p>T: We can find the same triangles by moving and spinning.</p> <p>(教師做出動作，複習此動作是 moving 或 spinning)</p>	5'	口語評量：學生回答教師提問	
單元教學目標	教學內容	時間	評量方式	備註
透過平移、旋轉、翻轉後疊合，了解三角形全等	<p>I. Warm up:</p> <p>(教師拿出兩個三角形教具)</p> <p>教師：這裡有兩張顏色相同的色紙(三角形)，Joanna 說它們是一樣的，但 Andy 說：「哪有！它們明明就不一樣」，你們認為誰的說法是對的？</p> <p>There are two triangle cookies. Joanna says, "They are the same" but Andy says, "No! They are not the same." Who is right, Joanna or Andy?</p>  <p>學生可能回答： Joanna/Andy 對。 Joanna/Andy is right.</p> <p>教師：如何判斷它們是不是一樣大？ How do we know?</p> <p>學生可能回答：利用平移/旋轉的方式，疊起來</p>	5'	口語評量：學生試著回答教師提問	

就一樣大
教師：怎麼操作？
(學生上台操作)



學生：好像無法透過平移和旋轉的方式疊合

II. Presentation

活動一：(延續本節課的引起動機)

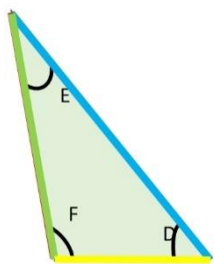
教師：那為什麼有些人覺得一樣大呢？

T: Why do you think they are the same?

學生：翻過去就會一樣大

教師：怎麼翻？ How to do it?

(請學生上台操作)



教師：剛剛覺得不一樣大的同學，現在覺得它們一樣大嗎？ Now, are they the same?

學生：一樣大了。Yes!

教師：為什麼？Why?

學生：因為它們現在完全疊合

教師：除了平移和旋轉，剛剛那位同學所說、所使用的方法，叫做「翻轉」

T: It's called "overturn."

活動二：對應邊、角、頂點

(教師給予學生兩個能透過平移、旋轉、翻轉就疊合的三角形)

實作評量：請學生上台操作，平移和旋轉三角形

30'

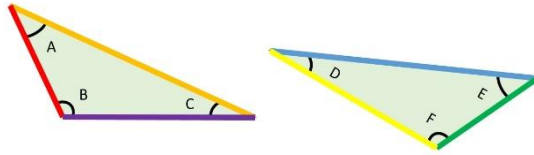
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口語評量：學生回答教師提問

實作評量：請學生上台操作，將三角形翻轉

口語評量：學生回答教師提問

(10')



(教師詢問學生這兩個三角形是否一模一樣)

(學生操作後)

學生回答：一模一樣

教師：這是角 A、這是角 B、這是角 C……這是角 F。

This is angle A. This is angle B. This is angle C...

教師：所以角 A 應該要疊到哪一個角？

Which angle should we put on angle A?

學生：角 E

Angle E.

教師：為什麼要把角 A 疊到角 E？

Why should we put angle A on angle E?

學生：因為它們一樣大

They are the same.

教師：角 B 應該要疊到哪一個角？

Which angle should we put on angle B?

學生：角 F

Angle F.

教師：為什麼要把角 B 疊到角 F？

Why should we put angle B on angle F?

學生：因為它們一樣大

They are the same.

教師：角 C 應該要疊到哪一個角？

Which angle should we put on angle C?

學生：角 D

Angle D.

教師：為什麼要把角 C 疊到角 D？

Why should we put angle C on angle D?

學生：因為它們一樣大

They are the same.

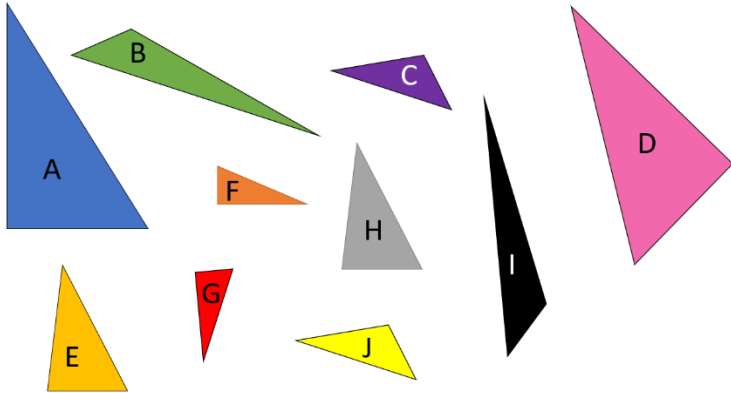
教師：紫色的邊，應該要疊到哪個顏色的邊？

Which side should we put on purple side?

實作評量：請學生操作，平移、旋轉、翻轉三角形

口語評量：學生回答教師提問，回答正確的對應角

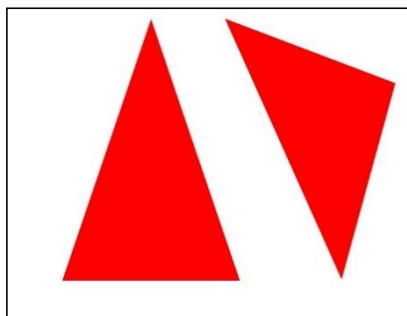
	<p>學生：黃色的邊 Yellow side. 教師：為什麼要疊到黃色的邊？ Why? 學生：因為它們一樣長。 They are the same. 教師：紅色的邊，應該要疊到哪個顏色的邊？ Which side should we put on red side? 學生：綠色的邊 Green side. 教師：為什麼要疊到綠色的邊？ Why? 學生：因為它們一樣長。 They are the same. 教師：橘色的邊，應該要疊到哪個顏色的邊？ Which side should we put on orange side? 學生：藍色的邊 Blue side. 教師：為什麼要疊到藍色的邊？ Why? 學生：因為它們一樣長。 They are the same.</p> <p>教師：點 a 會疊到哪個點上？ Which point should we put on point a? 學生：點 e。 Point e. 教師：點 b 會疊到哪個點上？ Which point should we put on point b? 學生：點 f。 Point f. 教師：點 c 會疊到哪個點上？ Which point should we put on point c? 學生：點 d。 Point d.</p> <p>教師：所以我們透過平移、旋轉和翻轉，可以知道這兩個三角形全等</p>	<p>口語評量：學生回答教師提問，回答正確的對應邊</p> <p>口語評量：學生回答教師提問，回答正確的對應點</p>
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	<p>T: So we can move, spin, and overturn the triangle, then we know they are congruent.</p> <p>活動三：找出全等三角形 (教師給予學生五組三角形，請學生找出一模一樣的三角形)</p>  <p>(教師詢問哪些三角形的大小是一模一樣的) (教師點學生上台)</p> <p>T: How did you do? Go on the stage and show us. (學生透過各種技巧重疊三角形) 學生：翻轉 學生：平移 學生：旋轉 (教師請其他學生判斷是否正確)</p> <p>T: Is he or she right? Why? T: Anything else? 還有沒有其他組一模一樣的三角形?</p> <p>III. Wrap up T: We can find the congruent triangles by moving, spinning, or overturning. (教師做出動作，複習此動作是 moving 或 spinning 或 overturning)</p>	(15')	實作評量：請學生操作，找出一模一樣的三角形	
單元教學目標	教學內容	時間	評量方式	備註
依據前三節課所學內容，進行綜合	<p>I. Warm up (教師拿出兩個三角形教具)</p>	5'	口語評量：學生回答教師提問	

統整

教師：這裡有兩張同色色紙(三角形)，Jane 說它們不一樣，但 Eric 說：「哪有！只要透過平移、旋轉或翻轉，兩個三角形就會一樣」，你們認為誰的說法是對的？

There are two triangle cookies. Jane says, "They are not the same" but Eric says, "No! They are the same. After we move, spin, and overturn them, they are the same." Who is right, Jane or Eric?



學生可能回答：

Jane/Eric 對。

Jane/Eric is right.

(請學生上台操作)

T: How do you know they are the same?

(學生透過操作發現兩三角形無法完全疊合)

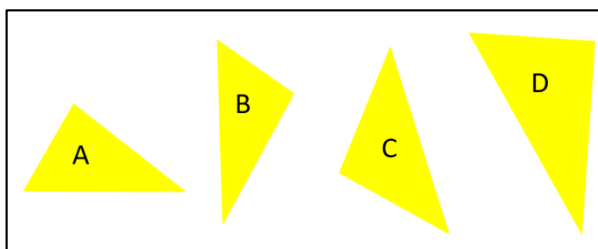
T: Are they the same?

S: No.

II. Presentation

活動一：密室大逃脫

情境引導：有一天，Jane、Joanna、Eric 去玩密室逃脫，牆上出現了四個不同的三角形，他們需要從桌上找出對應的三角形放到牆上，得到密碼，才能成功打開密室逃脫的門，讓我們一起幫助他們逃出去吧！



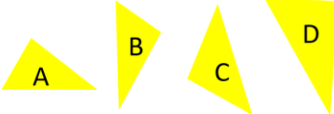
口語評量：學生回答教師提問、表達自己的想法

30'

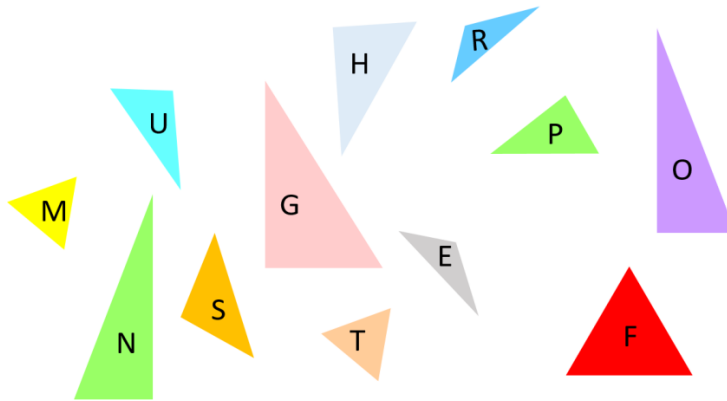
(15')

(教師發下學習單，請學生透過平移、旋轉、翻轉找出全等三角形)

Worksheet



Triangle ____ is the same as triangle A.
 Triangle ____ is the same as triangle B.
 Triangle ____ is the same as triangle C.
 Triangle ____ is the same as triangle D.
 The password is _____.



T: How can we find the same triangle?
 S: We can find the congruent triangles by moving and spinning.
 T: Which triangle is the same as triangle A?
 S: Triangle P.
 T: Which triangle is the same as triangle B?
 S: Triangle U.
 T: Which triangle is the same as triangle C?
 S: Triangle S.
 T: Which triangle is the same as triangle D?
 S: Triangle H.
 T: What is the password?
 S: PUSH!
 T: Excellent!

活動二：全等對對碰

(教師發給每人一張三角形圖卡，請學生透過平移、旋轉或翻轉等技巧，找出與自己拿到的那張三角形全等的同學，找到後，拿給教師檢

實作評量：請學生操作，透過平移、旋轉、翻轉找出全等三角形

口語評量：學生回答教師提問，說出與題目對應的三角形

(15')

實作評量：請學生操作，找出與自己手上

	<p>查並說出 “We are congruent!”, 即完成任務)</p> <p>S: “We are congruent!”</p> <p>T: “Yes! Good job!”</p> <p>III. Wrap up</p> <p>T: We can find the congruent triangles by moving and spinning.</p> <p>T: Their points, sides, and angles are the same. (教師作出動作，說明兩個全等的三角形，它們的對應點、邊、角都會一樣大)</p>	5'	<p>全等的三角形 口語評量：學生回答句型</p> <p>口語評量：學生回答教師提問</p>	
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肆、教學評量

單元教學目標	評量方式	備註
透過平移後疊合，了解三角形全等	<p>實作評量：學生以平移的方式操作三角形圖卡，使其兩兩疊合。</p> <p>口語評量：學生回答教師的提問、表達自己的想法</p>	
透過平移、旋轉後疊合，了解三角形全等	<p>實作評量：學生以平移、旋轉的方式操作三角形圖卡，使其兩兩疊合。</p> <p>口語評量：學生回答教師的提問、表達自己的想法</p>	
透過平移、旋轉、翻轉後疊合，了解三角形全等	<p>實作評量：學生以平移、旋轉、翻轉的方式操作三角形圖卡，使其兩兩疊合。</p> <p>口語評量：學生回答教師的提問、表達自己的想法</p>	
依據前三節課所學內容，進行綜合統整	<p>實作評量：學生以平移、旋轉、翻轉的方式操作三角形圖卡，使其兩兩疊合。</p> <p>口語評量：學生回答教師的提問、表達自己的想法</p>	

110 學年度小學數學雙語教學活動設計競賽

教案設計格式範例

壹、設計理念

讓學生能透過生活化的題目，學習加減、乘除併式的列式與計算，了解數學與生活的關聯的同時，也能運用數學解決生活中常見的問題。並透過與同學討論不同的列式方式差異，培養與人合作解決問題的想法。

貳、教學分析

一、教材分析

本單元接續第六冊第二單元，加、減與除的兩步驟問題，近一步推展至將加減、乘除兩算式合併為一，並學習「小括號」在數學算式中的意義與應用，並熟悉乘法結合率。

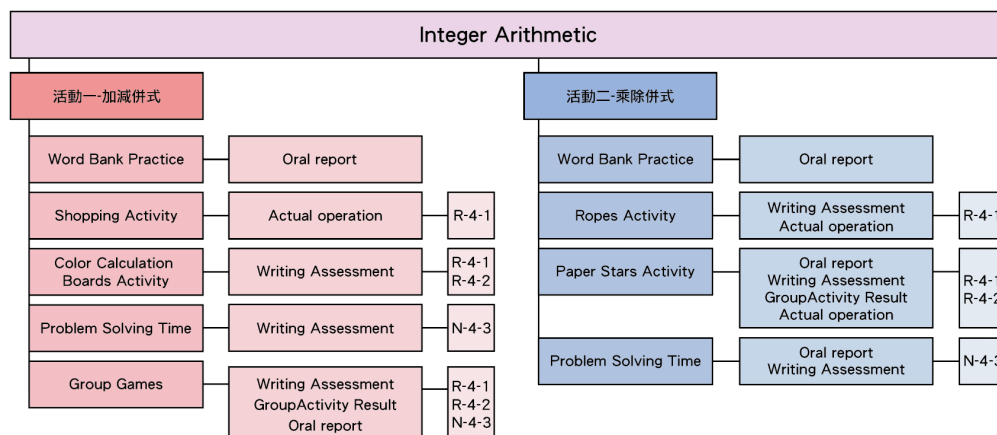
二、學生分析

學生已在三年級下學期學習加、減與除的兩步驟問題，已具備根據題目內容列出符合題意算式之能力，但尚無法將兩算式合二為一。

三、教學方法分析

首先，活動一的部分，讓學生複習加減法兩步驟問題的列式題型，學生熟悉後引導學生將兩算式合併為一，並讓學生發現需標示出「算式中要先算的部分」，否則答案有可能不正確。接著，進一步介紹小括號在數學算式中的使用方式。接著在活動二的部分，引導學生發現使用乘法結合率能簡化計算過程，並透過練習乘除法併式的題目，讓學生熟悉小括號的應用及數學算式的正確計算次序(括號內的先算，再由左到右計算)。

四、課程概念架構圖



參、教學活動設計

單元名稱	Integer Arithmetic	適用年級	Grade 4		
課程名稱	Brackets first! 括號先算	教學時間	4 Period		
教材版本	康軒				
教學準備	無				
能力指標/學習表現	分年細目/學習內容		單元教學目標		
<p>Activity 1 n-II-5 在具體情境中，解決兩步驟應用問題。 r-II-3 理解兩步驟問題的併式計算與四則混合計算之約定。</p> <p>Activity 2 r-II-4 認識兩步驟計算中加減與部分乘除計算的規則並能應用。 n-II-5 在具體情境中，解決兩步驟應用問題。 r-II-3 理解兩步驟問題的併式計算與四則混合計算之約定。 r-II-4 認識兩步驟計算中加減與部分乘除計算的規則並能應用。</p>	<p>Activity 1 R-4-1 兩步驟問題併式:併式是代數學學習的重要基礎。含四則混合計算的約定(由左往右算、先乘除後加減、括號先算)。學習逐次減項計算。 R-4-2 四則計算規律(I):兩步驟計算規則。加減混合計算、乘除混合計算。在四則混合計算中運用數的運算性質。</p> <p>Activity 2 N-4-3 解題:兩步驟應用問題(乘除,連除)。乘與除、連除之應用解題。 R-4-1 兩步驟問題併式:併式是代數學學習的重要基礎。含四則混合計算的約定(由左往右算、先乘除後加減、括號先算)。學習逐次減項計算。 R-4-2 四則計算規律(I):兩步驟計算規則。加減混合計算、乘除混合計算。在四則混合計算中運用數的運算性質。</p>		<p>1. Students can write down corresponding number sentences based on the questions.</p> <p>2. Students can combine addition and subtraction into one number sentence.</p> <p>3. Students can combine multiplication and division into one number sentence</p> <p>4. Students can do the number sentence in the order of operation.</p>		
單元教學目標	教學內容		時間	評量方式	備註

<p align="center">Activity 1</p>	<p align="center">Activity 1</p>	<p align="center">8min</p>				
<ul style="list-style-type: none"> Students be familiar with important words that will be used in the course. 	<ul style="list-style-type: none"> Word Bank Practice A. The teacher asks students to repeat vocabulary after him/her. T: Please repeat after me. Left 剩下 Circle up 圈起來 Minus 減 First 最先 Number sentence 算式 Same 相同的 Brackets 括號; Plus 加; Spend (Spent) 花費(花了) <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <p align="center">Number sentence Plus Minus Brackets Spend Left</p> </td> <td style="width: 50%; padding: 5px;"> <p align="center">Circle up First Same</p> </td> </tr> </table> </div> <ul style="list-style-type: none"> B. The teacher uses English and pictures on the slide to explain the meaning of each vocabulary. T: Brackets, Bra-ckets, these are brackets (Point the brackets on the slide). T: Left, look at the picture, there is one apple left. T: Number sentence is a math sentence, like this one, and this one. T: Plus, look at the number sentence, five plus two is seven, plus. T: Minus, look at the number sentence, five minus two is three, Minus. T: Spend, you need to spend money to buy something. T: Circle up, Circle up the number "5", That's right! T: First, look at the picture, who is the first? That's right! 	<p align="center">Number sentence Plus Minus Brackets Spend Left</p>	<p align="center">Circle up First Same</p>		<p>Oral report</p>	<p>Slide</p> <p>Worksheet</p>
<p align="center">Number sentence Plus Minus Brackets Spend Left</p>	<p align="center">Circle up First Same</p>					

T: Same, which are the same shape?

<p>Brackets</p> <p>() [] { }</p>	<p>Left</p>
<p>Number sentence</p> <p>$7 + 5 = 12$ $44 - 10 = 34$ $5 \times 4 = 20$ $35 \div 7 = 5$</p>	<p>Plus & Minus</p> <p>$5 + 2 = ?$ $5 - 2 = ?$</p>
<p>Spend</p>	<p>Circle up</p> <p>$7 + 5 = 12$ $5 \times 4 = 20$</p>
<p>First</p>	<p>Same</p>

● **Warm-up**

A. Students use toy coins for shopping activity.

T: Now, each group has 10 toy coins, how much does a group have?

S: 100 dollars!

T: That's right! Now, look at the slide, you have 100 dollars, you want to buy a pen and a tape, how much do you spend? And how much money do you have left? Please discuss it with your group members.

5min

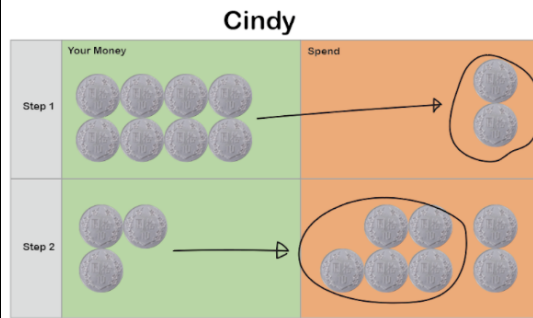
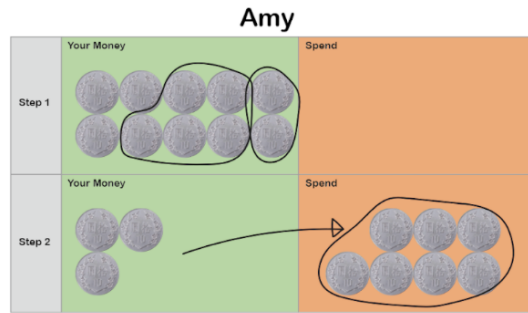
Slide
Toy cions

Actual
operation

- Through "shopping activity" and toy coins, let students realize that there may have different number sentences under the same situation.

	<p>-----</p> <p>T: Ok, group 2, how much do you spend? S: 70 dollars!</p> <p>T: How do you know? How much is a pen and how much is a tape? S: A pen is 20 dollars, a tape is 50 dollars, so it is 70 dollars.</p> <p>T: Very good! Then, how much money do you have left? S: 30 dollars.</p> <p>T: That's right! Because... S: 100 minus 70 equals 30 dollars. T: Good job.</p> <p>-----</p>	4min		
	<p>T: Now, everyone please write down the number sentence. You need to write down how much you spend, and how much you have left. You can use the toy coin to help yourself.</p> <p>T: Now, check your group member's answers, do you have the same number sentences? Where is the difference? S: My number sentence is "20+50=70, 100-70=30", I wrote down how much we spent first, and then how much we have left.</p> <p>S: My number sentence is "100-20=80, 80-50=30", I wrote down how much we spent on a pen, and then how much we spent on a tape.</p> <p>T: So, you have different number sentences! Amy wrote down how much they spent in total first, and then wrote down how much they have left; Cindy wrote down how much they spent on a pen, and then how much they spent on a tape. Both of you are very good! (The teacher moves coins on color calculation</p>	10min		<p>Slide</p> <p>Toy cions</p> <p>Color calculation board</p>

board to let students know the difference between the two number sentences)



● **Presentation**

A. Students use color calculation boards and toy coins to discover the different number sentence.

T: Now, everyone has two number sentences there, can you write it down in only one number sentence?

T: Everyone finish? So, which part do you do first in the number sentence? Please circle up.

T: Everyone did a great job! Now, we all know what should be done first in the number sentence. What if you don't circle up something? Does it have the same answer?

S: Yes/No.

T: Oh, someone found that the answer may not be the same. Please discuss with your group members, why may the answer not be the same? And what do the number sentences mean with or without a circle?

- Students can write down the problem in one number sentence.

12min writing assessment

Toy cions
Color calculation board

You can use toy coins to demonstrate the difference.

S: (Demonstration with toy coins) The number sentence “with” a circle is like this, “HERE(70 dollars)” are the money that we spent, and total 100 minus “HERE(70 dollars)” equals “HERE (30 dollars)”.



T: Very good! Can you tell me ”20+50”, what does it mean?

S: We spent 20+50 dollars.

T: That’s right! And could you also explain the number sentence “without” a circle means?

S: (Demonstration with toy coins) The number sentence “without” a circle is like this, total 100 minus “HERE (20 dollars)” equals 80, and then plus 50…… (Students run out of extra toy coins)



T: Good try! ”Minus 20”, what does it mean?

S: Spent 20 dollars.

T: And”plus 50”, what does it mean?


S:……


T: It means we get 50 dollars. Do we get 50 dollars?

S: No.

T: So, if we didn't circle up what needed to be done first, the number sentence

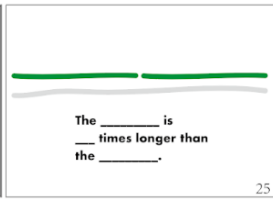
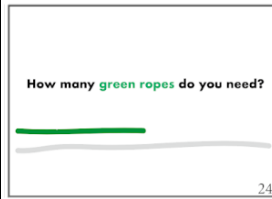
<ul style="list-style-type: none"> ● Students realize that the number sentence must be calculated in order, otherwise the answers may not be the same. ● Students learn to use brackets to differentiate the order of calculations for two-step problems. 	<p>might have another meaning, and the answer might not be the same!</p> <p>B. Students learn about the use of brackets in mathematics.</p> <p>T: In number sentences, we use “brackets” as a circle, you can use brackets to mark that “I should do here first”.</p> <p>T: Now look at the slide, what is the answer of the left side number sentence?</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <div style="border: 1px solid gray; padding: 2px; display: inline-block; margin-right: 10px;">$100 - 60 + 30 = ?$</div> <div style="border: 1px solid gray; padding: 2px; display: inline-block;">$100 - (60 + 30) = ?$</div> </div> <p>S: 70.</p> <p>T: What did you do first?</p> <p>S: 100 minus 60.</p> <p>T: Good job, there is no bracket, so do the number sentence from left to right.</p> <p>T: Then what’s the answer of the right one?</p> <p>S: 10.</p> <p>T: That’s right! What did you do first?</p> <p>S: 60 plus 30.</p> <p>T: Very good! There are brackets, so you need to do what’s in the brackets first!</p> <p>-----</p> <p>C. Student problem solving time.</p> <p>T: Please look at your textbook page 79, Maggie has 1000 dollars. She spent 365 dollars on pork, and 235 dollars on BBQ things. How much money did she have left?</p>	<p>5min</p> <p>5min</p>	<p>Oral report</p> <p>Oral report</p>	<p>Slide</p> <p>Textbook</p>
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<p>● Students realize that brackets come first, which is the same as the answer without brackets in number sentence.</p>	<p> 做做看</p> <p>(1) Maggie has 1000 dollars. She spent 365 dollars on pork, and 235 dollars on BBQ things. How much money did she have left?</p> <p>S: 400 dollars.</p> <p>T: Very good, what is your number sentence?</p> <p>S: $1000-365-235=400$.</p> <p>T: What do you do first in this number sentence?</p> <p>S: $1000-365$.</p> <p>T: Then, why don't you put brackets?</p> <p>S: ...</p> <p>T: Let's check these two number sentences, the "brackets number sentence" and the "no brackets number sentence". look at the slide. Does the left number sentence and the right number sentence have the same answer?</p> <p>S: Yes.</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>$(1000-365)-235=?$ $1000-365-235=?$</p> </div> <p>T: Why? But we just knew that we needed to put brackets, or else the answer might not be the same!</p> <p>S: Because "with" brackets, we do the number sentences from left to right. "Without" brackets, we do the number sentences from left to right, too!</p> <p>T: This sounds Reasonable! We do number sentences from left to right, so if we need to do the left part first, there is no need to put brackets, because the left part originally needs to be done first!</p> <p>-----</p> <p>D. Students conduct formative assessments through group games.</p>	5min	Writing assessment	
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<p>● Students can use the arithmetic of addition and subtraction to solve problems in life.</p>	<p>T: Now, we are going to have a game. I'll ask a question, you have only 3 minute to discuss with your group members, and write down the answer on your worksheet. Then I'll pick one person in each group to share your answers.</p>  <p>You have 80 dollars. You want to buy...</p> <p>Group 1: 小美冰淇淋、紅豆牛奶冰棒各一</p> <p>Group 2: 高級甜筒、情人果脆冰棒各一</p> <p>Group 3: 脆皮大雪糕、布丁大雪糕各一</p> <p>Group 4: 百級棒棒冰、紅豆粉條各一</p> <p>Questions</p> <p>Q1. How much money do you spend? I spend _____ dollars.</p> <p>Q2. How much money do you have left? I have left _____ dollars.</p> <p>3. Write down Q1 & Q2 in one number sentence.</p> <p>(The money that I spend) (The money I have left)</p>	5min	Group activity	Slide Worksheet
	<p>T: Now, look at the slide. Ready.....Start!</p> <p>T: Times up, everyone's finished?</p> <p>S: Yes.</p> <p>T: Now, group 1...Mike, could you share your answer with us? The first question is "How much money did you spend?".</p> <p>S: 42.</p> <p>T: You spent 42 dollars! How do you know?</p> <p>S: 22 plus 20 equals 42.</p> <p>T: Very good, thank you! And Lisa, how much money did you spend?.....</p> <p>(Each group answers the questions, which are omitted below)</p> <p>T: The second question is how much money did you have left? And how do you know? Group 3, Jasper, can you answer this one?</p> <p>S: 44 dollars. 18 plus 18 equals 36, 80 minus 36 equals 44.</p> <p>T: Excellent! And group 4, Chris, how about you guys?</p>	10min	Oral report	

	<p>(Each group answers the questions, which are omitted below)</p> <p>T: And the final question is “Write down in one number sentence“ . Every group please choose a person to share your number sentence, and tell your classmate what you do first, and what does that number sentence mean?</p> <p>S: $80-(20+20)=40$, first do what’s in brackets, it means the total money I have spent, and $80-40$ means the money I have left.</p> <p>T: Good work!</p> <p>(Each group answers the questions, which are omitted below)</p> <p>● Summary activity</p> <p>A. Student problem solving time. Teachers accept student learning outcomes.</p> <p>T: Now, please finish page 80 of the last three questions. If you have any problem, you can discuss it with your group members or raise your hand.</p> <p>B. Summarize the course content and review important concepts and sentence patterns</p> <p>T: I think it’s time to take a break, before that, let’s make a quick review.</p> <p>T: When doing number sentences, it is important to do from...</p>	<p>12min</p> <p>3min</p>		<p>Textbook</p> <p>Textbook Slide</p>
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<ul style="list-style-type: none"> Students can write down the problem in one number sentence. 	<p>T: Average, kids need to sleep for 8 hours on average per night.</p> <p>T: Divide, look at the number sentence, 6 divided by 2 equals...? That's right, divide.</p> <p>T: Multiple, multiple is 乘法, but we say "times" in number sentences, look at the number sentence, 6 times 2 equals...? And 8 times 3 equals...? That's correct!.</p> <p>T: What is correct? 10 plus 10 equals 30, is this correct? No, it isn't. And 3 times 2 equals 6, is this correct? Yes, it is correct!</p> <p>T: Each, how many students are there in each group? 5? That's right! There are 5 students in each group.</p> <p>● Warm-up</p> <p>A. Students learn the arithmetic of multiplication through ropes of different lengths.</p> <p>T: Each group has 6 red ropes, 2 green ropes and 1 white rope. Now, use your rulers to measure how long is the red rope?</p> <p>S: 5 centimeters.</p> <p>T: Nice, it is 5 centimeters. Now please look at the slide, can you try to use your red ropes to do like that? How many red ropes do you need?</p> <div> </div> <div> </div>	<p>10min</p>	<p>Writing assessment</p> <p>Actual operation</p>	<p>Slide</p> <p>Ropes</p>
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S: Three!

T: That's right! So we all know each red rope is 5 centimeters, and the green rope is 3 times longer than a red rope, then, how long is the green rope?

S: 15!

T: That's correct! Can you tell everyone how you know that?

S: Each red rope is 5 centimeters, the green rope is 3 times longer than the red rope, so 5 times 3 equals 15.

T: Great job! Now everyone, let's do the white one, please use green ropes to measure the white rope. How many green ropes do you need?

S: 2.

T: That's right, this is an easy one right? We need two green ropes, so we can say the white rope is 2 times longer than the green one! So, how long is the white rope? Please write down the number sentence.

T: Does anyone want to share your number sentence? ...Tiny! Thank you.

S: 15 times 2 equals 30.

T: Can you tell everyone what "15" means?

S: The green rope is 15 centimeters.

T: And how do you know the green rope is 15 centimeters?

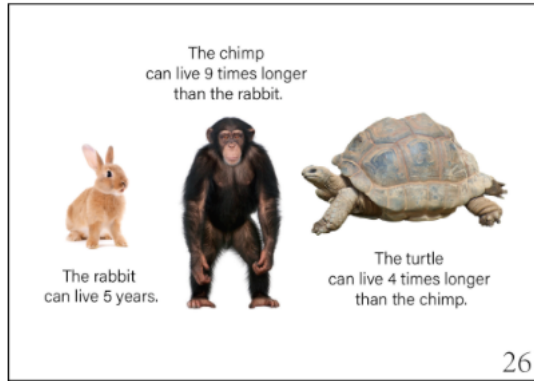
S: We just used the red ropes to measure that.

T: Good memory! So, we used red ropes to measure the green rope, that is 5

<p>● Students understand that the order of multiplication does not affect the result through the assigning paper stars activity.</p>	<p>times</p> <p>S: Three.</p> <p>T: Equals...</p> <p>S: Fifteen.</p> <p>T: And we used green ropes to measure the write rope, that is...</p> <p>S: 15 times 2 equals 30.</p> <p>T: Great! Can you write them down in only one number sentence?</p> <p>T: Good, everyone did a great job! 5 times 3 times 2 equals 15! Someone also wrote brackets to tell us where he did the number sentence first, that's really nice!</p> <p>● Presentation</p> <p>A. Assigning paper stars activity.</p> <p>T: Now, does every group all get some star papers, 4 small boxes and 1 big box?</p> <p>S: Yes.</p> <p>T: Each person please make 3 paper stars, put them into a small box. And then put all the small boxes of your group into your big box. You have 5 minutes, please also finish your worksheet B ok? Ready? Start!</p> <div> </div> <p>T: Time's up, everyone finished?</p> <p>S: Yes.</p> <p>T: Ok, we are going to send those paper stars to other groups as a gift! Each group has 4 people, so how many small boxes are there in one group?</p> <p>S: Four.</p> <p>T: Right! And how many paper stars are there in one small box?</p>	<p>6min</p>	<p>Actual operation</p> <p>Oral report</p> <p>group activity</p>	<p>Paper star</p> <p>Worksheet</p>
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	<p>S: Three.</p> <p>T: Very good, please draw 3 stars in the worksheet "small box". Now, every group please put all small boxes into the big box. Everyone finished? Great! Now, how many groups are there in our classroom?</p> <p>S: Five!</p> <p>T: So, how many big boxes do we have now?</p> <p>S: Five!</p> <p>T: Then, who can tell everyone, in total, how many paper stars are there in 5 big boxes?</p> <p>S: Sixty.</p> <p>T: Wow, how do you know that!</p> <p>S: We have 3 paper stars in each small box, and we have 4 small boxes in each big box, and we have 5 big boxes, so 3 times 4 times five equals 60.</p> <p>T: Good job! I have another solution, can I share with you?</p> <p>S: Yes.</p> <p>T: We have 3 paper stars in each small box, and in total we have 4 times 5 equals 20 small boxes, so 3 times 20 small boxes equals 60 stars. Do you remember what I did first?</p> <p>S: 4 times 5.</p> <p>T: Right! So I put brackets here. Then, what should I do next?</p> <p>S: 3 times 20.</p> <p>T: Great! Do I have the same answer as you?</p> <p>S: Yes!</p> <p>T: Why?</p> <p>S: In multiple number sentences, do wherever first is the same.</p>			
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<p>● Students understand the multiplicative associative ratio by calculating math problems.</p>	<p>T: Clever! You found that in multiple number sentences, we can do anywhere we want first. We can still put brackets, but the answer will still be the same!</p> <p>T: Look at the slide, let's try those number sentences, do they have the same answer?</p> <p>S: Yes, they have the same answer.</p> <p>B. Student problem solving time.</p> <p>T: Look at here (The teacher writes the number sentence on the blackboard), 25 times 18 times 4. I know it is quite a difficult number sentence, but please calculate the answer for me.</p> <p>S: The answer is 1800.</p> <p>T: Correct! How do you know?</p> <p>S: 25 times 18 equals 450, and 450 times 4 equals 1800.</p> <p>T: Nice! Any other solution?</p> <p>S: I did the 25 times 4 first.</p> <p>T: Why did you want to do that first?</p> <p>S: 25 times 4 equals 100, and 18 times 100 is easy to calculate.</p> <p>T: Wow, this sounds like a good idea! Do you remember that? In multiple number sentences, we can do whatever we want first! You make the number sentence easier, great job!</p> <p>T: Let's try another one, everyone please try to find an easy way to do it. Look at the slide, if the rabbit can live 5 years, the chimp can live 9 times longer than the rabbit, and the turtle can live 4 times longer than the chimp. How long does the turtle live?</p>	<p>10min</p>	<p>Oral report</p> <p>Writing assessment</p>	<p>Slide</p>
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S: 180 years old!

T: How can you do it so fast?

S: The number of sentence is 5 times 9 times 4, but I do 5 times 4 first, and then 20 times 9 equals 180.

T: Great job! If we do 5 times 9 first, the second step 45 times 4 will not be easy to calculate. So in multiple number sentences, choose wherever we want to do first, and make it easier!

- Students can use the arithmetic of multiplication and division to solve problems in life.

C. Students calculate math problems and become familiar with the use of parentheses in math.

T: Does your mom and dad give you some money to buy something?

S: Yes/Sometimes/No.

T: In February, your mom gives you 140 dollars. There are 4 weeks in February, and how many days are there in one week?

9min

Oral report

Writing assessment

Slide

**You have 140 dollars in February.
On average,
how much money do you have
in one day?**

S: Seven days.

T: That's right! So, on average, how much money do you get in one day? Please discuss it with your group members and write down the number sentences.

S: 5 dollars, 140 divided by 4 equals 35, and 35 divided by 7 equals 5.

T: Can you tell everyone what the "4" and the "7" means in your number sentences?

S: 4 weeks and 7 days.

T: Well done! So, first you calculated how much money you have each week, and then you calculated.....?

S: How much money I have each day.

T: Very good, thank you. Does any group have another way to do this?

S: We calculated how many days in February first, 7 times 4 equals 28 days. And 140 dollars divided by 28 days equals 5.

T: Nice, that is another good way. Now, can you try to write down in only one number sentence?

T: Let's see two number sentences from group 1 and group 3. Can you read the number sentences for me?

S: $140 \div 4 \div 7 = 5$, $140 \div 4 \times 7 = 5$.

T: Thank you everyone! Now, do you find

	<p>that there is a little difference between two number sentences?</p> <p>S: divide and times.</p> <p>T: Yes! You found it. “Here” is the difference. The two number sentences are not the same, but can you check for me if they have the same answer?</p> <p>S: Yes/No.</p> <p>T: Oops....someone said yes and someone said no. Jerry, can you do the first number sentence for me, and Lisa, can you do the second number sentence for me? Thanks.</p> <p>T: Now, let’s see these two number sentences. The first one is $140 \div 4 \div 7 = 5$, Jerry, can you tell everyone what did you do first?</p> <p>S: $140 \div 4$.</p> <p>T: And...</p> <p>S: 140 divided by 4 equals 35, and 35 divided by 7 equals 5.</p> <p>T: Good job! 140 dollars divided by 4 weeks equals 35 dollars, so you have 35 dollars in one week, and 35 dollars divided by 7 days, so you have 5 dollars in one day. And Lisa, what did you do first?</p> <p>S: 4 times 7.</p> <p>T: 4 times 7, it means there are 4 week in February, and each week has 7 day, so it is a total of 28 days, thank you Lisa, and then?</p> <p>S: 140 dollars divided by 28 days equals 5.</p> <p>T: Right, but I think Lisa forgot a little thing, does anyone know what it is?...In the last lesson, we talked about what we need to do the number sentence from...?</p> <p>S: Left to right.</p> <p>T: Yes, we need to do the number sentence from left to right. But now, Lisa</p>			
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<ul style="list-style-type: none"> ● Students can understand and tell the meaning of different number sentences. 	<p>and I want to do the right side number sentence first, what can we do?</p> <p>S: Put brackets!</p> <p>T: Well done! In the last lesson, we learned that we need to use brackets to mark down what we want to do first. So Lisa, can you put brackets in?</p> <p>T: Thank you Lisa. So, now we know, if you don't put brackets in number sentences, you may have the wrong answer!</p> <p>D. Students practice math problems and become familiar with the four operations of multiplication and division.</p> <p>T: Ok, Let's do some math exercises. First, here are three number sentences, everyone, please do them on your little board. And use the red marker to circle up what you did first in each math sentence.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> $54 \div (6 \div 3)$ $54 \div 6 \times 3$ $54 \div (6 \times 3)$ </div> <p>T: Finish? Ok, Tom, can you tell me in the first number sentence, what did you do first?</p> <p>S: 6 divided by 3.</p> <p>T: Why?</p> <p>S: There are brackets.</p> <p>T: Good choice! There are brackets, so</p>	6min	Oral report	Slide
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always do what's in brackets first.
 T: And Sam, 54 divided by 6 times 3, what did you do first?
 S: 54 divided by 6, because there is no bracket.
 T: Good job! There is no bracket, so we need to do the math sentence from left to right.
 T: And the last one, Jimmy can you do this?
 S: Yes...I did 6 times 3 first, because I should always do what's in brackets first.
 T: Well done!

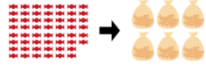
 T: Now, here I have a question. I bought a pack of candies yesterday. There were 54 candies in one pack. I wanted to give the candies to someone who did the cleaning job really well, so I divided them into 6 little bags.

6min

Slide

Worksheet

T: But today, only 3 students did the cleaning job really well, so I gave each of them one little bag of candies. How many candies have I given out?


<p>There were 54 candies in one pack. I divided them into 6 little bags.</p>  <p>There were 3 students. Each of them got a little bag. How many candies have I given out?</p>	<div style="border: 1px solid black; padding: 5px; margin: 5px;"> $54 \div (6 \div 3)$ </div> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> $54 \div 6 \times 3$ </div> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> $54 \div (6 \times 3)$ </div>
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T: Look at the three math sentences that we just did, which one is the right sentence of this question?

S: The second one.

T: Very good, because there are 54 candies, and I divided them into....

S: 6 little bags.

	<p>T: So first we can write down 54...</p> <p>S: divided by 6.</p> <p>T: Good, and what should we do next?</p> <p>S: Gave them to students.</p> <p>T: Yes, there were three students, I gave each of them one little bag, it is a total of three bags. So what should we write down?</p> <p>S: Times three.</p> <p>T: Very good, so the math sentence is...</p> <p>S: $54 \div 6 \times 3$</p> <p>T: That's right, please finish the worksheet C.</p> <p>T: The second question is: there was a student farmer camp. The teacher divides students into 6 groups, and there are 3 members in each group. At the end, the students total picked 54 apples, how many apples did one student pick on average?</p> <div> <p>There was a student farmer camp. The teacher divides students into 6 groups, and there are 3 members in each group.</p>  <p>The students total picked 54 apples, how many apples did one student pick on average?</p> </div> <p>T: No idea? Try to find out how many students are there first!</p> <p>S: There are 6 times 3 equals 18 students.</p> <p>T: That's right, and what should you do next?</p> <p>S: Divided 54 apples.</p> <p>T: Well done, everyone please write down only one math sentence.</p>	6min		
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<ul style="list-style-type: none"> ● Students can understand and tell the meaning of different number sentences. ● Students realize that there may have different number sentences under the same situation. 	<p>T: Everyone did a great job! 54 divided open bracket 6 times 3 close bracket equals 3, you did the 6 times 3 first, so remember to put brackets there! Now, please finish your worksheet C.</p> <p>E. Students practice math problems and realize that there may have different number sentences under the same situation.</p> <p>T: Open your textbook, page 84, the second question. Look at the picture, how much is the watermelon?</p> <div style="border: 1px solid black; padding: 5px;"> <p> The watermelon is 24 dollars per kilogram, mom and three friends buy 12 kilograms of watermelon together, how much does a person need to pay?</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid lightblue; padding: 5px; width: 45%;"> <p> 我先算一個西瓜要多少元，再算每人要付多少元。</p> $24 \times 12 \div 4$ <p>=</p> </div> <div style="border: 1px solid lightblue; padding: 5px; width: 45%;"> <p> 我先算一人買幾公斤西瓜，再算每人要付多少元。</p> $24 \times (12 \div 4)$ <p>=</p> </div> </div> <p style="text-align: center;">答：_____</p> </div> <p>S: 24 dollars.</p> <p>T: You can say the watermelon is 24 dollars per kilogram. Per “P E R” means each or one. So how much is 12 kilograms of watermelon?</p> <p>S: 48 dollars.</p> <p>T: That's right! If 4 of your friends and you want to buy a watermelon, and the watermelon is 12 kilograms. How much money does each person need to spend on average? Please write the math sentence.</p> <p>T: You got two different math sentences there. Let's see the first one, Sally, can you say out loud your math sentence?</p> <p>S: 24 times 12 divided 4.</p> <p>T: What did you do first? And what did that sentence mean?</p> <p>S: 24 times 12 equals 288.</p>	7min	<p>Oral report</p> <p>Writing assessment</p>	Textbook
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<ul style="list-style-type: none"> ● Students can independently solve the arithmetic of multiplication and division problems. 	<p>T: What is 288? S: 24 dollars per kilogram, and total 12 kilograms, so it's 288 dollars. T: That's right! And...? S: 288 dollars divided 4 people equals 72 dollars. T: Good job Sally! And the other one... Lucy, could you please? S: Yes, I did 12 divided 4 first, each person needed to pay 3 kilograms of watermelon. And 24 dollars per kilogram, so 24 times 3 equals 72. T: Thank you Lucy, you made a very clear demonstration! Can you say out loud your math sentence? S: 24 times open bracket 12 divided by 4 equals 72. T: That's right. So, we can see there is not only one math sentence for each question.</p> <ul style="list-style-type: none"> ● Summary activity <p>A. Student problem solving time. Teachers accept student learning outcomes.</p> <p>T: At the end of the class, please finish page 86, the first two questions. If you have any problem, you can discuss it with your group members or raise your hand. When you finish, you can take a break.</p>	6min	Writing assessment	Textbook
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肆、教學評量

單元教學目標 (Concept)	評量方式	備註
<p>1. Students can write down corresponding number sentences based on the questions. 學生能依據問題寫出相對應的算式。</p>	<p>Oral report Writing assessment</p>	<p>Learning outcomes are based on the question-and-answer activities in the lessons and the student's answers in the textbook and worksheet.</p> <p>Excellent Students can write down corresponding number sentences and can explain the meaning of each number sentence. 學生能寫出相對應的算式，並解釋各個算式中的含義。</p> <p>Good Students can write down corresponding number sentences. 學生能寫出相對應的算式。</p> <p>Satisfactory Students can write down corresponding number sentences with others' help. 學生經協助能寫出相對應的算式。</p> <p>Unsatisfactory Students can't write down corresponding number sentences. 學生無法寫出相對應的算式。</p>
<p>2. Students can combine addition and subtraction into one number sentence. 學生能寫出加減法併式。</p>	<p>Writing assessment</p>	<p>Learning outcomes are based on the math problems practiced in the lessons and the student's answers in the textbook and worksheet.</p>
<p>3. Students can combine multiplication and division into one number sentence. 學生能寫出乘除法併式。</p>	<p>Writing assessment</p>	<p>Excellent Students can combine two number sentences(+ or$\times$$\div$) into one, and tell the meaning of each number. 學生能將兩個算式(+或$\times$$\div$) 合併，並說出各個數字代表的含義。</p>





		<p>Good Students can combine two number sentences(+ or$\times\div$) into one. 學生能將兩個算式(+或$\times\div$)合併。</p> <p>Satisfactory Students can combine two number sentences(+ or$\times\div$) into one with others' help. 學生經協助能將兩個算式(+或$\times\div$) 合併。</p> <p>Unsatisfactory Students can combine two number sentences into one with others' help. 學生無法合併兩個算式(+或$\times\div$)。</p>
<p>4. Students can do the number sentence in the right order of operation. 學生能依照正確計算次序計算算式。</p>	<p>Oral report Writing assessment Group activity results</p>	<p>Learning outcomes are based on the math problems practiced in the lessons and the student's answers in the textbook and worksheet.</p> <p>Excellent Students can tell the order of operation, then calculate the correct answer. 學生能說出正確的計算次序，並計算出正確答案。</p> <p>Good Students can calculate the correct answer. 學生能依計算次序算出正確答案。</p> <p>Satisfactory Students can write down the arithmetic number sentences, and calculate the correct answer with others' help. 學生經協助能依計算次序算出正確答案。</p> <p>Unsatisfactory Students can't write down the arithmetic number sentences. 學生無法依計算次序算出正確答案。</p>

單元教學目標 (Language)	評量方式	備註
Listening	Oral report Group activity results	<p>Excellent Good understanding of words and sentences.</p> <p>Good Adequate understanding of words and sentences.</p> <p>Satisfactory Some understanding of words and sentences</p> <p>Unsatisfactory Clear difficulty in understanding of words and sentences</p>
Speaking	Oral report	<p>Excellent Answer the question in English sentences.</p> <p>Good Answer the question in English words.</p> <p>Satisfactory Answer the question in English words and some native language.</p> <p>Unsatisfactory Can't answer any question in English .</p>
Interaction	Oral report Group activity results	<p>Excellent Discuss questions with group members and teacher in English positively.</p> <p>Good Discuss questions with group members and teacher in English and some Chinese words.</p> <p>Satisfactory positively Discuss with group members in Chinese and some English words.</p> <p>Unsatisfactory Can't discuss with group members in any English or behaving negatively.</p>

伍、附錄

整數的四則運算(一) 班級_____ 姓名_____

A.Word Bank Practice

	•	• Brackets •	•	
$5 + 2 = ?$ $5 - 2 = ?$	•	• Circle up •	•	$7 + 5 = 12$ $44 - 10 = 34$ $5 \times 4 = 20$ $35 + 7 = 5$
	•	• Left •	•	
(\quad) $[\quad]$ $\{ \quad \}$	•	• First •	•	$7 - 5 = 12$ $5 \times 4 = 20$
		• Plus & Minus •		
		• Number sentence •		
		• Spend •		
		• Same •		

B.Activity





Q1.How much money do you spend?
(Write down the number sentences)

Q2.How much money do you have left?
(Write down the number sentences)


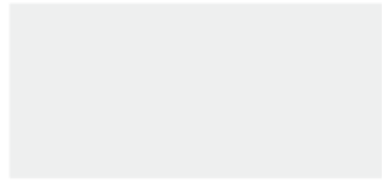
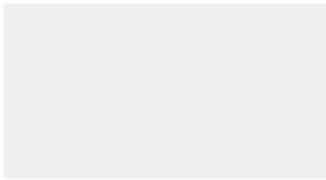
Q3.Write down Q1& Q2 in one number sentences.

整數的四則運算(二) 班級_____ 姓名_____


A. Word Bank Practice

$6 \div 2 = ?$ $6 \times 2 = ?$	<ul style="list-style-type: none"> • Average • • Multiple(Times) • <li style="text-align: center;">• & Divide • • Each • • Correct • 	 
 		

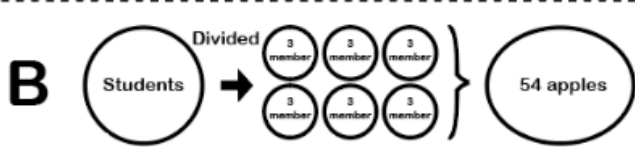
B. Activity

<p>A star</p> 	<p>A small box</p> 	<p>A big box</p> 
<p>How many paper stars are there in one small box? _____</p> <p>How many small boxes are there in one one box? _____</p>		

C. Activity

A 

How many candies have I given out? _____

B 

How many apples did one student pick on average? _____

Which one is the right sentence of A? Which one is the right sentence of B?

<input type="checkbox"/> $54 \div (6 \div 3)$	<input type="checkbox"/> $54 \div 6 \times 3$	<input type="checkbox"/> $54 \div (6 \times 3)$
=	=	=

110 學年度小學數學雙語教學活動設計競賽

壹. 設計理念

依據生活中常見的概數，逐步設計第一節的金額、第二節的旅遊人數與第三節的房價計算，讓學童不僅在專注課程的同時，還能透過不同的情境與任務，學習不同取概數的方法。最後再利用分組合作協同設計「旅遊規劃行程」，促進學童思考、增進對數字的敏感度，更重要的是在設計過程中利用一步步的概念，能夠更加了解概數的應用，將知識轉為行動，將課程內容內化，藉此在生活中留下對概數的印象。

貳. 教學分析

一、教材分析

以通過十二年國教國小中高年級訂定的翰林版教材為主，配合單元為110 學年度四年級下學期「概數」。教材設計以「數學為主，英語為輔」的方式，利用十二年國教的數學領域與英語文領域之領網的學習表現、學習內容進行設計。

【數學領域—概數】

以認識多種取概數的方法進行設計，分別有無條件捨去法、無條件進入法與四捨五入法，在課程中更融入多種生活中的概數，加深概數與生活的連結，最後再透過小組合力完成一份「旅遊規劃行程」的設計，評鑑學生是否學會概數的觀念，並能夠靈活運用與知曉如何運用。

【英語文領域】

透過學科領域之學習表現與學習內容找出在「概數」一課中最適當之句型，以「The number can be rounded down/off/up to _____。」作為學習重點。並考量到學生在此階段對英文的熟練度不夠，故教材不以全英文為主，改以部分中文為提示，希望學生在學習數學之餘，不僅能熟練概數的應用，更可認識英語文學科領域之專有名詞。

二、學生分析

(一)學生的學習背景

【數學領域】

1. 做簡單的二、三位數加減估算。
2. 認識一億以內的數及十萬以內數的加、減。
3. 以萬為單位的兩階單位計算。

【英語文領域】

1. 4-II-1 能書寫 26 個印刷體大小寫字母。
2. 4-II-2 能書寫自己的姓名。
3. 4-II-3 能臨摹抄寫課堂中所學的字詞。
4. 4-II-4 能臨摹抄寫課堂中所學的句子。

(二)學生可能產生的學習困難

【數學領域】

1. 搞不清楚無條件捨去法、無條件進入法以及四捨五入法的運算方式
2. 易搞混取概數的方法與其對應例子

【英語文領域】

1. 缺乏足夠的單字量、英語程度不足
2. 無法將目標句型與取概數的方法對應

三、教學方法分析

(一)TPR 教學法：

在學生英語程度尚未發展完整時，透過 TPR 教學法搭配肢體動作的方式營造活潑的上課氛圍，不僅讓學生不害怕說英文，更利用重複練習目標句型使學生對於口語表達更為熟稔。

(二)合作學習法：

在學習單較為複雜時，能透過小組分工完成的方式，促進學童間互相地指導與幫助，以增加彼此的溝通與思考，不僅有效降低個人完成的困難度，更學習到如何藉由互助來解決問題。

(三)問題導向教學法：

有別於過往教師提供知識與答案的教學方式，從問題的引導讓學生進行探索，不只學到學科上的知識，還可獲得解決問題、與人溝通及合作互助的技能。

(四)情境式教學法：

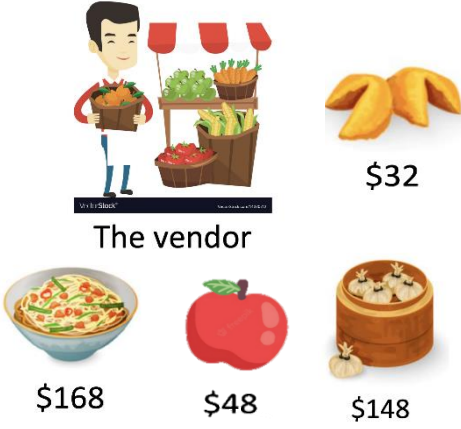
從菜市場買賣的情境激發學生學習興趣，還利用角色扮演體會真實情境，甚至透過設計專屬「旅遊規劃行程」讓學生了解何為概數，不僅有效學習，更能熟知應用。

四、課程概念架構圖



參. 教學活動設計

單元名稱	Approximate numbers	適用年級	四年級下學期		
課程名稱	Wow! 真有臆數!	教學時間	4 堂共 160 分鐘		
教材版本	翰林版				
教學準備	投影機、學習單、角色卡、商品卡、平板				
學習表現	學習內容		單元教學目標		
<p>【數學領域】 n-II-4 解決四則估算之日常應用問題。</p> <p>【英語文領域】 1-II-7 能聽懂課堂中所學的字詞。 1-II-9 能聽懂簡易的日常生活用語。 1-II-10 能聽懂簡易句型的句子。</p>	<p>【數學領域】 N-4-4 解題:對大數取概數。具體生活情境。四捨五入法、無條件進入、無條件捨去。含運用概數做估算。近似符號「\approx」的使用。</p> <p>【英語文領域】 Ac-II-2 簡易的生活用語。 B-II-1 第二學習階段所學字詞及句型的生活溝通。 D-II-1 所學字詞的簡易歸類。</p>		<p>【數學領域】 能知道取概數的三種方法。 能知曉生活中的概數。 能利用概數解決生活問題。</p> <p>【英語文領域】 學生能理解並說出目標句型 The number can be rounded up/down/off to _____.</p>		
單元教學目標	教學內容		時間	評量方式	備註
<p>【第一節】 1. 學生能認識無條件捨去法。 2. 學生能從情境中，知道使用無條件捨去法及合理性。</p>	<p>【Lesson 1】 Preparation and warm up 1. Teacher asks some questions below: (1) Do you watch Youtube? Which Youtuber do you like the most? (2) Do you know what is "Views"? (Teacher will explain the meaning of view later.) 2. Teacher asks a random student what's his/her favorite video and shows the view by projector to the class. 3. Teacher asks the questions below: (1) How many views of this video? (2) How do you feel about this number? 4. Teacher shows a random video's view to the class and explains that using approximate numbers can help</p>		10 mins	Oral assessment: Students can answer the correct answers toward the following questions.	

	<p>us describe big numbers easier.</p> <p>5. Teacher asks the question: How will you describe the number to the class? (hint: by using approximate number.)</p> <p>Presentation and practice 【Role-play】</p> <p>1. Teacher distributes role-play cards and merchandise cards to the groups and explains the rules.</p> <div style="text-align: center;">  <p>The vendor</p> <p>\$168 \$48 \$148</p> <p>(附件一)</p> </div> <p>Rules: Because the seller wants to attract more customers, he/she will ignore the mantissa every time when counting the sum of the cost.</p> <p>2. Four people in a group take turns doing the role-play, three people act customers and the other acts the seller.</p> <p>3. Teacher invites one group to display the role-play to the whole class.</p> <p>4. Teacher will do the declaration :</p> <p>(1) The meaning of “ignore mantissa” is a method of taking the approximate number, and that is called “unconditional rejection.</p> <p>(2) The rule of unconditional rejection is to ignore the mantissa after the specified digit.</p>	25 mins	<p>Practical assessment: Students must know how to carry out the course rules of this operation and work together with their classmates.</p> <p style="text-align: center;">Oral assessment: Students can understand</p>	
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(3) Key sentence: The number can be rounded down to_____.
(With the TPR method.)

5. Teacher asks questions related to this topic and invites students to answer them. °

Production and wrap up

1. Teacher does the declaration: By means of rounding the number can help us know the size of it better and also help us describe the number easier. Rounding off the number is one of the ways to round the number.
2. Teacher notices students that they must round the number carefully, and not ignore the wrong digit.
3. Teacher distributes the learning sheets to the class and asks them to do exercise themselves after school.
4. Teacher emphasizes that rounding off the number is not the only way of rounding, and students can browse the content of this topic in the textbook after school if they are willing to.

5 mins


the meaning of unconditional rejection and answer the teacher's questions correctly.

Oral assessment: Students can understand the meaning of unconditional rejection and use target sentence patterns correctly.

Class (班級): _____
 Number (字號): _____
 Name (姓名): _____

Internet watcher

◆ The picture below is the views of a video, please answer the questions based on the picture.




1. 將觀看次數用無條件捨去法取概數到百位。概數：_____。


2. 將觀看次數用無條件捨去法取概數到萬位。概數：_____。

◆ Search for videos online and record three videos with over 10,000 views and finish the form.

	影片名稱	原始觀看次數	將原始觀看次數用無條件捨去法取概數到萬位
1.			
2.			
3.			

	<p>numbers called: carry-save addition.</p> <p>(2) The process to round up the numbers is pretty easy, just to carry the selected digit, without worrying about the numbers behind the selected digit.</p> <p>(3) Teacher teaches students the key sentence of this lesson: The number can be rounded up to _____. (With the TPR method.)</p> <p>Production and wrap up</p> <p>1. Teacher distributes the press releases and the news report to the groups.</p> <p>LET'S DO SOME REPORT! 我數新聞播報員</p> <table border="1"> <tr> <td>NAME:</td> <td>CLASS:</td> </tr> <tr> <td>GRADE:</td> <td>DATE:</td> </tr> </table> <p>1. Good morning everyone, we are today's reporters- Group (第幾組) .</p> <p>2. As you can see in this picture, there are more than (數字) people in (地點) .</p> <p>3. 為避開交通阻塞延遲出遊行程，我們強烈建議您避開該景點。</p> <p>4. That's Latest news for today. We are Group (第幾組) reporting from (幾年幾班) . We'll see you tomorrow morning.</p>  <p>(附件三)</p> <p>2. Teacher guides students to fill up the blanks on the press release.</p> <p>3. Teacher asks students to divide the work themselves and go on the stage to display the news report.</p>	NAME:	CLASS:	GRADE:	DATE:	<p>10 mins</p>	<p>their observations .</p> <p>Oral assessment: Students can understand the meaning of carry-save addition and understand the key sentence pattern: The number can be round up to _____ .</p>	
NAME:	CLASS:							
GRADE:	DATE:							

	<p>graduation trip in November, but both hotels A and B have discounts, and Alice needs to present the approximate number when quoting to the teachers. If the numbers are rounded to the nearest millions digit, which hotel is cheaper? And what is the approximate price of this hotel?</p> <p>※A total of 150 quadruple rooms are required.</p> <p>A hotel discount: 4,200 \$NTD for a four-person room, 20% off for each room with more than 100 rooms.</p> <p>Hotel B offers: 3,800 \$NTD for a four-person room, 15% discount for more than 50 rooms.</p> <p>2. Push back the possible value of a number that has been rounded.</p> <p>(1) For the number 20000, which has been approximated to thousands digits, what are the maximum and minimum values of the original number?</p> <p>Production and wrap up</p> <p>1. Teacher distributes the worksheets: Where can you see approximate numbers in your life? (presented by clipping)</p>	7 mins	Oral assessment: Students can understand the teacher's questions and answer the answers.	
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	<p style="text-align: right;">Class: Number: Name:</p> <p style="text-align: center;">Life reporter</p> <p><i>After learning three different methods of taking approximate numbers, please observe if there are any approximate numbers in your life, and record what reports are about, and what are the approximate numbers!</i></p> <p><i>Word bank:</i> Different: 不同; Method: 方法; approximate numbers: 概數; Observe: 觀察; Record: 記錄</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;">(Please post the report)</p> </div> <p>1- Where did you see this report? 2- What is it saying? 3- What is the approximate number?</p>  <p style="text-align: center;">(附件四)</p>			
	<p>2. Teacher reviews the calculation of rounding off the numbers to the students.</p>			

<p>【第四節】</p> <p>1. 學生能利用概數做加、減法的概算。</p>	<p>【Lesson 4】</p> <p>Preparation and warm up</p> <ol style="list-style-type: none"> 1. Review the knowledge students already know: Teacher lists the daily examples of “unconditional rejection”, “carry-save addition”, and “Rounding-off method” respectively and invites students to categorize them. 2. Teacher invites students to make examples of how to round the numbers. (They can use the three methods.) 3. Review the key sentences of this topic with the TPR method. 4. Teacher asks the questions: <ol style="list-style-type: none"> (1) Do you have any experience living in other counties or cities with your family? (2) If you do, how do you plan your travel itinerary? 5. The teacher explains to the 	<p>7 mins</p>	<p>Oral assessment: Students can give correct examples of approximation.</p> <p>Oral assessment: Students can say the key sentence pattern and make matching actions.</p> <p>Oral assessment: Students can make corresponding</p>	
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	<p>students the resources needed to plan a trip to prepare for the teaching activities.</p> <p>Presentation and practice 【I am a tourist guide!】</p> <p>1. Teacher distributes the worksheets and Pads to the groups, and asks the students to use the Pads searching for the information they need in order to finish the worksheets.</p> <div> </div> <p>(附件五)</p> <p>2. Students need to organize the knowledge they have learned in the classes before and follow the steps to answer the worksheets.</p> <p>Step1: Searching for the videos to ensure the place they want to go.</p> <p>Step2: Make understanding of the estimated attendance.</p> <p>Step3: Book the accommodation hotel and round the numbers.</p> <p>Step4: Finish the worksheets.</p>	<p>23 mins</p>	<p>responses after listening to the teacher's questions.</p> <p>Practical assessment: Students can discuss with the group members, collect the resources needed to complete the worksheets together.</p>	
	<p>Production and wrap up</p> <p>1. Teacher checks the</p>	<p>10 mins</p>	<p>Oral assessment:</p>	<p>Re mar</p>

	worksheets students finished. 2. The students go on stage with their group members to display their trip plan. 3. Teacher summarizes the lesson: (1) Methods to round the numbers. (2) Teacher tells students that there are still many approximate numbers in our daily lives and they can pay more attention to them.		Students can use the key words and sentence patterns to present their travel itinerary to the class.	ks: Tea che rs can pro mpt the key wor ds and sen ten ce patt ern s wh en stu den ts dis pla y.
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肆、教學評量

單元教學目標	評量方式
【第一節】 1. 學生能認識無條件捨去法。 2. 學生能從情境中，知道使用無條件捨去法及合理性。	➤ 認知：Students can understand the rule of unconditional rejection. ➤ 情意：Students will be able to know how to carry out the course rules of role-play and practice the rule of unconditional rejection. ➤ 技能：Students will be able to find out other numbers rounded by unconditional rejection.
【第二節】 1. 學生能認識無條件進入法。 2. 學生能從生活情境中，知道使用無條件進入法及合理性。	➤ 認知：Students can understand the rule of carry-save addition. ➤ 情意：Students are able to observe and answer the questions based on their observations. ➤ 技能：Students can understand the meaning of carry-save addition and use the sentence pattern to make the reports.
【第三節】 1. 學生能認識四捨五入法。 2. 學生能從生活情境中，知道使用四捨五入法及合理性。	➤ 認知：Students can understand the rule of round-off method. ➤ 情意：Students can answer the questions relates to their lives.

	<ul style="list-style-type: none"> ➤ 技能：Students will be able to find out other approximate numbers in their daily lives.
<p>【第四節】</p> <p>1. 學生能利用概數做加、減法的概算。</p>	<ul style="list-style-type: none"> ➤ 認知：Students can understand the all rules of rounding the numbers and use them to do addition and subtraction. ➤ 情意：Students will be able to make examples of how to round the numbers ➤ 技能：Students will be able to use all the methods of rounding the numbers and do addition and subtraction to create a trip plan themselves.

伍、附件

附件一、菜販角色卡及商品卡

 <p>The vendor</p>	 <p>\$254</p>	 <p>\$148</p>
 <p>\$168</p>	 <p>\$32</p>	 <p>\$48</p>
 <p>\$87</p>	 <p>\$15</p>	 <p>\$71</p>

附件二、Internet watcher

Class (班級):
Number (學號):
Name (姓名):

Internet watcher

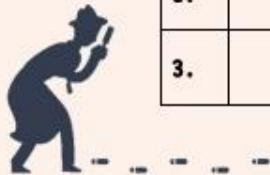
- ✦ The picture below is the views of a video, please answer the questions based on the picture.



1. 將觀看次數用無條件捨去法取概數到百位。概數：_____。
2. 將觀看次數用無條件捨去法取概數到萬位。概數：_____。

- ✦ Search for videos online and record three videos with over 10,000 views and finish the form.

	影片名稱	原始觀看次數	將原始觀看次數用無條件捨去法取概數到萬位
1.			
2.			
3.			



附件三、Let's do some report!

LET'S DO SOME REPORT!

我數新聞播報員

NAME:	CLASS:
GRADE:	DATE:

1. Good morning everyone, we are today's reporters- Group (第幾組) .

2. As you can see in this picture, there are more than (數字) people in (地點) .

3. 為避開交通阻塞延遲出遊行程，我們強烈建議您避開該景點。

4. That's Latest news for today. We are Group (第幾組) reporting from (幾年幾班) . We'll see you tomorrow morning.



附件四、Life reporter

Class:
Number:
Name:

Life reporter

After learning three different methods of taking approximate numbers, please observe if there are any approximate numbers in your life, and record what reports are about, and what are the approximate numbers!

Word banks:

Different: 不同的、Method: 方法、approximate numbers: 概數、
Observe: 觀察、Record: 記錄

(Please post the report)

1. Where did you see this report?
2. What is it saying?
3. What is the approximate number?



附件五、I am a tourist guide.

Class:
Group (組別):

I am a tourist guide!
(我數旅遊小嚮導)



✦ Follow the steps below to finish your travel plan (旅遊計畫) .



1. Where are you planning to visit?

2. How many people will there have?

3. What is the total price (金額) of the accommodation (住宿) ?

(Quadruple Room (四人房) \$2800)



【附件4】

110學年度小學數學雙語教學活動設計競賽

教案設計格式範例

壹、設計理念

The lesson plan refers to the CLIL format, integrating the curriculum knowledge and bilingual education. It presents the structure of bilingual education, and combines literacy-based education and issues integrated instruction to broaden the learning content. With the educational trend, math class doesn't use the traditional teaching methods anymore. It should integrate the learning activities of the different Curriculum Field, utilizing the interdisciplinary concept in Curriculum Guidelines of 12-year Basic Education to make math class more varied.

The teaching design of the literacy-based education not only makes students learn math but apply the content to life. We want to cultivate the children to have the ability of logical thinking and problem solving, and they know how to spend the time efficiently, plan their schedule, and take the initiative. On the other hand, we hope students are aware of the importance of time in life. students will be conscious that math is widely to apply because they can combine the courses with life and apply the learning content well. They can understand how to manage their time well.

Learning time has the students develop a good habit and plan their daily routine well. To be aware of the importance of the time, students will learn from the diverse activities, like daily routine record and plan schedule, which integrates the content and knowledge of English, Life, health and physical. Students record their daily routine and analyze the information, then solving the problem in life with their learning. We hope students will be responsible for their future and manage their time well.

To motivate students to learn how to manage their time well, we design the courses with different activities. the following is the concept of the activities:

堂數	設計理念
第一堂課	It's quite important for students to foster the concept of time. The concept of time can help students use their time more efficiently. We can make students practice how to use English to tell the time by interaction between teacher and students (ex. Q&A), and teach students

	to read the clock. In the end, students will record their daily routine to think about its relevance to time.
第二堂課	Students have the basic knowledgement of the clock after the first period. Then they will learn how to compare the electronic clock to the clock to learn the time more completely. The worksheet of the class schedule makes the learning content more related to their life and more practical. Students have the regular life in school. In the end, we check the learning outcome by the assessment-Bingo Game which makes students impressive.
第三堂課	Utilizing the situation related to life, students can learn how to plus or minus the minutes. Blockade-running assessment makes students read the clock well and be proficient at pulsing or minusing the minutes. It makes the class more interesting through the game: The Clock Monopoly. The schedule with the situation is related to the fourth period (managing their time).
第四堂課	Students learn how to plus or minus one hour and half an hour with the worksheet of time management to understand the importance of time and apply the learning content to life.

貳、教學分析

1、教材分析:

The lesson plan is based on “Nan 1 Book Three Unit 7-”The moment and time”. Its main point is focus on time telling, traditional clock and electronic clock reading, and basic addition and subtraction of time. By learning this lesson, students can foster the concept of time, so as to make good use of their time, becoming a proactive learner.

The analysis of the unit content refer to the following point:

(1)教材組織順序性Sequence of Curriculum:

Teaching students to learn step by step: In the beginning, they learn how to read the clock by counting the intervals. Next, we teach them how to read the electronic clock and compare the electronic clock to clock. In the end, they use the basic addition and subtraction to plus or minus hours or minutes.

(2)教材組織連結性Articulation:

The learning content connects with the previous lesson, the upcoming lesson, and the different subjects.

(3)教材組織統整性Curriculum Integration:

The learning content connects with the past experience, and integrates the different subjects.

2、 學生分析:

(1)Prior knowledge:

- Students have prior knowledge related to time.
- Students can tell the time in English, but they cannot read the clock well.
- Students know how to say one to one hundred in English.

(2)Personality:

- Students have enthusiasm for learning.
- Students like to answer the question.
- Students take the initiative to participate in the activities.

(3)Habitation:

- Students lack the concept of time.
- Students don't know how to manage their time.

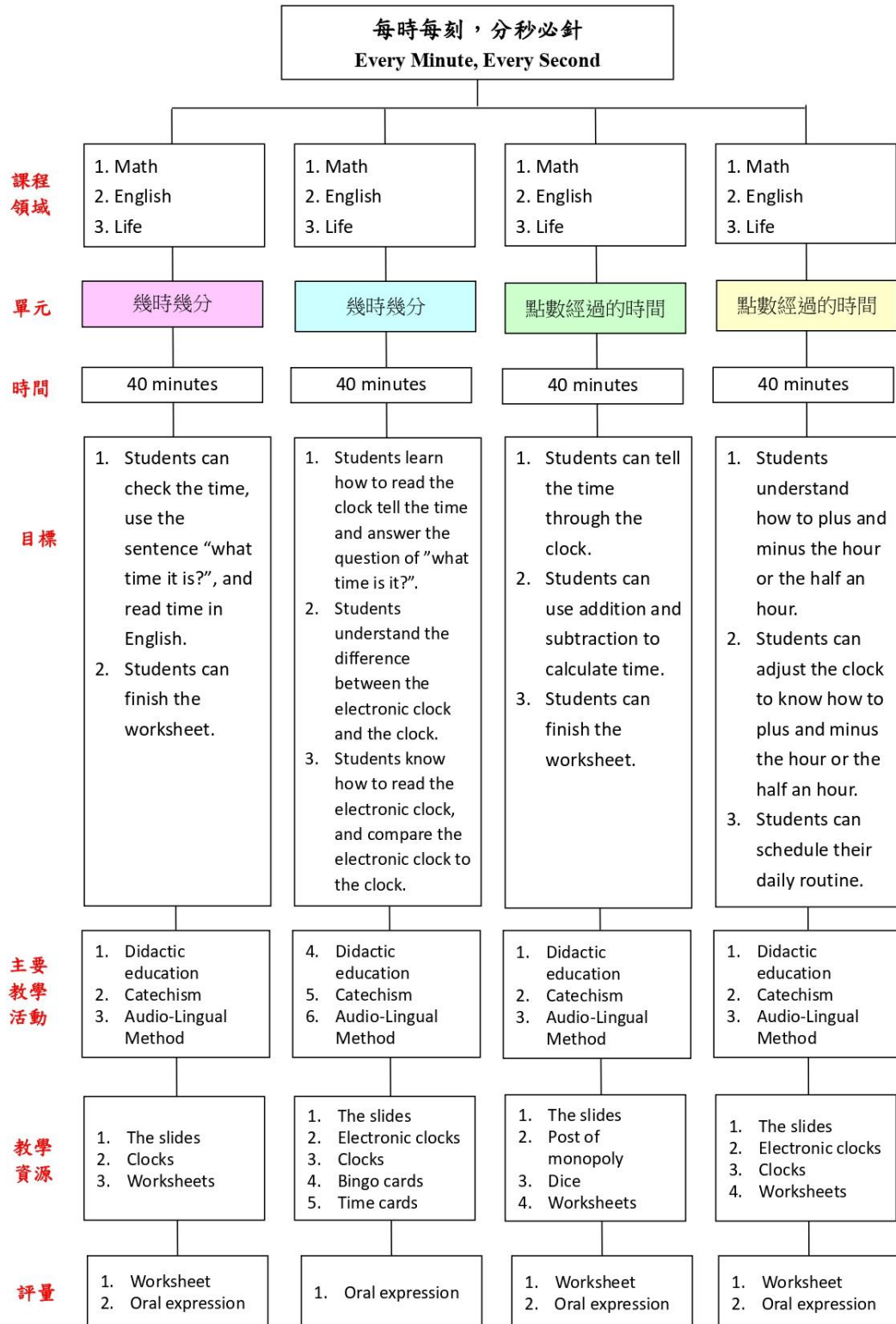
3、 教學方法分析

Didactic Teaching, question and answer method, and comprehensive activities:

The main teaching method is the didactic teaching and question and answer method with the assistance of comprehensive activities to make up the shortage of traditional teaching methods. (They only learn by listening to what teachers say in the traditional teaching way.) Motivating students to learn by question makes students think about the learning topic. And students will generate questions or find the answer by teacher's guidance. Using didactic teaching with teaching aids or life situations to teach the important lesson content. In the end, practical practice and application with making use of the learning content enhance the concept of time.

4、課程概念架構圖

指標/單元名稱/活動/策略/評量方式(可依上列項目自行繪製概念架構圖)



參、教學活動設計

單元名稱 Unit Title	幾時幾分 Moment and Time	適用年級 Grade Level	Second Grade 二年級
課程名稱 Course Title	每時每刻, 分秒必針 Every Minute, Every Second	教學時間 Unit Length	Four lessons (160 minutes) 四節課(160分鐘)
教材版本 Textbook Edition	南一第三冊第七單元 Nan 1 Book Three Unit 7		
教學準備 Preparation	The First Period	The slides, clocks, worksheets.	
	The Second Period	The slides, bingo cards, time cards, glues.	
	The Third Period	The slides, post of monopoly, dice, worksheets.	
	The Fourth Period	The slides, electronic clocks, clocks, worksheets.	
配合融入之 學科領域 Integrated Subject/Content Area	<input checked="" type="checkbox"/> 數學 <input type="checkbox"/> 自然科學 <input type="checkbox"/> 綜合活動 <input checked="" type="checkbox"/> 健康與體育 <input checked="" type="checkbox"/> 生活課程 <input type="checkbox"/> 藝術 <input type="checkbox"/> 社會		
配合融入之議題 Integrated Issue	<input type="checkbox"/> 性別平等教育 <input type="checkbox"/> 人權教育 <input type="checkbox"/> 環境教育 <input type="checkbox"/> 海洋教育 <input type="checkbox"/> 品格教育 <input type="checkbox"/> 生命教育 <input type="checkbox"/> 法治教育 <input type="checkbox"/> 科技教育 <input type="checkbox"/> 資訊教育 <input type="checkbox"/> 能源教育 <input type="checkbox"/> 安全教育 <input type="checkbox"/> 防災教育 <input type="checkbox"/> 閱讀素養 <input type="checkbox"/> 多元文化教育 <input type="checkbox"/> 國際教育 <input checked="" type="checkbox"/> 生涯規劃教育 <input type="checkbox"/> 家庭教育 <input type="checkbox"/> 原住民教育 <input type="checkbox"/> 戶外教育 <input type="checkbox"/> 無		
領域核心素養 Core Competencies	E-A1 具備良好的生活習慣, 促進身心健全發展, 並認識個人特質, 發展生命潛能。 E-A3 具備擬定計畫與實作的能力, 並以創新思考方式, 因應日常生活情境。 E-B1 具備「聽、說、讀、寫、作」的基本語文素養, 並具有生活所需的基礎數理、肢體及藝術等符號知能, 能以同理心應用在生活與人際溝通。		
結構架次 Lesson Structure	The First Period	Cognitive domain: 學生能夠藉由看時鐘來得知現在時刻。 Students can know what time is by watching the clock. Affective domain: 學生能領悟時間之重要性。 Students can understand the importance of time. Psychomotor domain: 學生可以由看時鐘得知現在的時間。 Students can check time by watching the clock.	

	The Second Period	<p>Cognitive domain : 學生能夠藉由看電子鐘來得知現在時刻。 Students can know what time is by watching the electronic clock.</p> <p>Affective domain : 學生能理解時間在生活中的作用。 Students can understand the usage of time.</p> <p>Psychomotor domain : 學生可以由看時鐘得知現在的時間，並守時。 Students can check time by watching the clock and be punctual.</p>
	The Third Period	<p>Cognitive domain : 學生認識一小時內分鐘的加減。 Students understand the addition and subtraction of minutes in an hour.</p> <p>Affective domain : 學生能領會時間的加減，並給予正向反應。 Students apprehend the addition and subtraction on time, and have positive reflection.</p> <p>Psychomotor domain : 學生能進行一小時內分的加減。 Students can calculate the time in one hour.</p>
	The Fourth Period	<p>Cognitive domain : 學生認識小時與半小時的加減。 Students understand plus or minus one hour and half an hour.</p> <p>Affective domain : 學生能有時間觀念。 Students have the concept of time.</p> <p>Psychomotor domain : 學生能夠進行簡易時間之加減，並初步學會規劃時間。 Students can plus or minus one hour and half an hour and manage their time.</p>

第一節課 The First Period

能力指標/ 學習表現 Student Performance	<p>Math: n-l-9 認識時刻與時間常用單位。</p> <p>Life: 3-l-2 體認探究事理有各種方法，並且樂於應用。</p>
分年細目/ 學習內容 Learning Content	<p>Math: N-2-13 鐘面的時刻：以操作活動為主。 以鐘面時針與分針之位置認識「幾時幾分」。 含兩整時時刻之間的整時點數（時間加減的前置經驗）。</p>

Life: E-I-3 自我行為的檢視與調整。				
單元教學目標 Learning Goals	教學內容 Procedures	跨語言實踐 translanguaging	時間 time	評量方式 Assessment
<p>English: Students can read numbers“1-12”and read clock to know what time it is.</p>	<p>Presentation:</p> <p>1.Worksheet contents:Record worksheet.</p> <p>2.Grouping students before class.</p> <p>3.Slide for class teaching.</p> <p>4.Teaching aids: clocks.</p> <p>引起動機: 教師透過提問引出教學目標為時鐘報讀。</p> <p>Motivating: Teacher ask students how to check time in normal times.</p> <p>1. Asking the question: T:How do you check the time? Joe: I know!Look at my watch! T: Good!Does anyone else have another answer? T:Raise your hand.Let me know you have a different answer. T:OK!Elsa,you say.</p> <p>Elsa:Mmm....I don't have a watch. But my father tells me when I want to check what time is, I can watch the clock.</p> <p>T:Great! Today, I will be teaching you how to check time more precisely.</p>	<p>1.Translanguaging: Teacher asks questions, and provides some additional information in Chinese. Students answer in English or Chinese.</p>	4'	<p>1.Oral Assessment: Students can answer the teacher's question in English or Chinese.</p>

<p>Math: Students can check the time, use the sentence “what time it is?”, and read time in English.</p>	<p>教學活動1:學生透過觀察鐘面學習區分時針分針，並複習用英文報讀數字(數字1~12)。</p> <p>Follow-up activity1:</p> <p>1. Teacher guides students to observe clock. Students find numbers, hour hand and minute hand. Teacher teaches students how to distinguish hour hand and minute hand.</p> <p>T:First,we need to review the things we have learned before.Can someone tell me what you can see on the clock?</p> <p>S:Numbers!Hour hand!(時針)Minute hand!(分針)</p> <p>T:Great! Let us review how to read these numbers and find the difference between hour hand and minute hand.</p> <p>T:Repeat after me.One.Two.Three...Twelve.</p> <p>S:(Repeat after T)</p> <p>T:Now,it's your turn. Read numbers by yourself.</p> <p>S:One,Two,Three...Twelve.</p> <p>T:Now,Look at the clock.We can find two pointers on the clock.The shorter pointer we call it“Hour hand”,and the longer pointer we call it “Minute hand”.</p> <p>Hour hand and Minute hand means「時針、短針」in Chinese.</p>	<p>1.Translanguaging: Teacher reviews “numbers”by asking students in English.Students allowed to use Chinese or English to answer teacher’s question.And teacher explain “Hour hand and Minute hand ”in English.</p> <p>Language for learning: Vocabulary: Clock, One, Two, Three, Four, Five, Six, Seven, Eight, Nine, Ten, Eleven, Twelve.Hour hand, Minute hand.</p>	<p>4’</p>	<p>1.Oral assessment: Students can count numbers on the clock, and read “1-12” in English.</p>
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<p>Math: Students can check time, read what time it is and read time in English. __ thirty)</p>	<p>教學活動2:學生說出鐘面所代表的時刻, 並讓學生複習整點鐘、幾點半的報讀。</p> <p>Follow-up activity2:</p> <p>2. Teacher review how to read time: Learning "it's ___ o'clock", "It's ___ thirty." And students can read time. Students can use "it's ___ o'clock", "It's ___ thirty." to answer the teacher's question.</p> <p>T: Look at the picture. What time is it? S: It's eight o'clock. T: What time is it? (換了另一個時間) S: It's two o'clock. T: Great! And Now? (調整鐘面時間) S: ... T: Look at the picture. We can find that the minute hand points to thirty. T: So, we can know what time it is, and we say 「八點半」 in Chinese. T: And in English, we say 「eight thirty」. 「eight thirty」 means 「八點半」 in English. T: Repeat after me 「eight thirty」. S: 「eight thirty」. T: Great! (調整鐘面時間) Now, who can tell me what time is it? T: Don't forget to raise your hand.</p>	<p>14'</p> <p>2. Translanguaging: Teacher ask student "What time is it?" And student need to answer teacher in english. After teacher change hour hand and minute hand, Teacher ask student "What time is it" again. Students can use Chinese to answer this question. Teacher use English teach student how to say "八點半" in English. After student understand how to say "八點半" in English, Teacher change hour hand and minute hand again, and ask "What time is it?". Students need to answer teacher in English.</p> <p>Language for learning: 1. What time is it? It's ___ o'clock. 2. What time is it? It's ___ thirty.</p>	<p>2. Oral Assessment: Students can repeat what the teacher says and understand how to read "8:30" in English.</p>
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<p>Math: Students can count intervals on the clock ,read what time is and read time in English.</p>	<p>教學活動3:</p> <p>教師問學生鐘面上除了很大一格的格子之外還有什麼,引導學生說出代表分鐘的小格,教學生如何運用「點數」獲得更詳細的時間資訊(例:12:34)</p> <p>點數的教法:先以12點為基準,帶領學生進行點數後,再進一步教學每一個大格子中的間隔都為五分鐘。</p> <p>Follow-up activity3:</p> <p>3. Teacher asks students except numbers and pointers, what can we find in the clock? Teacher guides students to find the intervals on the clock. Teacher teaches students how to use “counting intervals” to get more precise time.</p> <p>How to count intervals: Based on number twelve, teachers lead students to count intervals. After students understand how to count intervals, teacher teaches them: There are 60 intervals on the clock, and each interval means one minute.</p> <p>T: Besides numbers. What can we find on the clock?(引導至鐘面上的格子)</p> <p>T: Right. It's「格子」. In English, we call these「格子」 intervals」.</p> <p>T: Look at the picture. There are sixty intervals on the clock. One interval means「one minute」.</p> <p>T: Now, Let's count how many intervals in the clock together.</p> <p>T&S: One, Two, Three... Sixty.</p> <p>T: Good job! It's「Quick answer race time」.</p> <p>T: Don't forget to raise your hand. Only the quickest one can answer questions and get points.(調整好時間)</p>	<p>16'</p> <p>3. Translanguaging: Teacher use English to teach students how to count intervals. Students need to learn how to count and answer teacher's questions in English.</p> <p>Language for learning: What time is it? It's eight thirty. What time is it? It's eight (o) two.</p>	<p>3. Oral Assessment: Students can count intervals on the clock, and can read clock to say what time it is in English.</p>
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	<p>T:3...2...1...Ok...Elsa,you're the quickest one.You answer.</p> <p>T:What time is it?</p> <p>Elsa:It's eight o three.</p> <p>T:Great! You can get 5 points.</p>			
<p>Life: Students can use a worksheet to record their daily routine.</p>	<p>評量活動: 你/妳今天做什麼?</p> <p>Assessment activity:What do you do today?</p> <p>1.Explain activity:</p> <p>T:This worksheet is used for recording your daily routine. For example, if you go home at 12:00, you need to write down “went home” in the “What did you do ?” blank and “12:00” in the “time” blank.</p> <p>2.Teacher gives a worksheet to students.</p> <p>Students record their routine activity.</p>	<p>1. Translanguaging: Teacher use English to teach students how to finish the worksheets.</p>	2'	<p>1. Performance Assessment: Students finish the worksheet</p>
第二節課 The Second Period				
<p>能力指標/ 學習表現 Student Performance</p>	<p>Math: n-l-9 認識時刻與時間常用單位。</p> <p>Life: 3-l-1 願意參與各種學習活動, 表現好奇與求知探究之心。 6-l-3 覺察生活中的規範與禮儀, 探究其意義, 並願意遵守。 7-l-5 透過一起工作的過程, 感受合作的重要性。</p>			
<p>分年細目/ 學習內容 Learning Content</p>	<p>Math: N-2-13 鐘面的時刻:以操作活動為主。以鐘面時針與分針之位置認識「幾時幾分」。含兩整時時刻之間的整時點數(時間加減的前置經驗)。</p> <p>Life: C-l-5 知識與方法的運用、組合與創新。 D-l-4 共同工作並相互協助。</p>			

單元教學目標 Learning Goals	教學內容 Procedures	課室互動語言 Classroom Discourse	時間	評量 方式
<p>Math: Students learn how to read the clock and answer the question.</p> <p>English: Students can understand the simple question and use simple sentences to answer the question, like “It’s <u>(time)</u>”.</p>	<p>Preparation: 1.The slide for class teaching. 2.Grouping students before class. 3.Worksheet contents: worksheet of the class schedule, bingo card, time card.</p> <p><u>引起動機</u>: 配合生活作息複習如何看鐘。</p> <p>Motivating: Review how to read the clock with daily routine.</p> <p>1.配合簡報, 老師提問。 Teacher asks the question combing the life with slides :</p> <p>(1)Ask the question about the time of the session and recess.</p> <p>(1-1) T: It’s time for math class. Now, what time is it ? S: It’s nine thirty-three.</p> <p>(1-2) T:What time will you take a break ? S:At ten fifteen.</p> <p>T:Great! Thanks for your answer.</p> <p>(2)Ask the question to three students with slides. T:You answer the question “What did you do at this time last night ?” The time will be on the slides.</p> <p>(2-1) T:What did you do at this time last night ?</p>	<p>1. Translanguaging: Teacher asks the question in English, and students answer “It’s <u>(time)</u> ” in English.</p> <p>Students are allowed to use the Chinese to answer difficult questions, like what did you do at seven p.m.?, but encouraging them to speak in English.</p> <p>Language for learning:</p> <p>1. T:What time is it? S:It’s <u>(time)</u> .</p> <p>2. What time did you do sth? S:I <u>(do sth.)</u> at <u>(time)</u> .</p> <p>3. Vocabulary : (1)Electronic clock.</p>	5’	<p>1. Oral Assessment: Students understand what the teacher says and answer the questions.</p>

<p>English: Students can understand the simple words, like electric clock.</p>	<p>S1:I took a bath at eight o'clock. (我8點的時候在洗澡。) T:What did you do at this time last night? S2:I brushed my teeth at nine forty-five. (我9點45分的時候在刷牙。) T:What did you do at this time last night? S3:I did my homework at 5:27pm. (我5點27分的時候在寫作業。)</p> <p>(3)提問並總結Ask the question and go to the next learning topic: (3-1) T: How do you usually tell the time? With the electronic clock or the clock? S: Electronic clock/clock.</p> <p>T: Ok. some people tell the time by the electronic clock, the others tell the time by the clock. Now let's look at the difference between the electronic clock or the clock and learn how to read the electronic clock.</p>			
<p>Math: Students understand the difference between the electronic clock and the clock.</p> <p>Math:</p>	<p>發展活動1: 透過問答學習看鐘面與數字鐘。 Follow-up activity: Learning how to read the electronic clock by asking questions:</p> <p>1.T:What time is it? (The electronic clock shows 9:00 on slides) S:No answer or it's nine o'clock. T:It's ok. Let's learn how to read the electronic clock./Great, let's learn more about electronic clock.</p> <p>(1)</p>	<p>1. Translanguaging: Teacher asks the question in English, and students answer the question in English.</p> <p>Language for learning:</p> <p>1. T:What time is it?</p>	20'	<p>1. Oral Assessment: Students understand what the teacher says and answer the questions.</p>

<p>Students know how to read the electronic clock, and compare the electronic clock to the clock.</p> <p>Math: Students can be proficient at reading the clock and the electronic clock.</p> <p>Life: Students understand their class schedule and have the concept of time.</p>	<p>O’CLOCK: Explaining how to read the electronic clock.</p> <p>T:Look at the electronic clock,the former is nine. It means nine o’clock. For example, look at the picture. The former is six, so what time is it? S:It's six o’clock.</p> <p>(2) Not O’CLOCK: Explaining how to read the electronic clock.</p> <p>T:Look at the electronic clock again,the former is nine and the latter is twenty. It means the time is nine twenty. For example, the former is eight and the latter is forty, so what time is it? S:It's eight forty.</p> <p>T: Good job. next picture, what time is it? S:It's eleven twenty-two. T:Yes, you’re right. keep going!</p> <p>2. 播放只有平面時鐘的課表, 詢問在什麼課是幾點, 並配合學習單寫上課表時間。 The class schedule only with the clock on slides. Teacher asks the question about the time of the class, and students write down their answer on the worksheet.</p> <p>T: Now, I will give you the worksheet. you need to fill the blank. Yesterday, you recorded your daily routine after school. Today I will let you record the class schedule. (Giving the worksheet to the students)</p>	<p>S:It’s <u>(time)</u> .</p> <p>2. T: The former is <u>nine</u> and the latter is <u>twenty</u>. It means the time is <u>nine twenty</u>.</p> <p>3. Vocabulary : (1)former (2)latter</p> <p>2. Translanguaging: Teacher asks the question in English, and students answer the question in English.</p> <p>Language for learning: 1.T: What time is the <u>math class</u> ? S: The <u>math class</u> is at <u>time</u> . 2. Vocabulary : (1)Class schedule (2)Name of the</p>		<p>2. Performance assessment: Students finish the worksheet.</p> <p>Oral Assessment: Students understand what the teacher says and answer the questions.</p>
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<p>English: Students can understand the simple question and use simple sentences to answer the question, like “The <u>math class</u> is at <u>time</u>”.</p>	<p>T: It's your class schedule. It has the clock on it, you need to fill the number into the blank. For example, what time is the English class S:The English class is at ten twenty-five. T: So you write down the ten twenty-five on the worksheet. Is it ok for you? S:Ok.</p> <p>(After finishing the worksheet, teacher checks the answer by question.) T: What time is the _____ ? S: _____ is at _____ . T: great! you all finish the worksheet, let's play the game!</p>	<p>subject.</p>		
<p>Life: Students are willing to participate in the activities.</p> <p>Life: Students can cooperate with their</p>	<p>評量活動: 時間BINGO Assessment activity: TIME BINGO</p> <p>1.Preparation: (1)Grouping the students. (2)Giving the worksheets and time cards.</p> <p>2.講解活動規則Explaining the game rules: (1) T: The time will be on the slides. When the electronic clock is on the slides, you should take the time card with the clock , write down the time, and paste the time card on the BINGO card. When the clock is on the slides, you should take the time card with the electronic</p>	<p>2.Translanguaging: Teacher asks the question and tells the rules in English, and students answer the question in English.</p>	<p>15'</p>	

<p>classmates to finish the task(BINGO card) and solve the problem.</p> <p>Math: Students can be proficient at reading the clock and the electronic clock.</p>	<p>clock , write down the time, and paste the time card on the BINGO card.</p> <p>(2)</p> <p>T: Let’s practice one question. it’s a clock on the slides, so which card do you take?</p> <p>S: Electric clock.</p> <p>T: Great, then what time is it?</p> <p>S: It's three fifty-one.</p> <p>T: Ok, now let’s play the BINGO game.</p> <p>3.活動進行Activity:</p> <p>(1) Students write down the time,and paste the time cards into the BINGO card.</p> <p>(2)T: When the group one says what time is it? Then the group two will answer the question and choose the time to circle. Then turn to the group two to ask the question and the group one answer the question.</p> <p>Students play the BINGO game and complete who gets more lines when everyone groups choose two time cards to circle.</p>	<p>3.Translanguaging: Teacher tells the rules in English, and students answer the questions in English.</p> <p>Language for learning:</p> <p>1. S:What time is it? S:It’s <u>(time)</u> .</p>	<p>3.Blockade-running assessment: Students participate in the bingo game and finish the bingo card.</p> <p>Oral Assessment: Students answer the questions in English.</p>
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第三節課 The Third Period

<p>能力指標/ 學習表現 Student Performance</p>	<p>Math: n-l-9 認識時刻與時間常用單位。</p> <p>Life: 3-l-1願意參與各種學習活動, 表現好奇與求知探究之心。 7-l-1以對方能理解的語彙或方式, 表達對人、事、物的觀察與意見。 7-l-5透過一起工作的過程, 感受合作的重要性</p>
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<p>分年細目/ 學習內容 Learning Content</p>	<p>Math: N-2-13 鐘面的時刻:以操作活動為主。以鐘面時針與分針之位置認識「幾時幾分」。含兩整時時刻之間的整時點數(時間加減的前置經驗)</p> <p>Life: D-I-3 聆聽與回應的表現。 D-I-4 共同工作並相互協助。</p>			
<p>單元教學目標 Learning Goals</p>	<p>教學內容 Procedures</p>	<p>課室互動語言 Classroom Discourse</p>	<p>時間</p>	<p>評量 方式</p>
<p>English: Students can speak about the vocabulary related to clocks in English.</p> <p>Math: Students can tell the time through the clock.</p> <p>English:</p>	<p>課前準備 Preparation: 1.Slides contents: 2.Poster of the game “The Clock Monopoly” 3.Worksheet contents: Alice’s schedule on the weekend</p> <p>引起動機 Motivating: 1.教師使用簡報圖片複習單字 Teacher uses pictures on the slides to review the vocabulary:</p> <p>Vocabularies: Electronic clock 電子鐘 Clock 時鐘 Interval 格子 Hour hand 時針 Minute hand 分針</p> <p>教師提問: T:What is this? (Point to the picture on the slide.) S:It’s <u> </u> (the word).</p> <p>2.教師配合簡報圖像, 隨機抽點學生說出鐘面上的時間。 Teacher asks the students randomly to answer the time with slides. T: What time is it? S: It’s two thirty-nine.</p>	<p>1. Translanguaging: Teacher asks questions in English. Students answer in English.</p> <p>1. Language for learning: T:What is this? S:It’s <u> </u> (the word). Vocabularies: (1)Electronic clock (2)Clock (3)Interval (4)Hour hand (5)Minute hand</p> <p>2. Translanguaging: Teacher asks questions in English. Students answer in English.</p>	<p>5’</p>	<p>1. Oral Assessment: Students can understand questions and answer in English.</p> <p>2. Oral Assessment: Students can understand questions and answer in</p>

Students can answer wh- questions in English.		2. Language for Learning: What time is it? It's <u>(time)</u> .		English.
	<p>發展活動: 數出兩個整時刻中間有幾分鐘、簡單加減</p> <p>Follow-up Activity: Counting minutes in an hour by addition and subtraction.</p> <p>1. 營造情境: 教師以日常生活帶入情境。 Create a situation: Teacher creates a situation with a situation in daily life.</p> <p>(1) 引言 Introduction:</p> <p>T: Do you hang out with your friends on the weekend? S: Yes! T: How do you and your friends meet? S: We will meet at a certain time and location. T: Great! Let's see the story about what Alice and her friend do on the weekend. Let's look at the story in the worksheet.</p> <p>(2) 講述故事 Telling the story:</p> <p>Teacher assign students (individual or team) to read the story content on the worksheet. T: Could you read the story contents?</p> <p>故事內容: Alice 跟朋友約好早上到圖書館。出門前她看了牆上的時鐘, 發現現在已經10:24了, 到圖書館時已經是10:31了。 Story contents: Alice is going to meet her friend in the library. She sees the clock on the wall before she goes out, and it's 10:24. It takes her seven</p>	<p>1. Translanguaging: Teacher asks questions in English, and can give some additional information in Chinese.</p> <p>Students are allowed to use the Chinese to answer difficult questions, like "How do you and your friends meet?", but encouraging them to speak in English.</p>	20'	<p>1. Oral Assessment: Students can understand questions and answer.</p>

<p>Math: Students can use addition and subtraction to calculate time.</p> <p>English: Students can use and answer wh- questions in English.</p>	<p>minutes to walk to the library.</p> <p>2.配合學習單, 引導學生算出10:24-10:31中間過了幾分鐘。 Instruct students to calculate the time with the worksheet.</p> <p>(1)教師提問Questions: T:When Alice arrives at the library, what time is it? S:It's ten thirty-one.</p> <p>(2)教師提問Questions: T:How do you know the answer? Tell me the way you answer this question. S: (a) I answer the question by counting intervals. (b) I use addition. Twenty-four plus seven equals thirty-one.</p> <p>3.教師講解兩整時刻之間分的運算 Teacher teaches how to plus or minus the minutes in an hour. T:Some of you use subtraction in the question. T:When the time is in the arrange of an hour, we can just count the time by addition or subtraction. T:For example, if we want to count how many minutes between 5:02 and 5:09, we can get the answer by nine minus two.</p> <p>4.學生分成小組, 每組分別回答Alice在各個活動中花費的時長。 Every group answers the question of "How much time...?"</p>	<p>2.Translanguaging: Teacher asks questions in English.</p> <p>Students are allowed to use the Chinese to answer difficult questions, like "How do you know the answer?", but encouraging them to speak in English.</p> <p>3.Translanguaging: Teacher explains in English, and provides some additional information in Chinese.</p> <p>4.Translanguaging: Teacher asks questions in English, and provides some</p>	<p>2.Oral Assessment: Students can understand questions and answer.</p> <p>4.Oral Assessment: Students can understand questions and</p>
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<p>English: Students can use and answer the questions in English.</p> <p>Life: Students are willing to participate in the activities.</p>	<p>(1) 教師講解學習單 Explain the worksheet:</p> <p>T: Look at the form on the worksheet, now we are going to fill the forms. Each group discusses and finishes one line. Don't forget to draw the clock if it doesn't have hour hand and minute hand.</p> <p>(2) 教師提問 Questions: T: When does Alice finish doing the housework? (Group 1) S: At one seven.</p> <p>T: How much time does Alice read novels? (Group 2) S: Nineteen minutes.</p> <p>T: When does Alice start going jogging? (Group 3) S: At four four.</p> <p>T: How much time does Alice do an errand? (Group 4) S: Fifteen minutes.</p>	<p>additional information in Chinese. Students answer in English.</p> <p>4. Language for Learning: T: How much time does Alice <u>(plan to do)</u>? S: _____ minutes.</p> <p>When does Alice <u>(plan to do)</u>? At <u>(time)</u>.</p>	<p>answer in English.</p> <p>4. Performance assessment: Students can finish the worksheet with their teammates.</p>
<p>Math: Students can use addition to calculate time.</p>	<p>評量活動: 時鐘大富翁 Assessment activity: "The Clock Monopoly"</p> <p>1. 評量活動準備 Preparation of Assessment Activity (1) Teacher pastes the poster on the blackboard. (2) Teacher prepares different colored magnets to represent each group.</p> <p>2. 故事情境 Creating a Scenario: Story content: Alice wants to catch up with the bus. It's 6:03 now. The bus will come at 6:38. Could you please help her catch the bus in time?</p>	<p>2. Translanguaging: Teacher explains in English.</p>	<p>15'</p> <p>Blockade-running Assessment: Students learn to calculate time through the game "The Clock Monopoly".</p>

<p>English: Students can tell time in English. 2. Students can use and answer wh-questions.</p> <p>Life: Students are willing to participate in the activities.</p>	<p>3. 講解遊戲規則 Explaining game rules:</p> <p>(1) T: Each team rolls the dice in your turn. One point equals one minutes. If you row one point, you can move one minute forward.</p> <p>(2) T: Other teams ask “What time is it?” after Playing team moves their magnet. T: Playing team should answer other teams’ questions with the sentence “It’s <u>(time)</u>.”</p> <p>(3) T: The first group to reach the end point wins this game.</p> <p>(4) T: Do you have any questions about the game?</p> <p>4. 開始遊戲 Game Start:</p> <p>(1) Playing team rolls the dice. (2) Other team: What time is it? Playing team: It’s six thirty-two.</p>	<p>3. Translanguaging: Teacher explains in English, and provides some additional information in Chinese.</p> <p>4. Translanguaging: Students ask and answer in English. 4. Language for learning: What time is it? It’s <u>(time)</u>.</p>		
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第四節課 The Fourth Period

<p>能力指標/ 學習表現 Student Performance</p>	<p>Math: n-l-9 認識時刻與時間常用單位。</p> <p>Life: 3-l-2 體認探究事理有各種方法，並且樂於應用。 6-l-3 覺察生活中的規範與禮儀，探究其意義，並願意遵守。</p>
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<p>分年細目/ 學習內容 Learning Content</p>	<p>Math: N-2-13 鐘面的時刻:以操作活動為主。 以鐘面時針與分針之位置認識「幾時幾分」。 含兩整時時刻之間的整時點數(時間加減的前置經驗)。</p> <p>Life: E-I-3 自我行為的檢視與調整。 F-I-3 時間分配及做事程序的規劃練習。 F-I-4 對自己做事方法或策略的省思與改善。</p>			
<p>單元教學目標 Learning Goals</p>	<p>教學內容 Procedures</p>	<p>課室互動語言 Classroom Discourse</p>	<p>時間</p>	<p>評量 方式</p>
	<p>Preparation: 1.The slide for class teaching. 2.The worksheet: “My Schedule”. 3.Teaching aids: clocks.</p> <p>引起動機Motivating: 教師問學生平時是如何計算自己擁有多少時間 1.Teachers ask students how to calculate how many times they have in their normal times.</p> <p>T:Can you tell me what you do when you want to check how many times you have? S:Look at my schedule. T:Great! But, today I will teach you how to calculate how many times you have.</p> <p>2.營造情境 Teacher creates a daily life situation.</p> <p>Telling the story: (Continuing the story we told in the previous lesson.) Alice studied hard in the library, so when she went home she wanted to take a bath to relax.</p>		5'	
	<p>發展活動:學習時間的簡單加減(限小時與半小時的加減)。 Presentation:Learning how to plus or minus one hour and half an hour.</p>		25'	

<p>Math: Students understand how to plus and minus the hour or the half an hour.</p> <p>Math: Students can adjust the clock to know how to plus and minus the hour or the half an hour.</p>	<p>1.講解小時與半小時的加減並實際操作時鐘。 Teaching how to plus and minus the hour or the half an hour and making the students use the electronic clock and the clock to learn the time well:</p> <p>(1)Giving the electronic clock and the clock to the students: One group has one clock.</p> <p>(2)Teaching how to plus or minus one hour. T: Alice took a shower at five o'clock. After one hour, she finished the shower. So what time is it? (Teacher use the clock to show the answer) S: It's six o'clock. T: Look at the clock. The minute hand moves every minute. It moves 60 times per hour. A minute hand makes one revolution per hour. So when the time was five o'clock, after one hour, it's six o'clock.</p> <p>T: Yesterday, Alice took the bus at six thirty-eight. After one hour, she reached grandma's home. So what time was it? Please use the clock and tell me the answer. S: It's seven thirty-eight. T: Good job. Let's practice again. Now it's <u>(time)</u>. After an hour, what time will it be? Please use the clock and tell me the answer. S: It will be <u>(time)</u>. T: Before an hour, what time is it? (Teacher use the clock to show the answer) S: It was <u>(time)</u>. T: Take the minute hand to back one circle.</p> <p>(3)Teaching how to plus or minus one hour:</p>	<p>1.Translanguaging Teacher asks questions in English, and provides some additional information in Chinese. Students answer in English.</p>	<p>1.Performance assessment: students use the clock and electronic clock to answer the question.</p> <p>Oral Assessment: Students can understand questions and answer in English.</p>
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	<p>T: Today, Alice goes to the market to buy something at 6:00p.m. After thirty minutes, what time is it? (Teacher use the clock to show the answer) S: It's six thirty. T: Look at the clock. The minute hand moves 30 times. Thirty minutes is half an hour. So when the time was six o'clock, after half an hour, it's six thirty.</p> <p>T: Then Alice has dinner at seven eleven. After thirty minutes, she is down. So what time is it? Please use the clock and tell me the answer. S: It's seven forty-one. T: Good job. Let's practice again. Now it's <u>(time)</u> . After half an hour, what time will it be? Please use the clock and tell me the answer. S: It will be <u>(time)</u> . T: Before half an hour, what time is it? (Teacher use the clock to show the answer) S: It was <u>(time)</u> . T: Take the minute hand to back thirty intervals .</p>			
	<p>評量活動: 時間規劃 學生運用上課所學做時間規劃, 以學習單進行</p> <p>Assessment activity:</p> <p>1. 講解學習單 Explaining the worksheet:</p> <p>(1) 引言 Introduction: T: Remember what we did in the first class? S: We wrote down the things we do. T: Yes! Now we are going to make a future plan for your schedule after school today.</p> <p>(2) 教師提問 Questions: T: Look at the example. What does he</p>	<p>1. Translanguaging: Teacher explains in English, and provides some additional information in Chinese.</p> <p>Students are allowed to use the Chinese to answer difficult questions, like “What do you plan to do at four</p>	10'	<p>1. Oral Assessment: Students can understand questions and answer.</p>

<p>Career: Students can schedule their daily routine.</p> <p>Life: Students are willing to participate in the activities.</p>	<p>plan to do at four o'clock? S: He plans to go home. T: Great! What do you plan to do at four o'clock today? S: (1)I plan to go home. (2)I plan to play basketball.</p> <p>(3)講解學習單內容 Explain worksheet contents:</p> <p>T: Now write or draw what you plan to do after school today.</p> <p>T: Write the time at the leftmost form and draw the hour hand and minute hand on the clock in the middle form.</p> <p>T: The rightmost form is for your plan, so write or draw what you want to do after school today.</p> <p>T:Do you have any questions about the worksheet?</p> <p>2.學生實作 Finishing the worksheet: (1) Students write or draw their schedule on the worksheet. (2) Teacher directs students when they need help.</p>	<p>o'clock today?", but encouraging them to speak in English.</p> <p>2.Translanguaging: Teacher explains in English, and provides some additional information in Chinese.</p>	<p>2.Performance assessment: Students arrange their own schedule and write or draw on their worksheet.</p>
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肆、教學評量

科目	單元教學目標	評量方式
英文	Students can check time, read what time it is and read time in English.	Oral assessment: Students can read the numbers on the clock, and read "1-12" in English.
	Students can understand the simple question and use simple sentences to answer the question, like "It's (time) .".	Oral Assessment: Students understand what the teacher says and answer the questions.
	Students can understand the simple words, like electric clock.	Oral Assessment: Students understand what the teacher says and

		answer the questions.
	Students can understand the simple question and use simple sentences to answer the question, like “The <u>math class</u> is at <u>time</u> ”.	<u>Oral Assessment:</u> Students understand what the teacher says and answer the questions.
	Students can speak about the vocabulary related to clocks in English.	<u>Oral Assessment:</u> Students can understand questions and answer in English.
	Students can tell time in English.	<u>Oral assessment:</u> Students can understand questions and answer in English. <u>Blockade-running Assessment:</u> Students learn to calculate time through the game “The Clock Monopoly”.
	Students can use and answer wh-questions.	<u>Oral assessment:</u> Students can understand questions and answer in English. <u>Performance assessment:</u> Students can finish the worksheet with their teammates.
數 學	Students can read numbers“1-12”and read clock to know what time it is.	<u>Oral assessment:</u> Students can answer the teacher's question in English or Chinese.
	Students can check time,read what time it is and read time in English.__thirty)	<u>Oral assessment:</u> Students can repeat what the teacher says and understand how to read “8:30”in English.
	Students can count intervals on the clock, read what time is and read time in English.	<u>Oral assessment:</u> Students can count intervals on the clock,and can read clock to say what time it is in English
	Students learn how to read the clock and answer the question.	<u>Oral Assessment:</u> Students understand what the teacher says and answer the questions
	Students understand the difference between the electronic clock and the clock.	<u>Oral Assessment:</u> Students understand what the teacher says and answer the questions.
	Students know how to read the electronic clock, and compare the electronic clock to the clock.	<u>Oral Assessment:</u> Students understand what the teacher says and answer the questions
	Students can be proficient at reading the clock and the electronic clock.	<u>Performance assessment:</u> Students finish the worksheet.
	Students can be proficient at reading the clock and the electronic clock.	<u>Oral Assessment:</u> Students understand what the teacher says and answer the questions
	Students can tell the time through the clock.	<u>Oral Assessment:</u> Students can understand questions and answer in

		English.
	Students can use addition and subtraction to calculate time.	<p><u>Oral assessment:</u> Students can understand questions and answer in English.</p> <p><u>Performance assessment:</u> Students can finish the worksheet with their teammates.</p> <p><u>Blockade-running assessment:</u> Students learn to calculate time through the game “The Clock Monopoly”.</p>
生活	Students understand their class schedule and have the concept of time.	<p><u>Oral Assessment:</u> Students understand what the teacher says and answer the questions</p>
	Students are willing to participate in the activities.	<p><u>Oral Assessment:</u> Students can understand questions and answer in English.</p> <p><u>Performance assessment:</u> Students can finish the worksheet with their teammates.</p> <p><u>Blockade-running Assessment:</u> Students learn to calculate time through the game “The Clock Monopoly”.</p>
	Students can cooperate with their classmates to finish the task(BINGO card) and solve the problem.	<p><u>Performance assessment:</u> Students finish the bingo card.</p>
生涯	Students can schedule their daily routine.	<p><u>Performance assessment:</u> Students arrange their own schedule and write or draw on their worksheet.</p>

The First Period Attachment -1 :Motivating + Follow-up activity Slide



圖片來源：<http://clipart-library.com/clipart/pi58LbAyT.htm>

The Second Period Attachment -1: The Class Schedule

The class schedule

Class: _____ Number: _____ Name: _____

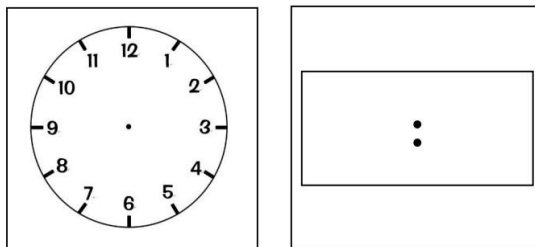
科目 Subject	上課時間 Session	下課時間 Recess
導師時間 Teacher Session		
國語 Mandarin		
數學 Mathematics		
英語 English		
校定課程 School based curriculum		
午餐時間 Lunch Time		
放學時間 The end of the class : _____		

The Second Period Attachment -2 :Bingo Card(1)

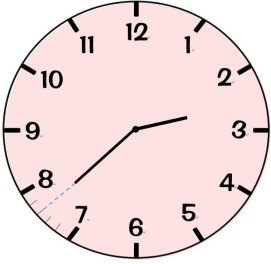
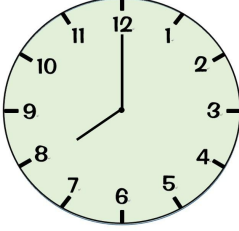
Bingo Card

Class: _____ Number: _____ Name: _____

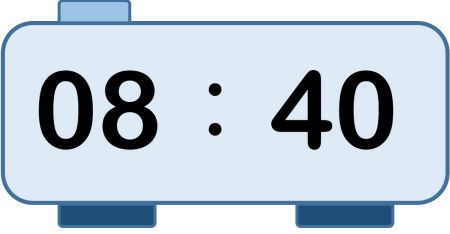
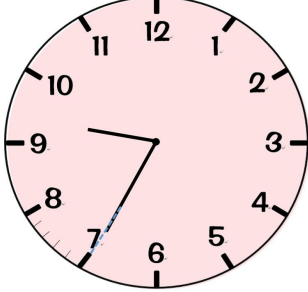
The Second Period Attachment -3 :Bingo Card(2)



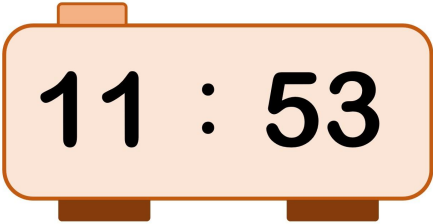
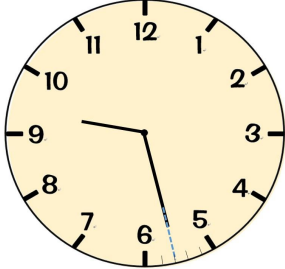
The Second Period Attachment -4: Motivating Slides

<p style="text-align: center;">Clock</p>  <p>An analog clock with a pink face and black numbers. The hour hand is between 8 and 9, and the minute hand is pointing at 8. The time shown is 8:40.</p>	 <p style="text-align: center;">What did you do at this time last night ?</p> <p>An analog clock with a green face and black numbers. The hour hand is pointing at 8 and the minute hand is pointing at 12. The time shown is 8:00.</p>
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The Second Period Attachment -5: Follow-up activity Slides

<p style="text-align: center;">Electronic clock</p>  <p>An electronic digital clock with a light blue face and black numbers. The time displayed is 08 : 40.</p>	<p style="text-align: center;">Math</p>  <p>An analog clock with a pink face and black numbers. The hour hand is between 8 and 9, and the minute hand is pointing at 8. The time shown is 8:40.</p>
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The Second Period Attachment -6: Bingo Slides

<p style="text-align: center;">Bingo</p>  <p>An electronic digital clock with a light orange face and black numbers. The time displayed is 11 : 53.</p>	<p style="text-align: center;">Bingo</p>  <p>An analog clock with a yellow face and black numbers. The hour hand is between 11 and 12, and the minute hand is pointing at 11. The time shown is 11:53.</p>
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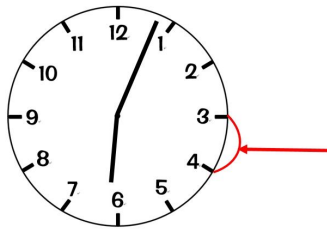
The Third Period Attachment -1 : Motivating Slides



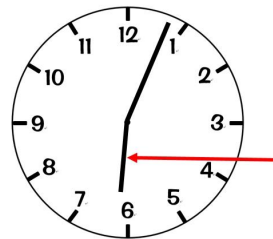
Electronic Clock



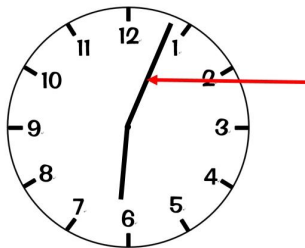
Clock



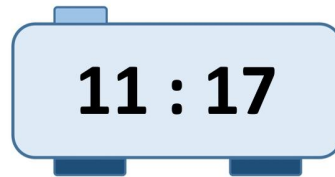
Interval



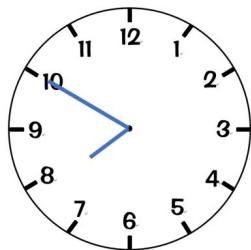
Hour Hand



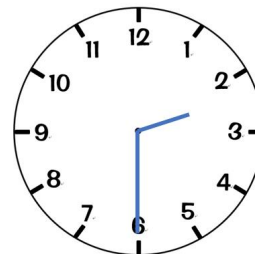
Minute Hand



What time is it?



What time is it?



What time is it?

The Third Period Attachment-2: Alice's Schedule

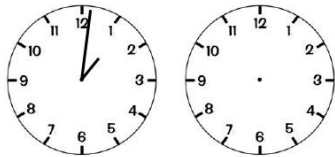
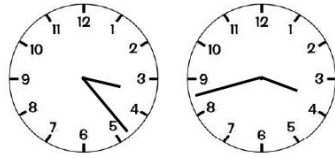
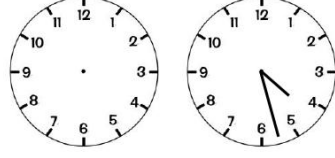
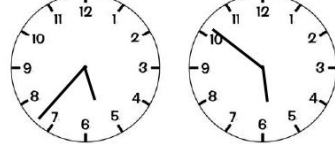
Alice 的 周末 行程 Alice's Schedule on weekend

Class : _____ Number : _____ Name : _____

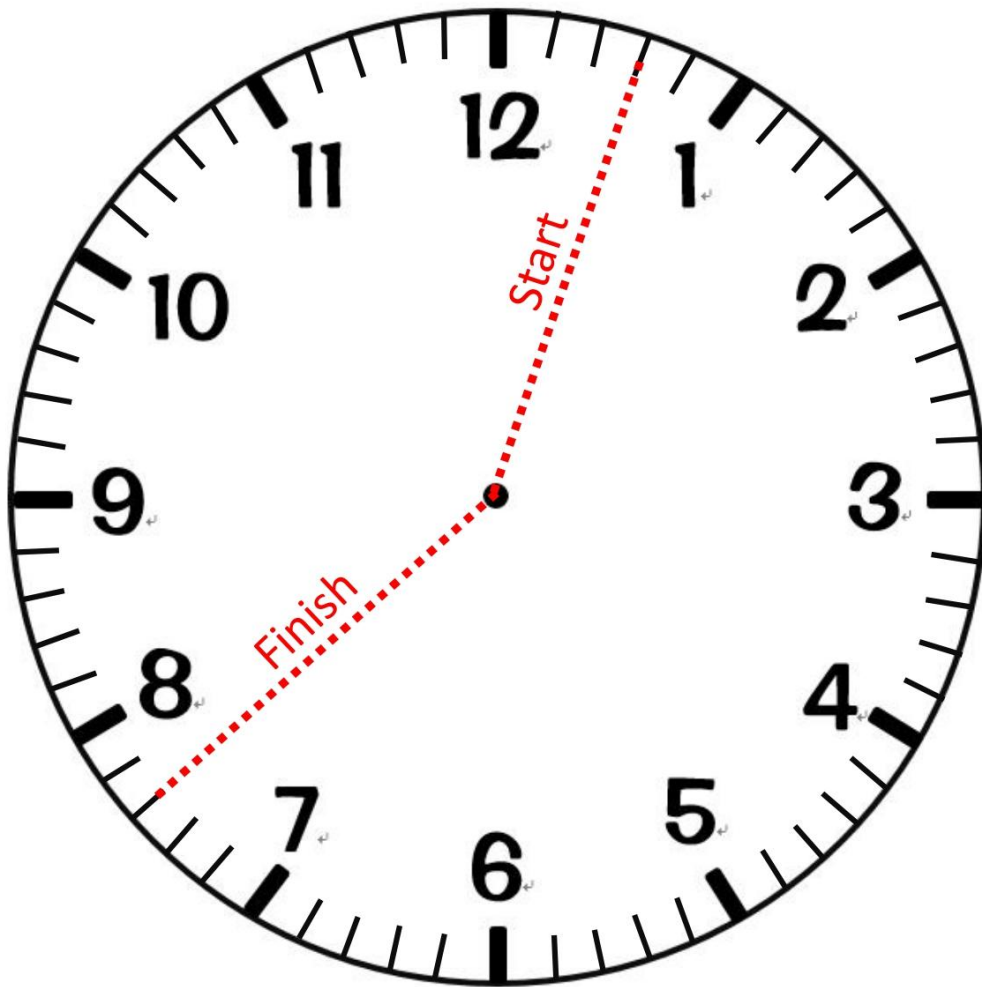
★ Story contents:

Alice is going to meet her friend in the library. She sees the clock on the wall before she goes out, and it is 10:24. It takes her seven minutes to walk to the library.

★ Alice's schedule on weekend

	Time	Minutes	Plan to do
1.		1:02 - _____ 7 minutes	Do the Housework
2.		3:24 - 3:43 _____ minutes	Read Novels
3.		_____ - 4:27 23 minutes	Go Jogging
4.		5:37 - 5:52 _____ minutes	Doing an Errand

The Clock Monopoly

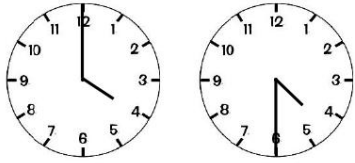
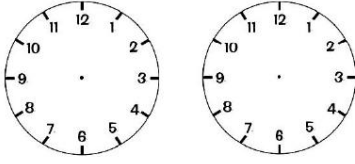
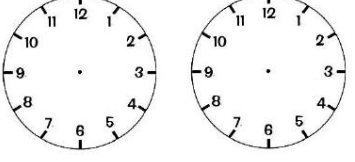
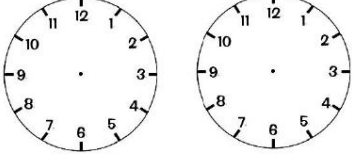
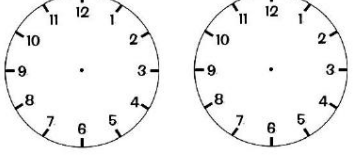


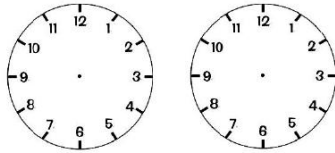
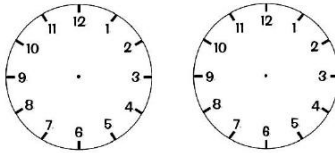
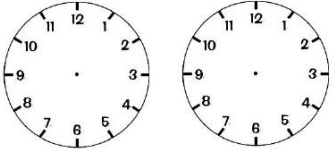
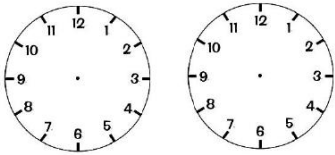
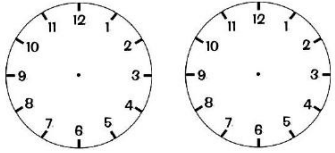
The Fourth Period Attachment -1 : My Schedule

page 1

我的行程表
My Schedule

Class : _____ Number : _____ Name : _____

	Time	Plan to do
<p>Example: 4:00 4:30</p>		<p>Go home on foot</p>
		
		
		
		

	Time	Plan to do
		
		
		
		
		

Reflection: What did you learn in this unit? Write down your reflections.

【附件 4】

110 學年度小學數學雙語教學活動設計競賽

教案設計格式範例

壹、設計理念

無論是為了樂趣或是購買生活用品，食衣住行育樂很常與消費有關聯。倘若出國，更是需要學會這常見的購買用語。此外，當我們消費時，不免會發生店員找錯錢的時候，所以自己的加減計算能力不可缺少。加上學生都是很有創意天賦，配合小小服飾設計師的構想，結合課程內容，學生自己設計服飾、服飾店，以跨領域方式將英語融入數學加減計算，進行雙語教學。

設計課程時，由於國小在第二學習階段才開始接觸英語文領域，因此，本教學以數學為主，英語為輔的方式進行億以內的加減教學。

本教案以「價格計算」為學習內容，連結學生的日常生活經驗，期望能夠有系統、激起學生學習興趣，學習數學及英語。

貳、教學分析

一、教材分析

數學領域—10000 以內的加減

加減法學習過程是反覆連續的，計算是基礎，需要一定量反覆鞏固練習，但不宜過分單獨練習，要結合解決問題去應用，因此，本教案以常見的買賣問題，讓學生練習數學加減。

英語文領域

當確定學科學習內容後，從中找出適合的專有名詞，且配合第二學習階段常用之—How much 詢問價格問句作為學習重點。本教案不以拼讀為主，而是希望學生能夠在學習學科內容的前提下，增加英語文出現的時間。

二、學生分析

	學生學習背景	學生可能的學習需求
數學	◇ 能千以內的加減計算	◇ 對於萬以內的加減，可能偶有位值錯誤。
英語文	◇ 在第二學習階段開始正式學習英語文課程，有一定認識的單字拼讀	◇ 缺乏英文單字量、英文拼字 ◇ 在進行雙語教學時，可能須考量學生程度，提供母語輔助教學比例

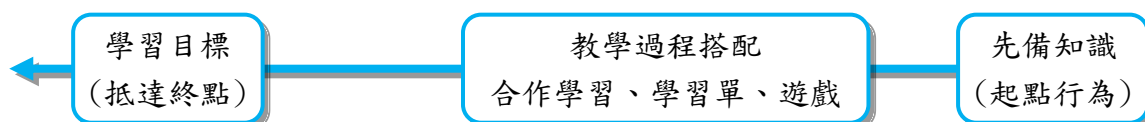
三、教學方法分析

本次教學將採用兩種教學策略，分別為講述式、合作學習討論。以講述法為主，合作學習討論為輔，期望能從課程中讓學生在講述中學習，在小組

討論中更加認識加減的英語用法相關的概念與計算，也營造和諧、友善的合作學習環境，讓學生能將所學不吝於教授給他人。


四、課程概念架構圖

指標/單元名稱/活動/策略/評量方式（可依上列項目自行繪製概念架構圖）



參、教學活動設計

單元名稱	Let's go to the Fashion Store!	適用年級	三年級
課程名稱	10000 以內的加減	教學時間	3 節課，共 120 分鐘
教材版本	數學翰林版		
教學準備			
能力指標/學習表現	分年細目/學習內容	單元教學目標	
數學 n-II-1 理解一億以內數的位值結構，並據以作為各種運算與估算之基礎。 n-II-2 熟練較大位數之加、減、乘計算或估算，並能應用於日常解題。 英語文 ◎1-II-7 能聽懂課堂中所學的字詞。 ◎1-II-8 能聽懂簡易的教室用語。 ◎1-II-9 能聽懂簡易的日常生活用語。 ◎2-II-3 能說出課堂中所學的字詞。 ◎2-II-4 能使用簡	數學 N-3-1 一萬以內的數：含位值積木操作活動。結合點數、位值表徵、位值表。位值單位「千」。位值單位換算。 N-3-2 加減直式計算：含加、減法多次進、退位。 英語文 ◎Ac-II-2 簡易的生活用語。 Ac-II-3 第二學習階段所學字詞。 B-II-1 第二學習階段所學字詞及句型的生活溝通。	學科內容目標： 1. 能說讀聽寫做 10000 以內的數。 2. 使用錢幣進行 10000 以內的數數與做數。 溝通／語言目標： 1. 學生能認識各類服飾英文單詞 2. 學生能妥善運用及回答情境中 How much 問句詢問價格時的用法 3. 學生能妥善運用及回答加減之用法	

<p>學生能認識各類服飾英文單詞</p>	<p>the sentences on the table in order.</p> <ol style="list-style-type: none"> 3. The ordering of the discussion in each group. Teachers use questions to guide students to say why they are in this order. 4. The teacher plays the pre-recorded audio file of the text, and the whole class reviews their answers together. 5. The teacher reads the short text. Read aloud in groups, each group recite one sentence, and then repeat the short text. <p><u>Use of languaging</u> Please read carefully and put the sentences in the correct order. Look at your guessing list. Did you get anything right? Let's read the paragraph together.</p> <p>Activity 3 - Read between the lines</p> <ol style="list-style-type: none"> 1. Use PPT to present pictures of clothing words, establish the connection between students' pictures and words, and lead students to practice the correct pronunciation of words. <div style="text-align: center;">  <p>a short-sleeved shirt</p> </div>	<p>10'</p>	<p>Recognize and correctly pronounce words related to clothing</p>	
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a long-sleeved shirt



dress



sweater



coat



jacket



jeans



shorts



socks



gloves



tie

2. Use PPT to quickly present pictures, and the whole class or group will read them out

	<p>in turn.</p> <p>3. Prompt students to practice the sentence pattern "What do you want? I want a/an/x _____."</p> <p>4. Let's play a board game (Appendix 2) by asking questions. Question and Answer Exercise Each group uses this dialogue for a board game</p> <p><u>Use of languaging</u> You have to shout out your answer. What do you want? I want a/an/x _____.</p> <p style="text-align: center;">Production</p> <p>Activity 4 - Choose This or That</p> <p>1. The teacher uses PPT to present 2 kinds of clothing (pictures and words) at a time, and other students use the question sentence: What do you want? I want _____. Answer your choice.</p> <p>2. The answer must be said immediately after the time has counted down three seconds to test the tacit understanding between the teacher and the students. If you choose the same as the teacher, you can get +2 points</p> <p>3. The team with the most points is the winner.</p> <p style="text-align: center;">Wrap-up</p> <p>1. Teacher asks questions to help students summarize and review what they have learned today. "What did you learn today?" "What else do you still want to know?"</p> <p>2. Encourage students to publish and give compliments when appropriate.</p> <p style="text-align: center;">【第一節 結束】</p>	10'	Willing to participate in various classroom practice activities.	
		2'		

	<p style="text-align: center;">Warm-up</p> <p>Activity 1 - Add and Minus</p> <p>Complete differentiated teaching activities in the classroom according to students' abilities, and issue study sheets of different levels (Appendix 3)</p> <ol style="list-style-type: none"> 1. Have students try to read the dialogue and make simple guesses about what word should be filled in the blank. 2. Teacher plays the dialogue audio file, and the students listen to the audio file and try to complete the dialogue. <p>*According to the needs of students, the audio file can be played repeatedly.</p> <ol style="list-style-type: none"> 3. Each group takes turns to read out the answers discussed by their group in sequence according to the sentence. 4. Teacher organizes the answers of the whole class on the blackboard. 5. The teacher plays a slow, sentence-by-sentence audio file and leads the class to review the answers together. <p style="text-align: center;">Presentation & Practice</p> <p>The teacher presents the English reading article and summarizes it, and guides students to speculate on the topic of the article and extended questions.</p> <ol style="list-style-type: none"> (1) Who is this person? (2) Look at the picture below and make a guess, what is the conversation going to be about? (3) In your opinion, what is “Seller”? (4) How would you describe “Seller”? <p>Please read the dialogue first and guess the missing words.</p> <p>Please discuss and check your answers with your teammates.</p>	<p>10'</p> <p>10'</p>	<p>Able to guess and write possible words based on their own experience</p> <p>Correct the dialogue based on the dialogue you hear</p>	
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<p>能說讀聽寫做 10000 以內的數。</p> <p>使用錢幣進行 10000 以內的數數 與做數。</p>	<p>Let's check the answers together.</p> <p style="text-align: center;">Production</p> <p>活動三 – How much is it ?</p> <ol style="list-style-type: none"> When linking to commodity trading, we need to know the price, so how do you ask for the commodity in English? (The single digit of the price of this unit is 0, which is convenient for teaching) Students review the clothing words they learned in the previous lesson, and use the Question sentence “How much is/are the _____?” “How much are the _____ and the _____ ?” Answer sentence <u>“Two hundred plus four hundred fifty is six hundred fifty”</u> <u>“Seven hundreds minus six hundred fifty is fifty.”</u> “It is/ They are _____ dollars.” The price is recorded on the small whiteboard. After the group members check each other's answers, the students use the question sentence and the teacher answers the price Each student has money within two thousand dollars to buy things. The group leader is the seller, other members buy goods from the group leader, conducts conversations in English, and uses addition and subtraction to find money. <p>If you want to know the prices, you have to ask. Write down the price next to the food on your notebook.</p>	<p>15'</p> <p>5'</p>	<p>Be able to use the words and sentence patterns learned in this lesson to answer questions</p>	
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	<p style="text-align: center;">Wrap-up</p> <ol style="list-style-type: none"> 2. Homework: Discuss in each group, design the names, prices and decorations of various clothing items in their own crazy clothing store. 3. Announcing the next class activities: Give each group a piece of poster paper to design the display and price of each clothing item. 4. Teacher asks questions to help students summarize and review what they have learned today. “What did you learn today?” "What else do you still want to know?" 1. Encourage students to publish and give compliments when appropriate. <p style="text-align: center;">【第二節 結束】</p>			
<p>學生能妥善運用及回答情境中 How much 問句詢問價格時的用法</p>	<p style="text-align: center;">Presentation & Practice</p> <p>Activity 1 - I am a little designer Students will discuss in groups and design each group's clothing store. First, design and draw each piece of clothing and decoration on poster paper. After the discussion is completed, each group will use a tablet to take pictures and upload it to the cloud to show the style of their own group's clothing store.</p> <p style="text-align: center;">Production</p> <p>Activity 2-Contextual Learning in Clothing Store - Guessing Game</p> <ol style="list-style-type: none"> 1. When the reporting group come to the stage to share various products, each other group take turns sending a student to the podium to buy the clothes designed by the reporting group, practice words and sentence patterns and addition and subtraction calculations to evaluate whether the students can use English correctly Buy clothing in words and sentences. 	30'	Students can creatively design clothing and use target sentence patterns to answer	

<p>學生能妥善運用及回答加減之用法</p>	<p>2. When each group comes to the stage, first upload the pictures of their own clothing stores to the cloud, show the products and price ranges of each group on the slideshow, and write the valuation answers on the small whiteboard for other groups under the stage. The same must take turns to write, must be written in English.</p> <p>3. Valuation Team (take turns to send team members to ask questions): How much is ? Is it two hundred and thirty dollars? Share group: No/Yes After one round is completed, if no one guesses correctly, a second round of valuation will be conducted. Guess the group +2 points</p> <p>4. Each group has two dollars to buy things. The sharing group on the stage is the seller, who sells goods to the audience. Conversation in English, using addition and subtraction to calculate money and sentence pattern application.</p> <p style="text-align: center;">Wrap-up</p> <p>1. Teachers ask questions to help students summarize and review what they have learned today. “What did you learn today?” “What else do you still want to know?”</p> <p>2. Encourage students to publish and give compliments when appropriate.</p> <p style="text-align: center;">【第三節 結束】</p>	<p>10'</p>		
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肆、教學評量

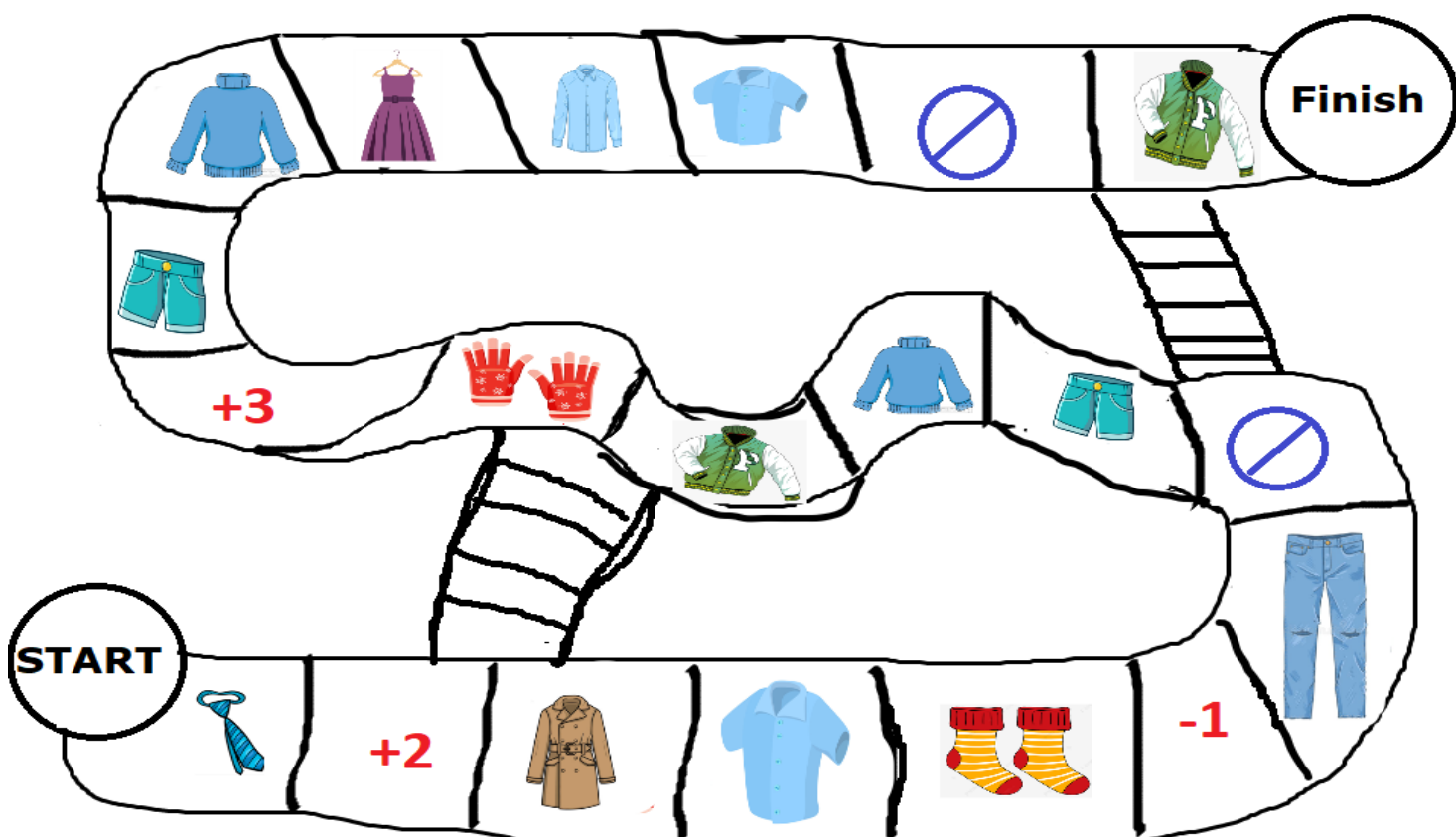
單元教學目標	評量方式	備註
<p>學科內容目標：</p> <p>1.能說讀聽寫做 10000 以內的數。</p> <p>2.使用錢幣進行 10000 以內的數</p>	<p>口語評量、觀察評量、實作評量</p>	

數與做數。		
<p>溝通／語言目標：</p> <p>1.學生能認識各類服飾英文單詞</p> <p>2.學生能妥善運用及回答情境中 How much 問句詢問價格時的用法</p> <p>3.學生能妥善運用及回答加減之用法</p>	口語評量、觀察評量、實作評量	

附件一

“Fashion Stores” text

- 2 There are many fashion stores in Taiwan.
- 4 Many people like to find clothes that suit them.
- 5 Coat, dress, skirt, pants, sweater, shirt, and shorts are
common clothes in the fashion stores.
- 3 In recent years, many styles of clothes have entered
Taiwan.
- 1 So, what do you want to wear today?



Q: What do you want?

A: I want a /an/ X_____.

Clothes Seller 中英閱讀 購物對話

Clothes Seller : Can I help you find something?

Customer : I'm looking for some warm sweaters, maybe a jacket.

Clothes Seller : Yes. That jacket fits you. It never goes out of style.

Customer : Can I try it on? Where is the fitting room?

Clothes Seller : No problem. Here you are. Fitting room is at the corner.

Customer : How much is the sweater?

Clothes Seller : It is three hundred and ten dollars.

Clothes Seller : Something else you are looking for today?

Customer : I'm looking for some gloves and scarves too.

Clothes Seller : Yes, here you go.

(Thirty minutes later)

Customer : That's all.

Clothes Seller : How are you going to pay?

Customer : I'll pay in cash.

Clothes Seller : The sweater is three hundred and ten dollars, the gloves are eighty dollars, and the scarves are two hundred and twenty dollars. They are six hundred and ninety dollars in total.

Clothes Seller : Here is your three hundred and ninety dollars and receipt.

Clothes Seller : Thank you, come again.



服飾店員：有什麼需要我幫忙的嗎？

顧客：我正在找幾件溫暖的毛衣或夾克也可以。

服飾店員：是的。那個夾克很適合你。這個不會退流行

顧客：我可以試穿看看嗎？試衣間在哪裡？

服飾店員：沒問題。給您。試衣間在那邊角落

顧客：毛衣多少錢？

服飾店員：毛衣390元

服飾店員：你今天還有想些什麼嗎？

顧客：我還正在找幾雙襪子和圍巾。

服飾店員：有的，在這裡。

(30分鐘過後)

顧客：這些就好

服飾店員：你要怎麼付款？

顧客：我付現金

服飾店員：毛衣是390元 手套是80元 還有圍巾是220元，總共是690元

顧客：收您1000元 310元及發票！ 謝謝您 歡迎再度光臨。

110 學年度小學數學雙語教學活動設計競賽

教案設計

壹、設計理念

行政院（2018）指示國家發展委員會，試圖在 2030 年前將台灣打造成雙語國家。目前實施的方式將以學科內容結合英語學習來設計課程，以強化學生英語聽力及口說上的表現，提升生活溝通能力，厚植國家競爭力（教育部，2018）。

是以，本課程設計運用 CLIL 思維進行數學領域雙語課程設計，節數共 7 堂課，以生活化、情境化的理念來實施錢幣的課程，給予學生豐富體驗及操作的機會，營造使用錢幣的需求，以期提升學生數學學習成就和興趣以及英語能力。本教學有以下三項特色：

（一）提供具體物操作

本教學之教學對象為國小一年級學生，依皮亞傑認知發展階段分類屬具體運思期（Inhelder & Piaget, 1958）。Cobb 等人（1992）指出，具體物可提供學生解題時的參考，以了解數學概念。故，本教學設計提供真實錢幣，使學生能運用錢幣回應教師的提問及參與課堂的活動，以提升學生對於錢幣的量感。

（二）營造情境式學習

范信賢（2016）提出素養導向的課程設計需以情境化、脈絡化進行課程設計，讓學生理解如何在真實情境中運用，以期學生最終能活用於日常生活之中。本教案依循此理念設計課程，運用 Jessie 和 Jack 兩位跟學生年紀相仿的人物設計故事，情境包含課後生活及家庭生活使用錢的狀況，非常貼近學生的生活。值得一提的是，本教案設計要到便利超商或是園遊會買水、養樂多或是炒泡麵等商品，茲預設教師帶實際物品到班級，帶著學生使用錢幣去購買實際的物品，以提升學生的學習動機及成效。

（三）教學以多模態呈現

以使用語言而言，時常夾雜超過一種語言，且會搭配手勢、圖片、音樂等多元媒介進行溝通與表達（柯宜中、林淑敏，2017）。因此，對於學生而言，非常習慣多模態的呈現，透過多模態的學習能補足學生第二語言的不足，協助數學概念及英語詞彙句型的學習。本教案使用豐富的圖片、實體物品以及肢體引導學生理解數學概念，使孩子不害怕雙語學習。

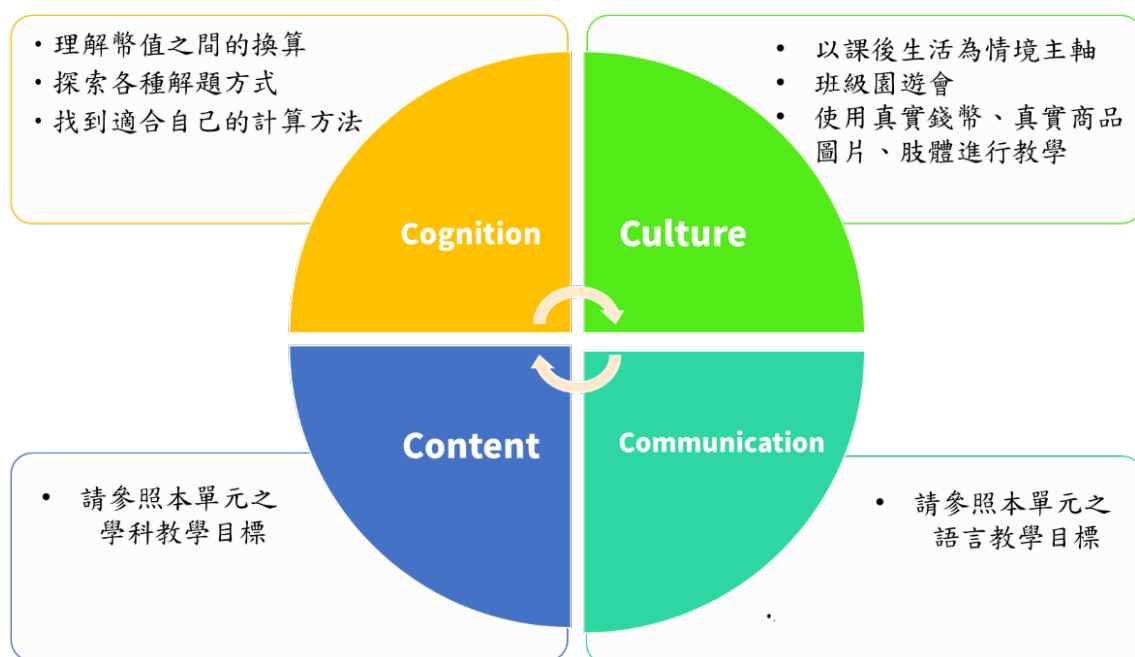
貳、教學分析

一、教材分析

(一) 教材脈絡分析

過去	現在	未來
翰林版第二冊第四單元	翰林版第二冊第八單元	翰林版第二冊第八單元
<ul style="list-style-type: none"> ■ 能認識 100 以內的數詞序列、數量與數詞。 ■ 能認識「個位」和「十位」的位名。 ■ 能比較 100 以內兩量的多少與兩數的大小。 ■ 能以「兩個一數」和「五個一數」進行數數活動。 	<ul style="list-style-type: none"> ■ 能認識 1 元、5 元、10 元、50 元和 100 元錢幣，並做幣值的兌換。 ■ 能計數錢數並比較多少。 ■ 能使用錢幣解決生活中的付錢問題。 	<ul style="list-style-type: none"> ■ 能解決 100 以內的加法問題。 ■ 能解決 100 以內的減法問題。 ■ 能解決生活中 100 以內的加減法問題。

(二) CLIL 4C 架構分析



二、學生分析

(一) 數學先備知識

1. 學生已認識 100 以內的數詞序列、數量與數詞。
2. 學生已認識「個位」和「十位」的位名。
3. 學生已能比較 100 以內兩量的多少與兩數的大小。
4. 學生已能以「兩個一數」和「五個一數」進行數數活動

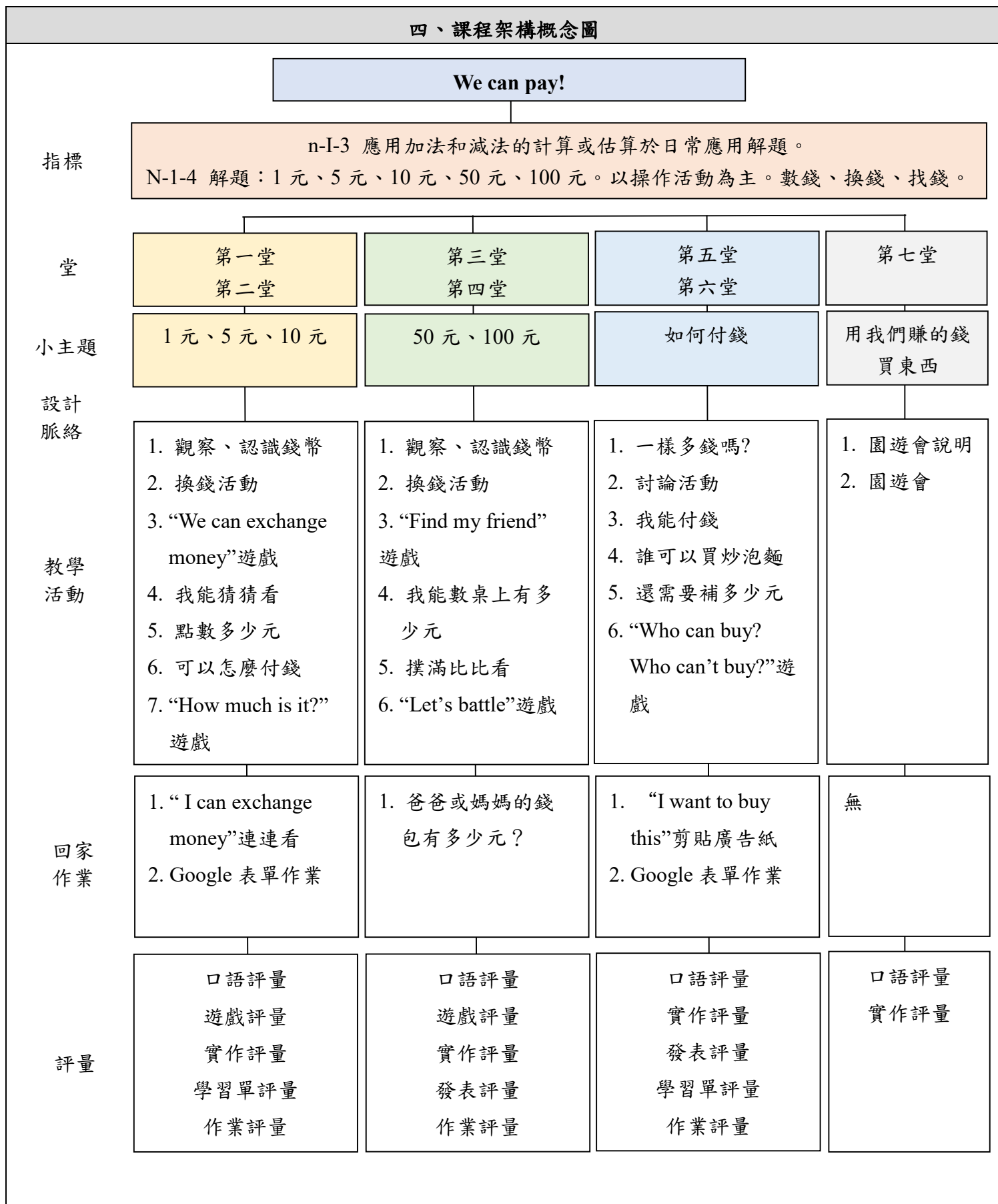
(二) 課堂學習

1. 學生已熟悉以小組形式學習，與同儕進行討論。
2. 學生已習慣將作法寫在小白板上。
3. 學生能投入課堂實作活動，並能嘗試探索多元解法。
4. 學生能積極回答教師的提問，並能遵守回答的規矩（先舉手再說話）。
5. 學生能按時並用心地完成教師所交代之功課。

三、教學方法分析

教學法	說明	於課堂中的使用
實作教學法	通常會在課程中安排可以讓學習者主動學習的活動，例如動手操作、示範及練習的活動、遊戲及角色扮演，讓學生將概念以具體的方式呈現，一方面能讓老師了解其學習情形，也能讓學生學習自我監控。	<ol style="list-style-type: none">1. 讓學生運用真實的 1 元、5 元、10 元、50 元和 100 元錢幣進行幣值的兌換。2. “We can exchange money”, “Find my friend”, “Let’s battle”, “Class Carnival”遊戲。
情境教學法	情境教學法以學生為中心，依據其特性設計多元的學習環境，使學習者置身於教師設計的情境之中，在情境中學習、探索，並與他人互動，進而發展出自身的知識和能力。	本教學以情境貫穿 7 堂課程，共有 5 位主角，分別是 Jessie, Jack, Lisa, Amanda 和 Simon，情境為主角們的課後生活，透過此營造班上同學在課堂使用錢的情境。
討論教學法	課堂活動採對話模式，促使老師和學生，以及學生和學生能夠交流想法，並探討作法的一種教學方法。	本教案透過讓教師提出問題，刺激兒童進行思考，運用具體物或是半具體物來呈現其想法。
發表教學法	學生能夠上台分享各組或各自的作品或是作法，供其他同學學習，教師也能讓台下同學給予發表者正向且有益改進的建議。	每當兒童或是小組形成作法之後，本教案設計讓他們能夠上台發表，再讓全班同學討論其作法，並請大家試著使用他們的作法操作一次。

四、課程架構概念圖




參、教學活動設計

單元名稱	How much is it?	適用年級	Grade 1
課程名稱	We can pay!	教學時間	7 periods, 280 minutes
教材版本	翰林版國小數學一（下）第六單元－數數看有多少錢		
教學準備	<p>Period 1 Computer, projector, blackboard, chalk, teaching PPT, several ①, ⑤ and ⑩, “I can exchange money” worksheet</p> <p>Period 2 Computer, projector, blackboard, chalk, teaching PPT, several ①, ⑤ and ⑩, yogurt, drink, milk, salmon eggs flavored rice balls, bags with money, “How can Jack pay” worksheet</p> <p>Period 3 Computer, projector, blackboard, chalk, teaching PPT, several ①, ⑤, ⑩, ⑤⑩ and 100, “Find my friend” card</p> <p>Period 4 Computer, projector, blackboard, chalk, teaching PPT, several ①, ⑤, ⑩, ⑤⑩ and 100, Piggy bank, “Let’s battle” card</p> <p>Period 5 Computer, projector, blackboard, chalk, teaching PPT, small white board, doll, Birthday card, “I want to buy this” worksheet</p> <p>Period 6 Computer, projector, blackboard, chalk, teaching PPT, small white board, fried noodles, “Who can buy? Who can’t buy” worksheet</p> <p>Period 7 Computer, projector, blackboard, chalk, teaching PPT, volunteers, garden party venue, products</p>		
能力指標/學習表現	分年細目/學習內容		
n-I-3 應用加法和減法的計算或估算於日常應用解題。	N-1-4 解題：1元、5元、10元、50元、100元。以操作活動為主。數錢、換錢、找錢。		
教學目標			
Language of learning (學科教學目標)	1-1 Students can recognize ①, ⑤ and ⑩. 1-2 Students can understand the exchange relationship between ①, ⑤ and ⑩.		

	<p>2-1 Students can count the total of coins.</p> <p>2-2 Students can understand the relationship and conversion of ①, ⑤ and ⑩.</p> <p>3-1 Students can recognize ⑤.</p> <p>3-2 Students can exchange ⑤.</p> <p>3-3 Students can recognize 100.</p> <p>3-4 Students can exchange 100.</p> <p>4-1 Students can explore ways to count coins.</p> <p>4-2 Students can count the total number of coins and compare them.</p> <p>5-1 Students can combine different coins to pay just the right amount of money.</p> <p>5-2 Students can use semi-concrete objects to represent coins and solve problems.</p> <p>6-1 Students can distinguish if there is enough money.</p> <p>6-2 Students can use count to pay more money.</p>
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Language for learning (語言教學目標)	認讀單字	應用句型
	<p>第一堂</p> <p>◆one/ five/ ten NTD coins</p> <p>◆supermarket</p> <p>◆count</p> <p>◆exchange</p> <p>第二堂</p> <p>◆yogurt drink</p> <p>◆milk</p> <p>◆spend</p> <p>◆inconvenient</p> <p>◆hungry</p> <p>◆salmon rice balls</p> <p>第三堂</p> <p>◆clean the house</p> <p>◆exchange</p> <p>◆fifty NTD coins</p> <p>◆one hundred NTD bills</p> <p>第四堂</p> <p>◆easy</p> <p>◆piggy bank</p> <p>◆more than</p>	<p>第一堂</p> <p>1. T: What is ①? Ss: It's <u>one</u> NTD coins.</p> <p>2. T: How many ① can be exchanged for one ⑤? Ss: <u>Five</u> ① can be exchanged for <u>one</u> ⑤.</p> <p>3. T: How many ① are there on the blackboard now? Ss: <u>Ten</u> ① are on the blackboard.</p> <p>第二堂</p> <p>1. T: How much does Jessie spend on yogurt drink? Ss: Jessie spend <u>nine</u> dollars on yogurt drink.</p> <p>2. T: Which method of calculation is inconvenient? Ss: The <u>third</u> method is inconvenient, because <u>先數4個一元之後再繼續加五元比較難計算。</u></p> <p>3. If Jack all pays with ①, he needs to pay <u>forty</u> ①.</p> <p>4. T: How much is it? Ss: It is <u>twenty one</u> dollars.</p> <p>第三堂</p> <p>1. What is ⑤? Ss: It's <u>fifty</u> NTD coins.</p> <p>2. How many ① can be exchanged for one ⑤? Ss: <u>Fifty</u> ① can be exchanged for <u>one</u> ⑤.</p> <p>第四堂</p> <p>1. I like <u>1</u>, because it's easy to count.</p>

<p>1-2 Students can understand the exchange relationship between ①, ⑤ and ⑩.</p>	<p>Ss: <u>It's one NTD coins.</u> (Teacher presents this in PPT)</p> <p>5. The teaching of ⑤ and ⑩ also follow steps 1 to 4 to bring students to understand.</p> <p>Activity 2_ Jessie wants to exchange money</p> <ol style="list-style-type: none"> 1. Situation setting: Jessie goes to the supermarket to exchange money, because she has a lot of ① and her wallet was too heavy. 2. Teacher shows five ① on the blackboard and asks how many ① Jessie is taking. (Teacher leads students to point to the coins and count) 3. Key questions: How many ① can be exchanged for one ⑤? How many ⑤ can be exchanged for five ①? Ss: <u>Five ① can be exchanged for one ⑤.</u> <u>One ⑤ can be exchanged for five ①.</u> 4. Situation setting: Jessie takes out a few more ①, how many ① are there on the blackboard now? Ss: <u>Ten ① are on the blackboard.</u> 5. Key questions: How many ⑩ can be exchanged for ten ①? How many ① can be exchanged for one ⑩? Ss: <u>One ⑩ can be exchanged for ten ①.</u> <u>Ten ① can be exchanged for one ⑩.</u> 6. Teacher still maintains ten ① on the blackboard, and asks how many ⑤ can be exchanged? 7. Lead students to count one by one, and when the count reaches 5, they will exchange it for ⑤, and finally, they will exchange it for two ⑤. 	<p>15</p>	<p>Performance Evaluation: Students can use coins to exchange between ①, ⑤ and ⑩.</p> <p>Oral Evaluation: Students can explain the exchange relationship between ①, ⑤ and ⑩.</p>	<p>Picture, Body Language</p> <p>Picture</p> <p>Sentence Pattern</p> <p>Picture, Body Language</p> <p>Sentence Pattern</p> <p>Picture, Body Language</p>
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<p>1-1 Students can recognize ①, ⑤ and ⑩.</p> <p>1-2 Students can understand the exchange relationship between ①, ⑤ and ⑩.</p>	<p>8. Key questions: How many ⑩ can be exchanged for two ⑤? How many ⑤ can be exchanged for one ⑩?</p> <p>Ss: <u>One ⑩ can be exchanged for two ⑤.</u> <u>Two ⑤ can be exchanged for one ⑩.</u></p> <p>9. Teacher guides students to summarize.</p> <p>(1) One ⑤ can be exchanged for five ①.</p> <p>(2) One ⑩ can be exchanged for ten ①.</p> <p>(3) One ⑩ can be exchanged for two ⑤.</p> <p>Wrap up_ We can exchange money</p> <p>1. Teacher gives out fifteen ①, fifteen ⑤, and fifteen ⑩ to each group. (teacher mixes together)</p> <p>2. Teacher explains the rules of the game: There are 6 grids on the PPT, and each grid has a question that students must answer with the coins on each group's table.</p>  <p>3. The entire group that can answer</p>		<p>10 Game</p> <p>Evaluation: Students can exchange the coins of ①, ⑤ and ⑩ in the game.</p>	<p>Sentence Pattern</p> <p>Picture, Sentence Pattern</p> <p>Picture, Body Language, Game, PBI (performance-based instruction)</p>
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fastest and count the coins correctly will be the winner. They can decide which card to flip next.

4. The questions are as follows:
 - (1) One ⑤ can be exchanged for □ ①.
 - (2) □ ⑤ can be exchanged for five ①.
 - (3) One ⑩ can be exchanged for □ ①.
 - (4) □ ⑩ can be exchanged for ten ①.
 - (5) One ⑩ can be exchanged for □ ⑤.
 - (6) □ ⑩ can be exchanged for two ⑤.
5. Teacher assigns the homework_ I can exchange money: Students have to draw a line to connect the correct pairs.













Name :

Class :


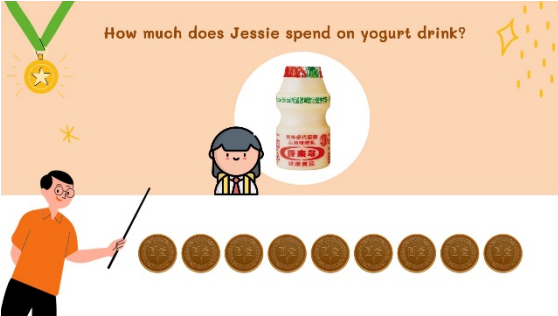



I can exchange money!

Draw a line to connect the correct pairs!

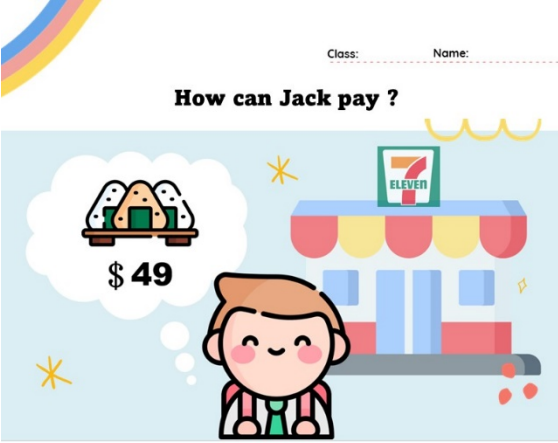





Two  can be exchanged for ()  .	one
()  can be exchanged for ten  .	two
()  can be exchanged for one  .	four
Two  can be exchanged for ()  .	five
()  can be exchanged for two  .	ten
Three  can be exchanged for ()  .	six

3 **Homework Evaluation:**
 Students can use coins to exchange between ①, ⑤ and ⑩.

<p>1-1 Students can recognize ①, ⑤ and ⑩.</p> <p>1-2 Students can understand the exchange relationship between ①, ⑤ and ⑩.</p> <p>2-1 Students can count the total of coins.</p>	<p style="text-align: center;">Period 2</p> <p>Warm up_ Which one is correct?</p> <ol style="list-style-type: none"> 1. Teacher reviews the homework with students. 2. Teachers may invite low or moderate achievers to operate coins to answer questions, because questions are basic. Give them opportunity to express and present themselves. <p>Activity 1_How much do they pay?</p> <ol style="list-style-type: none"> 1. Situation setting: Jessie and Jack are going back home. Jessie wants to buy a bottle of yogurt drink and Jack wants to buy a bottle of milk, so they decide to go to the supermarket to buy drinks together.  <ol style="list-style-type: none"> 2. Question: How much does Jessie spend on yogurt drink?  <ol style="list-style-type: none"> 3. Teacher asks groups to discuss how they count the money. 4. Teacher invites groups to present their practices. Possible student practices: (1) We circle five ①, and there will 	<p>5</p> <p>13</p>	<p>Performance Evaluation: Students can use coins to exchange between ①, ⑤ and ⑩.</p> <p>Performance Evaluation: Students can count the total of coins.</p> <p>Oral Evaluation: Students can speak the total of coins.</p>	<p>PBI</p> <p>Picture, Body Language</p> <p>PBI, Circle</p>
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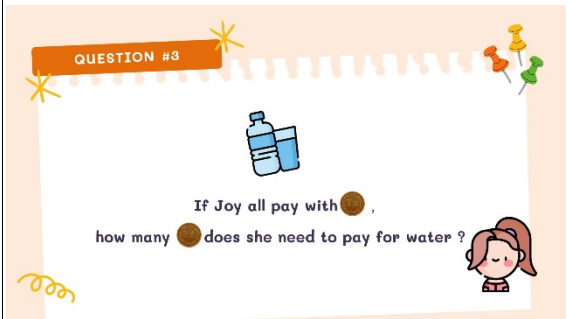
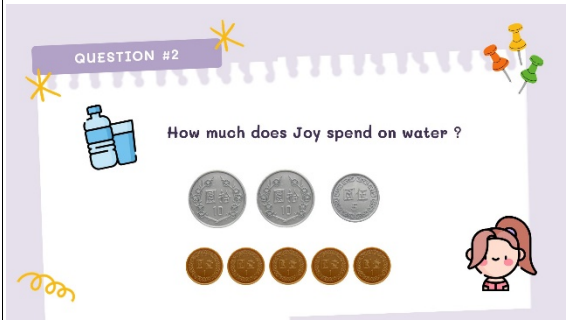
	<p>be four ① left, total 9 dollars.</p> <p>(2) Count one by one, and there are nine ① in total.</p> <p>(Students can answer in Chinese)</p> <p>5. Question: How much does Jessie spend on yogurt drink?</p> <p>Ss: <u>Jessie spends nine dollars on yogurt drink.</u></p> <p>6. Ask students to think about which approach is easier to calculate. Guide students to understand that each person has a different approach, and both approaches are possible!</p> <p>7. Question: How much does Jack spend on milk?</p>  <p>8. Teacher asks groups to discuss how they can count the money.</p> <p>9. Teacher invites groups to present their practices.</p> <p>Possible student practices:</p> <p>(1) 5, 10, 15, and then 16, 17, 18, 19.</p> <p>(2) Circle 2 ⑤, 2 ⑤ are 10, then 1 ⑤ add 4 ① is 9, for a total of 19 dollars.</p> <p>(3) 4 ①, then 9, 14, 19, for a total of 19 dollars.</p> <p>(Students can answer in Chinese)</p> <p>10. Question: How much does Jack spend on milk?</p> <p>Ss: <u>Jack spends nineteen dollars on milk.</u></p>			<p>Sentence Pattern</p> <p>Body Language</p> <p>PBI</p> <p>Sentence Pattern</p>
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<p>2-2 Students can understand the relationship and conversion of ①, ⑤ and ⑩.</p>	<p>11. Question: Which method of calculation is inconvenient? Ss: The third method is inconvenient, because 先數 4 個一元之後再繼續加五元比較難計算。 (Students can answer in Chinese)</p> <p>12. Teacher guides students to understand that each method is ok, but it is better if we count from larger numbers to smaller numbers.</p> <p>Activity 2_How can we pay?</p> <p>1. Situation setting: Jack suddenly felt hungry, so he wanted to buy a 49 NT dollars salmon rice balls.</p> <div> <p>The illustration shows a cartoon boy with a thoughtful expression. Above him is a thought bubble containing three salmon rice balls on a tray with the price '\$ 49'. In the background, there is a 7-Eleven store with its characteristic red and yellow striped awning and a sign that says '7-ELEVEN'.</p> </div> <p>2. Teacher gives the worksheet and asks the children to use the coins on their table. If they all pay with ①, how many ① do they need to pay. If they all pay with ⑤, how many ⑤ do they need to pay? If they all pay with ⑩, how many ⑩ do they need to pay?</p>	<p>10</p>	<p>Performance Evaluation: Students can use coins to represent the relationship and conversion of ①, ⑤ and ⑩.</p> <p>Worksheet Evaluation: Students can write down conversion consequence.</p>	<p>Sentence Pattern</p> <p>Body Language</p> <p>Picture, Body Language</p> <p>Worksheet Scaffolding</p>
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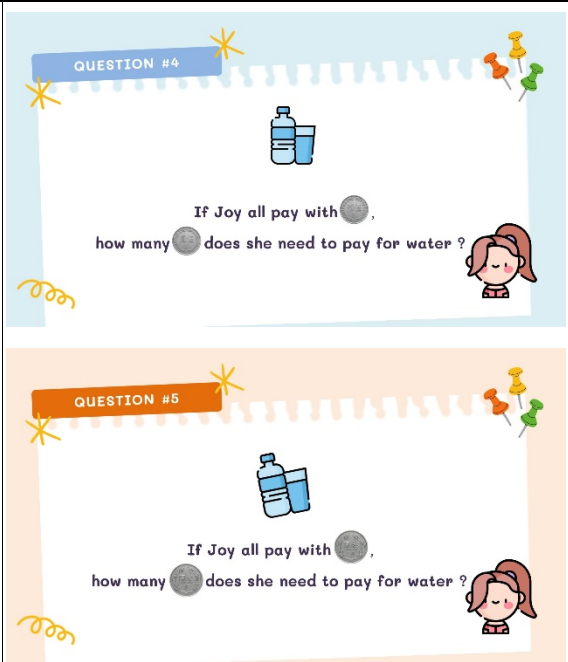
<p>2-1 Students can count the total of coins.</p>	<div style="text-align: right;">Class: _____ Name: _____</div> <h3 style="text-align: center;">How can Jack pay ?</h3>  <p>• Question 1 : If Jack all pay with , he needs to pay ()  coins.</p> <p>• Question 2 : If Jack all pay with , he needs to pay ()  coins.</p> <p>• Question 3 : If Jack all pay with , he needs to pay ()  coins.</p> <p>3. Teacher checks with each group to make sure that the answers are correct. For each question, each group is asked to use the blackboard to show the group's practice. Ss: If jack all pays with ①, he needs to pay forty ①.</p> <p>Wrap up_ How much is it?</p> <p>1. Teacher assigns 5 students (high achievers) to be the level master. Their jobs are to grab the money from the bags and check if the player said the correct amount of money. If it is correct, then they can help stamp the gating sheet of the player. Ss: It is twenty one dollars.</p> <p>2. Players must take the gating sheet to 3 level masters to play the game.</p>		<p>Oral Evaluation: Students can speak the conversion consequence.</p> <p>10 Game Evaluation: Students can count and speak the total of coins.</p>	<p>Sentence Pattern</p> <p>Game</p>
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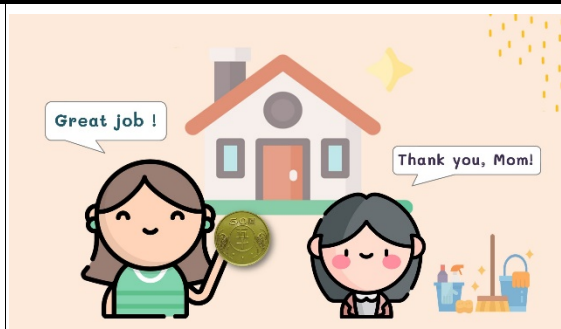


3. Teacher should pay attention to the time control.
4. Homework: Teacher assigns 5 questions by Google Sheet. (Answer in numbers)



2 **Homework Evaluation:** Students can count the total of coins. Students can understand the relationship and conversion of ①, ⑤ and ⑩.

	 <p>5. Students are able to watch a video of teacher's solution to the problem after they finished their homework.</p>			
<p>3-1 Students can recognize 50.</p> <p>3-2 Students can exchange 50.</p>	<p style="text-align: center;">Period 3</p> <p>Warm up</p> <ol style="list-style-type: none"> Teacher gives out real NTD coins of 1, 5, 10 and 50 to each group. Students observe carefully how the 50 is different from 1, 5 and 10. (Students' answers will be accepted if they are reasonable) Question : What is 50? Ss: <u>It's fifty NTD coins.</u> (Teacher presents this in PPT) <p>Activity 1_ 50 NTD coins</p> <ol style="list-style-type: none"> Situation setting: Jessie's mother gives Jessie 50 NTD coins as a reward for her hard work in cleaning the house. 	<p>5</p> <p>12</p>	<p>Oral Evaluation: Students can recognize 50 coins and explain the features they observe.</p> <p>Performance Evaluation: Students can use coins to exchange between 1, 5, 10 and 50.</p>	<p>Concrete Objects</p> <p>Picture, Body Language, PBI</p>



2. Question: How many ① can be exchanged for one ⑤⑩? (Since students have already had the experience of changing money, asks them to operate ① on the stage).
3. Question: How many ① can be exchanged for one ⑤⑩? How many ⑤⑩ can be exchanged for fifty ①?
 Ss: Fifty ① can be exchanged for one ⑤⑩.
One ⑤⑩ can be exchanged for fifty ①.
4. Question: How many ⑩ can be exchange for ⑤⑩? How can we exchange it faster?
5. Guide students to exchange ten ① for one ⑩, for a total of five ⑩.
6. Question: How many ⑩ can be exchanged for one ⑤⑩? How many ⑤⑩ can be exchanged for five ⑩?
 Ss: Five ⑩ can be exchanged for one ⑤⑩.
One ⑤⑩ can be exchanged for five ⑩.
7. Question: How many ⑤ can be exchanged for one ⑤⑩?
8. Guide students to exchange one ⑩ for two ⑤, which will make a total of ten ⑤.
9. Question: How many ⑤ can be exchanged for one ⑤⑩? How many ⑤⑩ can be exchanged for ten ⑤?
 Ss: Ten ⑤ can be exchanged for one ⑤⑩.

Oral

Evaluation:

Students can explain the exchange relationship between ①, ⑤, ⑩ and ⑤⑩.

Sentence Pattern

PBI

Sentence Pattern

PBI

Sentence Pattern

	<p><u>50</u>. One <u>50</u> can be exchanged for ten <u>5</u>.</p> <p>10. Teacher guides students to summarize.</p> <p>A. One <u>50</u> can be exchanged for fifty <u>1</u>. Fifty <u>1</u> can be exchanged for one <u>50</u>.</p> <p>B. One <u>50</u> can be exchanged for fifty <u>10</u>. Fifty <u>10</u> can be exchanged for one <u>50</u>.</p> <p>C. One <u>50</u> can be exchanged for ten <u>5</u>. Ten <u>5</u> can be exchanged for one <u>50</u>.</p>			Picture, Sentence Pattern
3-3 Students can recognize <u>100</u> .	<p>Activity 2_ 100 NT Dollars</p> <p>1. Teacher gives out <u>100</u> to each group and asks them to observe the front and back of the bills.</p> <p>2. Teacher takes back <u>100</u> after one minute and ask each group to draw down the symbols of the <u>100</u> they observe. The group that matches more will win.</p> <p>3. Teacher guides students to recognize and state the value of the <u>100</u>. T: What is <u>100</u>? Ss: <u>It's one hundred NTD bills.</u></p>	13	<p>Performance Evaluation: Students can use coins to exchange between <u>1</u>, <u>10</u>, <u>50</u> and <u>100</u>.</p> <p>Oral Evaluation: Students can explain the exchange relationship between <u>1</u>, <u>10</u>, <u>50</u> and <u>100</u>.</p>	Concrete Objects Sentence Pattern
3-4 Students can exchange <u>100</u> .	<p>4. Teacher puts <u>1</u> in a 10*10 arrangement on the blackboard and asks how many coins are on the blackboard?</p>			Picture



5. Question: How many ① can be exchanged for 100? How many 100 can be exchanged for one hundred ①?
 Ss: One hundred ① can be exchanged for one one hundred bill. One one hundred bill can be exchanged for one hundred ①.
6. Question: If all the ① on the blackboard are replaced by ⑩, how many can be replaced? Teacher asks the students to come up to the stage to operate how many they can exchange.
7. Question: How many ⑩ can be exchanged for one 100? How many 100 can be exchanged for ten ⑩?
 Ss: Ten ⑩ can be exchanged for one one hundred NTD bill. One one hundred NTD bill can be exchanged for ten ⑩.
8. Question: If all the ⑩ on the blackboard are replaced by ⑤⑩, how many can be replaced? Teacher asks the students to come up to the stage to operate how many they can exchange.
9. Question: How many ⑤⑩ can be exchanged for one 100? How many 100 can be exchanged for two ⑤⑩?
 Ss: Two ⑤⑩ can be exchanged for one one hundred NTD bill . One one hundred NTD bill can be exchanged for one two ⑤⑩.

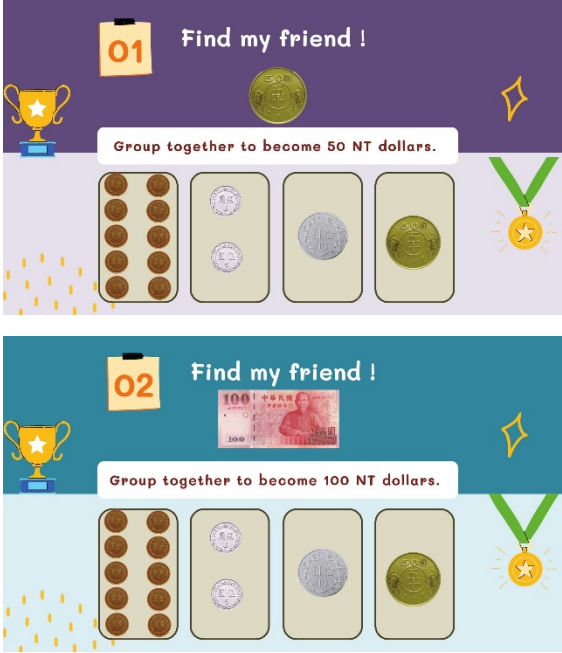
Sentence Pattern



PBI

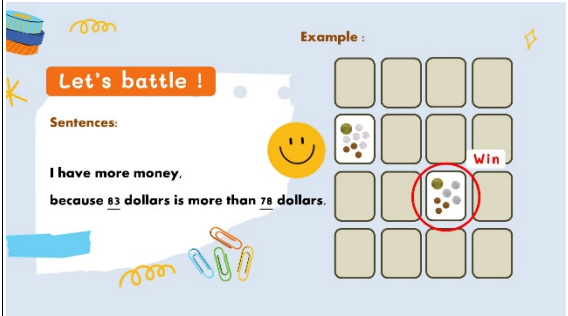
Sentence Pattern

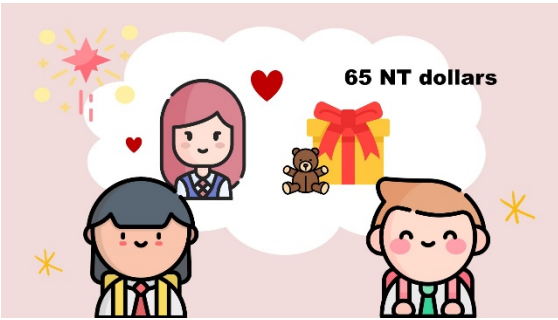
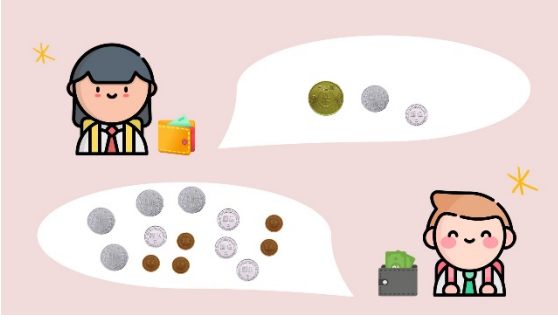
PBI

Sentence Pattern

<p>3-1 Students can recognize ⑤0.</p> <p>3-2 Students can exchange ⑤0.</p> <p>3-3 Students can recognize 100.</p> <p>3-4 Students can exchange 100.</p>	<p>10. Teacher guides the students to summarize.</p> <p>A. One 100 can be exchanged for one hundred ①. one hundred ① can be exchanged for one 100.</p> <p>B. One 100 can be exchanged for ten ⑩. ten ⑩ can be exchanged for one 100.</p> <p>C. One 100 can be exchanged for one two ②0. one hundred ②0 can be exchanged for one 100.</p> <p>Wrap up_ Find my friend</p> <p>1. Teacher explains the rules of the game: There are four types of cards: ten ①, two ②, one ⑩, and one ②0. Teacher randomly distributes the cards to the students.</p>  <p>2. The first round of the game: Students can talk and find classmates to group together to become 50 NT dollars.</p>	<p>10</p>	<p>Game</p> <p>Evaluation: Students can understand the exchange relationship between ①, ②, ⑩, ②0 and 100, and perform in the game.</p>	<p>Sentence Pattern</p> <p>Picture, Game</p>
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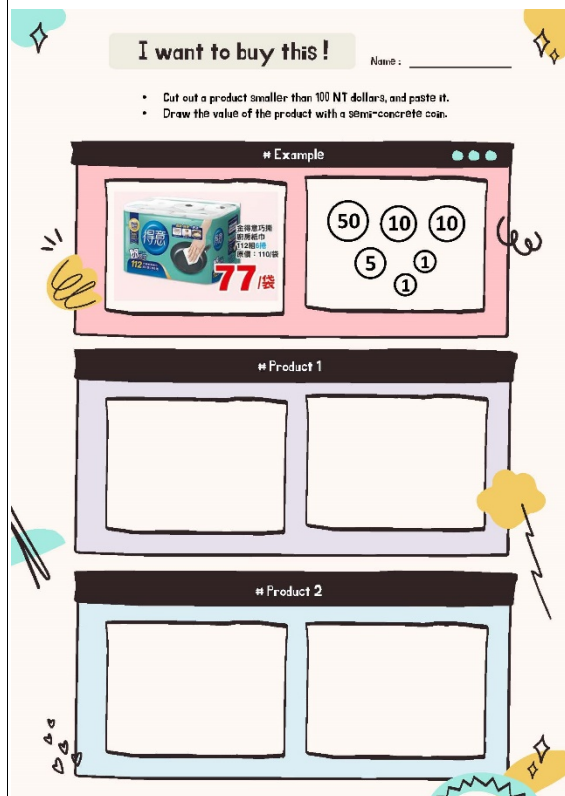
<p>4-2 Students can count the total number of coins and compare them.</p>	<p>count.</p> <p>5. Teacher guides students to understand that both methods make it easier to count and there are no right or wrong way, so you can choose the method that you like.</p> <p>Activity 2_ Piggy bank</p> <p>1. Situation setting: Jessie finds her own piggy bank and her brother Simon's piggy bank in the cabinet. Jessie wants to know whether her piggy bank has more money or her brother's piggy bank has more money.</p>  <p>2. Teacher asks students to use the coin cards to sort out Jessie's and Simon's coins using the method of Activity 1 and then compare them.</p>  <p>3. Question: Who has more money? How do you know?</p> <p>4. Ask a few students to share the number of coins and how to compare them.</p> <p>Ss: <u>Jessie has more money, because</u></p>	<p>10</p>	<p>Oral Evaluation: Students can count the total number of coins and compare</p>	<p>Body Language</p> <p>Picture, Body Language</p> <p>Sentence Pattern</p>
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<p>4-2 Students can count the total number of coins and compare them.</p>	<p><u>83 dollars is more than 78 dollars.</u></p> <p>Wrap up_ Let's battle</p> <ol style="list-style-type: none"> 1. Teacher explains the rules of the game: Two people are in a group, and each group has 16 cards. Each person turns over one card at the same time.  <ol style="list-style-type: none"> 2. If the coins value of party A is bigger than party B, party A can take away party B's card and A's own card, and A has to say the following sentence. Sentence: <u>I have more money, because 83 dollars is more than 78 dollars.</u> 3. The one who gets the most cards at the end will be the winner. 4. Assign homework: Ask students to compare two of their parents' purse, and answer the total number of coins in the purse, and upload the photos and answers to Google Classroom. 5. Teacher must ask the parents in advance to put any kind of coins in the wallet, but no more than 100 NT dollars. 	<p>10</p> <p>2</p>	<p>them.</p> <p>Game</p> <p>Evaluation: Students can count the total number of coins and compare them.</p> <p>Homework</p> <p>Evaluation: Students can count the total number of coins and compare them.</p>	<p>Game, Picture, Body Language</p> <p>Sentence Pattern</p>
	<p>Period 5</p> <p>Warm up_ Are they the same?</p> <ol style="list-style-type: none"> 1. Situation setting: Tomorrow is Monica's birthday, Jessie and Jack decide to buy a 65 NT dollars doll for Monica as a birthday gift, but... 	<p>3</p>		<p>Picture, Body Language</p>

<p>5-1 Students can combine different coins to pay just the right amount of money.</p>	 <p>2. Question: Jessie thinks the way he pays is the right way and the way Jack pays is the wrong way, is that true?</p>  <p>Activity 1_Discusion time</p> <ol style="list-style-type: none"> 1. Ask groups to discuss which approach is the correct one? Or both methods are correct? 2. Teacher invites groups to share their answer and ask everyone to count. 3. Extended question: Besides Jessie and Jack's practices, are there any other practices to pay? 4. Teacher invites groups to share practices. T: How do you pay? Ss: <u>We pay thirteen ⑤.</u> 5. Teacher summarizes that there are many ways to pay. As long as the money added together is exactly the amount of money for the product, it is the correct way to pay. <p>Activity 2_ How to pay for birthday</p>	<p>12</p>	<p>Oral Evaluation: Students can share their answers.</p> <p>Oral Evaluation: Students can share their practices.</p>	<p>Picture, Body Language</p> <p>PBI</p> <p>Sentence Pattern</p> <p>Body Language</p>
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<p>5-1 Students can combine different coins to pay just the right amount of money.</p> <p>5-2 Students can use semi-concrete objects to represent coins and solve problems.</p>	<p>card?</p> <ol style="list-style-type: none"> 1. Situation setting: After Jessie and Jack bought the doll, they want to buy a birthday card that costs 36 NT dollars to write down their wishes to Monica. How to pay? 2. Ask students to use ①, ⑤, ⑩ semi-concrete objects to represent coins and draw their answers on the small whiteboard of each group. 3. Teacher invites groups to share their practices and counts the coins to confirm that the total is correct. T: How do you pay? Ss: <u>We pay three ⑩ and one ⑤ and one ①.</u> 4. Teacher takes students through the concepts they have learned before, using the larger ⑩ first, then ⑤, and then ① for the last. <p>Wrap up</p>	<p>12</p>	<p>Performance</p> <p>Evaluation: Students can draw coins to answer questions.</p> <p>Oral</p> <p>Evaluation: Students can share their practices.</p>	<p>Picture, Body Language</p> <p>PBI</p> <p>Sentence Pattern</p>
<p>5-1 Students can combine different coins to pay just the right amount of money.</p> <p>5-2 Students can use semi-concrete objects to represent coins and solve problems.</p>	<ol style="list-style-type: none"> 1. Situation setting: Jessie and Jack feel that 36 NT dollars card is too expensive, so they want to buy 24 NT dollars card instead. 2. Teacher asks students to try to draw coins on the exercise book. 3. Teacher prompts students to pay with the larger coins first and then the smaller coins. 4. Teacher asks a few students to share their practices briefly. T: How do you pay? Ss: <u>We pay four ⑤ and four ①.</u> 	<p>10</p>	<p>Performance</p> <p>Evaluation: Students can draw coins on the book.</p> <p>Oral</p> <p>Evaluation: Students can share their practices</p>	<p>Picture, Body Language</p> <p>PBI</p> <p>Sentence Pattern</p>

5. Assign homework: Ask students to go home to find advertising paper. Try to cut out a product smaller than 100 NT dollars, and paste it on the "I want to buy this" worksheet, drawing the value of the product with a semi-concrete coins.



6. Teacher demonstrates how to complete the assignment.

3 **Homework Evaluation:**
Students can finish the worksheet.

6-1 Students can distinguish if there is enough money.

Period 6

Warm up
Invite 3 to 5 children to share "I want to buy this" worksheet.

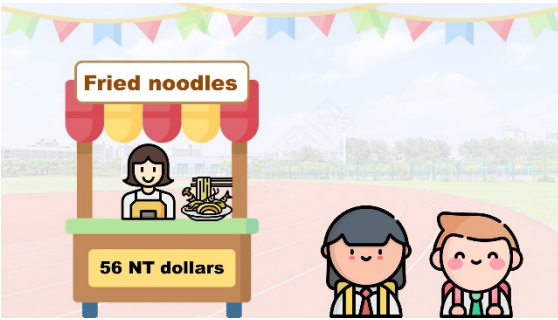


Activity 1_ Is it enough to pay?

1. Situation setting: Jessie and Jack find a booth selling a bowl of fried noodles for 56 NT dollars at the school garden party.

5

10

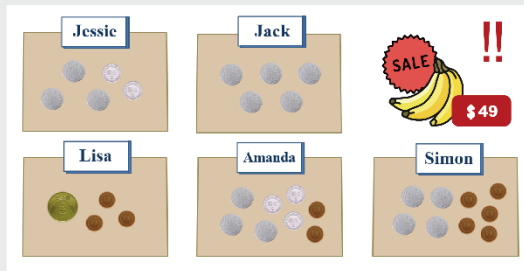
Picture,
Body
Language

<p>6-2 Students can use count to pay more money.</p>	 <p>2. Question: How much does Jessie have? How much does Jack have? Ss: <u>Jessie has 61 dollars. Jack has 54 dollars.</u></p>  <p>3. Question: Who can buy fried noodles? Ss: <u>Jessie can buy fried noodles?</u></p>  <p>Activity 2_ I really want to eat...</p> <ol style="list-style-type: none"> 1. Situation setting: Because fried noodles are really delicious, Jack wants to buy a fried noodles to eat. How much does Jack need to borrow from Jessie to buy fried noodles? 2. Ask each child to draw on the small whiteboard that Jack needs to borrow from Jessie with semi-concrete coins. 3. Teacher invites a student to share how can we make up the money and count 	<p>10</p>	<p>Oral Evaluation: Students can share their answer.</p> <p>Oral Evaluation: Students can share their answer.</p> <p>Performance Evaluation: Students can draw the coins that Jack needs</p>	<p>Sentence Pattern</p> <p>Sentence Pattern</p> <p>Picture, Body Language</p> <p>PBI</p> <p>Sentence Pattern</p>
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<p>6-1 Students can distinguish if there is enough money.</p> <p>6-2 Students can use count to pay more money.</p>	<p>with everyone.</p> <p>Ss: <u>55, 56. Jack has to pay more two</u> ①.</p> <p>4. Moral Question: Does Jack have to pay money back to Jessie? Why? Ss: Yes/ No. 因為那原本是別人的錢，所以要還給別人。 (Students can answer in Chinese)</p> <p>5. Guide students to understand that we have to return money that we borrow from others, because it belongs to someone else and we must return it to its owner.</p> <p>Wrap up_ Who can buy? Who can't buy?</p> <p>1. Teacher sets up 5 tables at the back of the classroom beforehand, and place Jessie, Jack, Lisa, Amanda, and Simon's name card on each table with 40, 50, 53, 47, and 45 NT dollars.</p>  <p>2. Situation setting : Jessie, Jack and their friends Lisa, Amanda and Simon all love bananas. When they see a bunch of bananas on sale for 49 NT dollars outside the supermarket, they want to buy it.</p> <p>3. Ask each group to discuss the following questions and write the results of the discussion on the worksheet.</p>	<p>13</p>	<p>to borrow.</p> <p>Oral Evaluation: Students can share their idea.</p> <p>Worksheet Evaluation: students can write the results of the discussion on the worksheet.</p>	<p>Picture, Body Language</p> <p>Concrete Objects</p> <p>Picture, Body Language</p>
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Who can buy? Who can't buy?

Class : _____ Group: _____



Please circle the right answers below :

1) Who can buy the bananas?

Jessie Jack Lisa Amanda Simon






2) Who can't buy the bananas?

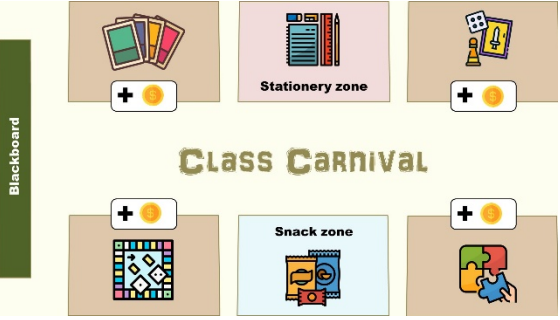
Jessie Jack Lisa Amanda Simon

4. Teacher briefly describes the questions in the worksheet: Which students can buy? Which students cannot buy? How much does the students who cannot buy need to pay more?
5. Assign homework: Students have to answer who can buy the pen? Who can't buy the pen? How much does she need to make up?

2 **Homework Evaluation:**
Students can finish homework.

Body
Language

	<div style="text-align: center; border: 1px solid black; padding: 5px; margin-bottom: 10px;"> ? Who can buy? Who can't buy? </div> <p style="text-align: center;">Class : _____ Name : _____</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <div style="border: 1px solid black; padding: 2px; display: inline-block;">\$32</div> </div> <div style="display: flex; gap: 10px;"> <div style="text-align: center;">  <div style="border: 1px solid black; padding: 2px; display: inline-block;">Lisa</div>  </div> <div style="text-align: center;">  <div style="border: 1px solid black; padding: 2px; display: inline-block;">Amanda</div>  </div> </div> </div> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>Please circle the right answers below :</p> <p>1) Who can buy the pen ? Lisa Amanda</p> <p>2) Who can't buy the pen ? Lisa Amanda</p> <p style="text-align: center;">↓</p> <p>3) How much does she need to pay more ?</p> </div>			
	<p style="text-align: center;">Period 7</p> <p>Preparation</p> <ol style="list-style-type: none"> 1. Teacher invites 3 parents to be volunteers in advanced to help "Class Carnival" activity as level master. 2. Teacher exchanges all students' points for coins in advance, so that the children could use coins to buy things in the Class Carnival. <p>Warm up</p> <ol style="list-style-type: none"> 1. Teacher gives out the amount of change that each student can get. 2. Teacher explains the rules of the Class Carnival: Students can use the change they get to buy goods. There are two zones, stationery zone and snack zone. Each zone can only buy one item. In addition, there are four zones for earning money, and each person can play once in each earning money 	5		Picture, Body Language

<p>1-1 Students can recognize ①, ⑤ and ⑩.</p> <p>1-2 Students can understand the exchange relationship between ①, ⑤ and ⑩.</p> <p>2-1 Students can count the total of coins.</p> <p>2-2 Students can understand the relationship and conversion of ①, ⑤ and ⑩.</p> <p>3-1 Students can recognize ⑤0.</p> <p>3-2 Students can exchange ⑤0.</p> <p>3-3 Students can recognize 100.</p> <p>3-4 Students can exchange 100.</p> <p>4-1 Students can explore ways to count coins.</p> <p>4-2 Students can count the total number of coins and compare them.</p> <p>5-1 Students can combine different coins to pay just the right amount of money.</p> <p>5-2 Students can use semi-concrete objects to represent coins and solve problems.</p> <p>6-1 Students can distinguish if there is</p>	<p>zone.</p> <p>Activity _ Class Carnival</p>  <p>1. When buying items, students must count the money for the teacher or volunteer parents.</p> <p>2. Earning money zone contains the following types of questions (Include one to six classes' content) :</p> <p>(1) Students can exchange ①, ⑤, ⑩, ⑤0 and 100.</p> <p>(2) Students can count the total number of coins.</p> <p>(3) Students can combine different coins to pay just the right amount of money.</p> <p>(4) Students can distinguish if there is enough money, and use count to make up the money.</p> <p>Wrap up</p> <p>1. Teacher asks children to thank the volunteers who came to help, and thank themselves for participating so seriously in the program.</p>	<p>30</p> <p>5</p>	<p>Performance Evaluation: Students can buy items and count the money.</p> <p>Performance Evaluation: Students can operate the questions of earning money zone.</p> <p>Oral Evaluation: Students can answer the questions of earning money zone.</p>	<p>Game, Concrete Objects, PBI</p> <p>Body Language</p>
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enough money. 6-2 Students can use count to pay more money.				
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肆、教學評量

單元教學目標	評量方式
1-1 Students can recognize ①, ⑤ and ⑩.	Oral Evaluation Game Evaluation Homework Evaluation
1-2 Students can understand the exchange relationship between ①, ⑤ and ⑩.	Performance Evaluation Oral Evaluation Game Evaluation Homework Evaluation
2-1 Students can count the total of coins.	Performance Evaluation Oral Evaluation Game Evaluation Homework Evaluation
2-2 Students can understand the relationship and conversion of ①, ⑤ and ⑩.	Performance Evaluation Worksheet Evaluation Homework Evaluation
3-1 Students can recognize ⑤0.	Oral Evaluation Game Evaluation
3-2 Students can exchange ⑤0.	Performance Evaluation Oral Evaluation Game Evaluation
3-3 Students can recognize 100.	Oral Evaluation Game Evaluation
3-4 Students can exchange 100.	Performance Evaluation Oral Evaluation Game Evaluation
4-1 Students can explore ways to count coins.	Performance Evaluation Presentative Evaluation
4-2 Students can count the total number of coins and compare them.	Oral Evaluation Game Evaluation Homework Evaluation
5-1 Students can combine different coins to pay just the right amount of money.	Oral Evaluation Performance Evaluation Homework Evaluation
5-2 Students can use semi-concrete objects to represent coins and solve problems.	Performance Evaluation Homework Evaluation
6-1 Students can distinguish if there is enough money.	Oral Evaluation


	Performance Evaluation Homework Evaluation
6-2 Students can use count to pay more money.	Worksheet Evaluation Oral Evaluation Homework Evaluation

附錄一、教學PPT











We can exchange money !

1	2	3
4	5	6

We can exchange money !

One  can be exchanged for () 

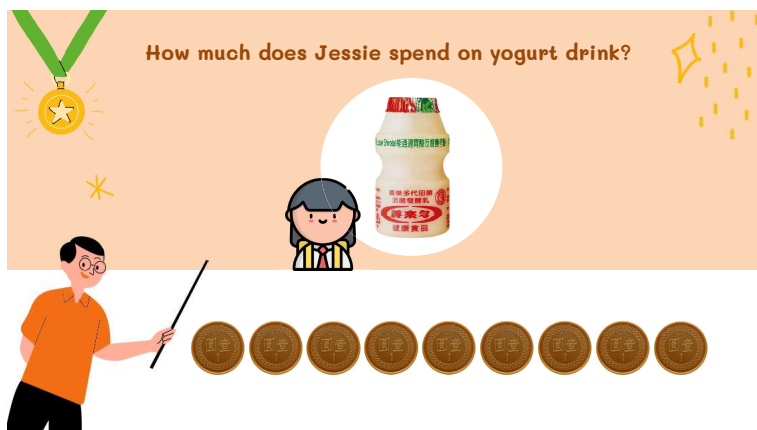
We can exchange money !

One  can be exchanged for () 	()  can be exchanged for five 	One  can be exchanged for () 
()  can be exchanged for ten 	One  can be exchanged for () 	()  can be exchanged for two 

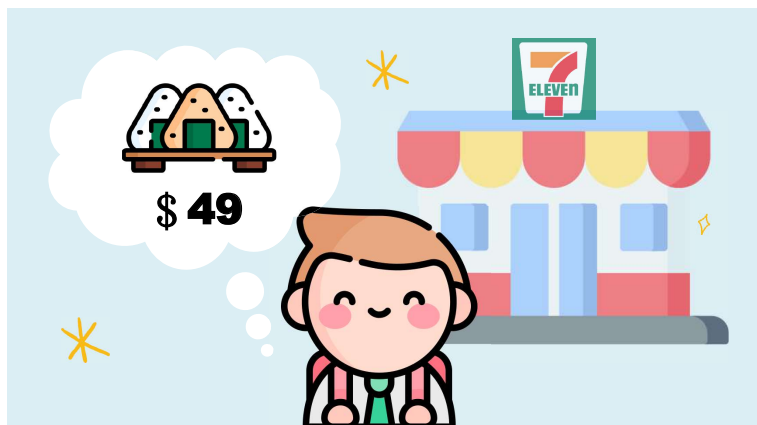


supermarket

How much does Jessie spend on yogurt drink?



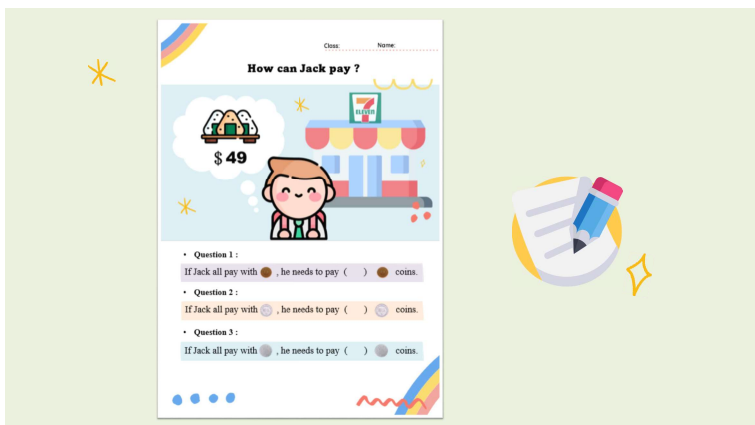
How much does Jack spend on milk?








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

Class: _____ Name: _____

How can Jack pay ?



Question 1:
If Jack all pay with , he needs to pay ()  coins.

Question 2:
If Jack all pay with , he needs to pay ()  coins.

Question 3:
If Jack all pay with , he needs to pay ()  coins.

How much is it?

Excellent!

42 NT dollars!

Joy is thirsty, she wants to buy some drinks in the convenience store...


QUESTION #1


How much does Joy spend on cola?

QUESTION #2


How much does Joy spend on water?


QUESTION #3

If Joy all pay with ,


how many  does she need to pay for water?


QUESTION #4

If Joy all pay with ,

how many  does she need to pay for water?

QUESTION #5

If Joy all pay with ,

how many  does she need to pay for water?

Great job!

Thank you, Mom!

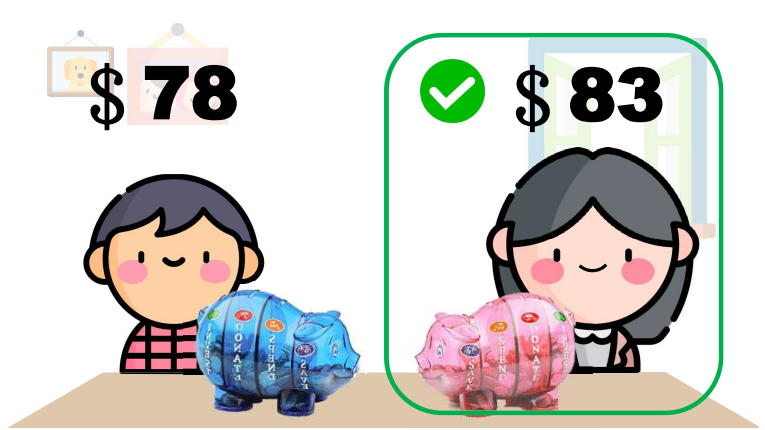


01 Find my friend !

Group together to become 50 NT dollars.

02 Find my friend !

Group together to become 100 NT dollars.



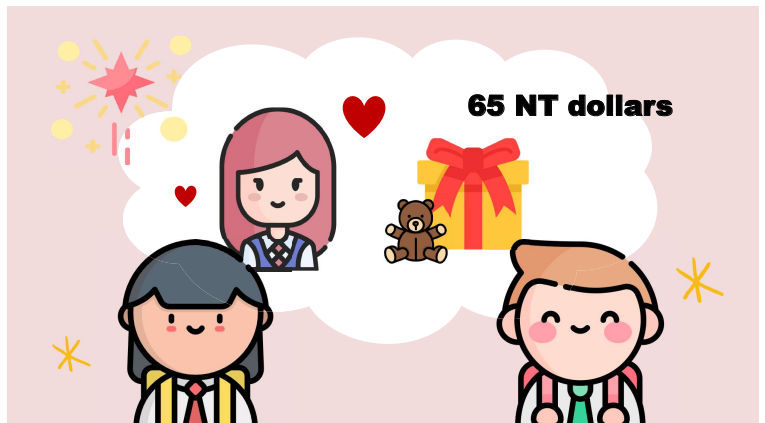
Let's battle !

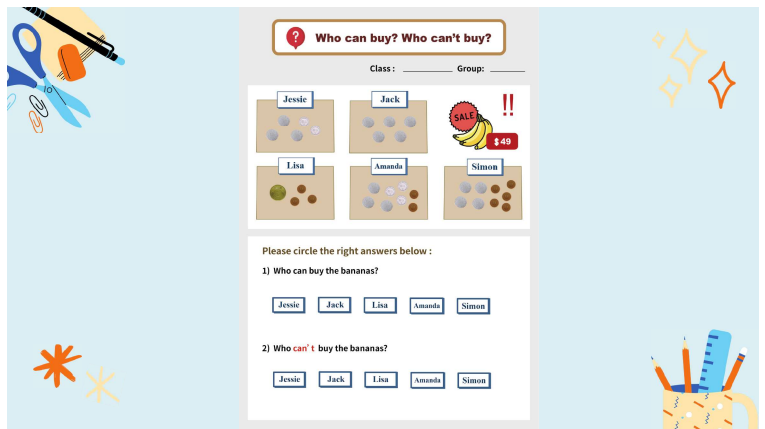
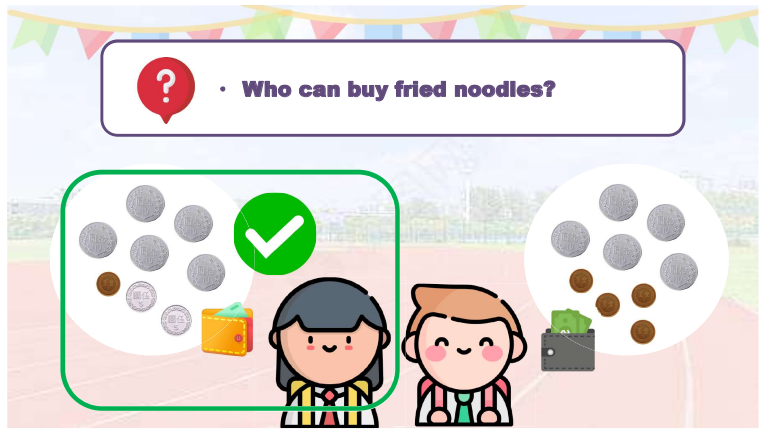
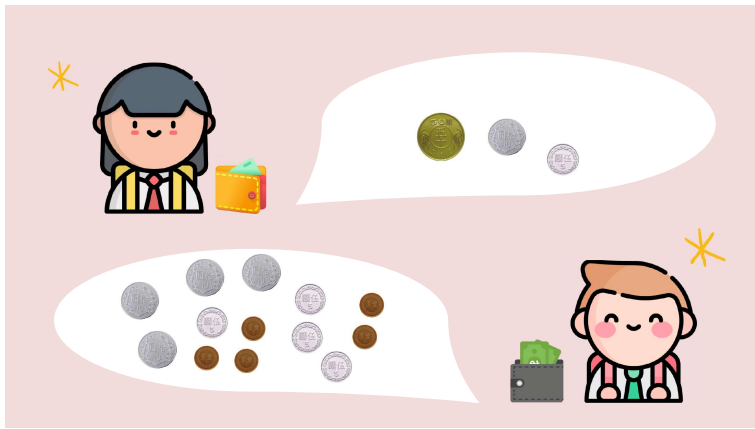
Sentences:

I have more money,
because 83 dollars is more than 78 dollars.

Example :

Win





附錄二、學習單

Name : _____
Class : _____

I can exchange money!

Draw a line to connect the correct pairs!

Two can be exchanged for () .	one
() can be exchanged for ten .	two
() can be exchanged for one .	four
Two can be exchanged for () .	five
() can be exchanged for two .	ten
Three can be exchanged for () .	six

Class: _____ Name: _____

How can Jack pay?

\$49

- Question 1 :
If Jack all pay with , he needs to pay () coins.
- Question 2 :
If Jack all pay with , he needs to pay () coins.
- Question 3 :
If Jack all pay with , he needs to pay () coins.

I want to buy this!

Name: _____

- Cut out a product smaller than 100 NT dollars, and paste it.
- Draw the value of the product with a semi-concrete coin.

Example

Product 1

Product 2

Who can buy? Who can't buy?

Class: _____ Group: _____

Jessie 	Jack 	
Lisa 	Amanda 	Simon

Please circle the right answers below :

1) Who can buy the bananas?

Jessie Jack Lisa Amanda Simon

2) Who can't buy the bananas?

Jessie Jack Lisa Amanda Simon

Who can buy? Who can't buy?

Class: _____ Name: _____

\$32

Lisa **Amanda**

Please circle the right answers below :

1) Who can buy the pen? Lisa Amanda

2) Who can't buy the pen? Lisa Amanda

3) How much money does she need to make up?

111 學年度小學數學雙語教學活動設計競賽封面

編 號：_____（由承辦單位填寫）

作品名稱：一克千斤

注意事項：

參賽作品封面請勿書寫校名及作者名。

【附件 3】此表與稿件於截止日一併繳交

111 學年度小學數學雙語教學活動設計競賽形式審查表

收件號碼	(由承辦單位填寫)				
教案名稱	一克千斤				
項次	審查要項	參選者自行審查		承辦單位審查(此欄由承辦單位填寫)	
		符合	不符合	符合	不符合
1	報名表(並同步於報名表單中上傳 word 檔)				
2	封面				
3	形式審查表				
4	教案書面資料 4 份(請以長尾夾或迴紋針固定,並同步於報名表單中上傳 word 及 pdf 檔)				
5	授權暨承諾書				
6	完成報名表單(含檔案上傳)				
切結事項	<p>本人保證符合徵稿參加對象。</p> <p>本人保證著作權無違反研究倫理事項。</p> <p>本人已熟悉徵選計畫所列規範,倘違反規範而獲獎時,其獎勵及稿費繳回,並視情節予以議處。</p> <p>具結人:</p> <p>(請每位作者親自簽章,切結事項未簽具者一律退件)</p>				

※寄送前,敬請逐項檢查各項資料(含份數),如不符合規定者,即不具參賽資格,不予受理。收件日期為即日起至 111 年 11 月 8 日(二)(以郵戳為憑,逾期不受理)。寄送至「40306 臺中市西區民生路 140 號 國立臺中教育大學 數學教育學系 蔡怡洵專任助理收」。聯絡人:蔡怡洵、聯絡電話:04-22183598、e-mail: yihsun@mail.ntcu.edu.tw

【附件 4】

111 學年度小學數學雙語教學活動設計競賽

教案設計格式範例

壹、設計理念

在全球化的今天，擁有國際溝通能力已是現代公民不可或缺的能力。數學教學上，教師應提供學生有感的學習機會，培養學生正確使用工具的素養。故本教學設計以操作工具的活動為主，在課堂對話中加入英語會話的元素，期許學生在培養數學素養的同時，也能有練習英語聽說的機會，增加使用英語的信心。

公克與公斤，該單元在介紹日常生活中常見的重量單位公克與公斤，認識兩個單位的關係，並能進行加法、減法與整數倍的計算。重量非視覺感官單位，學生需要操作實物感受重量，操作工具進行測量。本教學活動將採用觀察教學法，讓學生認識磅秤；採用直接教學法，讓學生藉由圖片與實物練習英語會話；採用 Polya 數學解題策略，協助學生解決數學問題。

綜上所述，本教學活動設計將生活情境、英語會話與數學概念做結合。第一、二節提供學生常見的物品書包與鉛筆盒感受重量，在感受重量的同時也引起學生對於重量精準測量的興趣。第三節先使用累加一百公克糖果的方式，觀察一公斤與三公斤秤，發現重量單位公克與公斤間的關係。第四、五節課以學生的生活情境出發，設計重量相關的問題，使用 Polya 數學解題策略，協助學生解決數學問題。在教學活動中，加入重複的英語會話，讓學生自然地學會使用英語。營造能有感學習數學，安心使用英文的班級氛圍。

貳、教學分析

一、教材分析

(一)迷思概念

1. 學生誤以為數字大的重量就比較重
2. 學生認為秤面上的最小單位刻度都是一公克
3. 學生將相同的物品放在一公斤秤與三公斤秤上，因為指針擺動的幅度不同，會認為其顯示出來的重量不同

(二)教材脈絡

過去學的	現在學的	未來學的
<p>N-2-12 容量、重量、面積： 以操作活動為主。此階段量的教學應包含初步認識、直接比較、間接比較（含個別單位）。不同的量應分不同的單元學習。</p> <p>R-2-1 大小關係與遞移律： 「>」與「<」符號在算式中的意義，大小的遞移關係。</p> <p>N-3-2 加減直式計算： 含加、減法多次進、退位。</p> <p>N-3-3 乘以一位數： 乘法直式計算。教師用位值的概念說明直式計算的合理性。被乘數為二、三位數。</p>	<p>N-3-16 重量： 「公斤」、「公克」。實測、量感、估測與計算。單位換算。</p>	<p>N-5-13 重量： 「公噸」。生活實例之應用。含與「公斤」的換算與計算。使用概數。</p>

二、學生分析

(一)背景分析

學生來自新北市某國小三年甲班，班級人數共 20 人。師生日常的課室語言部分使用英文溝通，學生以習慣課程中加入英語會話。

(二)學生先備經驗

1. 能進行重量的直接比較與間接比較。
2. 能理解物體重量之間的遞移關係。
3. 能進行千位以內的加、減與二、三位數乘以一位數的運算。

三、教學方法分析

(一)觀察教學法

觀察秤面的教學活動採用觀察教學法，提供實際教具讓學生觀察，於學生開始觀察前提醒學生觀察要點，觀察過程中讓學生分小組

進行討論討論，觀察結束後各組發表觀察到的內容，教師於學生發表時補充學生觀察的不足。

(二)直接教學法

本教學活動英語會話採用直接教學法，透過具體操作，實際使用一公斤秤、三公斤秤測量物體的重量，並配合圖示、動作幫助學生了解英語句型的意思。

(三)Polya 教學法

Polya 將處理數學問題分為四步驟，本課程將依照四步驟設計相關問題，以引導學生解決生活情境下的數學問題，並讓學生習慣使用該方法來解決其他的數學問題。

四、課程概念架構圖

第一節

- 認識公斤、認識三公斤秤、建立量感
- 掂掂看(一、二、三公斤重的書包)，秤(認識三公斤秤加報讀)，估測一公斤重的書包
4組 12個書包

第二節

- 認識公克、認識一公克秤、建立量感
- 掂掂看(一百公克、五公克的鉛筆盒)，秤(認識一公斤秤加報讀)，估測五百公克的鉛筆盒

第三節

- 幾公斤幾公克、換算
- 三公斤秤與一公斤上使用100公克的物品累加報讀，用三公斤秤與一公斤秤測課本，分組紀錄生活中不同物品的重量。

第四節

- 計算(公克加減乘)
- 製作薑餅屋秤重情境(準備相同的材料整數乘法、多種材料組裝薑餅屋加法、材料多餘的減法)

第五節

- 計算(複合單位加減)
- 書箱重量變化計算的情境(書放入書箱中，書箱重量變化的加法、書箱中拿出書，書箱重量變化的減法)

參、教學活動設計

單元名稱	公斤與公克	適用年級	三
課程名稱	一克千斤	教學時間	一節 40 分鐘，共五節
教材版本	三上數學翰林版第五冊第七單元		
教學準備	第一節：12 個書包(一、二、三公斤各四個)，5 個三公斤秤，健康檢查圖片，投影設備 第二節：2 個鉛筆盒(一百公克、五百公克各一個)，5 個一公斤秤，投影設備 第三節：5 個三公斤秤，5 個一公斤秤，100 公克的糖果包，學習單(一) 第四節：1 個一公斤秤，薑餅屋圖示，薑餅屋材料包，學習單(二) 第五節：1 個三公斤秤，班級共讀書箱，班級共讀書，學習單(三)		
能力指標/學習表現	分年細目/學習內容	單元教學目標	
n-II-9 理解長度、角度、面積、容量、重量的常用單位與換算，培養量感與估測能力，並能做計算和應用解題。認識體積。	N-3-16 重量：「公斤」、「公克」。實測、量感、估測與計算。單位換算。	1. 認識重量教學單位「公斤」、「公克」，及知道重量在秤面上的刻度現象。 2. 認識一公斤秤，並能以一公斤秤進行實測與報讀。 3. 認識三公斤秤，並能以一公斤秤進行實測與報讀。 4. 建立重量量感與估測 5. 認識公斤、公克的關係，並做化聚和比較。 6. 能解決生活中重量的合成與分解問題，並用算式紀錄。	
單元教學目標	教學內容	時間	評量方式
	第一節 教師準備：12 個書包(一、二、三公斤各四個)，4 個三公斤秤，健康檢查圖片，投影設備 學生準備：學用品(估測活動使用) 壹、準備活動 一、回憶生活經驗 師生對話內容： (一)教師詢問學生健康檢查的生活經驗 The teacher asks students about life experiences of health checks.	3'	健康檢查圖片



學生回答：測量身高體重，視力檢查

(二)教師詢問學生體重多重

The teacher asks students how much they weigh.

關鍵提問：

教師：How much do you weigh?

學生回答：____公斤

教師帶入公斤的單字

(三)教師說明公斤為重量的單位

The teacher explained that the kilogram is the unit of weight.

認識重量單位「公斤」

二、掂掂看

(一)教師每組發下三個書包(分別為一、二、三公斤重)，小組分別掂掂看，並選擇何者為一公斤重的書包

(二)教師詢問學生如何判斷哪個書包為一公斤重，引起學生對於使用三公斤秤的需求

The teacher asks students how to know which school bag weighs 1 kilogram, which leads to the learning needs of the students to use a three-kilogram scale.

3'

12 個書包
(一、二、三公斤各四個)

貳、發展活動

一、認識三公斤秤

(一)教師讓學生觀察三公斤秤，並發表在秤面上看到什麼

The teacher lets students observe a three-kilogram scale and ask them their observations about it.

(二)教師說明以秤測量物體重量時，要先確定指針指向0，再將物品放到秤面上測量

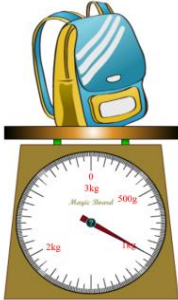
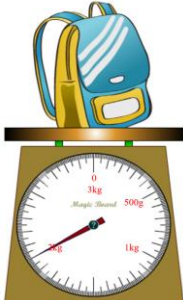
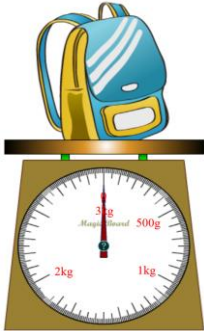
Teacher explained that before using the scale, we have

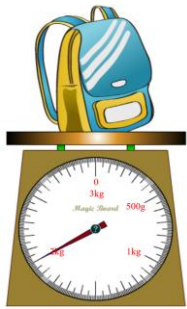
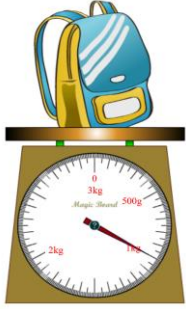
9'

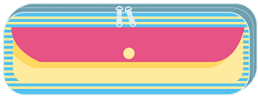
口語評量：在給予一個三公斤秤的情況下，學生能說出三公斤秤的秤面結構。

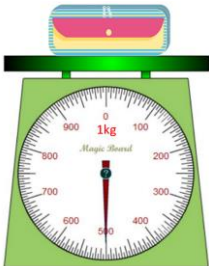
4 個三公斤秤

認識三公斤秤的秤面結構

<p>使用三公斤秤實測物體重量(整數公斤)</p> <p>能報讀三公斤秤秤面上的物體重量</p>	<p>to check whether the pointer points at 0. If the pointer points at 0, we can start to put things on the scale.</p> <p>二、使用三公斤秤測量物體的重量並報讀</p> <p>(一)小組測量3個書包的重量，並報讀</p> <p>The students weigh three school bags and read the number on the scale.</p> <p>師生對話內容：</p>  <p>T : How much does the schoolbag weigh? S : It weighs 1 kilogram.</p>  <p>T : How much does the schoolbag weigh? S : It weighs 2 kilograms.</p>  <p>T : How much does the schoolbag weigh? S : It weighs 3 kilograms.</p>	<p>10'</p>	<p>口語評量：報讀物體重量時，學生能使用公斤作為重量單位。</p> <p>實作評量：給予一個三公斤秤，學生能正確使用測量物體的重量。</p> <p>口語評量：給予一個三公斤秤，學生能報讀三公斤秤物體重量。</p>	<p>12 個書包</p> <p>(一、二、三公斤各四個)</p> <p>4 個三公斤秤</p>
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<p>建立學生對於一公斤重的量感</p>	<p>教師巡堂時檢視各組測量狀況，發現錯誤類型時加以導正。</p> <p>學生測量時可能出現的錯誤類型： During measuring, students probably make the following error patterns.</p> <ol style="list-style-type: none"> 1. 測量前未注意秤面上指針是否指向 0 2. 在測量時，秤放在不平穩的位置 <p>三、估測一公斤重的書包</p> <p>(一) 小組討論，將物品(如：課本、水壺)放到書包中，估測 1 公斤的書包重</p> <p>(二) 小組分別上台實測書包重量，由台下同學閱讀秤面後，給予台上學生太重或太輕的提示。(將秤面投影至電子白板)</p> <p>師生對話：Teacher-student dialogue</p>  <p>T : Is the schoolbag 1 kilogram? S : No, it isn't. T : Is it more than or less than 1 kilogram? S : More.</p>  <p>T : Is the school bag 1 kilogram? S : Yes, it is.</p>	<p>10'</p>	<p>實作評量：給予學生一個物品，學生能判斷它是否接近一公斤。</p>	<p>4 個書包 1 個三公斤秤 投影設備</p>
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	<p style="text-align: center;">參、綜合活動</p> <p>一、教師總結</p> <p>(一)教師詢問學生使用三公斤秤的注意事項</p> <p style="padding-left: 2em;">The teacher asks do's and don't for a 3 kg weighing scale.</p> <p>(二)教師詢問學生如何報讀三公斤秤的秤面</p> <p style="padding-left: 2em;">The teacher asks the students how to read a 3 kg weighing scale.</p> <p>關鍵提問：</p> <ol style="list-style-type: none"> 1. 看指針時要怎麼看呢？從上往下看指針嗎？ 2. 物品放上秤後能馬上報讀指針指向數值嗎？ 	5'		
認識重量單位「公克」	<p>第二節</p> <p>教師準備：2 個鉛筆盒(一百公克、五百公克各一個)，4 個一公斤秤，投影設備</p> <p>學生準備：文具(估測活動使用)</p> <p style="text-align: center;">壹、準備活動</p> <p>一、前一節課幫助學生建立一公斤的量感後，詢問學生鉛筆盒的重量是否大於一公斤。</p> <p>(若學生認為鉛筆盒重量大於一公斤，則提供一公斤重的書包比較)</p> <p>師生對話內容 Teacher-student dialogue：</p> <div style="text-align: center; margin: 10px 0;">  </div> <p>T：Is the pencilbox more than 1 kilogram? S：No, it isn't. T：Is the pencilbox less than 1 kilogram? S：Yes, it is.</p> <p>二、掂掂看</p> <p>(一)教師每組發下兩個鉛筆盒(分別為一百公克、五百公克重)，讓各小組分別掂掂看，感受兩個鉛筆盒的重量。</p> <p>(二)教師詢問學生如何精準的表示鉛筆盒的重量，引起</p>	3'		

	<p>學生認識重量單位公克與使用一公斤秤的需求。 Teacher asks students how to know the accurate weight of a pencilbox so as to lead the learning needs of the students to know common measurement of gram and to use a one-kilogram scale.</p> <p>關鍵提問：</p> <p>1. 前一堂課我們知道公斤是重量的單位，但是鉛筆盒的重量小於一公斤，我們要如何精準的表示鉛筆盒的重量呢？</p>		
<p>認識一公斤秤的秤面結構</p>	<p style="text-align: center;">貳、發展活動</p> <p>一、認識一公斤秤</p> <p>(一) 教師讓學生觀察一公斤秤，並發表在秤面上看到什麼。</p> <p>The teacher lets students observe a one-kilogram scale and ask them their observations about it.</p> <p>關鍵提問：</p> <p> 這個秤和前一堂課介紹的三公斤秤有哪些相同與不同的地方？</p> <p>(二) 教師說明以秤測量物體重量時，要先平放一公斤秤，檢查指針指向 0，再將物品放到秤面上測量。</p> <p>Teacher explains that before using the scale, we have to check whether the pointer points at 0. If the pointer points at 0, we can start to put things on the scale.</p>	<p>9'</p> <p>口語評量：給予一個一公斤秤，學生能說出一公斤秤的秤面結構。</p>	
<p>能報讀一公斤秤秤面上的物體重量。</p> <p>能使用一公斤秤實測物體重量(整數公克)</p>	<p>二、使用一公斤秤測量物體的重量並報讀</p> <p>(一) 小組測量 2 個教師所提供鉛筆盒的重量，並確認何者為 500 公克重的鉛筆盒。</p> <p>師生對話內容：</p> 	<p>10'</p> <p>口語評量：報讀物體重量時，學生能使用公克作為重量單位。</p> <p>口語評量：給予一個一公斤秤，學生能報讀一公斤秤秤面上的</p>	

建立學生對於五百公克重的量感

T : How much does the pencilbox weigh?

S : It weighs 500 grams.



T : How much does the pencilbox weigh?

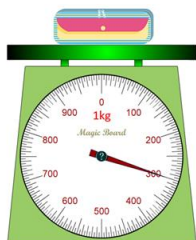
S : It weighs 100 grams.

三、估測 500 公克重的鉛筆盒

(一)小組討論，將文具放到自己的鉛筆盒中，試著使鉛筆盒的重量為 500 公克。

(二)小組分別上台實測書包重量，由台下同學閱讀秤面後，給予台上學生太重或太輕的提示。(將秤面投影至電子白板)

師生對話：Teacher-student dialogue

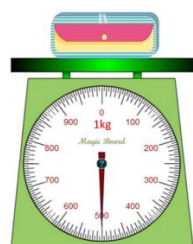


T : Is the pencilbox 500 grams?

S : No, it isn't.

T : Is the pencil box more or less than 300 grams?

S : Less.



T : Is the pencil box 500 grams?

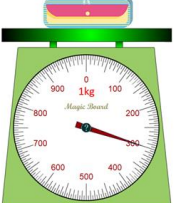
S : Yes, it is.

物體重量。

實作評量：給予一個一公斤秤，學生能正確使用測量物體的重量。

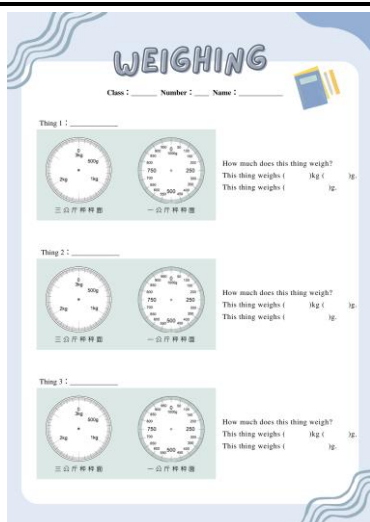
10'

實作評量：給予一個物品，學生能判斷它是否接近五百公克。

	<p style="text-align: center;">參、綜合活動</p> <p>一、教師總結</p> <p>(一)教師詢問學生使用一公斤秤的注意事項</p> <p>The teacher asks students to do and don't for the one-kilogram scale.</p> <p>關鍵提問：</p> <p> 拿到一公斤秤就能馬上使用嗎？</p> <p> 測量物體重量前須注意那些地方？</p> <p>(二)教師詢問學生如何報讀一公斤秤的秤面</p> <p>The teacher asks students how to read the one-kilogram scale.</p> <p>關鍵提問：</p> <p>T：How much do the pencilbox weigh?</p>  <p>S：It weighs 300 grams.</p>	5'		
<p>能知道公斤與公克的換算規則。</p>	<p>第三節</p> <p>教師準備：4 個三公斤秤，4 個一公斤秤，15 個 100 公克的糖果包，學習單(一)(記錄測量結果)</p> <p>學生準備：學用品(測量活動使用)</p> <p style="text-align: center;">壹、準備活動</p> <p>一、複習一公斤秤的報讀(秤 100g 糖果包)</p> <p>The teacher reviews how to read a one-kilogram scale.</p> <p style="text-align: center;">貳、發展活動</p> <p>一、累加 100 公克認識單位換算</p> <p>(一)教師詢問學生當糖果包有兩包時秤起來會是多重，當糖果包有三個包、四包時...十包時分別的重量是多少公克。</p> <p>The teacher asks students how many grams do two bags of candies weigh; then, the teacher continually asks them how many grams do three, four, or ten sacks of candies weigh, respectively.</p>	3' 10'		1 個一公斤秤、15 個 100 公克的糖果包

	<p>師生問答：</p> <p>T : How much do two bags of candies weigh? S : It weighs 200 grams. T : How much do three bags of candies weigh? S : It weighs 300 grams. T : How much do four bags of candies weigh? S : It weighs 400 grams. ... T : How much do ten bags of candies weigh? S : It weighs 1000 grams.</p>			
<p>能進行幾公斤幾公克與公克的換算。</p>	<p>(二)學生從報讀與觀察一公斤秤秤面發現，累加十個一百公克是一千公克，也就是一公斤，讓學生了解公斤與公克之間的單位換算。</p> <p>教師引導語： 我們可以看到十個糖果包的重量，指針指在1公斤的位置，所以十個糖果包的重量為1公斤，透過累加的數與秤面的觀察，學生可以知道1000公克等於1公斤。 T : As you can see, the pointer points at 1 kilogram, so ten bags of candies weigh 1 kilogram. By observing, the students know 1000 grams equals 1 kilogram.</p>			
<p>能區分一公斤與三公斤秤的使用時機</p>	<p>二、認識一公斤與三公斤秤的不同使用時機</p> <p>(一)教師接著繼續累加糖果包，讓學生發現當糖果包太重時，一公斤秤無法再測量，此時需要使用其他秤(三公斤秤)秤重。</p> <p>師生問答： 老師：當糖果包超過一公斤時，可以使用一公斤秤測量嗎？</p> <p>學生可能回應一：不行</p> <p>學生可能回應二：可以</p> <p>教師針對回應二進行引導：</p>	<p>8'</p>		<p>1個一公斤秤、1個三公斤秤</p>

<p>建立學生對於生活中常見物品重量的量感。</p>	<p>實測物體重量，讓學生觀察當物體重量超過一公斤後指針位置的變化，發現指針指向刻度小於一公斤但物體重量超過一公斤的矛盾。</p> <p>(二)當在繼續累加糖果包的過程中，讓學生練習複合單位的報讀、單位換算與英語會話。</p> <p>師生對話： T：How much do ten bags of candies weigh? S：It weighs 1000 grams. T：We can also say ____ kilogram. S：One kilogram. T：How much do eleven bags of candies weigh? S：It weighs 1100 grams. T：We can also say ____ kilogram and ____ gram? S：1 kilogram and 100 grams. </p> <p>三、測量生活中各種物品的重量</p> <p>(一)教師詢問學生教室內常見物品的重量，讓學生們進行猜測，引發學生對於物品實際重量的好奇，讓學生產生測量物品重量的需求。</p> <p>師生對話： T：How much does this object weigh? S：It weighs _____ grams. T：Are you sure? S：Not sure. T：You can measure it, and see whether the number on the scale is close to what you guessed.</p> <p>(二)教師發下學習單(一)，讓學生分組秤看看生活周遭的物品重量，並紀錄於學習單上。</p> <p>學習單(一)：</p>	<p>15'</p>	<p>紙筆評量：在教師設定的情境中，學生能使用公斤與公克的換算規則解題。</p>	<p>4個三公斤秤，4個一公斤秤，學習單(一)</p>
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(三) 各組分享自己組別所秤的物品及其重量
Groups share and express their worksheet.

Review sentence patterns

T : How much does this object weigh?

S : It weighs _____ grams.

T : We can also say ____ kilogram and ____ gram?

S : ____ kilogram and ____ gram.

(四) 教師統整

教師巡堂時蒐集在分組活動中出現報讀和換算上出現的迷失概念，並依照學生測量不同物品於兩種秤測量的結果，整理不同秤面的使用時機。

參、綜合活動

一、教師總結

(一) 複習如何選擇使用不同重量的秤進行測量(一公斤與三公斤秤的差異)

Review how to choose different weighing scales to measure.

(二) 複習報讀上常見的錯誤類型

Review error patterns during using the scales.

(三) 複習公斤與公克的單位換算

Review how to calculate weight conversion between kilogram and gram.

紙筆評量：在教師設定的情境中，學生能換算公斤公克的複合單位。

實作評量：在測量物品重量的情境中，學生能區分一公斤與三公斤秤的使用時機。

4'

第四節

教師準備：1 個一公斤秤，薑餅屋圖示，薑餅屋材料包，學習單(二)

學生準備：無

壹、準備活動

一、教師帶入聖誕節製作薑餅屋的情境



教師製作薑餅屋將學生帶入情境，將製作過程中所會遇到的數學問題紀錄於學生單中，讓學生在教師的引導下解決學習單上的問題。

The teacher gives students the scenario by making gingerbread houses, and records the math problems encountered in the process in the student list, so that students can solve the problems on the study list under the guidance of the teacher.

GINGERBREAD HOUSE

Class : _____ Number : _____ Name : _____

<p>(1) 已知一打餅乾 15 公斤，製作薑餅屋需要 7 打餅乾，這時餅乾重多少公斤呢？</p> <p>(2) 我們的薑餅屋目前裝飾的糖霜是 10 公克，已知餅乾重 100 公克，每打餅乾重多少公斤呢？</p> <p>(3) 已知一箱餅乾重 5 公斤，那 4 箱餅乾重多少公斤呢？</p> <p>(4) 所花的薑餅屋重 _____ 公斤，我們所重 _____ 公斤的餅乾是裝飾薑餅屋的，製作薑餅屋的餅乾重多少公斤呢？</p>	<p>(5) 薑餅屋屋頂的門重 _____ 公斤的餅乾，這次製作薑餅屋一共花了多少公斤的餅乾呢？</p> <p>(6) 假如我們所花的薑餅屋重 _____ 公斤，餅乾重 _____ 公克，每打餅乾重 _____ 公克的餅乾，這時薑餅屋可能重多少公斤呢？</p>
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材料：

物品	餅乾	糖霜	薑餅屋
重量(g)			

貳、發展活動

一、教師展示製作薑餅屋材料，並使用一公斤秤進行材料重量的測量。

The teacher showed the materials for making gingerbread houses, and used a one kilogram scale to measure the weight of the materials.

二、教師使用 polya 解題步驟解決毫米整數乘法與加法問題，引導學生完成問題一、二

3'

3'

8'

薑餅屋圖示

學習單(二)

1 個一公斤秤、薑餅屋材料包


<p>能依題意選擇合適的解題策略，解決公克為單位的整數倍問題。</p>	<p>問題一：已知一片餅乾 15 公克，製作薑餅屋需要 7 片餅乾，這些餅乾重多少公克？</p> <p>教師關鍵提問：</p> <p>(一) 一片餅乾有多重？</p> <p>According to question one, how much does a piece of cookies weigh?</p> <p>(了解問題)(understanding the problem)</p> <p>(二) 製作薑餅屋會用幾片餅乾？</p> <p>How many pieces of cookies do we have to make a gingerbread house?</p> <p>(了解問題)(understanding the problem)</p> <p>(三) 我們要怎麼要知道全部的餅乾有多重？</p> <p>How do we know the weight of all pieces of the cookies?</p> <p>(擬定策略)(devising a plan)</p> <p>(四) (15 公克 乘以 7 等於 105 公克 算式)</p> <p>(實施策略)(carrying out the plan)</p> <p>(五) 我們是如何算出答案的？</p> <p>How do we solve this math problem?</p> <p>(回顧)(looking back)</p> <p>(六) 這個答案合理嗎？</p> <p>Does this answer make sense?</p> <p>(回顧)(looking back)</p>			
<p>能計算以公克為單位的整數倍。</p>				
<p>能依據生活經驗衡量作答結果的合理性。</p>				
<p>能依題意選擇合適的解題策略，解決公克為單位的加法問題。</p>	<p>問題二：我們的薑餅屋由餅乾與糖霜組成，已知餅乾重 ___ 公克，糖霜重 100 公克，製作出來的薑餅屋重多少公克？</p> <p>教師關鍵提問：</p> <p>(一) 餅乾一共重多少公克？</p> <p>According to question 2, how much do the cookies weigh?</p> <p>(了解問題)(understanding the problem)</p>			
<p>能計算以公克為單位的</p>				

<p>加法。</p>	<p>(二)糖霜重多少公克? How much does the frosting weigh? (了解問題)(understanding the problem)</p> <p>(三)我們要如何算出薑餅屋有多重? How do we know the weight of a gingerbread house? (擬定策略)(devising a plan)</p> <p>(四)105 公克 + 100 公克 = 205 公克 (實施策略)(carrying out the plan)</p> <p>(五)我們是如何算出答案的? How do we solve this math problem? (回顧)(looking back)</p> <p>(六)這個答案合理嗎? Does this answer make sense? (回顧)(looking back)</p> <p>三、教師引導學生討論完成問題三、四</p> <p>問題三：已知一顆拐杖糖 5 公克，那___顆拐杖糖重多少公克？</p> <p>教師關鍵提問：</p> <p>(一)一顆拐杖糖多少公克？ According to question three, how much does a stick of candy cane weigh? (了解問題)(understanding the problem)</p> <p>(二)我們製作薑餅屋有幾顆拐杖糖？ How many sticks of cookies do we have to make a gingerbread house? (了解問題)(understanding the problem)</p> <p>學生練習 教師巡堂檢視學生作答狀況 (實施策略)(carrying out the plan)</p>	<p>8'</p>	<p>紙筆評量：在製作薑餅屋情境中所遇到的數學問題，學生能計算以公克為單位的整數倍問題。</p> <p>口語評量：在製作薑餅屋情境中所遇到的數學問題，學生能依據生活經驗衡量作答結果的合理性。</p>
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	<p>(三)我們是如何算出答案的? How do we solve this math problem? (回顧)(looking back)</p> <p>(四)這個答案合理嗎? Does this answer make sense? (回顧)(looking back)</p> <p>問題四：原先的薑餅屋重__公克，我們將重__公克的拐杖糖都裝飾到薑餅屋，製作出來的薑餅屋重多少公克?</p> <p>教師關鍵提問：</p> <p>(一)原先的薑餅屋有多重? How much does a former gingerbread house weigh? (了解問題)(understanding the problem)</p> <p>(二)我們裝飾了多重的拐杖糖? How much do candy canes weigh? (了解問題)(understanding the problem)</p> <p>學生練習 教師巡堂檢視學生作答狀況 (實施策略)(carrying out the plan)</p> <p>(三)我們是如何算出答案的? How do we solve this math problem? (回顧)(looking back)</p> <p>(四)這個答案合理嗎? Does this answer make sense? (回顧)(looking back)</p> <p>四、開始製作薑餅屋 Start to make a gingerbread house.</p>		<p>紙筆評量：在製作薑餅屋情境中所遇到的數學問題，學生能計算以公克為單位的加法問題。</p>	
能依題意選	五、教師使用 polya 解題步驟解決毫米減法問題，引導學生	5'		5'

<p>擇合適的解題策略，解決公克為單位的減法問題。</p> <p>能計算以公克為單位的減法。</p>	<p>完成問題五</p> <p>問題五：薑餅屋做完後我們還剩重_____公克的糖霜，這次製作薑餅屋一共用了多少公克的糖霜？</p> <p>教師關鍵提問：</p> <p>(一)完成薑餅屋後，還有多少的糖霜沒用完？ After making the gingerbread house, how much frost is left? (了解問題)(understanding the problem)</p> <p>(二)原來的糖霜有多重？ How much does the former frosting weigh? (了解問題)(understanding the problem)</p> <p>(三)我們要如何算出我們使用了多重的糖霜？ How do we know the frosting's weight? (擬定策略)(devising a plan)</p> <p>(四)(100 公克 - 60 公克 = 40 公克) (實施策略)(carrying out the plan)</p> <p>(五)我們是如何算出答案的？ How do we solve this math problem? (回顧)(looking back)</p> <p>(六)這個答案合理嗎？ Does this answer make sense? (回顧)(looking back)</p> <p>六、教師引導學生討論完成問題六</p> <p>問題六：原先我們預計薑餅屋重量為_____公克，做完薑餅屋後，發現還剩重_____公克的糖霜，請問薑餅屋可能為多少公克？</p> <p>教師關鍵提問：</p> <p>(一)經過剛剛的計算，我們本來算出薑餅屋的重量是多少公克？ After doing the math, how much does the former gingerbread house weigh?</p>	<p>5'</p>	<p>紙筆評量：在製作薑餅屋情境中所遇到的數學問題，學生能計算以公克為單位的減法問題。</p>
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	<p>(了解問題)(understanding the problem)</p> <p>(二) 因為還剩下多少公克的糖霜，所以我們要修正我們對於薑餅屋重量的計算？</p> <p>How many grams of frosting are left, so we need to revise our calculation of the weight of the gingerbread house?</p> <p>(了解問題)(understanding the problem)</p> <p>學生練習，教師巡堂檢視學生作答狀況</p> <p>(實施策略)(carrying out the plan)</p> <p>(三) 我們是如何算出答案的？</p> <p>How do we solve this math problem?</p> <p>(回顧)(looking back)</p> <p>(四) 這個答案合理嗎？</p> <p>Does this answer make sense?</p> <p>(回顧)(looking back)</p> <p style="text-align: center;">參、綜合活動</p> <p>一、 教師說明，計算結果與實際測量結果的誤差來源</p> <p>The teacher explains the reasons of error between the calculation result and the actual measurement result.</p> <p>(一) 計算時沒有考慮到餅乾屑掉落的重量，導致實際測量結果較計算結果輕。</p> <p>The weight of the cookie crumbs dropped was not taken into account in the calculation, resulting in the actual measurement being lighter than the calculated result.</p> <p>(二) 使用錯誤的方式操作一公斤秤，導致實際測量結果與計算結果不同。</p> <p>Using a one-kilogram scale in the wrong way causes the actual measurement results to differ from the calculated results.</p>	3'		
	<p>第五節</p> <p>polya(了解問題、擬定策略、實行策略、回顧)</p> <p>教師準備：1 個三公斤秤、班級共讀書箱、班級共讀書、學習單(三)</p>			

<p>學生準備：無</p> <p>能依題意選擇合適的解題策略，解決複合單位的加法問題。</p> <p>能計算以複合單位的加法。</p>	<p>學生準備：無</p> <p style="text-align: center;">壹、準備活動</p> <p>一、掂掂看</p> <p>(一)教師讓學生拿看看共讀書箱，感受裝滿書的共讀書箱的重量。</p> <p>(二)請學生估測裝滿書的共讀書箱的重量</p> <p>(三)教師使用三公斤秤測量裝滿書的書箱重量，發現太重無法測量，引起學生對於計算複合單位的需求。</p> <p>(一)The teacher asked the students to take the shared reading box after class and feel the weight of it.</p> <p>(二)Ask students to estimate the weight of the book box full of books</p> <p>(三)The teacher used a three kilogram scale to measure the weight of the book box full of books. Then, let the students find that it was too heavy to measure, which caused the students' learning needs for calculating compound units.</p> <p style="text-align: center;">貳、發展活動</p> <p>一、教師依據學習單進行教學</p>  <p>(一)問題一：</p> <p>空書箱重 1 公斤 100 克，共讀書共重 16 公斤 500 公克，請問裝滿書的共讀書箱重量是幾公斤幾公克？</p> <p>1. 教師關鍵提問：</p> <p>(1) 這個問題在問什麼？</p> <p style="padding-left: 40px;">What problem does this math problem ask?</p> <p style="padding-left: 40px;">(了解問題)(understanding the problem)</p>	<p>5'</p> <p>6'</p>	<p>班級共讀書、班級共讀書箱、1 個三公斤秤</p> <p>學習單 (三)</p>	
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<p>能依據生活經驗衡量作答結果的合理性。</p>	<p>(2) 空書箱有多重? How much does the empty book box weigh? (了解問題)(understanding the problem)</p> <p>(3) 書箱內的共讀書一共有多重? How much do the books in the box weigh? (了解問題)(understanding the problem)</p> <p>(4) 你想用什麼方法來解決這題? 為什麼? What ways will you choose to solve this problem? Why? (擬定策略)(devising a plan)</p> <p>2. 教師說明如何進行重量複合單位的直式計算 (實施策略)(carrying out the plan)</p> <p>3. 教師引導學生進行解題後的回顧</p> <p>(1) 根據你的經驗, 你算出來的答案合理嗎? According to your own experiences, does this answer make sense?</p> <p>(2) 為什麼使用加法作為解題策略能解決這個問題? Why can you choose to use addition to solve this problem?</p> <p>(二) 問題二: 空書箱重 1 公斤 100 克, 共讀書共重 11 公斤 250 公克, 請問裝滿書的共讀書箱重量是幾公斤幾公克?</p> <p>1. 教師關鍵提問</p> <p>(1) 這個問題在問什麼? What problem does this math problem ask? (了解問題)(understanding the problem)</p> <p>(2) 空書箱有多重? How much does the empty book box weigh? (了解問題)(understanding the problem)</p> <p>(3) 書箱內的共讀書一共有多重?</p>	<p>5'</p>	<p>紙筆評量: 在教師設定的情境中所遇到的數學問題, 學生能依題意選擇合適的解題策略, 解決複合單位的加法問題。</p> <p>紙筆評量: 在教師設定的</p>	
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<p>能依題意選擇合適的解題策略，解決複合單位的減法問題。</p> <p>能計算以複合單位的減法。</p>	<p>How much does the books in the box weigh in total? (了解問題)(understanding the problem)</p> <p>2. 教師巡堂檢視學生擬定策略與實行策略過程，並給予部分學生協助。 (實施策略)(carrying out the plan)</p> <p>3. 教師引導學生進行解題後的回顧 (1) 根據你的經驗，你算出來的答案合理嗎? According to your own experiences, does this answer make sense? (回顧)(looking back)</p> <p>(2) 為什麼使用加法作為解題策略能解決這個問題? Why can we use addition to solve this math question? (回顧)(looking back)</p> <p>(四) 問題三： 裝滿書的書箱 17 公斤 600 克，老師發給全班閱讀的書總共重 12 公斤 500 克。請問發下共讀書後，書箱加上裡面的書重量是幾公斤幾公克？</p> <p>1. 教師關鍵提問 (1) 這個問題在問什麼? What problem does this math problem ask? (了解問題)(understanding the problem)</p> <p>(2) 裝滿書的書箱重幾公斤幾公克? How many kilograms and grams does a book box full of books weigh? (了解問題)(understanding the problem)</p> <p>(3) 老師發下的書有多重? How much do the books weigh given by the teacher? (了解問題)(understanding the problem)</p>	<p>情境中所遇到的數學問題，學生能計算以複合單位的加法問題。</p> <p>口語評量：在教師設定的情境中所遇到的數學問題，學生能依據生活經驗衡量作答結果的合理性。</p>	<p>8'</p>
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	<p>(4) 你想用什麼方法來解決這題？為什麼？ Which ways will you choose to solve this math problem? Why? (擬定策略)(devising a plan)</p> <p>2. 教師說明如何進行重量複合單位的直式計算 (實施策略)(carrying out the plan)</p> <p>3. 教師引導學生進行解題後的回顧</p> <p>(1) 根據你的經驗，你算出來的答案合理嗎？ According to your own experience, does this answer make sense? (回顧)(looking back)</p> <p>(2) 為什麼使用減法作為解題策略能解決這個問題？ Why can you choose to use subtraction to solve this problem? (回顧)(looking back)</p> <p>(五) 問題四：</p> <p>裝滿書的書箱 12 公斤 600 克，老師發給全班閱讀的書總共重 9 公斤 375 克。請問發下共讀書後，書箱加上裡面的書重量是幾公斤幾公克？</p> <p>1. 教師關鍵提問</p> <p>(1) 這個問題在問什麼？ What problem does this math problem ask? (了解問題)(understanding the problem)</p> <p>(2) 裝滿書的書箱重幾公斤幾公克？ How many kilograms and grams does a book box full of books weigh? (了解問題)(understanding the problem)</p> <p>(3) 老師發下的書有多重？ How much do the books weigh given by the</p>	6'	<p>紙筆評量：在教師設定的情境中所遇到的數學問題，學生能依題意選擇合適的解題策略，解決複合單位的減法問題。</p> <p>紙筆評量：在教師設定的情境中所遇到的數學問題，學生能計算以複合單</p>	
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	<p>teacher? (了解問題)(understanding the problem)</p> <p>2. 教師巡堂檢視學生擬定策略與實行策略過程，並給予部分學生協助。 (實施策略)(carrying out the plan)</p> <p>3. 教師引導學生進行解題後的回顧 (1) 根據你的經驗，你算出來的答案合理嗎? According to your experience, does this answer make sense? (回顧)(looking back)</p> <p>(2) 為什麼使用減法作為解題策略能解決這個問題? Why can you choose to use subtraction to solve this problem? (回顧)(looking back)</p> <p>(六) 問題五： 教師詢問學生其估測共讀書箱的重量與實際測量結果的差異 The teacher asked the students about the differences between the estimated weight of the shared reading box and the actual measurement results.</p> <p style="text-align: center;">參、綜合活動</p> <p>一、教師統整</p> <p>(一) 複習學生於複合單位的加減時常遇到的錯誤類型 The teacher reviews error patterns students often encounter in addition and subtraction of compound units.</p> <p>(二) 提醒學生作答後要回顧自己的解題策略，並依據生活經驗檢視答案的合理性。 The teacher reminds students to review their own problem-solving strategies after answering, and to check the rationality of the answers based on their life experiences.</p>	<p>5'</p> <p>5'</p>	<p>位的減法問題。</p>	
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肆、教學評量

第一節 數學

教學目標		精熟	基礎	待加強	評量方法
認知	認識重量單位「公斤」	回答教師提問時，學生能使用重量單位「公斤」作為回應。	回答教師提問時，在教師提示下，學生能使用重量單位「公斤」作為回應。	未達基礎	口語評量
	認識三公斤秤的秤面結構。	學生能回答三公斤秤的秤面結構。	在教師的提示下，學生能回答三公斤秤的秤面結構。	未達基礎	口語評量
	能報讀三公斤秤秤面上的物體重量	學生能正確報讀三公斤秤秤面上的物體重量。	在教師引導下，學生能報讀三公斤秤秤面上的物體重量。	未達基礎	口語評量
技能	能使用三公斤秤實測物體重量(整數公斤)。	學生能獨立使用三公斤秤實測物體重量。	在教師引導下，學生能使用三公斤秤實測物體重量(整數公斤)。	未達基礎	實作評量
情意	建立學生對於一公斤重的量感。	學生能從不同重量的物體中挑選出接近一公斤重的物體。	在教師引導下，學生能從不同重量的物體中挑選出接近一公斤重的物體。	未達基礎	實作評量

第二節數學

教學目標		精熟	基礎	待加強	評量方法
認知	認識重量單位「公克」。	回答教師提問時，學生能使用重量單位「公克」作為回應。	回答教師提問時，在教師提示下，學生能使用重量單位「公克」作為回應。	未達基礎	口語評量
	認識一公斤秤的秤面結構。	學生能回答一公斤秤的秤面結構。	在教師的提示下，學生能回答一公斤秤的秤面結構。	未達基礎	口語評量
	能報讀一公斤秤秤面上的物體重量。	學生能正確報讀一公斤秤秤面上的物體重量。	在教師引導下，學生能正確報讀一公斤秤秤面上的物體重量。	未達基礎	口語評量
技能	能使用一公斤秤實測物體重量(整數公克)。	學生能獨立使用一公斤秤實測物體重量。	在教師引導下，學生能使用一公斤秤實測物體重量(整數公斤)。	未達基礎	實作評量
情意	建立學生對於三百公克重的量感。	學生能從不同重量的物體中挑選出接近三百公克重的物體。	在教師引導下，學生能從不同重量的物體中挑選出接近五百公克重的物體。	未達基礎	實作評量

第三節數學

教學目標		精熟	基礎	待加強	評量方法
認知	能知道公斤與公克的換算規則。	學生能獨立進行公斤與公克的換算	在教師的引導下，學生能進行公斤與公克的換算	未達基礎	紙筆評量
	能進行幾公斤幾公克與公克的換算。	學生能獨立進行幾公斤幾公克與公克的換算。	在教師的引導下，學生能進行幾公斤幾公克與公克的換算。	未達基礎	紙筆評量
技能	能區分一公斤與三公斤秤的不同使用時機。	學生能獨立區分一公斤與三公斤秤的不同使用時機。	在教師的引導下，學生能區分一公斤與三公斤秤的不同使用時機。	未達基礎	實作評量
情意	建立學生對於生活中常見物品重量的量感。	對於生活中常見物品重量	對於生活中常見物品重量	未達基礎	實作評量

第四節數學

教學目標		精熟	基礎	待加強	評量方法
認知	能依題意選擇合適的解題策略，解決公克為單位的加法問題	學生能依題意自行選擇合適的解題策略，解決公克為單位的加法問題	在教師的引導下，學生能依題意選擇合適的解題策略，解決公克為單位的加法問題	未達基礎	紙筆評量
	能依題意選擇合適的解題策略，解決公克為單位的加法問題	學生能依題意自行選擇合適的解題策略，解決公克為單位的減法問題	在教師的引導下，學生能依題意選擇合適的解題策略，解決公克為單位的減法問題	未達基礎	紙筆評量
	能依題意選擇合適的解題策略，解決公克為單位的整數倍問題	學生能依題意自行選擇合適的解題策略，解決公克為單位的整數倍問題	在教師的引導下，學生能依題意選擇合適的解題策略，解決公克為單位的整數倍問題	未達基礎	紙筆評量
技能	能計算以公克為單位的加法。	學生能獨立計算以公克為單位的加法。	在教師的引導下，學生能計算以公克為單位的加法	未達基礎	紙筆評量
	能計算以公克為單位的減法。	學生能獨立計算以公克為單位的減法。	在教師的引導下，學生能計算以公克為單位的減法	未達基礎	紙筆評量
	能計算以公克為單位的整數倍。	學生能獨立計算以公克為單位的整數倍。	在教師的引導下，學生能計算以公克為單位的整數倍	未達基礎	紙筆評量
情意	能依據生活經驗衡	學生能自行依據生活	在教師的引導	未達基礎	實作評量

	量作答結果的合理性。	經驗衡量作答結果的合理性。	下，學生能依據生活經驗衡量作答結果的合理性。		
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第五節數學

教學目標		精熟	基礎	待加強	評量方法
認知	能依題意選擇合適的解題策略，解決複合單位的加法問題。	學生能依題意自行選擇合適的解題策略，解決複合單位的加法問題。	在教師的引導下，學生能依題意選擇合適的解題策略，解決複合單位的加法問題。	未達基礎	紙筆評量
	能依題意選擇合適的解題策略，解決複合單位的減法問題。	學生能依題意自行選擇合適的解題策略，解決複合單位的減法問題。	在教師的引導下，學生能依題意選擇合適的解題策略，解決複合單位的減法問題。	未達基礎	紙筆評量
技能	能計算以複合單位的加法。	學生能獨立計算以複合單位的加法。	在教師的引導下，學生能計算以複合單位的加法。	未達基礎	紙筆評量
	能計算以複合單位的減法。	學生能獨立計算以複合單位的減法。	在教師的引導下，學生能計算以複合單位的減法。	未達基礎	紙筆評量
情意	能依據生活經驗衡量作答結果的合理性。	學生能自行依據生活經驗衡量作答結果的合理性。	在教師的引導下，學生能依據生活經驗衡量作答結果的合理性。	未達基礎	口語評量

【附件 5】

111 學年度小學數學雙語教學活動設計競賽 授權暨承諾書

教案名稱：(一克千斤)

本人 吳宜嘉、黃鴻任、

設計之教案參加「111 學年度小學數學雙語教學活動設計競賽」，經評審入選後，其著作財產權為台灣數學教育學會及國立臺中教育大學數學學習領域教學中心擁有。同意可將該項教材、教案等予以重製、公開發表或發行，並應註明該教材、教案等為本人著作之旨。並於著作權宣導之範圍內（非營利之目的），將前項教學設計案等予以編輯或重製後，不限時間、地點、次數公開播送做為教育推廣之用。

有關本人參加「111 學年度小學數學雙語教學活動設計競賽」，願意承諾事項如下：

- 一、該教學資源內容(含教材、教案、學習單、素材、媒體等)確實由本人自行創作，且無侵害他人著作權及智慧財產權之情事。
- 二、日後如有任何侵權之糾紛，本人願意出面處理並自負法律責任，與中心無涉。如因此致中心有損害者，本人願負賠償之責。
- 三、如有侵害著作權等相關法規經法院判決確定者，本人願意繳回所有原發之獎勵及稿費等。

此致

台灣數學教育學會及國立臺中教育大學

作者一姓名：吳宜嘉 (簽名蓋章) 身分證字號：

聯絡電話： 電子郵件：

聯絡地址：

作者二姓名：黃鴻任 (簽名蓋章) 身分證字號：

聯絡電話： 電子郵件：

聯絡地址：

作者三姓名： (簽名蓋章) 身分證字號：

聯絡電話： 電子郵件：

聯絡地址：

中 華 民 國 111 年 11 月 7 日

▶本表可自行複製影印。

111 學年度小學數學雙語教學活動設計競賽

教案設計格式範例

壹、設計理念

在國際化的浪潮下，為了厚植並強化國人英語的軟實力，政府將藉此全面啟動雙語化教學（國家發展委員會，2018）。本教案之教學活動以數學操作為主，輔以簡易的英語會話，期望學生能在培養數學素養的同時，增加英語溝通信心。

除法，作為數學計算常用的運算符號，也是人們解決生活問題時常用的工具之一。小學二年級分裝與平分單元正是除法教學的前置經驗，透過教師引導學生操作及觀察實際物品，發現並歸納出解決分裝與平分問題的方法。在解決數學問題教學上，教學活動設計參考 Polya 數學解題策略，協助學生練習閱讀題目與歸納討論解題策略。在教學活動中，加入許多對話與提問，讀題後的提問能協助學生理解題意，解題後的提問能刺激學生思考與比較不同解題方法的優劣。

設計者選用聖誕節作為本教學活動的主題，透過裝飾雪人、聖誕樹的操作活動以及生活中材料包的分裝，引出數學中分裝與平分的需求。藉由解題策略的分解步驟以及分裝過程的動畫呈現，引導學生嘗試以英語回答問題。與此同時，搭配逐步釋放責任的步驟及理念，搭配由淺至深的佈題，引領學生自主思考及操作，最後能勇於分享自己的解題策略，營造以英文為溝通語言的共好環境。

貳、教學分析

一、教材分析

1. 迷思概念

- (1) 單位量和單位數混淆(顏妙芬，2021)
- (2) 平分時未將全部分完。學童的生活經驗，只要每組（人）分得的物品數量相同，雖未將物品全部分完，但學生亦可能視為平分。老師應強調全部都要分完。(國家教育研究院，2019)
- (3) 平分活動的記錄中，可能出現 6 個蘋果減去 3 盤的錯誤，這是學生尚未掌握問題以轉化成 6 個蘋果減去 3 個蘋果的想法。(國家教育研究院，2019)

2. 教材脈絡

過去	現在	未來
<ul style="list-style-type: none">能以乘法、減法作為解題策略，並了解其意義能以「幾個一數」進行數數活動	<ul style="list-style-type: none">以操作活動學習分裝與平分的意義與常用思考方法能以畫記、點數、乘法等多元策略來解題能使用幾個一數、連減、十十乘法作為解題活動的策略	<ul style="list-style-type: none">從「分裝」和「平分」兩種不同的情境理解除法與「商」的意義，並學習除法的橫式記法透過「幾個一數」的想法，理解如何用乘法解決除法問題。熟練十十乘法範圍的除法

參照自數學課程手冊

二、學生分析

1. 背景分析：

某國小持續多年實施雙語融入各領域的課程，師生對於英文融入各科的課堂並不排斥。此班級人數為 20 人，並於本學期每週進行兩節(80 分鐘)雙語課程。

2. 學生已具備以下能力：

- (1) 能聽懂日常生活英文語句。
- (2) 能進行 100 以內的加法。
- (3) 能進行 100 以內的減法(限一次退位)。
- (4) 理解乘法的意義，熟練十十乘法。

三、教學方法分析

1. Polya 教學法：

波利亞 Polya, G (1945) *How to solve it?* Princeton University Press 將解題歷程分為四個階段，分別為：了解問題、擬定計畫、執行計畫、回顧解答。本課程活動依據不同的解題階段設計多個問題，藉由教師提問讓學生思考，並熟悉 Polya 解題歷程。

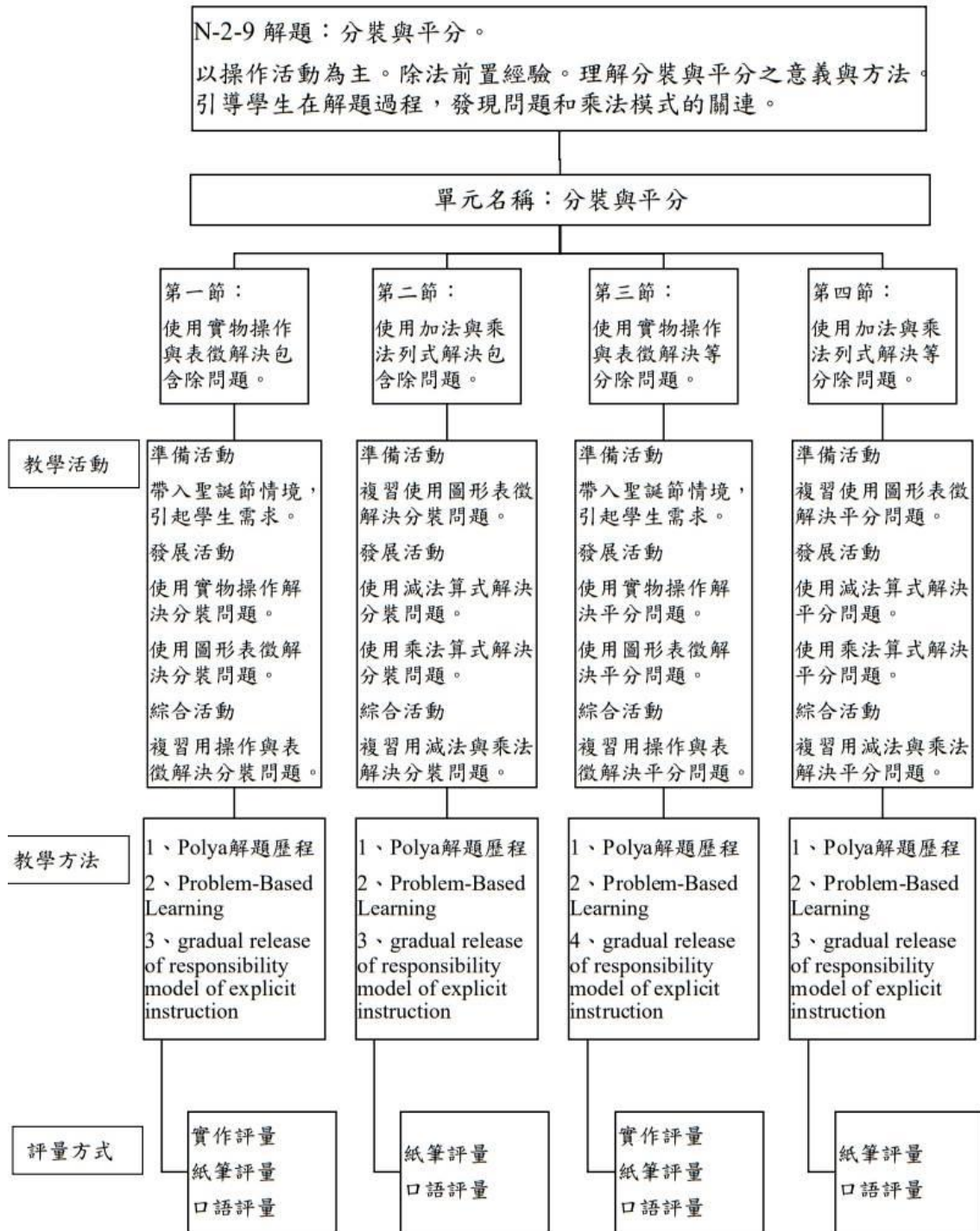
2. 問題導向教學法(Problem-Based Learning)：

教師透過提問引導學生思考，思考如何依照題意進行操作與列式，解決分裝與平分的問題。


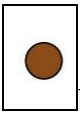
3. 漸進釋放責任直接教學模式(gradual release of responsibility model of explicit instruction)：


由 Pearson 和 Gallagher (1983) 提出，此教學模式為在學習時，由教學者先示範，之後逐步引導學生學習，並將學習的責任漸進釋放到學生身上，最終學生能獨立解決問題。


四、課程概念架構圖




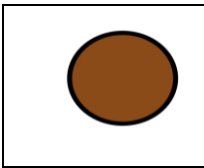

參、教學活動設計

單元名稱	分裝與平分	適用年級	國小二年級		
課程名稱	聖誕打扮	教學時間	4 節課，共 160 分鐘		
教材版本	參考康軒版數學課本後自編				
教學準備	教學用 PPT(教學活動解釋算式) 圖卡四組(含 8 張雪人、15 張樹枝、15 張鈕扣、5 張聖誕樹、28 張聖誕小球、28 張鈴鐺) 小白板數組(依學生人數配發)				
參考資料	單位量圖示法解題策略在國小二年級分裝與平分概念之學習成效 (顏妙芬, 2021)				
能力指標/學習表現	分年細目/學習內容			單元教學目標	
n-I-4 理解乘法的意義，熟練十十乘法，並初步進行分裝與平分的除法活動。	N-2-9 解題：分裝與平分。以操作活動為主。除法前置經驗。理解分裝與平分之意義與方法。引導學生在解題過程，發現問題和乘法模式的關連。(本條目非除法教學，不列除式，不用「除」的名稱 (N3-4)。限相當於整除的問題。教學應在「十十乘法」範圍中進行。可用幾個一數或連減協助，但不可成為答題格式。)			見〈肆、教學評量〉	
單元教學目標	教學內容	時間	評量方式	備註	
	<p>第一節課</p> <p>準備活動(Warm up)</p> <p>帶入聖誕節的情境，引發學生對於分裝雪人材料的需求。</p> <p>(Provoking students' interests by the situation: Christmas gifts distribution)</p> <p>複習相關單字(樹枝、鈕扣)</p> <p>Review the vocabulary.</p> <p>(The teacher shows the pictures.)</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>branch</p> </div> <div style="text-align: center;">  <p>button</p> </div> </div> <p>Q: What's this? (展示圖片點數後，帶領學生點數樹枝數量)</p> <p>Q: How many branches are there?</p>	4mins		實作評量：教師檢視學生	

<p>能操作具體物 解決包含除問 題(技能)</p>	<p>(教師請學生自行點數鈕扣數量) Q: How many buttons are there?</p> <p>發展活動(Presentation) 使用建造雪人材料包的情境，讓學生利用實物操作 及表徵解決問題 (The situation: DIY packages distribution) (Students use the real-life materials and the representation to solve the problem.)</p> <p>1-1(教師帶著小組練習) (The teacher leads students to practice in groups.) 問題一：每個雪人需要 2 枝樹枝做為裝飾，請問 12 枝樹枝能裝飾多少個雪人？</p>  <p>關鍵提問： Q: 每個雪人需要幾枝樹枝當作裝飾？ Q: How many branches do we need? (了解問題)(Understand the problem.)</p> <p>Q: 我們一共有多少樹枝？ Q: How do we know? (了解問題)(Understand the problem.)</p> <p>Q: 如何知道 12 支樹枝能分給多少雪人？ Q: How can we do? (擬訂計畫)(Devise a plan.)</p> <p>Q: 讓學生開始操作樹枝圖卡進行分裝 Q: How do you do? (執行計畫)(Carry out the plan.)</p>	<p>3mins</p> <p>6mins</p>	<p>點數的先備 經驗</p> <p>雪人、樹 枝、鈕扣 圖卡</p> <p>口語評量：學 生回答教師 提問，檢視學 生是否了解 問題。</p> <p>實作評量：操 作圖卡，教師 檢視學生操</p>	
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<p>能了解哪些情境下，能使用操作具體物解決包含除問題(認知)</p>	<p>Q: 我們剛剛如何做到的? Q: How did we do? (回顧解答)(Look back.)</p> <p>1-2 (學生自行練習) (Students practice on their own) 問題二：每個雪人有 3 顆鈕扣，請問 15 個鈕扣能裝飾多少個雪人?</p>  <p>關鍵問題： Q:每個雪人需要幾顆鈕扣當作裝飾? Q: How many buttons do we need? (了解問題)(展示雪人的圖片)</p> <p>Q: 我們有多少鈕扣? Q: How many hands do we have? (了解問題)(Understand the problem.)</p> <p>Q: 我們應該怎麼做? Q: How do we do? (擬訂計畫)(Devise a plan.)</p> <p>學生自行練習(執行計畫)(Carry out the plan.) (Students practice on their own.)</p> <p>教師巡視行間觀察學生作答情況 (The teacher walks around the students to check their problem-solving process.)</p> <p>Q: 我們剛剛如何做到的?</p>	<p>8mins</p>	<p>作情況</p> <p>動態評量(行為觀察):教師觀察學生在討論過程中的反應</p> <p>口語評量:學生回答教師提問,檢視學生是否了解問題。</p> <p>實作評量:操作圖卡,教師檢視學生操作情況。</p> <p>動態評量(行</p>
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<p>能透過圖像表徵，解決包含除問題(技能)</p> <p>能了解哪些情境下能透過圖像表徵解決包含除問題(認知)</p>	<p>Q: How did we do? (回顧解答)(Look back.)</p> <p>1-3 教師帶著小組練習 (The teacher leads students to practice in groups.)</p> <p>問題三：二年二班的樹枝有 14 枝，請問可以做幾個雪人？</p> <p>關鍵問題：</p> <p>Q: 每個雪人需要幾支樹枝當作手的裝飾？</p> <p>Q: How many hands do we need? (了解問題)(Understand the problem.)</p> <p>Q: 共有多少樹枝？</p> <p>Q: How do we know? (了解問題)(Understand the problem.)</p> <p>Q: 我們要如何知道 14 支樹枝能分裝成多少份雪人材料包呢？</p> <p>Q: How can we do? (擬訂計畫)(Devise a plan.)</p> <p>讓學生繪製樹枝圖形表徵進行分裝 (Let student draw the image of branches to pack) (執行計畫)(Carry out the plan.)</p> <p>Q: 我們剛剛如何做到的？</p> <p>Q: How do you do? (回顧解答)(Look back.)</p> <p>1-4 學生自行練習，將做法寫在小白板 (Students practice on their own and write down the ideas on the small whiteboard.)</p> <p>問題四：隔壁班的鈕扣有 12 個，請問可以做幾個雪人？</p> 	<p>6mins</p> <p>8mins</p>	<p>為觀察)：教師觀察學生在討論過程中的反應</p> <p>口語評量：學生回答教師提問，檢視學生是否了解問題。</p> <p>實作評量：學生畫出圖像表徵於小白板上。</p> <p>動態評量(行為觀察)：教師觀察學生在討論過程中的反應</p>	<p>小白板 數組</p>
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<p>能與同學分享自己的解題策略及想法(情意)</p>	<p>關鍵問題：</p> <p>Q: 每個雪人需要幾個鈕扣當作裝飾？</p> <p>Q: How many hands do we need? (了解問題)(Understand the problem.)</p> <p>Q: 我們一共有多少鈕扣？</p> <p>Q: How do we know? (了解問題)(Understand the problem.)</p> <p>學生自行練習，將做法寫在小白板上 (Student practice on their own and write down the ideas on the small whiteboard.)</p> <p>教師巡視行間觀察學生作答情況 (The teacher walks around the students to check their problem-solving process.)</p> <p>Q: 我們剛剛如何做到的？</p> <p>Q: How do you do? (回顧解答)(Look back.)</p> <p>綜合活動 Wrap up 複習本節單字</p> <p>Q: What's it?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; width: 60px; height: 60px; display: flex; align-items: center; justify-content: center;">  </div> <div style="border: 1px solid black; width: 60px; height: 60px; display: flex; align-items: center; justify-content: center;">  </div> </div> <p>複習分裝的操作活動 教師在黑板上隨意畫出樹枝，請學生分裝</p> <p>Q: How many hands do we need?</p> <p>總結 Summary 我們可以使用實物或圖示來解決問題 (We can use real materials or marks to solve the problem.)</p>	<p>5mins</p>	<p>口語評量：學生回答教師提問，檢視學生是否了解問題。</p> <p>實作評量：學生畫出圖像表徵於小白板上。</p> <p>動態評量(行為觀察)：教師觀察學生在討論過程中的反應</p> <p>實作評量：學生上台演示解題過程。</p>	<p>小白板 數組</p>
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第二節課

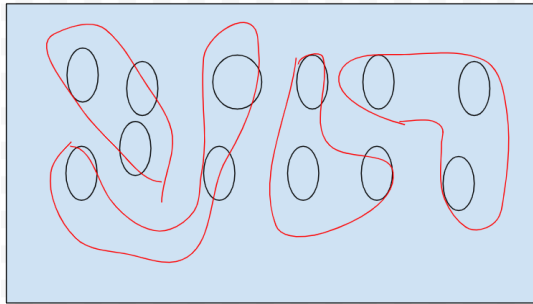
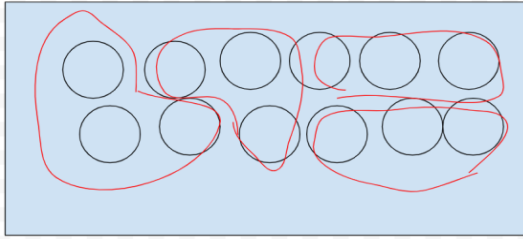
準備活動(Warm up)

複習分裝情境問題與解決方法

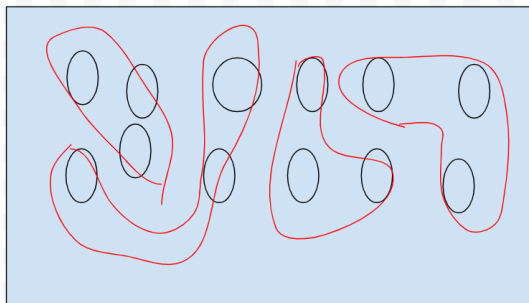
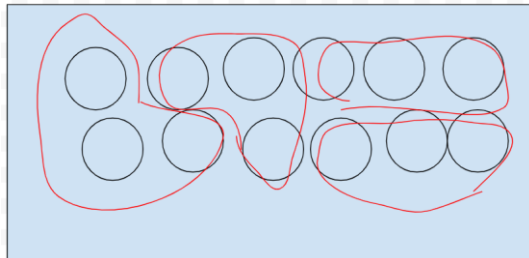
(Review what they learned.)

問題一：老師有 12 顆鈕扣，每 3 顆鈕扣裝一袋，
最多能裝多少袋？

學生可能回答：



發展活動(Presentation)



2-1 展示學生前一節課不同的作答過程，詢問學生有什麼數學算式能表示這些解題過程。

(The teacher shows solving processes from the last class, and asks the students how

5mins

實作評量：教師檢視學生分裝的先備經驗

5mins

to use number sentences to represent them.)
(教師引出使用算式紀錄解題方法的原因)

Q: 可以用什麼算式表示解題過程?

(擬訂計畫)(Devise a plan.)

$$12-3=9$$

$$9-3=6$$

$$6-3=3$$

$$3-3=0$$

口語評量：能
針對題目情
境回答可使
用的解題策
略

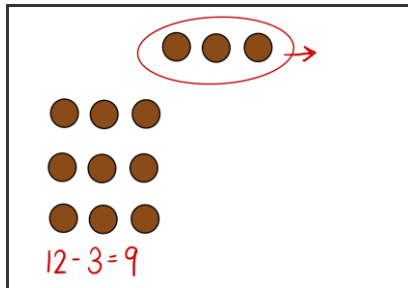
能了解減法算
式在包含除的
情境下所代表
的意義(認知)

動畫解釋減法算式意義

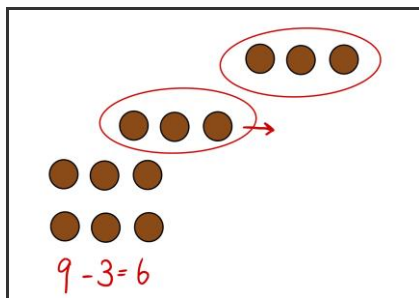
(Using animation to explain the meaning of the
number sentences.)

4mins

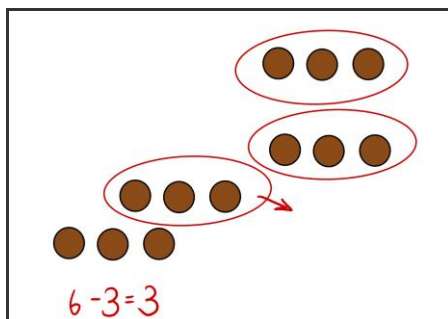
教學用
PPT



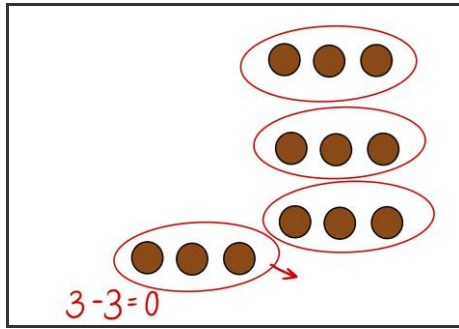
每 3 顆裝一袋，所以還剩 9 顆鈕扣



再每 3 顆裝一袋，所以還剩 6 顆鈕扣



再每 3 顆裝一袋，所以還剩 3 顆鈕扣



再每 3 顆裝一袋，所以剛好分完

2-2 學生練習解釋減法算式的意義

問題二：老師有 20 根拐杖糖，每 4 根裝一袋，
最多能裝多少袋？

關鍵提問：

Q: 我們有多少根拐杖糖？

Q: How many candy canes do we have?
(了解問題)(Understand the problem.)

Q: 我們要如何知道 20 根拐杖糖能裝幾袋呢？

Q: How do we know?
(擬訂計畫)(Devise a plan.)

Q: 讓學生使用減法算式表示分裝過程

Q: How can we do?
(執行計畫)(Carry out the plan.)

Q: 我們剛剛如何做到的？

Q: How did we do?
(回顧解答)(Look back.)

$$20-4=16$$

$$16-4=12$$

$$12-4=8$$

$$8-4=4$$

$$4-4=0$$

6mins

口語評量：學生回答教師提問，檢視學生是否了解問題。

小白板
數組

動態評量(行為觀察)：教師觀察學生在討論過程中的反應

能使用減法解決包含除問題
(技能)

學生回應(教師根據回應內容補充說明)

可能回應一：第一次少 4 根，剩下 16 根；第二次少 4 根，剩下 12 根；第三次少 4 根，剩下 8 根；第四次少 4 根，剩下 4 根；第五次少 4 根，剩下 0 根。

可能回應二：一次分四根，所以就會寫減 4、減 4、減 4、減 4。

問學生其他的解題想法

$$4 \times 1 = 4$$

$$4 \times 2 = 8$$

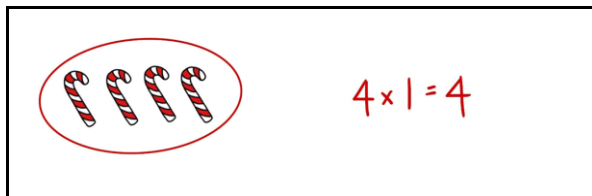
$$4 \times 3 = 12$$

$$4 \times 4 = 16$$

$$4 \times 5 = 20$$

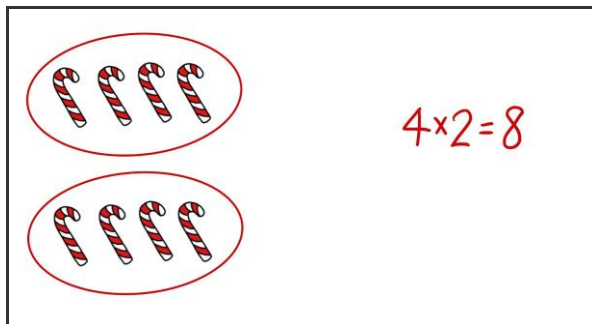
動畫解釋乘法的算式意義

(Using animation to express the meaning of the number sentences.)



20 根拐杖糖，每 4 根裝一袋

每 4 根裝 1 袋，裝了一袋，還沒分完

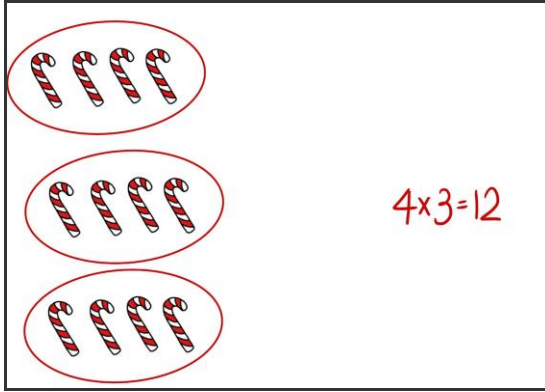


每 4 根裝 1 袋，裝了 2 袋，還沒分完

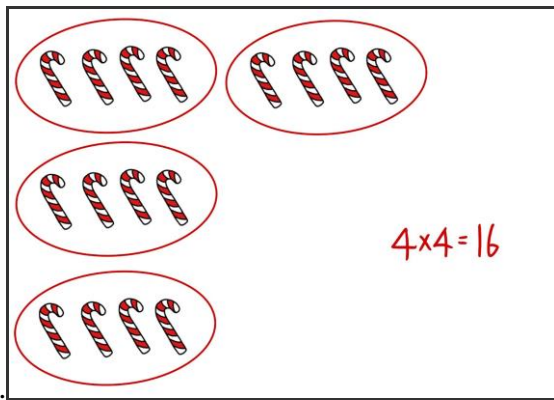
能了解乘法算式在包含除的情境下所代表的意義(認知)

4mins

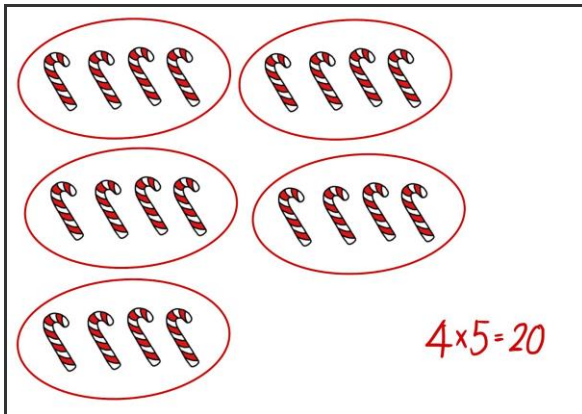
教學用
PPT



每4根裝1袋，裝了3袋，還沒分完



每4根裝1袋，裝了4袋，還沒分完



每4根裝1袋，裝了5袋，剛好分完

能使用乘法解決包含除問題(技能)

2-3 學生練習解釋乘法算式的意義

問題三：老師有 32 根拐杖糖，每 8 根裝一袋，最多能裝多少袋？

關鍵提問：

Q: 我們有多少根拐杖糖？

6mins

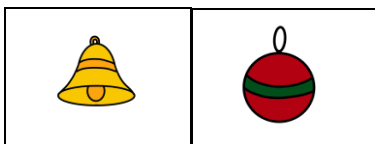
口語評量：學生回答教師

<p>以開放的心胸</p>	<p>Q: How many candy canes do we have? (了解問題)(Understand the problem.)</p> <p>Q: 我們要如何知道 32 根拐杖糖能裝幾袋呢? Q: How do we know? (擬訂計畫)(Devise a plan.)</p> <p>Q: 讓學生開始操作拐杖糖表徵進行分裝 Q: How can we do? (執行計畫)(Carry out the plan.)</p> <p>Q: 我們剛剛如何做到的? Q: How do you do? (回顧解答)(Look back.)</p> <p>2-4 練習解決分裝問題 (讓學生練習使用算式表達解題過程) 問題四：老師有 21 根拐杖糖，每 7 根裝一袋， 最多能裝多少袋？ 關鍵問題： Q: 我們有多少根拐杖糖？ Q: How do we know? (了解問題)(Understand the problem.)</p> <p>Q: 我們要如何知道 21 根拐杖糖能裝幾袋呢？ Q: How can we do? (擬訂計畫)(Devise a plan.)</p> <p>學生自行練習，將做法寫在小白板上 (執行計畫)(Carry out the plan.) (Student practice on their own and write down the ideas on the small whiteboard.)</p> <p>教師巡視行間觀察學生作答情況 (The teacher walks around the students to check their problem-solving process.)</p> <p>Q: 我們剛剛如何做到的？</p>	<p>7mins</p>	<p>提問，檢視學生是否了解問題。</p> <p>動態評量(行為觀察)：教師觀察學生在討論過程中的反應</p> <p>口語評量：學生回答教師提問，檢視學生是否了解問題。</p> <p>動態評量(行</p>	<p>小白板 數組</p> <p>小白板 數組</p>
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<p>接納同學與自己不同的解題策略(情意)</p>	<p>Q: How did we do? (回顧解答)(Look back.)</p> <p>綜合活動(Wrap up) 總結課程內容(數學)</p> <p>Q: What's it? (複習分裝的操作活動)</p> <p>教師在黑板上隨意畫出拐杖糖，請學生分裝</p> <p>Q: How many candy canes do we have?</p> <p>總結 Summary 我們也可以使用算式來解決生活中的分裝問題 (We can use number sentences to solve the problem.)</p>	<p>3mins</p>	<p>為觀察)：教師觀察學生在討論過程中的反應</p> <p>實作評量：學生上台演示解題過程。</p>	
<p>能操作具體物解決等分除問題(技能)</p>	<p>第三節課 準備活動(Warm up) 帶入聖誕節的情境，引發學生對於平分布置聖誕樹材料的需求。 (Provoking students' interests by the situation: Christmas tree decorations)</p> <p>複習相關單字(鈴鐺、聖誕小球) Review the vocabulary. (The teacher shows the pictures.) Q: What's this?</p> <div> </div> <p>發展活動(Presentation) 使用分配裝飾物的情境，讓學生利用實物操作及表徵解決平分問題 (The situation: Distributing the decorations) (Students use the real-life materials and the representation to solve the problem.)</p> <p>3-1(教師帶著小組練習)</p>	<p>4mins</p> <p>3mins</p> <p>6mins</p>		<p>聖誕小球、聖誕樹、鈴鐺圖卡。</p>

(The teacher leads students to practice in groups.)

問題一：老師準備了 16 個鈴鐺，要平分給 4 棵聖誕樹布置，請問每棵聖誕樹能分到幾個鈴鐺？



關鍵提問：

Q: 全部有多少顆鈴鐺？

Q: How many Christmas bells are there?
(了解問題)(Understand the problem.)

Q: 總共有多少棵聖誕樹？

Q: How many Christmas trees are there?
(了解問題)(Understand the problem.)

Q: 如何知道 16 顆鈴鐺能分給幾顆聖誕樹呢？

Q: How can we do?
(擬訂計畫)(Devise a plan.)

讓學生開始操作鈴鐺圖卡進行平分
(Let students divide bell-cards equally.)
(執行計畫)(Carry out the plan.)

Q: 我們剛剛如何做到的？

Q: How did we do?
(回顧解答)(Look back.)

3-2 學生自行練習

(Students practice on their own)

問題二：老師準備了 20 顆小球，要平分給 4 棵聖誕樹做裝飾，請問每棵聖誕樹能分到多少顆小球？



口語評量：學生回答教師提問，檢視學生是否了解問題。

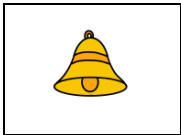
實作評量：學生實際操作教具。


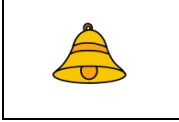
動態評量(行為觀察)：教師觀察學生在討論過程中的反應

8mins

能了解哪些情境下，能使用操作具體物解決等分除問題(認知)

<p>能了解哪些情境下能透過圖像表徵解決等分除問題(認知)</p> <p>能透過圖像表</p>	<p>關鍵提問</p> <p>Q: 老師準備了多少顆小球?</p> <p>Q: How many baubles are there? (了解問題)(Understand the problem.)</p> <p>Q: 要分給多少棵樹?</p> <p>Q: How many Christmas bells can we divide equally? (了解問題)(Understand the problem.)</p> <p>讓學生開始操作鈴鐺圖卡進行平分 (Let students divide bell-cards equally.) (執行計畫)(Carry out the plan.)</p> <p>Q: 我們剛剛如何做到的?</p> <p>Q: How did we do? (回顧解答)(Look back.)</p> <p>3-3 教師帶著小組練習 (The teacher leads students to practice in groups.)</p> <p>問題三：隔壁班老師準備了 25 個小球，要平分給 5 棵聖誕樹布置，請問每棵聖誕樹能分到幾個小球?</p> <p>關鍵提問：</p> <p>Q: 有多少棵聖誕樹需要裝飾?</p> <p>Q: How many Christmas trees do we need to decorate? (了解問題)(展示聖誕樹的圖片)</p> <p>Q: 共有多少顆小球?</p> <p>Q: How many Baubles are there? (了解問題)(Understand the problem.)</p> <p>Q: 如何知道 25 顆小球能分給多少聖誕樹呢?</p> <p>Q: How do we divide them equally? (擬訂計畫)(Devise a plan.)</p> <p>讓學生開始繪製小球進行平分</p>	<p>6mins</p>	<p>口語評量：學生回答教師提問，檢視學生是否了解問題。</p> <p>實作評量：學生實際操作教具。</p> <p>動態評量(行為觀察)：教師觀察學生在討論過程中的反應</p> <p>口語評量：學生回答教師提問，檢視學生是否了解問題。</p>	<p>小白板</p>
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<p>徵，解決等分除問題(技能)</p>	<p>(Let students draw the image of bauble-cards and divide them equally.) (執行計畫)(Carry out the plan.)</p> <p>Q: 我們剛剛如何做到的? Q: How did we do? (回顧解答)(Look back.)</p> <p>3-4 學生自行練習，將做法寫在小白板上 (Students practice on their own and write down the ideas on the small whiteboard.)</p> <p>問題四：隔壁班老師準備了 20 個鈴鐺，要平分給 5 棵聖誕樹布置，請問每棵聖誕樹能分到幾個鈴鐺？</p>  <p>關鍵提問： Q: 全部有多少顆鈴鐺？ Q: How many Christmas bells are there? (了解問題)(Understand the problem.)</p> <p>Q: 共有多少棵聖誕樹？ Q: How many Christmas trees are there? (了解問題)(Understand the problem.)</p> <p>讓學生開始操作鈴鐺圖卡進行平分 (Let students divide bell-cards equally) (執行計畫)(Carry out the plan.)</p> <p>Q: 我們剛剛如何做到的？ Q: How can we do? (回顧解答)(Look back.)</p> <p>綜合活動 Wrap up 複習本節單字(Review the words.) Q: What's it?</p>	<p>8mins</p> <p>5mins</p>	<p>生繪製圖像表徵於小白板上。</p> <p>動態評量(行為觀察): 教師觀察學生在討論過程中的反應</p> <p>口語評量: 學生回答教師提問, 檢視學生是否了解問題。</p> <p>實作評量: 學生繪製圖像表徵於小白板上。</p> <p>動態評量(行為觀察): 教師觀察學生在討論過程中的反應</p>	<p>數組</p> <p>小白板 數組</p>
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<p>能與同學分享自己的解題策略(情意)</p>	<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>複習平分的操作活動 (Review what we learned today.)</p> <p>教師在黑板上隨意畫出隨機數量的小球(20顆內)，請學生平分並解釋。 (The teacher draws the baubles on the blackboard and asks students to divide them equally.)</p> <p>總結 Summary 我們可以使用實物或圖示來解決問題 We can use real materials or marks to solve the problem.</p>		<p>口語評量：請學生分享與表達自己的解題策略。</p>	
	<p>第四節課 準備活動(Warm up) 複習平分情境問題與解決方法 (Review the situations of the problems and the solutions.) 問題一：老師有 14 個小聖誕襪，平均分給 2 棵聖誕樹做裝飾，每棵聖誕樹能分到幾個小聖誕襪？</p> <p>發展活動 4-1 展示學生前一節課不同的作答過程，詢問學生有什麼數學算式能表示這些解題過程。 (The teacher shows solving processes from the last class and asks the students how to use number sentences to represent them.) (教師引出使用算式紀錄解題方法的原因) Q: 可以用什麼算式表示解題過程？ 14-2=12 12-2=10 10-2=8 8-2=6</p>	<p>7mins</p> <p>5mins</p>	<p>口語評量：教師檢視學生平分的先備經驗</p> <p>口語評量：能針對題目情境回答可使用的解題策略</p> <p>口語評量：針對題目情境回答可使用的解題策略</p>	

能了解減法算式在等分除的情境下所代表的意義(認知)

$$6-2=4$$

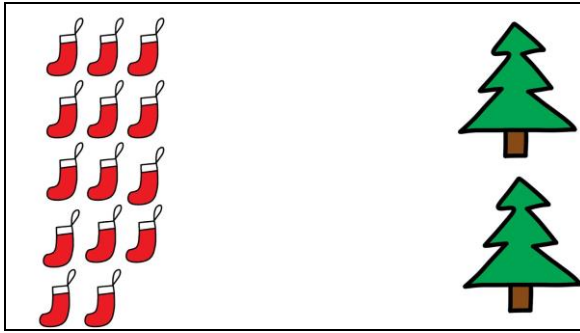
$$4-2=2$$

$$2-2=0$$

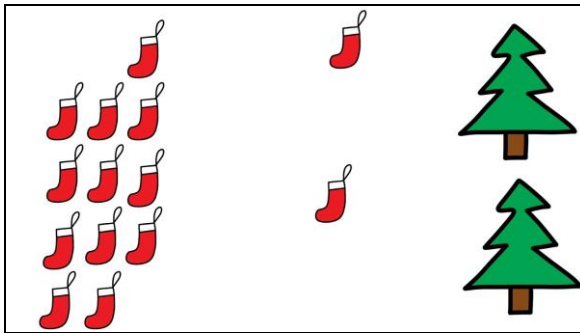
4-2 動畫解釋減法算式意義

(Using animation to explain the meaning of the number sentences.)

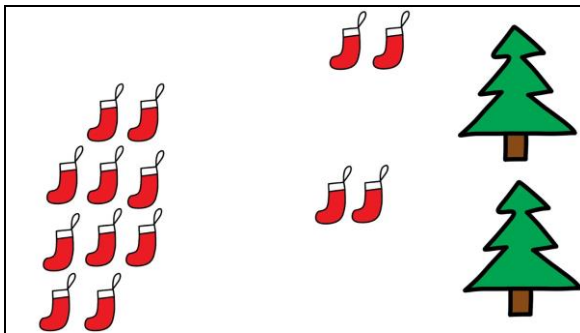
教師依據學生回應的內容解釋：



這裡有 14 隻小聖誕襪，平均分給 2 棵聖誕樹做裝飾



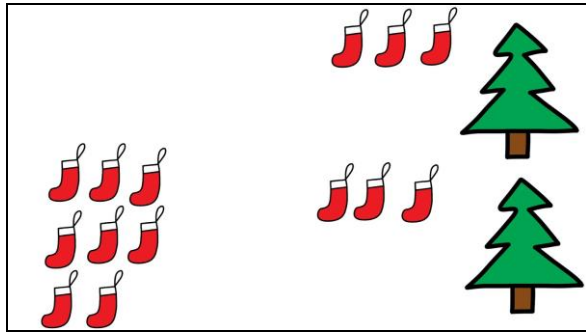
第一次平分，用去了 2 隻襪子，剩下 12 隻



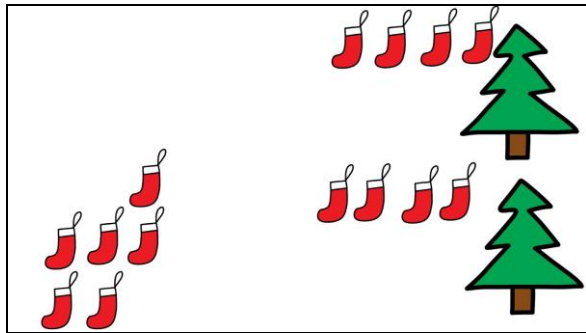
第二次平分，用去了 2 隻襪子，剩下 10 隻

4mins

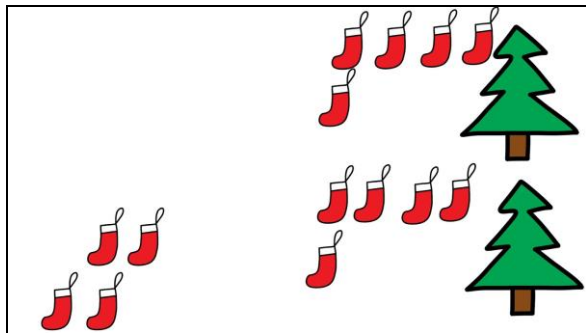
教學用
PPT



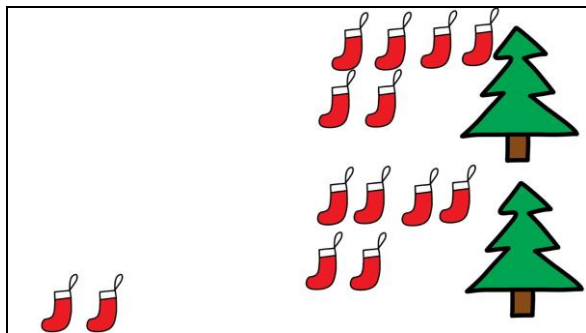
第三次平分，用去了 2 隻襪子，剩下 8 隻



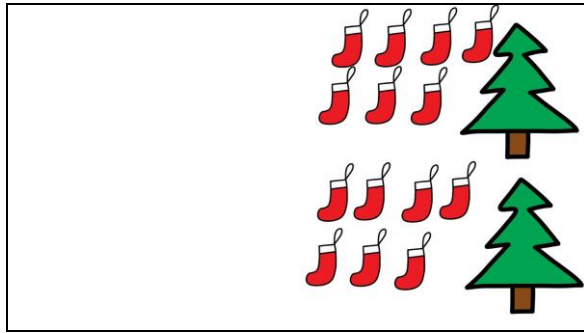
第四次平分，用去了 2 隻襪子，剩下 6 隻



第五次平分，用去了 2 隻襪子，剩下 4 隻



第六次平分，用去了 2 隻襪子，剩下 2 隻



第七次平分，用去了 2 隻襪子，剩下 0 隻，剛好分完。

能使用減法解決等分除問題
(技能)

4-3 學生練習解釋減法算式的意義

問題二：老師有 20 根拐杖糖飾品，平均分給 5 棵聖誕樹做裝飾，每棵聖誕樹能分到幾根拐杖糖飾品？

$$20-5=15$$

$$15-5=10$$

$$10-5=5$$

$$5-5=0$$

學生回應(教師根據回應內容補充說明)

可能回應一：第一次少 5 根，剩下 15 根；
第二次少 5 根，剩下 10 根；
第三次少 5 根，剩下 5 根；
第四次少 5 根，剩下 0 根。

可能回應二：一次分五根，所以就會寫減 5、減 5、減 5、減 5。

教師依據學生回應的內容解釋：

分第一次時，每棵樹分 1 根拐杖糖，所以還剩 15 根拐杖糖；分第二次時，每棵樹分 1 根拐杖糖，所以還剩 10 根拐杖糖；分第三次時，每棵樹分 1 根拐杖糖，所以還剩 5 根拐杖糖；分第四次時，每棵樹分 1 根拐杖糖，剛好分完。

問學生其他的解題想法

$$5 \times 1 = 5$$

$$5 \times 2 = 10$$

$$5 \times 3 = 15$$

$$5 \times 4 = 20$$

6mins

紙筆評量：學生寫下做法，教師行間巡視確認學生學習成效

口語評量：請學生分享與表達自己的解題策略

口語評量：請學生分享與表達自己的解題策略

能了解乘法算式在等分除的情境下所代表的意義(認知)

4-4 動畫解釋乘法的算式意義

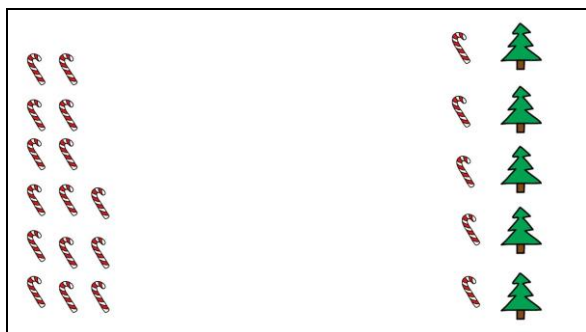
(Using animation to explain the meaning of the number sentences.)

4mins

教學用
PPT



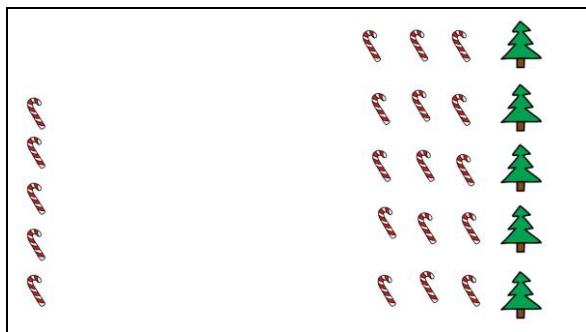
20 根拐杖糖飾品，平均分給 5 棵聖誕樹



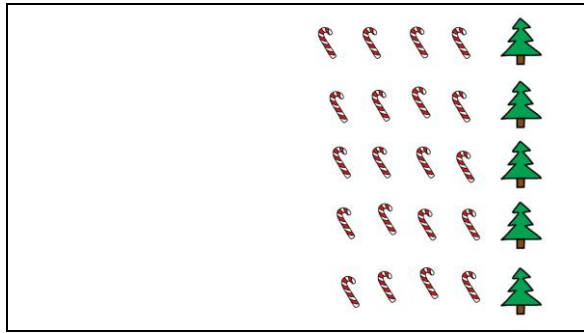
第一次分完，用去了 5 根，剩下 15 根



第二次分完，用去了 5 根，剩下 10 根



第三次分完，用去了 5 根，剩下 5 根



第四次分完，用去了 5 根，剩下 0 根，剛好分完

能使用乘法解
決等分除問題
(技能)

2-3 讓學生練習解釋乘法算式

(The students explain the meaning of number sentences.)

問題三：老師有 32 根拐杖糖，平均分給 4 棵聖誕樹做裝飾，每棵聖誕樹能分到幾根拐杖糖飾品？

$$4 \times 1 = 4$$

$$4 \times 2 = 8$$

$$4 \times 3 = 12$$

$$4 \times 4 = 16$$

$$4 \times 5 = 20$$

$$4 \times 6 = 24$$

$$4 \times 7 = 28$$

$$4 \times 8 = 32$$

2-4(練習題)讓學生練習使用算式表達解題過程

題目四：老師有 24 根拐杖糖飾品，平均分給 4 棵聖誕樹做裝飾，每棵聖誕樹能分到幾根拐杖糖飾品？

學生回應(教師根據回應內容補充說明)

可能回應一：第一次少 6 根，剩下 18 根；
第二次少 6 根，剩下 12 根；
第三次少 6 根，剩下 6 根；
第四次少 5 根，剩下 0 根。

可能回應二：一次分 6 根，所以就會寫
減 6、減 6、減 6、減 6。

以開放的心胸
主動和同學分
享自己不同的
解題策略

6mins

口語評量：能
針對題目情
境回答可使
用的解題策
略

7mins

紙筆評量：學
生寫下做
法，教師行間
巡視確認學
生學習成效

小白板
數組

口語評量：請
學生分享與
表達自己的
解題策略

	<p>教師依據學生回應的內容解釋：</p> <p>分第一次，每棵樹分 1 根拐杖糖，所以還剩 18 根拐杖糖；分第二次，每棵樹分 1 根拐杖糖，所以還剩 12 根拐杖糖；分第三次，每棵樹分 1 根拐杖糖，所以還剩 6 根拐杖糖；分第四次，每棵樹分 1 根拐杖糖，剛好分完。</p> <p>綜合活動(Wrap up)</p> <p>教師統整</p> <p>我們也可用算式來解決生活中的平分問題 (We can use number sentences to solve the problem.)</p> <p>複習本單元中的英文單字(socks, candy canes)</p>	3mins		
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肆、教學評量

第一節

單元教學目標	評量方式	備註		
		精熟	基礎	待加強
能操作具體物解決包含除問題(技能)	實作評量：學生實際操作教具。	能獨自依據題目敘述使用具體物解決包含除問題	在同學或老師的引導下依據題目敘述使用具體物解決包含除問題	未達基礎
能了解哪些情境下,能使用操作具體物解決包含除問題(認知)	紙筆評量：學生寫下做法,教師行間巡視確認學生學習成效	能獨自判斷題目	在同學或老師的引導下判斷題目	未達基礎
能透過圖像表徵,解決包含除問題(技能)	實作評量：學生畫出圖像表徵於小白板上	能獨自依據題目敘述透過圖像表徵解決包含除問題	在同學或老師的引導下依據題目敘述使用圖像表徵解決包含除問題	未達基礎
能了解哪些情境下能透過圖像表徵解決包含除問題(認知)	紙筆評量：學生寫下做法,教師行間巡視確認學生學習成效	能獨自判斷題目	在同學或老師的引導下判斷題目	未達基礎
樂於與同學分享自己的想法(情意)	口語評量：請學生分享自己的想法。	能主動表達自己的想法	在同學或老師的引導下表達想法	未達基礎

第二節

單元教學目標	評量方式	備註		
		精熟	基礎	待加強
能使用減法解決包含除問題(技能)	紙筆評量：學生寫下做法，教師行間巡視確認學生學習成效	能獨自依據題目敘述使用減法解決包含除問題	能在教師或同儕的引導下使用減法解決包含除問題	未達基礎
能了解減法算式在包含除的情境下所代表的意義(認知)	口語評量：能針對題目情境回答可使用的解題策略	能獨自判斷題目情境，發展出合理的解題策略	能在教師或同儕的引導下，發展出合理的解題策略	未達基礎
能使用乘法解決包含除問題(技能)	紙筆評量：學生寫下做法，教師行間巡視確認學生學習成效	能獨自依據題目敘述使用乘法解決包含除問題	能在教師或同儕的引導下使用乘法解決包含除問題	未達基礎
能了解乘法算式在包含除的情境下所代表的意義(認知)	口語評量：能針對題目情境回答可使用的解題策略	能獨自判斷題目情境，發展出合理的解題策略	能在教師或同儕的引導下，發展出合理的解題策略	未達基礎
以開放的心胸接納同學與自己不同的解題策略(情意)	動態評量（行為觀察）：教師觀察學生在討論過程中的反應。	在同儕發言後，能主動給予正面或有建設性的回饋	在同儕發言時，能當個良好的傾聽者，專注聆聽他人想法	未達基礎

第三節

單元教學目標	評量方式	備註		
		精熟	基礎	待加強
能操作具體物解決等分除問題(技能)	紙筆評量：學生實際操作教具。	能獨自依據題目敘述使用具體物解決等分除問題	在同學或老師的引導下依據題目敘述使用具體物解決等分除問題	未達基礎
能了解哪些情境下，能使用操作具體物解決等分除問題(認知)	口語評量：能針對題目情境回答使用的解題策略	能獨自判斷題目	在同學或老師的引導下判斷題目	未達基礎
能透過圖像表徵，解決等分除問題(技能)	紙筆評量：學生畫出圖像表徵於小白板上	能獨自依據題目敘述透過圖像表徵解決等分除問題	在同學或老師的引導下依據題目敘述使用圖像表徵解決等分除問題	未達基礎
能了解哪些情境下能透過圖像表徵解決等分除問題(認知)	口語評量：能針對題目情境回答使用的解題策略	能獨自依據題目	在同學或老師的引導下判斷題目	未達基礎
能與同學分享自己的解題策略(情意)	動態評量（行為觀察）：教師觀察學生在討論過程中的反應。	能表達自己的想法	在同學或老師的引導下表達想法	未達基礎

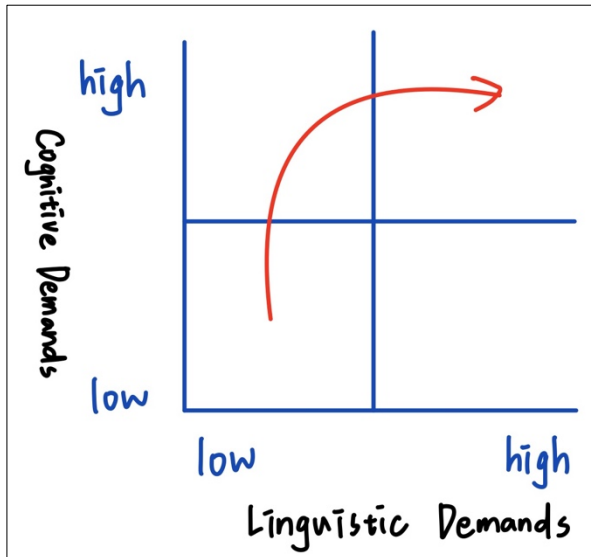
第四節

單元教學目標	評量方式	備註		
		精熟	基礎	待加強
能使用減法解決等分除問題(技能)	紙筆評量:學生寫下做法,教師行間巡視確認學生學習成效	能獨自依據題目敘述使用減法解決等分除問題	能在教師或同儕的引導下使用減法解決等分除問題	未達基礎
能了解減法算式在等分除的情境下所代表的意義(認知)	口語評量:能針對題目情境回答可使用的解題策略	能獨自判斷題目情境,發展出合理的解題策略	能在教師或同儕的引導下,發展出合理的解題策略	未達基礎
能使用乘法解決等分除問題(技能)	紙筆評量:學生寫下做法,教師行間巡視確認學生學習成效	能獨自依據題目敘述使用乘法解決等分除問題	能在教師或同儕的引導下使用乘法解決等分除問題	未達基礎
能了解乘法算式在等分除的情境下所代表的意義(認知)	口語評量:能針對題目情境回答可使用的解題策略	能獨自判斷題目情境,發展出合理的解題策略	能在教師或同儕的引導下,發展出合理的解題策略	未達基礎
以開放的心胸主動和同學分享自己不同的解題策略(情意)	動態評量(行為觀察):教師觀察學生在討論過程中的反應。	能主動表達自己的想法	在同學或老師的引導下表達想法	未達基礎

111 學年度小學數學雙語教學活動設計競賽

教案設計格式範例

壹、設計理念



本雙語教案採用 CLIL 教學法，希望能夠整合學科內容和語言學習，並依據 CLIL 教學四矩陣循序漸進設計教案(Coyle, D., Hood, P., Marsh, D, 2010)，從低語言低認知的「認知、理解」面向開始，慢慢提高層次到低語言高認知的「分析、創造」，最後透過多元的鷹架延伸到高語言高認知的最終層次。語言鷹架的支持在雙語教學上十分重要，也因為本教案目標教學對象為一年級學生，因此

在 auditory 和 visualization 這兩方面會特別注重，透過眼耳並用的方式讓學生多聽多看，達到雙語教學的最終目的，學會學科知識的同時也能提升語言學習。

貳、教學分析

一、教材分析

「認識圖形」本單元主要有兩個教學概念，一是學生要能區分平面和區面的差別，二是學生對四種圖形「圓形、三角形、正方形和長方形」有初步認識。一年級學生雖然沒有正式學習過圖形的概念，但在日常生活中應能時常接觸到各式平面及立體圖形，甚至已經知曉部分平面圖形的名稱，因此在教學上透過連結學生生活經驗便能有效引起學生學習動機。須注意一年級的圖形單元並沒有特別強調不同圖形邊角的屬性，在觸摸立體圖形的活動中教師也不需要特別介紹其名稱，只需著重在觸摸的感覺即可。

二、學生分析

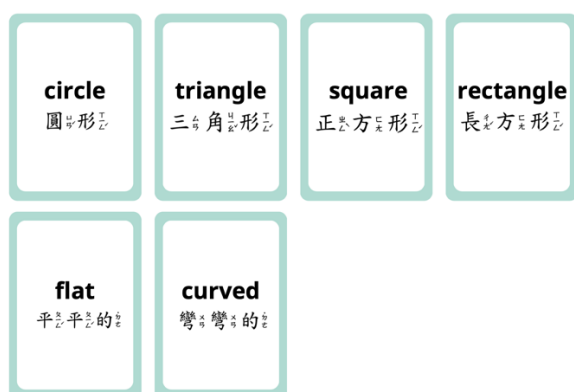
選擇此單元發展雙語教學實際上是考量到學生的英文能力，一年級學生的英文程度較為低落，因此若選擇與數字有關的數學單元，在語言上便會給予太多負荷，因此在學生剛開始接觸雙語教學時，使用能提供具體圖像表徵的「認識形狀」本單元，能讓學生輕易上手。此外，因一年級學生對英文字母尚未完全熟悉，因此本雙語教學在簡報上較少呈現長句子，多以圖片示意搭簡短對

話，教學上也不會太過注重學生拼讀單字的能力，僅著重在「聽」的能力。此外，因一年級學生的專注度時間較短，因此透過一系列的操作活動讓學生不停地動手做、動嘴說，可以有效加強學生的學習能力。

三、教學方法分析

雙語教學上語言鷹架為一主要協助工具，因此為了避免學生因為語言的負荷而無法跟上課程，上課前教師會給予學生每人 6 張單字卡並用一個小袋子裝的，除了能夠讓學生在上課時對照中文之外，課程中安排的活動也會使用到這幾張單字卡。另教案中也會特別註明「跨語言」，提供教師們參考哪些地方可使用 translanguage 的方式，適當的用中文補充說明，如活動的規則教師可視情況再使用中文補充說明一次，以確保學生理解接下來的活動過程。如此操作便讓學生在吸收知識的同時不會因為語言的隔閡而無法理解，也可藉此確認學生的學習狀況。

教學簡報： https://reurl.cc/bGzvRy	教學單字卡： https://reurl.cc/eW9r8b
	

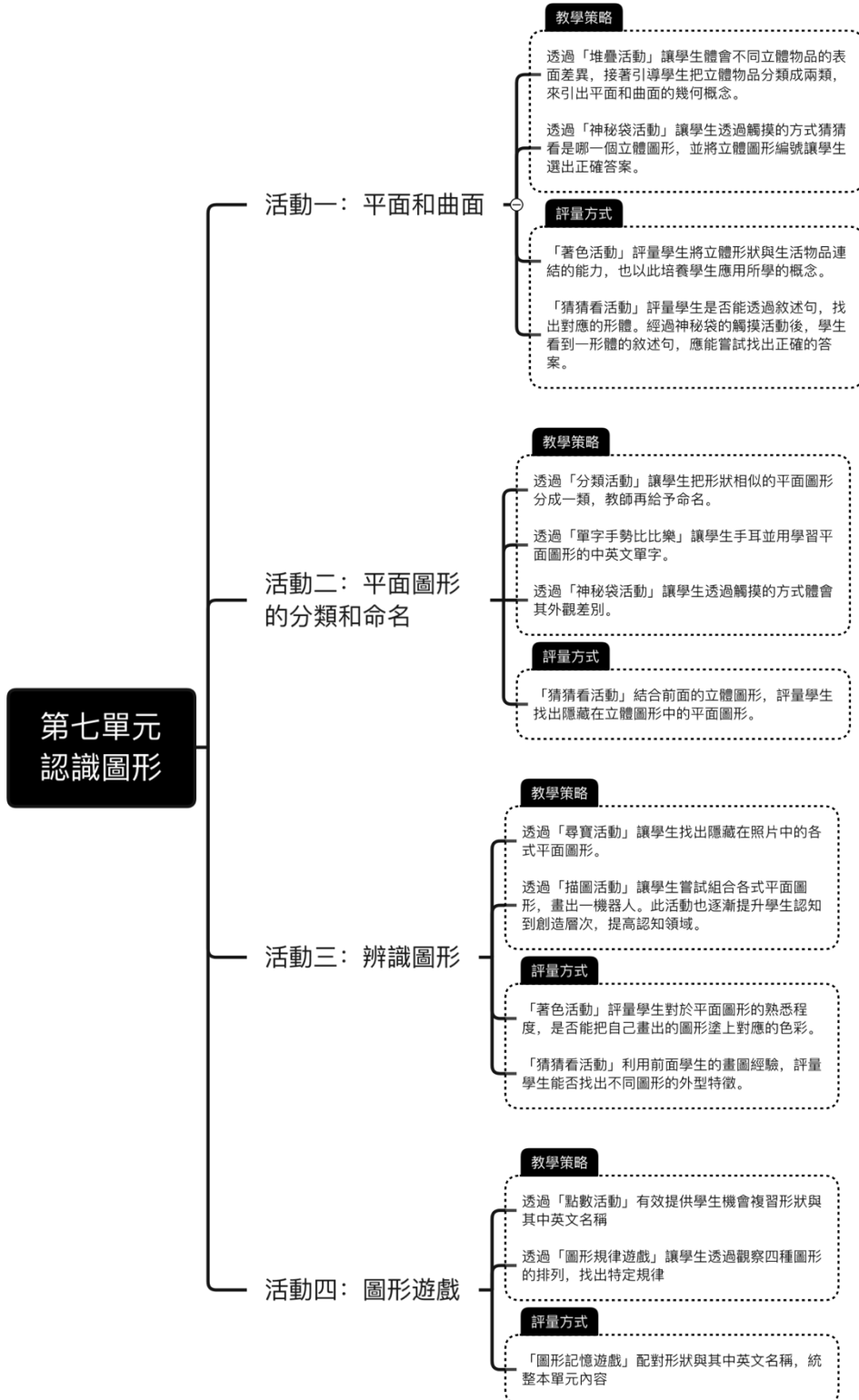


四、課程概念架構圖

指標/單元名稱/活動/策略/評量方式（可依上列項目自行繪製概念架構圖）


學習表現：s-I-1從操作活動，初步認識物體與常見幾何形體的幾何特徵。

學習內容：S-1-2形體的操作：以操作活動為主。描繪、複製、拼貼、堆。



參、教學活動設計

























單元名稱	SHAPE it off!	適用年級	Grade 1
課程名稱	Shapes	教學時間	5 sessions
教材版本	Nanni		
教學準備	6 flashcards, slides, objects, solid figures, 數學附件		
能力指標/學習表現	分年細目/學習內容	單元教學目標	
s-I-1 從操作活動，初步認識物體與常見幾何形體的幾何特徵。	S-1-2 形體的操作：以操作活動為主。描繪、複製、拼貼、堆疊。	<ol style="list-style-type: none"> 1. 學生能透過操作活動發現平面和曲面的差異。 2. 學生能認識正方體、長方體、圓柱和球，並了解四者外觀的差別。 3. 學生能辨認平面圖形的外型，並進行分類。 4. 學生能認識正方形、長方形、三角形和圓形，並了解四者外觀的差異及其名稱。 5. 學生能透過圖形的排列察覺規律。 	
Session 1			
第一部分教學目標			時間
1. Students can identify differences faces of an object through activity “Tumble tower”.			10 minutes
參考用投影片	教學內容	評量方式	備註
<p>Warm up Prepare some objects</p> 	<p>T: Today's lesson is “Shapes”. Before we start the class, let's play a game first. The game is called “Tumble Tower”.</p> <p>T: 2 rows in a group.</p> <p>T: Take out your objects. Try to build your tower as high as possible.</p>	<p>Students can finish the task. Also, the group who build the highest will get the point.</p>	<p>The teacher can show how to build the tower first, so that students take it as reference.</p>

<p>Warm up How to stack it?</p> 	<p>T: Which one is hard to build high? S: 🍎 T: Which one is easy to build high? S: 🍵 and 📦 T: This one (🍎) is hard to build high, why? S: It is round. S: It doesn't have a flat face. (跨語言：哪一個物品很難疊上去？哪一個物品每面都很好疊？哪一個物品只有一面可以堆疊？)</p>	<p>Students can use Chinese or simple English to explain the way they sort the objects.</p>	<p>The teacher can ask questions to help them how to sort the objects. The objects showed in the slide is kind of an example; in the real class, the teacher can use kids' objects to do.</p>
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第二部分教學目標	時間
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2. Students can find the relations between an object's face and its attributes.	15 minutes
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參考用投影片	教學內容	評量方式	備註
<p>Warm up How to stack it?</p> 	<p>T: This one (🍎) is hard to build high, but we can roll it. T: Let's try three things: touch it, stack it and roll it. T: When you touch it, what do you feel? S: It (🍎) is round. It (📦) is sharp. T: Which one can stack high? Which one can roll around? Which one can do both? (跨語言：哪些可以堆高？哪些可以滾動？哪些可以堆高也可以滾動？) S: This one (🍎) can roll around. S: This one (📦) can stack high.</p>	<p>Students can figure out 🍎 can roll around; 📦 can stack high; 🍵 can do both. Students can find the different appearance of these objects.</p>	

	<p>S: This one () can do both.</p> <p>T: They have different features.</p> <p>What makes them different?</p>						
<p>Teamwork Sort into 2 groups</p>  <p>Teamwork Sort into 2 groups</p> <p>can stack high 可以一堆一高 滾動 可以一滾一動</p> 	<p>T: Two rows in a group. Let's sort these objects into two groups. Later you will have to explain the reason how you sort them.</p> <p>(跨語言：這些物品有些可以堆高，而有些可以滾動，試試看如何把這些分成兩類。例如你可以分成：可以堆高和可以滾動，還有呢?)</p> <p>S: (學生實際操作、討論、上台發表。)</p>	<p>Students can sort the objects into 2 groups.</p>	<p>The teacher can provide one of the ways to sort them, like “can stack high” and “can roll around” to help students in grade 1 to have a clear idea of “sort objects”.</p>				
<p>Share time Show me your answer!</p> <table border="1"> <tr> <td>can stack high and roll round 可以一堆一高、滾動</td> <td>cannot do both 不能同時一堆一高、滾動</td> </tr> <tr> <td></td> <td></td> </tr> </table>	can stack high and roll round 可以一堆一高、滾動	cannot do both 不能同時一堆一高、滾動			<p>S: It () can do many things; both stack high and roll around.</p> <p>S: They ( ) cannot do it.</p> <p>T: Wow, it () is awesome!</p>	<p>Students can explain their idea in Chinese or simple English.</p>	<p>The teacher can give comments and guide kids to talk more.</p>
can stack high and roll round 可以一堆一高、滾動	cannot do both 不能同時一堆一高、滾動						
							
<p>Share time Show me your answer!</p> <table border="1"> <tr> <td>can stack high and roll round 可以一堆一高、滾動</td> <td>cannot stack high 不能一堆一高</td> </tr> <tr> <td></td> <td></td> </tr> </table>	can stack high and roll round 可以一堆一高、滾動	cannot stack high 不能一堆一高			<p>S: They ( ) are useful to build the tower, both can stack high.</p> <p>S: The apple only can roll around.</p> <p>T: Yes, we can play with apples.</p> <p>While, do you try roll around it ()?</p> <p>T: Many kids say it () is useful; it can do both.</p> <p>T: It is so sad we cannot use it () to build the tower.</p>	<p>Students can explain their idea in Chinese or simple English.</p>	<p>The teacher can give comments and guide kids to talk more.</p>
can stack high and roll round 可以一堆一高、滾動	cannot stack high 不能一堆一高						
							

Conclusion

make a new table!

roll around 可以滾動	stack high 可以堆高	stack high and roll around 可以堆高、滾動

T: We have so many groups. Let's put the similar sentences together and find out their features.

(跨語言：大家有好多分類方式，我們把一樣的整理出來，把全班的分類方式用成一個表格。)

T: To conclude, if it is easy to build the tower, it is easy to stack high. If not, we can roll around the object.


(跨語言：想要建造比較高的摩天大樓，就要選比較好疊高的物品。有些比較難疊高的物品，就會比較好滾動。)

T: So, we have "roll around", "stack high" Let's put in a table.

After the activity, the teacher can discuss with kids and make a new table together.

Conclusion

make a new table!

roll around 可以滾動	stack high 可以堆高	stack high and roll around 可以堆高、滾動
		

T: Can it roll around? Can it stack high? Let's try it together.

T: Can it (🍎) roll around?

S: Yes.

T: Can it stack high?

S: No.

T: Why this one can roll around?

S: It is round and slippery.

(跨語言：為什麼它容易疊高？為什麼它容易滾動？)

T: Let's look at its face. What do you find?

(跨語言：可以怎麼形容它的表面？)

S: Not flat/ curved.

T: It has a "curved face", so it can roll around.

(跨語言：它有彎彎的面，所以容



Students can find the relations between an object's face and its attributes.


Kids can answer in Chinese, and the teacher can guide them through various questions. For example, "Look at the face, what do you find?".

Remember to emphasize on the "face" of the object, and lead kids to understand the

	易滾動。)		differences between “flat and curved face”.
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Conclusion make a new table!


roll around 可以滾動	stack high 可以堆高	stack high and roll around 可以堆高、滾動
		

T: Can it () roll around?
 S: No.
 T: Can it stack high?
 S: Yes.
 T: Why this one can stack high?
 S: It is sharp and flat.
 (跨語言：為什麼它容易疊高？為什麼它容易滾動？)
 T: Let's look at its face. What do you find?
 (跨語言：可以怎麼形容它的表面？)
 S: Flat/ not curved.
 T: It has a “flat face”, so it can stack high.
 (跨語言：它有彎彎的面，所以容易堆高。)

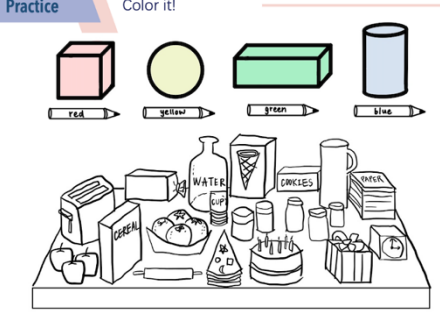

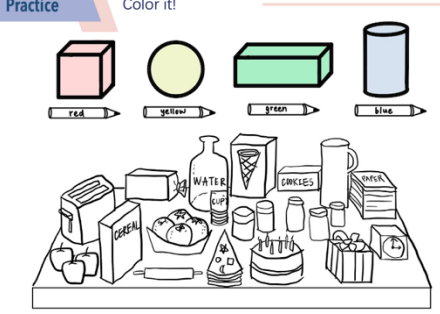

Students can find the relations between an object's face and its attributes.

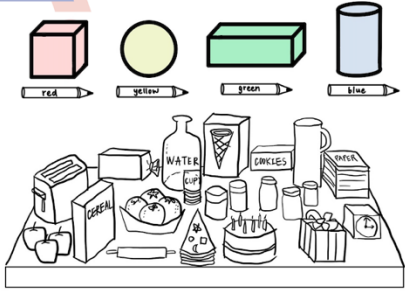




Conclusion make a new table!

roll around 可以滾動	stack high 可以堆高	stack high and roll around 可以堆高、滾動
		

T: Can it () roll around?
 S: Yes.
 T: Can it stack high?
 S: Yes.
 T: Why this one can both roll around and stack high?
 (跨語言：為什麼它容易疊高又容易滾動？)
 S: It is round and flat.
 T: Let's look at its face. What do you find?
 (跨語言：可以怎麼形容它的表

Students can find the relations between an object's face and its attributes.

	<p>面?)</p> <p>S: Two faces are flat, the other are round.</p> <p>S: It has both, a curved face and a flat face.</p> <p>T: It has two kinds of faces, flat face and curved face, so it can do both.</p> <p>(跨語言：它有平平的面也有彎彎的面，所以容易堆高也容易滾動。)</p>		
第三部分教學目標			時間
3. Students can apply their knowledge into the real life.			10 minutes
參考用投影片	教學內容	評量方式	備註
<p>Practice Color it!</p> 	<p>T: There are some objects on the table, help me color them.</p> <p>(跨語言：桌上有不同的東西，一起來幫我把對應的形狀塗上顏色。)</p> <p>T: Which one looks like  ? It can stack high, but cannot roll around. Color them red.</p> <p>S: (Kids color the clock, gifts and the piles of paper.)</p>	Students can color the objects correctly.	The Question is adapted from <i>McGraw-Hill Mathematics</i> , Carlsson, G., & Cohen, R. L. (2002).
<p>Practice Color it!</p> 	<p>T: Which one looks like  ? It cannot stack high, but can roll around. Color them yellow.</p> <p>S: (Kids color the apple yellow.)</p> <p>T: Can apples roll around? It depends.</p>	Students can give reasons for how to color the objects.	In fact, there is not correct answer. If the kids can give reasonable ideas of why color them yellow, it is enough.

		<p>The teacher can discuss with kids the attributes of different objects, since in reality the shape will be differ.</p>
<p>Practice Color it!</p> 	<p>T: Which one looks like  ? It just like  , but looks longer.</p> <p>S: (Kids color the box of cereal and a loaf of bread green.)</p> <p>T: Can a loaf of bread stack high? It depends.</p> <p>T: If we stack it, we may squash the bread flat.</p>	<p>Students can give reasons for how to color the objects.</p> <p>The teacher can discuss with kids in some situations, it is not good to stack the objects high.</p>
<p>Practice Color it!</p> 	<p>T: Which one looks like  ? It can both stack high and roll around. Color them green.</p> <p>S: (Kids color the cake, pepper mill and glass cups blue.)</p> <p>T: Can the cake stack high and roll around?</p> <p>S: The cake will be flattened. It cannot eat anymore.</p> <p>T: Right! How about the box of the cake?</p> <p>S: It can roll around and stack high!</p>	<p>Students can give reasons for how to color the objects.</p> <p>The teacher can discuss with kids' reason for color the objects. If the kid can figure out the difference between the flat and the curved face, it is good enough.</p>

第四部分教學目標

時間

4. Students can have a clear idea of today's lesson.

5 minutes

參考用投影片

教學內容

評量
方式

備註

Warm up

How to stack it?



T: In the activity “Tumble Tower”, what do you do?

S: We build a tower as high as possible.

T: 🍎, 📦 and 🥤, which one is easy to build the tower?

S: 📦 and 🥤.

T: Why are they easy to build the tower?

S: They have a flat face.

T: How does a flat face feel like?

S: It is flat. It isn't round.

T: Does this one (🥤) only have a flat face?

S: No. It also has a curved face.

Students can tell what they learned in the class today.

Practice

Color it!



T: Excellent. How about the next activity? What did you learn?

S: We drew some objects.

T: There are many objects look like

📦, 🍌, 📦 and 🥤 in our daily lives, right?

S: And also there are many fruits look like 🍌.

T: Great. Try to find out more and share with us next time. See you tomorrow.

Students can tell what they learned in the class today.

-----End of session 1-----

Session 2

第一部分教學目標

時間

1. Students can recall the attributes of solid figures.

7 minutes

參考用投影片

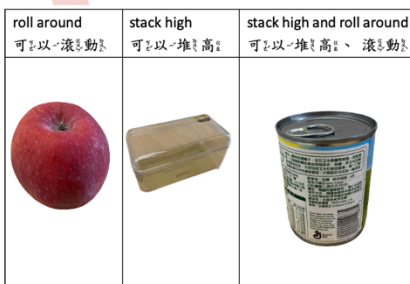
教學內容

評量
方式

備註

Warm up

Review



T: Today's lesson is "shapes". Last time we played a game "Tumble Tower"; try to build a tower as high as possible.

T: We find that some objects are easy to build, but some do not. Why?

S: They have different faces.

T: "Curved face" and "flat face" right?

T: When an object has a **flat** face, is it easy to roll around or stack high?

S: Stack high.

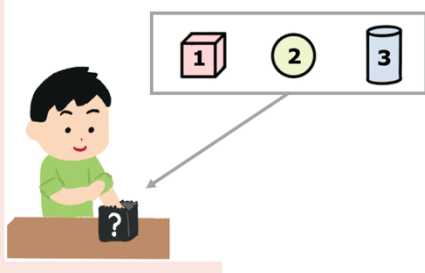
T: When an object has a **curved** face, is it easy to roll around or stack high?

S: Roll around.

Students can answer questions.

Activity

Guess what it is!



T: Today we are going to play a game "Guess what it is!"

T: Let's look at these three objects first. Number 1, is it easy to roll around or stack high?

S: Stack high.

T: So is it curved or flat?

S: flat.

T: Let's look at number 2, is it easy to roll around or stack high?


S: Roll around.

T: So is it curved or flat?

Students can answer questions.

Remember to give each solid figure a number, so that kids can use number to answer the questions.

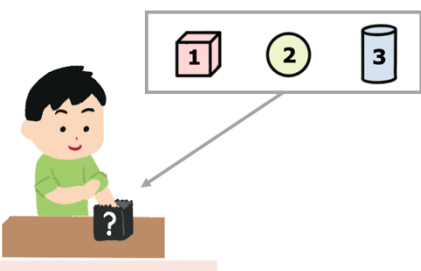
The teacher can use real solid figures to

<p>Warm up Is it curved or flat? _____</p>  <table border="1"> <tr> <td>curved 彎彎的</td> <td>flat 平平的</td> <td>flat and curved 平平的也彎彎的</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	curved 彎彎的	flat 平平的	flat and curved 平平的也彎彎的				<p>S: Curved. T: Great. How about number 3, is it easy to roll around or stack high? S: Both. T: Right, so we can say it has both curved and flat face.</p>	<p>help kids observe them. When introducing the attributes of each solid figure, the teacher can point at their faces to show the special parts.</p>
curved 彎彎的	flat 平平的	flat and curved 平平的也彎彎的						

第二部分教學目標	時間
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2. Students can discover the differences between faces of the shapes through touching activity.	15 minutes
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參考用投影片	教學內容	評量方式	備註
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<p>Activity Guess what it is!</p> 	<p>T: Now I will put one of them in the bag in secret. T: You have 10 seconds to feel what it is. T: After that I will ask your 2 questions. T: Is it curved? Is it flat? You can only say YES OR NO. T: After that, everyone EXCEPT the kid on the stage can take a guess, what is it? T: Let's look at the example.</p>	<p>Students can use YES OR NO to answer the question.</p>	<p>If students cannot understand the rule, the teacher can use translanguaging to explain the idea.</p>
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Activity Guess what it is!

Is it curved?
No.
Is it flat?
Yes.

T: What is it? Number 1, 2 or 3?
S: Number 1.
T: How do you know?
S: It isn't curved but flat, so it's number 1.
T: Now it's your turn. I'm going to invite a person to feel and answer 2 questions.

Students can use the number of solid figure to tell what it is.

Warm up Is it curved or flat?

curved 彎彎的	flat 平平的	flat and curved 平平的也彎彎的
2	1	3

S: (One kid comes to the stage and answer two questions.)
T: Is it curved?
S: Yes.
T: Is it flat?
S: Yes.
T: Everyone take a guess, what is it?
Raise your hands if you know the answer.
S: Number 3.
T: How do you know?
S: It is curved and flat, so it is number 3.
(do the activities 3-4 times)

If kids cannot find what it is, the teacher can put the table on the board as a cue to guide them.
After doing the activity, the teacher can conclude the attributes of these three solid figures.

第三部分教學目標

3. Students can reorganize their concepts through some easy questions. 時間 8 minutes

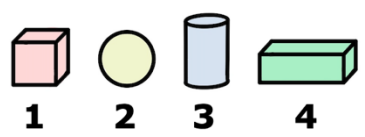
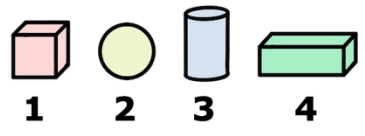
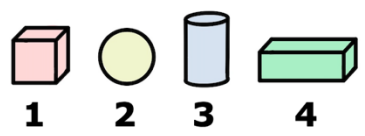
參考用投影片	教學內容	評量方式	備註
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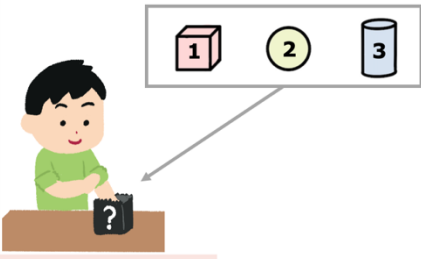
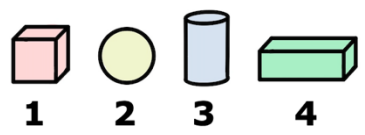
Practice A new member!

1 2 3 4

T: You guys take a good guess. Now there is a new member, number 4.
T: Can number 4 stack high? Or can it roll around?
S: Stack high.
T: Yes, it has a flat face. What does it look like?

Students can tell the difference between number 1 and 4.
The teacher can use translanguage to explain the difference between number 1 and

	<p>S: Like a cake; similar to number 1, but it is longer.</p> <p>T: Yes, they are similar. Here are some questions for you. This time you have to guess who it is.</p> <p>(跨語言：編號 1 和編號 4 有什麼差別?)</p>		4.
<p>Practice A new member!</p> 	<p>T: I have 2 flat faces. I can roll around. Who am I?</p> <p>S: Number 3.</p> <p>T: How do you know?</p> <p>S: (Kids use fingers to point out the two kind of faces, flat and curved, and explain that the curved face can roll around.)</p>	Students can explain their ideas.	The teacher can exphasize the idea of “flat face and curved face”.
<p>Practice A new member!</p> 	<p>T: Which one can roll around but cannot stack high?</p> <p>S: Number 2.</p> <p>T: How do you know?</p> <p>S: (Kids points out the attribute of ball and explain that it doesn't have flat face, so that it can roll around.)</p>	Students can explain their ideas.	The teacher can exphasize the idea of “flat face and curved face”.
<p>Practice A new member!</p> 	<p>T: You want to build a wall (牆), which one do you choose?</p> <p>S: Number 1 and 4.</p> <p>T: How do you know?</p> <p>S: (Kids can explain that the wall is flat, so using number 1 and 4 is more reasonable. There are two flat faces on number 3, but one curved face, so we cannot use it.)</p>	Students can explain their ideas.	The teacher can exphasize the idea of “flat face and curved face”.

第四部分教學目標			時間
4. Students can have a clear idea of today's lesson.			10 minutes
參考用投影片	教學內容	評量方式	備註
<p>Activity Guess what it is!</p> 	<p>T: What did we learn today? S: We play a game, to feel and guess what it is. T: What is the difference between the three? S: Two kinds of face, flat face and curved face.</p>	Students can share what they learned today.	
<p>Practice A new member!</p> 	<p>T: Nice, after that, we have a new member, number 4. It looks similar to number 1, but a little different. S: Number 4 is longer! T: Excellent, now take out your student book and let's finish the questions.</p> <p>-----End of session 2-----</p>	Students can finish questions in student book.	For this part, the teacher can go back to the student book and finish questions.

Session 3

第一部分教學目標

時間

1. Students can recall their prior knowledge and try to sort the shapes.

15 minutes

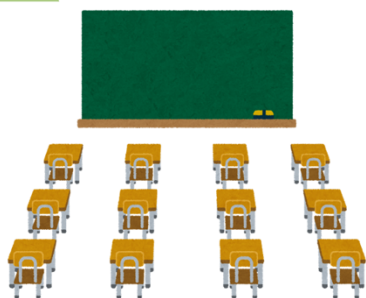
參考用投影片

教學內容

評量 方式

備註

Warm up What shapes do you see in the classroom?

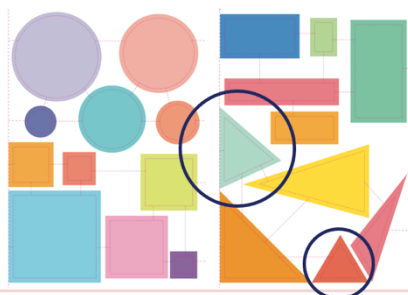


T: Today's lesson is "Shapes". What shapes do you see in the classroom?
 S: circle, triangle, square, rectangle.....
 S: clock, the lid of water bottle, black board, table, window, wiper.....

Students can share the shapes they see in the classroom.

If kids use "clock" to describe the shape circle, it is also a correct answer.

Teamwork 數學附件

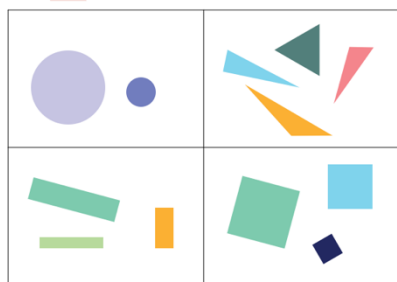


(Ask students to take out 數學附件)
 T: Let's try two things: touch it and observe it. Put the similar shapes together, and sort them in groups.
 T: Let's look at green one and orange one, can I put them in a group?
 S: Yes, because they look similar/ they all have three sharp parts.
 T: Good, so now it's your turn.
 T: 2 kids in a group.
 T: Later I will ask your, "How many groups do you have?"
 S: (Kids try to sort the shapes.)

Students can sort the shapes in different groups.

Before doing the activity, the teacher can first tell one kind of sorting ways. By doing so, kids can have a clear idea of how to sort them.




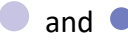

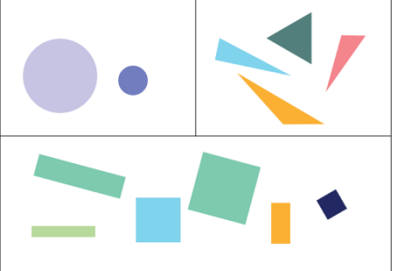


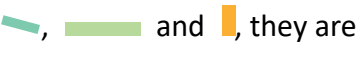

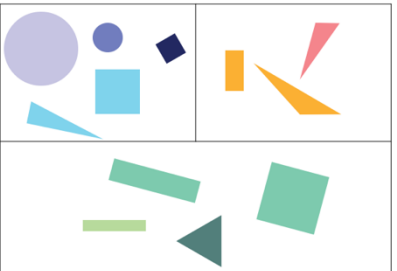
Share time Show me your answer!

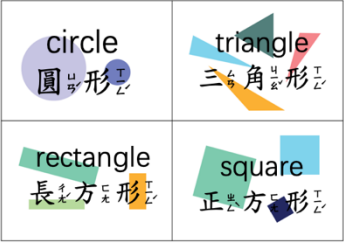


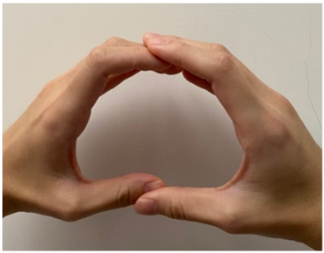



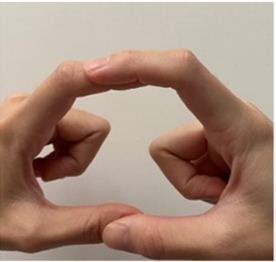

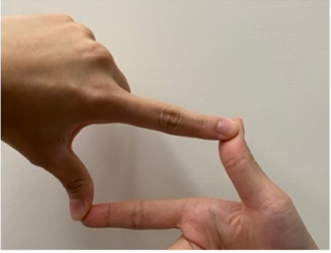

T: How many groups do you have?
 S: four groups.
 T: How do you do?
 (跨語言：這幾個為什麼分成一類？他們有什麼相同的地方？這幾個為什麼分成不同一類，他們有什麼不同的地方？)



Students can share their ideas.

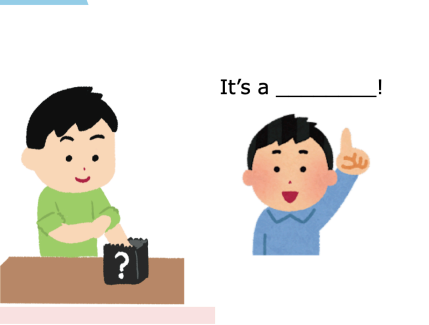
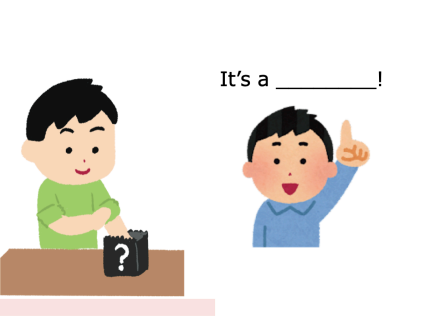
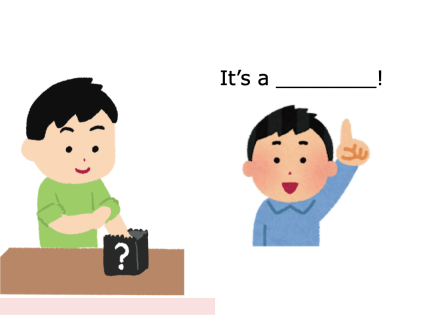
The teacher can use translanguage to ask kids explain how they sort the shapes.


	<p>S:  and , they have three sharp parts; they are in a group.</p> <p>S: , they look upright and like a square.</p> <p>S: , they look like a circle. All are round.</p> <p>S: , they look long.</p>		
<p>Share time Show me your answer!</p> 	<p>T: How many groups do you have? S: three groups.</p> <p>T: Can you share the bottom group? S: , and , they look upright.</p> <p>T: If I want to make one more group, what will you do? S: , they are longer. These three in another group.</p> <p>T: Nice, not all shapes in the bottom group look like a chocolate cake right, so you can try to make more groups.</p>	<p>Students can share their ideas.</p>	<p>If kids give improper answer, the teacher can guide them through various questions.</p> <p>For instance, the four lines in  are different, so maybe try to sort them again.</p>
<p>Share time Show me your answer!</p> 	<p>T: How many groups do you have? S: three groups.</p> <p>T: Can you share how do you do? S: The color of shapes in Group 1 are close to blue. Group 2 are red. Group 3 are green.</p> <p>T: It's a creative way! But I ask you</p>	<p>Students can share their ideas.</p>	<p>If kids use color to sort the shapes, the teacher can tell the question again to emphasize that</p>

	to “touch it and feel it”, you forget to touch the appearance of the shape. Try it again.		we focus on the appearance of the shapes.
<p>Conclusion four shapes</p> 	<p>T: You guys did a great job. Just like your answer, there are 4 groups.</p> <p>Touch it and feel it, you will find the differences between them. The four kinds of shapes are “triangle, square, circle and rectangle”.</p>		
第二部分教學目標			時間
2. Students can memorize English and Chinese name of four shapes.			8 minutes
參考用投影片	教學內容	評量方式	備註
<p>Practice the sign of the triangle</p> 	<p>T: Look at  , we call it “triangle 三角形”. Read after me.</p> <p>S: Triangle 三角形.</p> <p>T: Show me the gesture “triangle”.</p> <p>S: (Use fingers to show the gesture.)</p>	Students can follow teacher’s gesture.	The teacher can use fingers to make a gesture of four shapes.
<p>Practice the sign of the circle</p> 	<p>T: Look at  , we call it “circle 圓形”. Read after me.</p> <p>S: Circle 圓形.</p> <p>T: Show me the gesture “circle”.</p> <p>S: (Use fingers to show the gesture.)</p>	Students can follow teacher’s gesture.	The teacher can use fingers to make a gesture of four shapes.

<p>Practice the sign of the square</p> 	<p>T: Look at  , we call it “square 正方形”. Read after me. S: Square 正方形. T: Show me the gesture “square”. S: (Use fingers to show the gesture.)</p>	<p>Students can follow teacher’s gesture.</p>	<p>The teacher can use fingers to make a gesture of four shapes.</p>
<p>Practice the sign of the rectangle</p> 	<p>T: Look at  , we call it “rectangle 長方形”. Read after me. S: Rectangle 長方形. T: Show me the gesture “rectangle”. S: (Use fingers to show the gesture.)</p>	<p>Students can follow teacher’s gesture.</p>	<p>The teacher can use fingers to make a gesture of four shapes.</p>
	<p>T: Now we are going to review the words. The first one gets the right answer will win 1 point. T: Ready? Use hands to show me a triangle! S: (Use fingers to show the triangle.) T: Show me something that looks like a rectangle! S: (Hold student book and pencil case.) T: Show me a circle item! Point at something looks like a circle! S: (Point at the bottom of the bottle) S: (Point at the clock.) T: Use hands to show me a square! S: (Use fingers to show the square.)</p>		<p>Through various practice, kids can get more familiar to these shapes.</p>

第三部分教學目標			時間
3. Students can tell the differences between the shapes through touching activity.			12 minutes
參考用投影片	教學內容	評量方式	備註
<p>Activity Guess what it is!</p> 	<p>T: Now we are going to play a game "Guess what it is! "</p> <p>T: It's similar to we played last time, but a little different.</p> <p>T: First I will invite a person to face to the blackboard.</p> <p>T: Then I will show you a shape and put it in the bag.</p> <p>T: After that, you can turn around/ face to everyone.</p> <p>T: You have 5 seconds to feel what shape it is.</p> <p>T: When the time's up, you have to give the answer.</p> <p>T: Every group needs to send boys or girls to take a guess.</p> <p>T: Who gets the right answer the most, they will be the winner.</p>		<p>The teacher can use translanguaging to explain the rule of the game.</p> <p>Only put 1 shape in the bag, and ask kids to guess what shape it is.</p>
<p>Activity Guess what it is!</p> 	<p>T: (Put a triangle in the bag.)</p> <p>T: 5 seconds, feel the shape in the bag.</p> <p>S: (Feel the shape.)</p> <p>T: What shape is it?</p> <p>S: It's a triangle.</p> <p>T: How do you know?</p> <p>S: It is sharp. There are three sharp parts.</p>	Students can tell what they felt and the reason how they found the shape.	<p>Kids can use Chinese to share their idea.</p> <p>The idea of "angle and side" won't be introduced.</p>

<p>Activity Guess what it is!</p> 	<p>T: (Put a circle in the bag.) T: 5 seconds, feel the shape in the bag. S: (Feel the shape.) T: What shape is it? S: It's a circle. T: How do you know? S: It is round. I cannot feel any sharp part. It is not like a square.</p>	<p>Students can tell what they felt and the reason how they found the shape.</p>	
<p>Activity Guess what it is!</p> 	<p>T: Now it will be harder, I will put a square or a rectangle, try to figure out what shape it is. T: (Put a square in the bag.) T: 5 seconds, feel the shape in the bag. S: (Feel the shape.) T: What shape is it? Square or rectangle? S: It's a square. T: How do you know? S: It is square. There are four parts that are equal.</p>	<p>Students can tell what they felt and the reason how they found the shape.</p>	<p>If kids cannot tell which one is a square or a rectangle, guide them by asking the difference between the four sides of the shape.</p> <p>(引導學生觸摸正方形和長方形邊的四部分，但不特別介紹邊長的概念。)</p>
<p>Activity Guess what it is!</p> 	<p>T: (Put a rectangle in the bag.) T: 5 seconds, feel the shape in the bag. S: (Feel the shape.) T: What shape is it? A square or a rectangle? S: It's a rectangle. T: How do you know? S: One side is longer. S: It's not square. S: It feels long.</p>	<p>Students can tell what they felt and the reason how they found the shape.</p>	

第四部分教學目標			時間
4. Students can have a clear idea of today's lesson.			10 minutes
參考用投影片	教學內容	評量方式	備註
	<p>T: In the beginning of the class, we sort the shapes in 4 groups. What are they?</p> <p>S: triangle, square, rectangle and circle.</p> <p>T: Yes, we learned four shapes. Then we play a game to guess what shape is it. Did you all guess right?</p> <p>S: Yes.</p> <p>T: Now here are some questions to test you. Remember the objects we have in "Tumble tower"? It seems like there are some shapes in them. Let's find them.</p>		
<p>Practice What shape is it?</p> 	<p>T: What shape is it?</p> <p>S:</p> <p>T: Let's trace it.</p> <p>T: What shape is it?</p> <p>S: It's a rectangle.</p>		If kids cannot find what shape it is, the teacher can trace the real item and show it to kids.
	<p>T: Nice try, you got all shapes. Try to find more shapes around you and share with us next time.</p> <p>T: What did you learn today?</p> <p>S: Four shapes, triangle, square, rectangle and circle.</p> <p>T: Show me the gesture.</p> <p>S: (Use fingers to show the gesture.)</p> <p>T: Also, we played a game to guess</p>		

what shape it is, right? Similar to the game we played in session 2.

T: Remember to review the four new words you learned today, triangle, square, rectangle and circle. See you next time.

-----End of session 3-----

Session 4

第一部分教學目標

時間

1. Students can associate the name of the shapes.

5 minutes

參考用投影片

教學內容

評量 方式

備註

Warm up

What shape is it? _____



What shape is it?

Show me the picture **square**.



T: Today's lesson is "Shapes". Take out the flash cards and let's review the words first.

T: (Draw a triangle on the board.)

What shape is it?

S: It's a triangle.

T: Show me the picture "square".



S:

Students can name the shape when seeing it.

Students can take out the shape when hearing its name.

Before the class, the teacher will give each student a set of flash cards. This can not only help kids review the words, but also

Warm up

What shape is it? _____




rectangle
長方形

Show me the shape.


What shape is it?



T: (Hold a flash card: ) Show me the shape.

S:




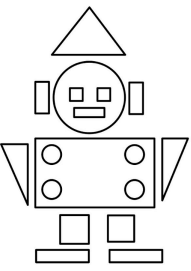
T: (Hold a circle: ) What shape is it?

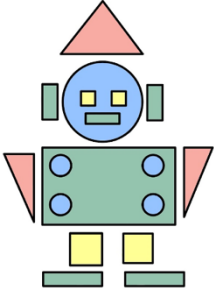
S: It's a circle.



Students can take out the shape when seeing its name.

Students can say the name when seeing the shape.

surves as an assistance for kids to know the Chinese meaning of each word.

第二部分教學目標			時間
2. Students can find the shapes in the picture.			5 minutes
參考用投影片	教學內容	評量方式	備註
<p>Activity Where are triangles?</p>  <p>picture from: <i>Baby, find the shapes!</i></p>	<p>T: Let's find the shapes in the picture.</p> <p>T: Can you find the triangles, where are they?</p> <p>S: (Kids point at triangles.)</p> <p>T: How about circles. Where?</p> <p>S: (Kids point at circles.)</p> <p>T: How many squares are there?</p> <p>S: One. On the toy block.</p> <p>T: How many rectangles are there?</p> <p>S: Nine. The closet, toy train.....</p>	Students can find the shapes in the picture.	The pictures are from <i>Baby, find the shapes!</i> , Trukhan, E. Kids can share the name of the object they found the shapes in, in Chinese is fine.
第三部分教學目標			時間
3. Students can draw the shapes.			15 minutes
參考用投影片	教學內容	評量方式	備註
<p>Share time Draw a robot!</p> 	<p>T: You see many shapes in the picture, right. Now it's your turn to draw your own pictures.</p> <p>T: Let's try draw a robot. Use four kinds of shapes, triangle, circle, square and rectangle.</p> <p>T: You can use 附件描圖紙 or a ruler to help you draw the picture.</p> <p>T: I will show my example first.</p> <p>T: Do you see circles?</p> <p>S: Yes, on the body.</p> <p>T: Where are the triangles?</p> <p>S: Hat and hands.</p> <p>T: How about rectangles?</p> <p>S: Ears and shoes.</p> <p>T: Squares?</p>	Students can put shapes into the picture.	The last activity provides some examples for kids to think about how to put shapes in the object. After that, kids can have more ideas of how to draw a robot with shapes.

	S: Legs!		
<p>Share time Color the robot</p> 	<p>T: 5 minutes for you to draw a robot. Go.</p> <p>S: (Kids try to use 附件描圖紙 or a ruler to draw a robot.)</p> <p>T: Now I want you color the circle “blue”, triangle “red”, square “yellow”, and rectangle “green”. Just like I did.</p> <p>S: (follow teacher’s instruction.)</p>	Students can color the shape correctly.	This activity also gives the teacher a chance to make sure whether kids understand the English name of four shapes.
第四部分教學目標			時間
4. Students can have a clear idea of today’s lesson.			10 minutes
參考用投影片	教學內容	評量方式	備註
	<p>T: In the beginning of the class, we reviewed the words of four shapes, what are they?</p> <p>S: Triangle, square, rectangle and circle.</p> <p>T: Yes, and then we try to find some shapes in the picture. How about the classroom? Where can you see the shapes?</p> <p>S: Clock, table, black board.....</p> <p>T: Awesome. Then we draw a robot and color it. You guys did a nice job.</p> <p>T: Now here are some questions for you. Did you find anything when you drew the robot?</p>		

<p>Practice What shape is it?</p> 	<p>T: I use a ruler to draw a shape. Which shape can I have? S: Triangle. T: How do you know? S: There is no straight line in a circle. (跨語言：三角形和圓形的線條有什麼差別?)</p>	<p>Students can share their ideas.</p>	<p>The teacher can use translanguaging to guide kids think about the process of drawing the robot.</p>
<p>Practice What shape is it?</p> 	<p>T: I use a ruler to draw four lines. Which shape can I have? S: Rectangle. T: How do you know? S: There is only three lines in a triangle. (跨語言：在畫三角形和長方形時，你畫了幾條線?) T: Nice, and that is all for today. You learned many shapes, right? Tomorrow there will be some missions for you, see you next time.</p> <p>-----End of session 4-----</p>	<p>Students can share their ideas.</p>	<p>The teacher can explain the difference between triangles and circles, like the side is straight or curved.</p>

Session 5

第一部分教學目標

時間

1. Students can review the concept and meaning of the shapes through counting activity.

8 minutes

參考用投影片

教學內容

評量方式

備註

Activity 3 missions for you

T: Today's lesson is "Shapes". Tell me, what did you learned yesterday?

S: Draw a robot and color it.

S: Color the shapes.

T: Nice, here are the robots you drew last time, and.....

T: Look, do you see the king of the robot? Let's hear what the king of the robot is saying.

The King of the Robot: Hello kids, I am the king of the robot. I have 3 missions for you. If you pass them, there will be a big surprise for you.

T: Ready to go mission 1? Let's go

The teacher can mimic the sound of the robot and speak it out.

Activity 3 missions for you

T: Look here, what is mission 1?

S: Let's count it.

T: Right. Look here are two kinds of cards.

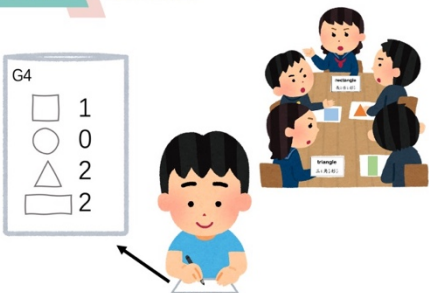


T: I am going to give everyone one of them. You may get **name card**

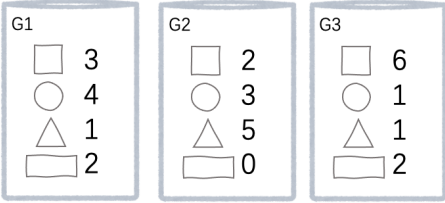
(triangle (三 角 形)) or **shape card** ().

T: Your mission is to count how many

Before kids start counting, the teacher can use translanguage to emphasize 4 important parts:


1. name ✓
2. shape ✓

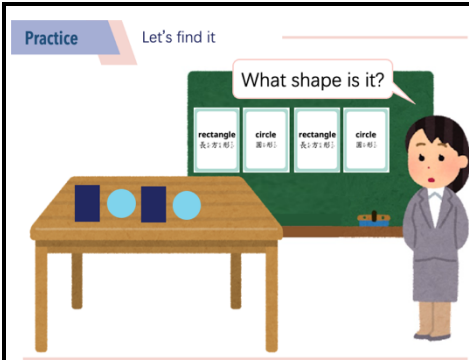
	<p>triangles/circles/squares/rectangles in your group?</p> <p>T: Remember, you have to count the total number of 4 shapes.</p>		<p>3. 4 shapes</p> <p>4. record</p> <p>Kids have to count name</p>
<p>Teamwork Let's count it</p> 	<p>T: Let's look at this group, did they get the correct answer?</p> <p>S: Yes.</p> <p>T: Let's see. , is it a triangle?</p> <p>S: Yes.</p> <p>triangle 三角形 (三, 角, 形), is it a triangle?</p> <p>S: Yes.</p> <p>T: So you count 1,2. Two triangles. (Repeat the same process for the number of circles, squares and rectangles.)</p> <p>T: Also, I need a person to record the number of each shape.</p> <p>T: Look at the whiteboard, count how many and write down the number. When your group finish, put back to the black board. Any questions?</p>	<p>Students can follow teacher's instructions.</p>	<p>cards and shape cards. Also, the total number of four shapes need to be recorded.</p> <p>When asking kids to record the number on the white board, give clear instructions:</p> <ol style="list-style-type: none"> 1. Write the group number on the left corner. 2. Draw four shapes (as big as you fist). 3. Write down the total number of 4 shapes. 4. Put in on the board
<p>Activity Take out the bag!</p> 	<p>T: Okay, so now everyone take out your flashcard bag, I have already put it in.</p> <p>T: Everyone now you can leave the seat, and count how many circles/triangles/squares/rectangles in your group. Go.</p> <p>T: (The teacher keep reminding steps of the activity.)</p>	<p>Students can cooperate with each other and finish the task.</p>	<p>3. Write down the total number of 4 shapes.</p> <p>4. Put in on the board</p>

	<p>S: (Kids start to count the number of shapes.)</p> <p>T: One person has to record the number of each shape. If you finish, put back on the black board.</p>		
<p>Share time Show me your answer!</p>  <p>G1: square 3, circle 4, triangle 1, rectangle 2 G2: square 2, circle 3, triangle 5, rectangle 0 G3: square 6, circle 1, triangle 1, rectangle 2</p>	<p>T: Group 1, how many triangles in your group?</p> <p>S: Only one.</p> <p>T: Group 2, how many squares in your group?</p> <p>S: Two.</p> <p>T: Group 3, which shape is the most?</p> <p>S: The square.</p> <p>T: Everyone got correct answers, one point for all. Let's move to mission 2.</p>	Students can share their answer.	The teacher can use translanguage to help kids share their ideas and make sure the answer is correct.

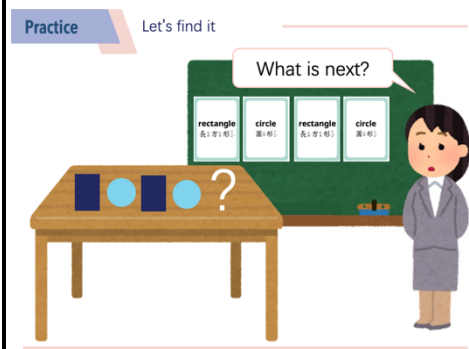
第二部分教學目標 **時間**

2. Students can find the pattern through observation. 12 minutes

參考用投影片	教學內容	評量方式	備註
<p>Activity 3 missions for you</p> 	<p>T: What is mission 2?</p> <p>S: Let's find it!</p> <p>T: Look, there are many shapes, we are going to find "What is next?"</p> <p>T: Okay, take out your flashcards and the shape cards.</p> <p>T: Two in a group.</p>		

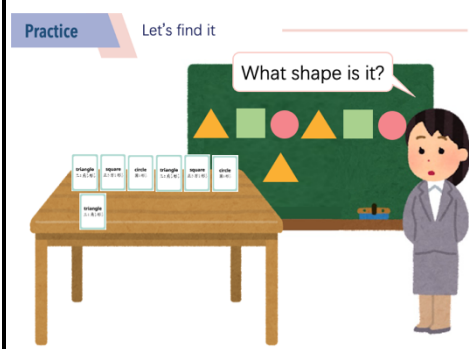






T: What shape is it? Put the shape on your table.
 S: (Put a rectangle on the table.)
 T: What shape is it? Put the shape on your table.
 S: (Put a circle on the table.)
 T: What shape is it? Put the shape on your table.
 S: (Put a rectangle on the table.)
 T: What shape is it? Put the shape on your table.
 S: (Put a circle on the table.)




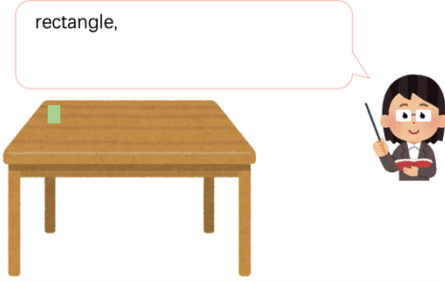





T: Then, what is next?
 S: Rectangle.
 T: A rectangle is next. How do you know?
 S: rectangle, circle, rectangle, circle, so the next one is rectangle.
 T: Yes, it follows a rule.
 (跨語言：為什麼你知道下一個是長方形?)

Students can share their ideas about how to find the next shape.



T: How about this one?
 T: What shape is it? Put the name of the shape on your table.

 S: (Put a  on the table.)
 T: What shape is it? Put the name of the shape on your table.

 S: (Put a  on the table.)
 T: What shape is it? Put the name of the shape on your table.

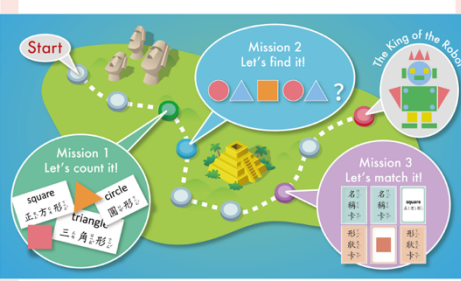
	<p style="text-align: center;">  circle 圓形 </p> <p>S: (Put a  on the table.)</p> <p>T: (Repeat the teaching process until seeing the question mark.)</p>		
<p>Practice Let's find it</p> 	<p>T: What is next?</p> <p>S: Square.</p> <p>T: What color is square?</p> <p>S: Green.</p> <p>T: Yes, it is a green square.</p> <p>T: How do you know?</p> <p>S: triangle, square, circle, triangle, square, circle, triangle..... so the next one is square.</p> <p>T: Any other idea?</p> <p>S: the color!</p> <p>S: orange, green, red, orange, green, red, orange..... so the next one is green.</p> <p>(跨語言：為什麼你知道下一個是綠色正方形?)</p> <p>(跨語言：除了圖形的變化之外，他的顏色有什麼變化?)</p>	<p>Students can share their ideas about how to find the next shape.</p>	<p>The teacher can use translanguaging to guide kids to find color pattern and shape pattern.</p>
<p>Practice Let's find it</p> <p>rectangle,</p> 	<p>T: Here is another challenge. Listen carefully. When I say the word, put the shape on the table.</p> <p>T: Rectangle (With the gesture of )</p> <p>S: (Put a rectangle on the table.)</p> <p>T: Circle (With the gesture of )</p> <p>S: (Put a rectangle on the table.)</p>	<p>Students can put correct shape on the table.</p>	<p>When the teacher says the word, showing the gesture at the same time. By doing so, it is easy for kids to find the answer.</p>


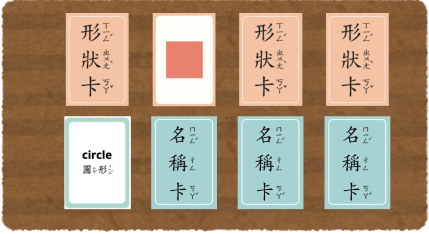
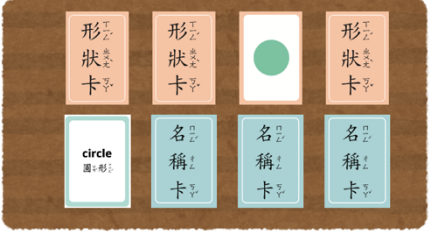
	T: (Repeat the teaching process until seeing the question mark.)		
<p>Practice Let's find it</p> <p>What is next?</p> 	<p>T: What is next?</p> <p>S: Triangle.</p> <p>T: A triangle is next. How do you know?</p> <p>S: (Point at the pattern on the table and explain the idea.)</p> <p>S: Rectangle, circle, rectangle, triangle.....</p> <p>S: Green, pink, green, orange.....</p> <p>(跨語言：為什麼你知道下一個是橘色三角形?)</p> <p>(跨語言：除了形狀的變化之外，每一個形狀的顏色有什麼變化?)</p> <p>T: More kids in group 2 and 3 answer correctly. One point for them. Now let's move to mission 3, the last mission.</p>	Students can find the change in shape and color.	

第三部分教學目標

時間

3. Students can find the pattern through observation. 15 minutes

參考用投影片	教學內容	評量方式	備註
<p>Activity 3 missions for you</p> 	<p>T: What is mission 3?</p> <p>S: Let's match it!</p> <p>T: Look, there are 2 kinds of cards, shape cards and name cards. Matching it is our mission.</p> <p>T: Before that, let's practice.</p> <p>T: Take out your green cards and red cards.</p> <p>T: We make 2 rows.</p>		The teacher can use translanguage to explain the rule.

<p>Practice Let's match it</p> 	<p>T: First row, put the red cards. The cover that writes 形狀卡 on the top.</p> <p>T: Second row, put the green cards. The cover that writes 名稱卡 on the top.</p> <p>(跨語言：第一排放紅色卡，上面會寫著形狀卡。第二排放綠色卡，上面會寫著名稱卡。)</p>		
<p>Practice Let's match it</p> 	<p>T: Then, let's match it.</p> <p>T: Choose one red and one green card, does it match?</p> <p>S: No.</p> <p>T: Then, put it back and try again.</p> <p>(跨語言：一次選一張紅色卡，一張綠色卡，他們是好朋友嗎？配對錯誤就放回去。)</p>	<p>Students can find the correct pairs.</p>	
<p>Practice Let's match it</p> 	<p>T: Flip another card, does it match?</p> <p>S: Yes.</p> <p>T: Correct, then you read it out and take them away. Say the word.</p> <p>S: Circle!</p> <p>(跨語言：找到好朋友後，要把單字唸出才能拿走喔。)</p> <p>T: It's easy, right? Now there are 4 pairs, try to find out all.</p> <p>(跨語言：現在總共有 4 組紅色綠色好朋友，試試看把全部找出。)</p> <p>S: (Kids find all 4 pairs.)</p>	<p>Students can find all pairs on their own.</p>	<p>The teacher can use translanguage to explain the rule.</p>

Teamwork Let's match it

T: Is it too easy for you? Now 2 in a group.

T: Again, first row red cards, second row green cards. Try to find out all pairs.

T: This time you and your partner have to take turns.

T: Paper, scissor, stone first, and then the winner go first.

T: Remember, choose one red card and one green card.

T: If they match, read it out and take it away. If no, put it back.

(跨語言：兩兩一組，規則和上面一樣，先猜拳決定順序，贏家先選，兩個人要輪流找出紅綠好朋友。記得如果配對正確的話，要把單字唸出才可以拿走，我們來看看誰可以找到比較多組。)

Students can cooperate with their partner.

The teacher can use translanguaging to explain the rule.

Activity Let's match it

T: In your group, who get more pairs? Raise your hands.

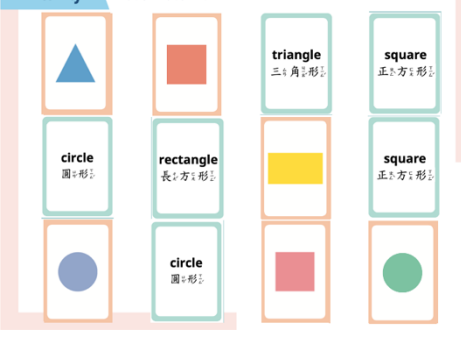
S: (One of the team raise the hand.)

T: Who get more than 5 pairs?

S: (3 kids raise their hands.)

T: Now come back to our mission, these 3 guys will come out and fight for their group.

(跨語言：找到 5 組以上紅綠好朋友的這幾個小朋友，要來代表各組挑戰任務。)

<p>Activity Let's match it</p>  <p>The grid contains the following items:</p> <ul style="list-style-type: none"> Row 1: Blue triangle (triangle 三角), Red square (square 正), Yellow square (square 正), Green circle (circle 圓) Row 2: Blue circle (circle 圓), Red rectangle (rectangle 長), Yellow square (square 正), Green circle (circle 圓) Row 3: Blue circle (circle 圓), Red square (square 正), Yellow square (square 正), Green circle (circle 圓) 	<p>T: The rule is the same. Choose one red card and one green card. If they match, read it out and take it away.</p> <p>T: Now I will show you the location of the cards, 30 seconds. Go.</p> <p>T: Time's up. Ready to find the pairs?</p> <p>S: (Do the activity.)</p> <p>(跨語言：你們有 30 秒的時間記住紅綠好朋友的位置，規則和剛剛練習的一樣，30 秒後牌蓋起來，試著找出所有的紅綠好朋友。)</p>	<p>Students can find all pairs and read the word correctly.</p>	<p>The teacher can emphasize that you have to read the word correctly and then you can get the point.</p>
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第四部分教學目標

時間

4. Students can have a clear idea of today's class. 5 minutes

<p>參考用投影片</p>	<p>教學內容</p>	<p>評量方式</p>	<p>備註</p>
<p>Activity 3 missions for you</p>  <p>The map shows three missions:</p> <ul style="list-style-type: none"> Mission 1: Let's count it! (Count shapes: square, circle, triangle) Mission 2: Let's find it! (Find shapes: square, circle, triangle) Mission 3: Let's match it! (Match shapes: square, circle, triangle) 	<p>T: Let's see which group got the highest points.</p> <p>T: Congratulations to Group 1! You're the king of the robot!</p> <p>T: Let's see what the king of the robot is going to say.</p> <p>The King of the Robot: Great job, kids. Now you guys can become the king of the robot. Here is the crown. All members in Group 1 can have it all the day. Let's put the crown on and take a picture together.</p>	<p>Students can share what they learned today.</p>	<p>The teacher can make a paper crown, and give it to the winner group.</p>
	<p>T: What did you learn today?</p> <p>S: Count how many shapes there are.</p> <p>S: Find what is next.</p>		<p>The teacher can use translanguage to encourage</p>

	<p>S: Match name cards and shape cards.</p> <p>T: Yes, we play many games about shapes. Next time you can share these games with friend and play together!</p> <p>(跨語言：你今天學到了什麼？闖了哪三個任務？每個任務的內容是什麼？你使用了什麼方式來過關？)</p> <p>-----End of session 5-----</p>	<p>kids express themselves.</p>
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肆、教學評量

單元教學目標	評量方式
1. 學生能透過操作活動發現平面和曲面的差異。	1. 進行疊疊樂操作活動後，學生能否說出容易滾動與容易堆高的物品表面差別。
2. 學生能認識正方體、長方體、圓柱和球，並了解四者外觀的差別。	1. 透過神秘箱活動，學生能否透過觸摸的方式分辨四個立體物品表面的差異。 2. 神秘箱活動後，學生能否將四種立體圖形與生活周遭物品的外型相連結。
3. 學生能辨認平面圖形的外型，並進行分類。	1. 學生能將平面圖形分成四類：正方形、長方形、三角形和圓形。
4. 學生能認識正方形、長方形、三角形和圓形，並了解四者外觀的差異及其名稱。	1. 學生能找出隱藏在立體圖形中的四種平面圖形。 2. 學生能把平面圖形與其名稱連結。
5. 學生能透過圖形的排列察覺規律。	1. 學生能察覺兩種規律變化，分別是顏色變化和圖形變化。

(六)辦理數學教學演示競賽

子計畫名稱	子計畫 4. 小學數學教學活動設計工作坊
執行單位	台灣數學教育學會
活動名稱	110 學年度小學、中學數學教學演示競賽
活動時間	111 年 4 月 9 日(六) 9:00-17:30
活動地點	國立臺中教育大學數學樓 C302、C303 教室
參與對象	本校在學師資生/學程生

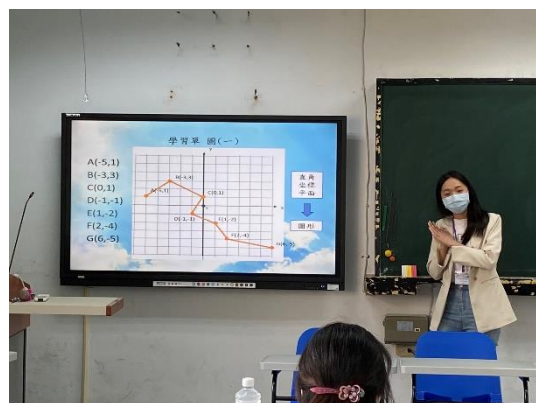
活動辦理照片



小學組演示



小學組演示



中學組演示



中學組演示

活動相關資訊

一、工作坊籌備

為強化職前教師對於數學學習領域之教學知能，確保能將教學理念轉化為實踐能力，藉此提升課堂教學品質，促進教師專業發展。期以競賽方式帶動師資培訓、教材研究及實務教學，俾使攸關國民基本教育之教學知能得向上提升。透過辦理甄選及發表會活動，將優良教學活動設計，互相分享以提升數學教學專業成長。

綜上理念，本競賽活動於 110 年 8 月 31 日(三)公告活動簡章，活動對象分為小學組及中學組，並分初選(第一階段)及決選(第二階段)進行。活動說明如下：

(一)報名對象：

1. 小學組：師資培育大學及一般大學之國民小學師資生、學程生，或當年度具有國小師資培育實習生資格者。
2. 中學組：師資培育大學及一般大學之中等學校師資生、學程生，或當年度具有中等學校師資培育實習生資格者。

(二)初選(第一階段)：書面教案至 111 年 1 月 4 日(五)收件截止，錄取名單於 111 年 3 月 4 日(五)公布於「國立臺中教育大學數學學習領域中心」(網站 <https://mathcenter.ntcu.edu.tw/>)，最後共選出小學組十二件、中學組六件進入決選(第二階段)。

(三)決選(第二階段)：111 年 4 月 9 日(六)假國立臺中教育大學數學樓 C302、C303 教室進行現場發表決選，每件發表時間 15 分鐘。

二、講評委員

(一) 小學組：

1. 國立臺北教育大學數學暨資訊教育學系鍾靜教授
2. 國立清華大學數理教育研究所林碧珍教授
3. 高雄市梓官區梓官國小阮正誼老師

(二) 中學組：

1. 國立彰化師範大學科學教育研究所秦爾聰副教授
2. 國立彰化師範大學科學教育研究所鄭章華助理教授
3. 彰化縣立彰興國民中學賴佩伶老師

小學組獲獎名單

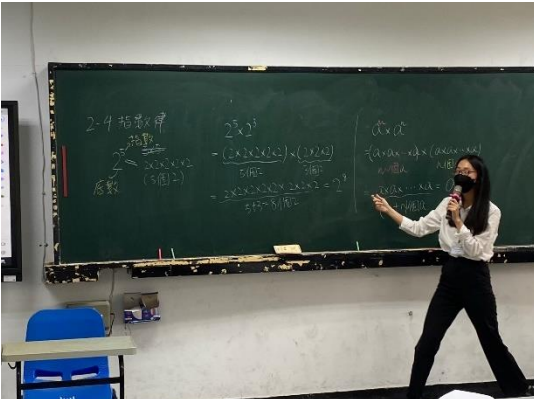
名次	教案名稱	姓名
優等	健康「長」在飲食裡	李○葶、黃○堯、李○臻、李○恩
	哪種停車格的面積比較大？	曾○勝
甲等	周長一樣長面積大不同	司○荷、陳○苓、吳○男、古○若
	幫平行四邊形量身「高」	許○蒂
佳作	小小建築師	蔣○恩
	金幣輝煌	吳○嘉、陳○慈、劉○美、李○楨
入選	原來都一樣	周○萱、沈○寧、蔡○之
	我是小小行程規劃家	蘇○湄、黎○潔
	咦？果汁去哪了？——認識容積	楊○瑞、黃○宸、馬○珊、陳○妍
	籃球得分王	徐○衛、王○晴、鍾○宇、趙○莉
	面面相「聚」	胡○滌、黃○婷

中學組獲獎名單

名次	教案名稱	姓名
優等	二次方根的意義	曾○新瑜、李○珊
	記帳的煩惱-二元一次式	施○帆
甲等	相關係數	周○萱
	二元一次方程式圖形	曾○瑜、李○珊
佳作	丟番圖的一生	黃○翔

心得：

此競賽透過評審委員講評討論，並與參賽者互動回饋，讓參賽者能強化該單元之數學教學知能，從中提升數學教學專業成長。教學最重要的就是教學目標一定要很明確，教學流程和教學目標的結合需對應清楚，而程序性知識的順序及概念連結必須也要和教學目標吻合。另外，教學也強調佈題引入的重要性(考慮引起學生的興趣及解題的需求)，從生活經驗連結並與後面教學做結合。讓我們來用數學來解決問題，而不是把簡單的數學複雜化。再次感謝台灣數學教育學會理監事、會員及相關單位的大力指導、支持與廣為宣傳，讓 110 學年度小學、中學數學教學演示競賽圓滿完成。

子計畫名稱	子計畫 4. 小學數學教學活動設計工作坊
執行單位	台灣數學教育學會
活動名稱	111 學年度小學、中學數學教學演示競賽
活動時間	112 年 4 月 15 日(六) 9:00-17:30
活動地點	國立臺中教育大學數學樓 C303、C304 教室
參與對象	本校在學師資生/學程生
活動辦理照片	
	
小學組演示	小學組演示
	
中學組演示	中學組演示
	
中學組演示	中學組演示

活動相關資訊

工作坊籌備

為強化職前教師對於數學學習領域之教學知能，確保能將教學理念轉化為實踐能力，藉此提升課堂教學品質，促進教師專業發展。期以競賽方式帶動師資培訓、教材研究及實務教學，俾使攸關國民基本教育之教學知能得向上提升。透過辦理甄選及發表會活動，將優良教學活動設計，互相分享以提升數學教學專業成長。

綜上理念，本競賽活動於 111 年 9 月 5 日(一)公告活動簡章，活動對象分為小學組及中學組，並分初選(第一階段)及決選(第二階段)進行。活動說明如下：

(四)報名對象：

3. 小學組：師資培育大學及一般大學之國民小學師資生、學程生，或當年度具有國小師資培育實習生資格者。
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(五)初選(第一階段)：書面教案至 112 年 1 月 5 日(四)收件截止，錄取名單於 112 年 3 月 10 日(五)公布於「國立臺中教育大學數學學習領域中心」(網站 <https://mathcenter.ntcu.edu.tw/>)，最後共選出小學組十二件、中學組六件進入決選(第二階段)。

(六)決選(第二階段)：112 年 4 月 15 日(六)假國立臺中教育大學數學樓 C303、C304 教室進行現場發表決選，每件發表時間 15 分鐘。

二、講評委員

(三) 小學組:

1. 國立臺北教育大學數學暨資訊教育學系鍾靜教授
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3. 高雄市梓官區梓官國小阮正誼老師

(四) 中學組:

1. 國立彰化師範大學科學教育研究所秦爾聰副教授
2. 國立彰化師範大學科學教育研究所鄭章華助理教授
3. 彰化縣立彰興國民中學賴佩伶老師

小學組獲獎名單

名次	教案名稱	姓名
優等	<u>平行四邊形偵探大隊</u>	許云璣
	<u>太「平」「聖」事</u>	李元楨
甲等	<u>時間小偵探</u>	全中玉、安莉芳、吳彩 縈
	<u>表格中的祕密</u>	陳映慈
佳作	<u>餐桶「概」下多少魚</u>	楊宇歡
	<u>發現柱體表面積的祕密</u>	巫欣儒
入選	<u>「我要更多巧克力！」 --異分母分數的加法</u>	陳紫妍
	<u>因數與倍數</u>	謝依伶、陳奕硯、蔡佳 穎
	<u>豬肉怎麼分？</u>	多奧·阿季
	<u>真繪鑽</u>	李元楨、黃鴻任
	<u>面積切切切</u>	黃力寧

中學組獲獎名單

名次	教案名稱	姓名
優等	<u>乘方比大小</u>	李昀珊
	<u>旋轉矩陣</u>	陳維廷
甲等	<u>三角測量</u>	鄭名芳
	<u>這「次」，你發現了什麼？</u>	曾新瑜
佳作	<u>生活中-圓的切線</u>	李承憲
	<u>2-1 變數與函數</u>	林政毅
入選	<u>撲克牌中的二項式定理</u>	陳嘉洛

心得：

評審委員講了一句很重要的話，其實這個競賽不只是比賽，而是藉此讓自己可以更好，可以學習別人的優點改善自己的缺點，最主要不是這次的名次，而是這是學習到了什麼可以幫助未來在教甄上。

每位上台試教的參賽者都很厲害，不僅全程面對微笑，引起的動機有融入社會文化和生活經驗，但教學方法可再精進，畢竟只有 15 分鐘，盡可能呈現自己的亮點，建議題目多注重生活情境多一點，不僅僅只侷限在學生解法，再針對學生錯誤迷思進行講解是很棒的。

(六)舉辦國際學術論文發表會與工作坊

子計畫名稱	子計畫 4. 小學數學教學活動設計工作坊
執行單位	台灣數學教育學會
活動名稱	2022 年台灣數學教育學會年會暨第十四屆科技與數學教育國際學術研討會
活動時間	2022 年 04 月 30 日(星期六)、05 月 01 日(星期日)
活動地點	線上會議 (Online Meeting)
參與對象	數學領域教授、研究生

活動辦理照片



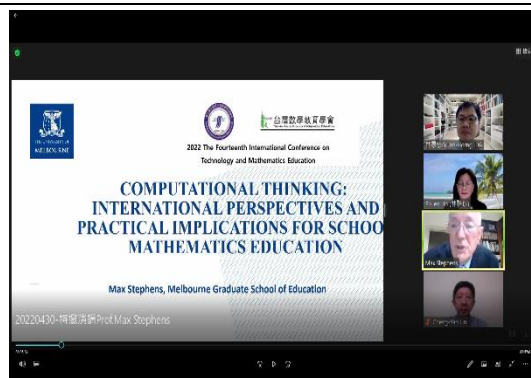
王曉璿副校長致詞



林碧珍教授創造力演講放映



張僑平教授特邀演講



林承堯教授特邀演講



活動內容

演講者

國家	任教學校	任教學系	演講者。
台灣	國立清華大學	數理教育研究所	林碧珍教授
香港	華東師範大學	數學學系	張僑平教授
美國	南伊利落大學	課程與教學學系	林承瑤教授
澳洲	墨爾本大學	墨爾本教育研究院	Prof. Max Stephens

本研討會主要涵蓋「數學解題與思維」在數學教學、學習與評量應用之相關議題，主要規劃以下大主題，每個大主題下分別有許多小子題，若有其他相關議題之研究亦歡迎提出。

- (1) 「數學解題與思維」和數學素養教學設計與學習科技
- (2) 「數學解題與思維」和數學素養課程內容與數學素養
- (3) 「數學解題與思維」和數位素養科技工具與數學教學
- (4) 「數學解題與思維」和數學素養師資與數位科技素養
- (5) 「數學解題與思維」和數學素養概念發展與學習工具
- (6) 「數學解題與思維」和數學素養學習評量與補救教學
- (7) 「數學解題與思維」和其他數學素養教育和數位議題

心得：

以精彩的特邀演講直接切入研討會的核心主題，林碧珍教授從研究的角度闡述數學臆測任務的教學模式、與創造力的關係以及與解題導向教學的差異，並介紹對於「臆測任務的數學創造力」的相關研究成果。

活動當天的下半場，是由 Prof. Max Stephens 主講的「運算思維是一種特別的處理問題的方式」，展示了如何運用運算思維解決問題及提出更多有趣的問題，也可以將其用來推廣透過數學邏輯與歸納所帶來的深度思考。

最後為論文發表，各場次的交流十分熱烈，不僅讓論文發表者學術成就更加增進，台下的參與者更是受益良多。從學術分享，為我們在學術界奠定基礎，最後由論文發表者為我們帶來學術增能，研討會內容豐富也帶動了學術界各領域專家的交流。

子計畫名稱	子計畫 4. 小學數學教學活動設計工作坊
執行單位	台灣數學教育學會
活動名稱	2023 年台灣數學教育學會年會暨第十四屆科技與數學教育國際學術研討會
活動時間	2023 年 04 月 29 日(星期六)、04 月 30 日(星期日)
活動地點	國立臺北教育大學
參與對象	數學領域教授、研究生
活動辦理照片	
	
林福來名譽教授 特邀演講	Prof. Jackie Murawska
	
	
TI 頒獎	論文發表

活動內容			
演講者			
國家	任教學校/學會名稱	任教學系/職位	演講者
台灣	國立臺灣師範大學	數學系	林福來名譽教授
美國	Illinois Council of Teachers of Mathematics	President	Jackie Murawska
台灣	國立中央大學	數學系	單維彰教授
日本	Utsunomiya University		Keiko Hino
香港	華東師範大學	數學學系	張僑平教授
<p>本研討會主要涵蓋「數學解題與思維」在數學教學、學習與評量應用之相關議題，主要規劃以下大主題，每個大主題下分別有許多小子題，若有其他相關議題之研究亦歡迎提出。</p> <ol style="list-style-type: none"> (1) 「數學解題與思維」和數學素養教學設計與學習科技 (2) 「數學解題與思維」和數學素養課程內容與數學素養 (3) 「數學解題與思維」和數位素養科技工具與數學教學 (4) 「數學解題與思維」和數學素養師資與數位科技素養 (5) 「數學解題與思維」和數學素養概念發展與學習工具 (6) 「數學解題與思維」和數學素養學習評量與補救教學 (7) 「數學解題與思維」和其他數學素養教育和數位議題 <p>心得：</p> <p>以精彩的特邀演講直接切入研討會的核心主題，由林福來教授主講的「數教 50」分享了在數學教育的 50 年的歷程以及想法心得，老師與老師間、學生與學生之間、老師與學生之間如都能有效且有系統的討論、分享、互助以及互學就能達到共好。由 Prof. Jackie Murawska 主講的「喚醒數學課堂的快樂：思考任務和主動學習的力量」，展示了讓課堂的學習可以是很有趣但不失教育目的的，讓學生從不喜歡到不討厭甚至喜歡真的是老師的該注意的一件很重要的事情。由單維彰教授主講的「民族觀點下的數學課程與學習」，社會人文文化與數學是密不可分的，在課程總綱裡也將人文素養等列為重要核心素養。由 Prof. Keiko Hino 主講的「通過解決問題的探究數學教學：日本數學教育研究與實踐的方法」，在日本的教育體系中，數學教育一直是重中之重，而通過解決問題的探究數學教學就是其中的重要一環。此方法的主要特點是讓學生在一個具體而有意義的問題情境下進行探究和學習，以此來進行數學知識的構建和概念的理解，由張僑平教授主講的「在充面挑戰的時代面對變革：COVID-19 大流行期間香港數學教師的教學經驗反思」，COVID-19 大流行期間，全球教育領域面臨了前所未有的挑戰，香港也不例外。在這個時期，許多數學教師被迫改變他們的教學方式和策略。</p>			

肆、檢討與精進作為

一、數學雙語教學工作之舉辦確實能協助教師與師資生釐清數學內容裡的重要概念，並能從中欣賞不同文化對數學概念之詮釋，深入理解數學概念之學習原理。惟整個跨域和協作歷程，需整合不同領域之知識和思維，例如英語教師、數學輔導員和專家學者之間的互動與概念釐清需耗費長久時間，非短期可以完成。建議數學雙語教學工作坊可擬定長期計畫，規劃增能與協調工作機會，利用寒暑假長期實踐進行工作坊，逐步從低能即開始增加對教材與教學方法認識，設計創發有趣教案，提供現職教師使用。

二、ICT 教學可以促進學生運用媒體進行學習，促進使用工具能力，為不同教師對於使用軟體介紹素材或是操作有其精熟常用之軟體，學生針對不同講師進行工作坊時，常會因軟體版本不同、介面有異而需花費時間精熟，建議教育部可針對國中小課堂裡推薦可用之優良軟體(集中少許即可)，提供教師有效進行教學。

三、師培生在校需修習眾多師培學分，雖然計畫提供多元豐富研習機會，但礙於正課時間有限，雖然亦開辦周六、日研習活動，惟講師難聘請！學生亦要休息。因此未來活動之安排可融入適合之正式課程，讓學生有連結理論與實務相互驗證機會，亦能免除上述問題。

四、感謝教育部師藝司提供經費補助領域中心推行相關業務，無欠缺專任助理協助，甚多文書及經費處理須由主持人負責，對主人持體力與業務承受皆是一大負擔，建議未來計畫可酌以編列專任助理經費協助業務推動。