114 學年度小學數學雙語教案設計競賽

壹、設計理念

本教案以「線對稱圖形」為主題，並應用 CLIL 4C 教學法，讓學生透過英語來學習數學學科知識，從內容、溝通、認知、文化四個層面提升學生各方面的能力。本單元透過生活化的觀察、摺紙與鏡射等活動，使學生能從具體操作中發現線對稱圖形的特徵，並學習如何判斷對稱軸，此次，也透過對摺活動認識並理解對稱點、對稱邊與對稱角以及其相關性質，最後能自行繪製或剪出線對稱圖形，也能做簡單的幾何推理。整體課程強調「做中學」與「說中學」，透過教師提問引發學生進行數學思考，培養邏輯推理與語言表達的雙重能力，並營造開放、互動且具多元的學習環境，使學生在愉悅的學習歷程中體驗數學之美，達成理解、應用與溝通並重的學習目標。

貳、教學分析

一、教材分析

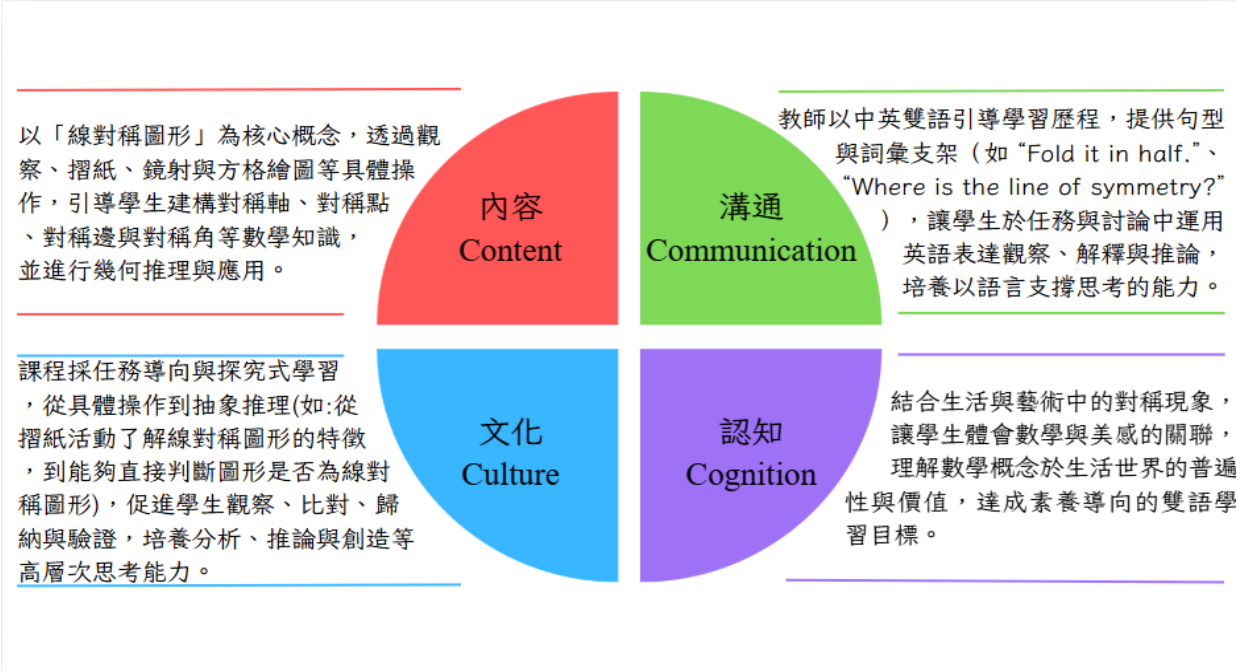
以前	現在	未來
第七冊 L6 -認識平面上全等圖形的意義 -認識全等三角形的對應頂點、對應邊、對應角的關係 第八冊 L2 -平面上兩條直線互相垂直的意義 第九冊 L5 -認識多邊形(含正多邊形)	-察覺線對稱圖形的現象 -認識線對稱圖形及對稱軸 -認識線對稱圖形的性質 -繪製線對稱圖形 -利用線對稱圖形做簡單幾何的推理	第十一冊 L9 -知道原圖和縮圖或放大圖的對應角、對應邊的關係 -畫出簡單圖形的放大圖或縮圖

（參考來源：康軒版教師手冊資料篇）

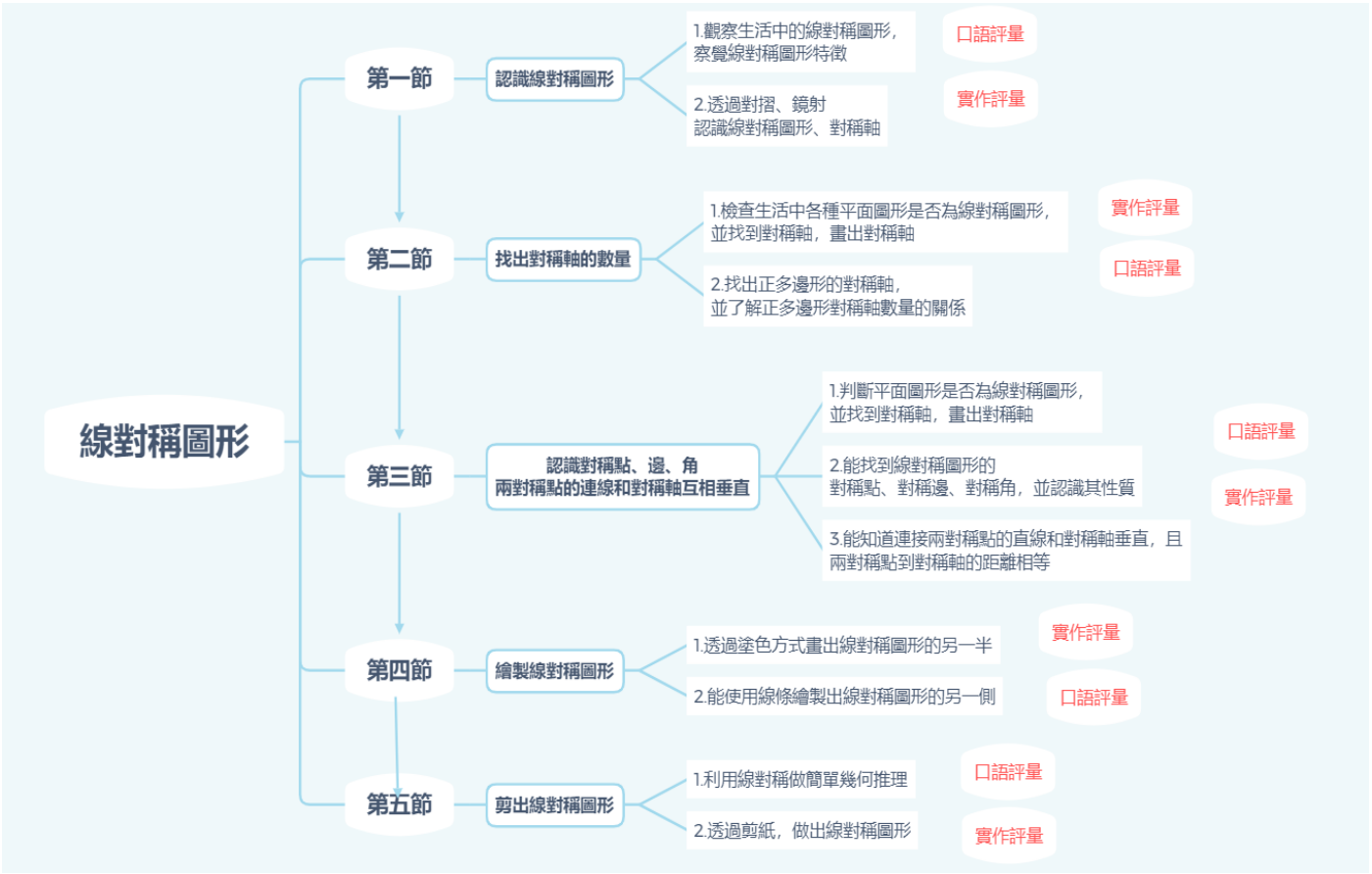
二、學生分析

學生在四上第七單元學過平面上全等圖形的意義，並且認識全等三角型的對應點、對應邊、對應角的關係，並於四下第二單元學習平面上兩條直線互相垂直的意義，及本冊第五單元認識多邊形的邊、頂點和角，而本單元學生學生須透過觀察生活中的線對稱圖形，了解到線對稱圖形的特徵。接著，透過對摺與鏡射發現並線對稱圖形的現象，利用對摺的概念作線對稱圖形對稱軸的判斷，並能畫出對稱軸。了解線對稱圖形意義後，透過對摺的活動認識線對稱圖形的性質，最後，能夠繪製線對稱圖形，並利用線對稱圖形做幾何推理。

三、教學方法分析



四、課程概念架構圖

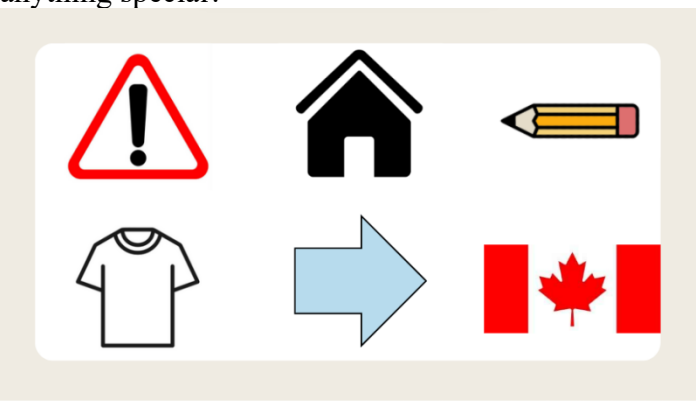
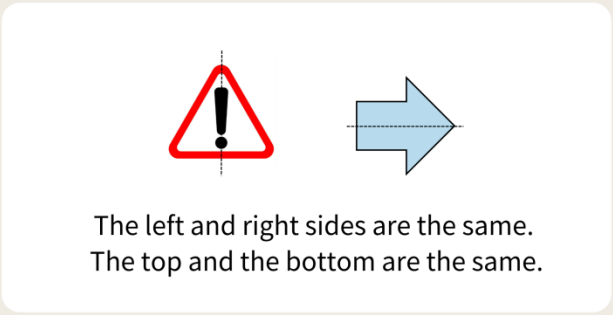
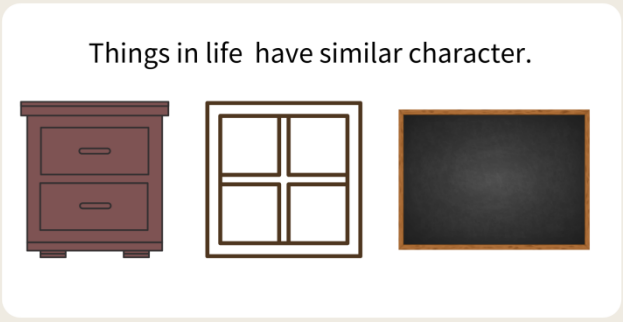


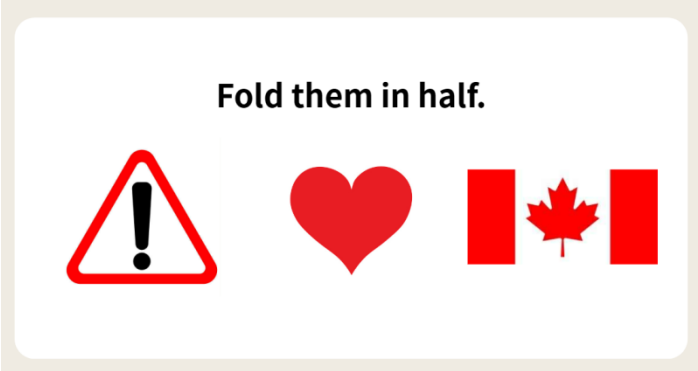
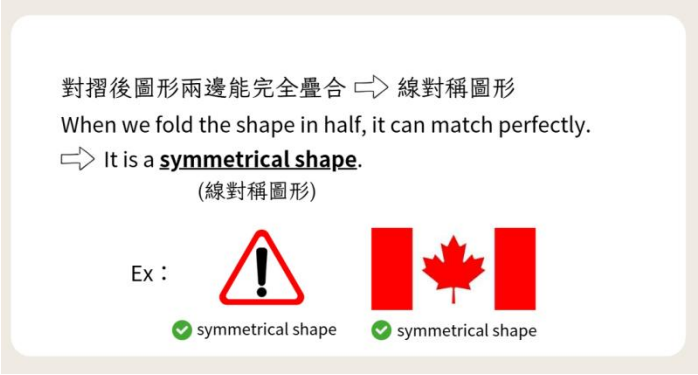
參、教學活動設計

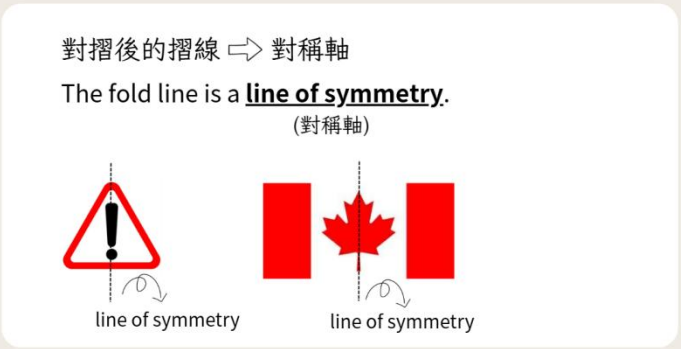
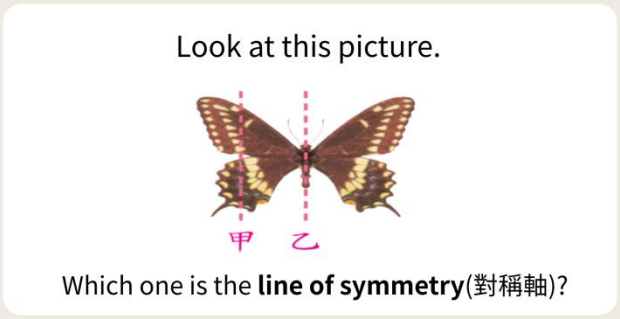
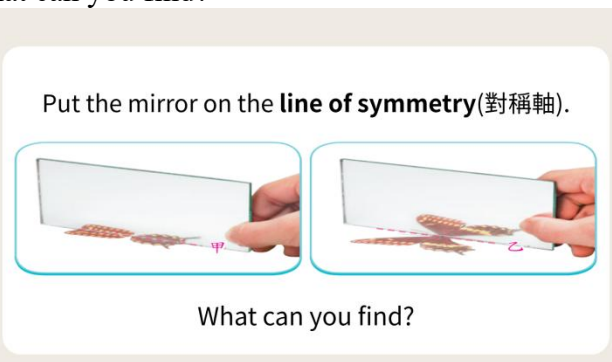
單元名稱	線對稱圖形	**適用年級**	五年級
課程名稱	對稱，讓圖形更有形	**教學時間**	共 5 節
教材版本	康軒第九冊第七單元		
教學準備	鏡面紙、色紙、圖形紙卡、剪刀、直尺、量角器、三角板、學習單、簡報、學習單。		

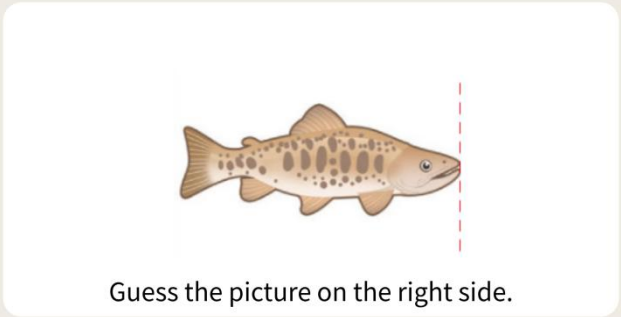
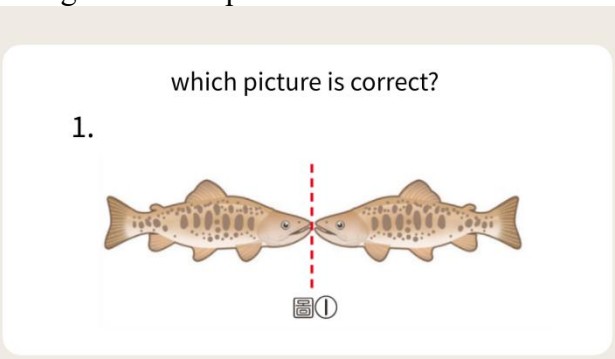
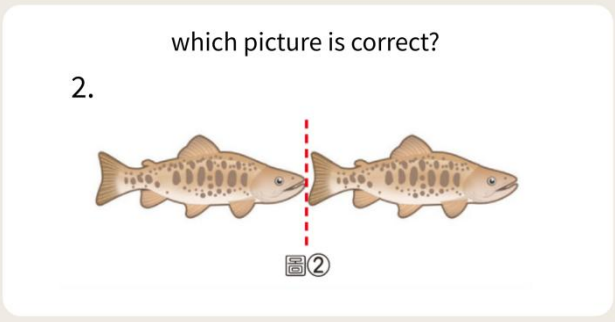
能力指標/學習表現	**分年細目/學習內容**	**單元教學目標**
s-III-6 認識線對稱的意義與其推論。	S-5-4 線對稱:線對稱的意義。「對稱軸」、「對稱點」、「對稱邊」、「對稱角」。由操作活動知道特殊平面圖形的線對稱性質。利用線對稱做簡單幾何推理。製作或繪製線對稱圖形。	1.觀察生活中的線對稱圖形，察覺線對稱圖形特徵 2.透過對摺、鏡射認識線對稱圖形、對稱軸 3.檢查生活中各種平面圖形是否為線對稱圖形，並找到對稱軸，畫出對稱軸 4.找出正多邊形的對稱軸，並了解正多邊形對稱軸數量的關係 5.判斷平面圖形是否為線對稱圖形，並找到對稱軸，畫出對稱軸 6.能找到線對稱圖形的對稱點、對稱邊、對稱角，並認識其性質 7.能知道連接兩對稱點的直線和對稱軸垂直，且兩對稱點到對稱軸的距離相等 8.透過塗色方式畫出線對稱圖形的另一半 9. 能使用線條繪製出線對稱圖形的另一側 10.利用線對稱做簡單幾何推理 11.透過剪紙，做出線對稱圖形

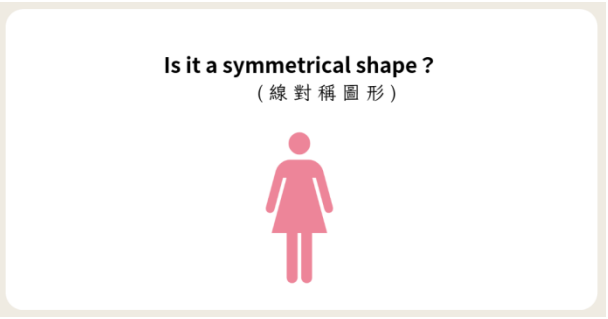
單元教學目標	**教學內容**	**時間**	**評量方式**	**備註**

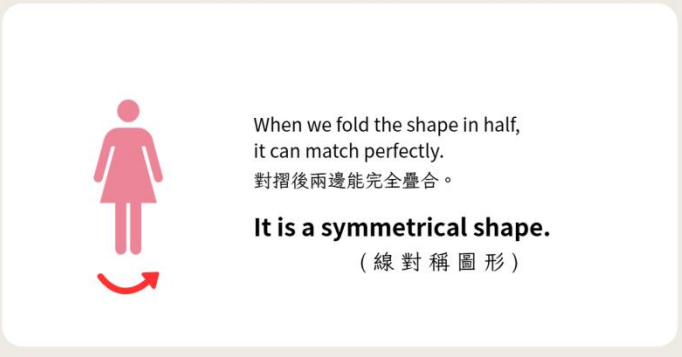
1. 觀察生活中的線對稱圖形，察覺線對稱圖形特徵 2. 透過對摺、鏡射認識線對稱圖形、對稱軸	**-第一節課-** 引導活動 Warm up 1.教師準備圖片讓學生觀察 T: Look carefully at these pictures. Can you find anything special?  (學生可能回答：圖案左右兩邊都長一樣、圖案上下兩邊長得一樣。) T: That's right. The left side and the right side are the same, or the top and the bottom are the same.  2.教師詢問學生教室中還有哪些左右兩邊一樣的東西。 T: Can you find things in life that have similar character? (學生可能回答：抹布、黑板、窗戶。)  發展活動 Development	5’	口語評量 學生能說出圖案的特性(左右一樣、上下一樣)	

	(一)摺紙-觀察及認識線對稱圖形 1.教師準備 3-5 個圖案，請學生將圖形對摺。  T: Look at the pictures. Fold them in half. T: What can you find？ (學生可能回答：圖形變成原本的一半了、可以完全疊在一起。) T:Excellent! 3.教師定義線對稱圖形 T:對摺後兩邊能完全疊合的圖形，就是線對稱圖形。When we fold the shape in half, it can match perfectly. →It is a “**symmetrical shape”**.  4.教師定義對稱軸：對摺的摺線，就是這個圖形的對稱軸。 T: Now, open the folded pictures. What can you find? (學生可能回答：圖案中間有一條線) T: Good! T: 對摺的摺線，就是這個圖形的對稱軸。The fold line is a “**line of symmetry**”.	12’	實作評量 學生能將生活中的圖形對摺 口語評量 學生能說出對摺後線對稱圖形特徵	

	 (二)透過鏡射發現線對稱圖形 1.教師請學生拿出上一個活動的圖案 T: Where is the **line of symmetry** in the shape? Why? (學生可能回答:在圖案的中間，因為他們摺起來會完全疊在一起，因此此線會是它的對稱軸。) 2.請學生找出對稱軸  T: Which one is the line of symmetry? 甲 or 乙? (學生可能回答：乙，因為左右兩邊會相同。) 3.教師請學生拿出鏡面紙 T:把鏡子放在對稱軸上，我們可以發現什麼? Put the mirror on the **line of symmetry**(對稱軸), what can you find?  (學生可能回答：從鏡子裡可以看到圖形的另一	18’	實作評量 學生能透過操作鏡面紙，了解線對稱圖形的特徵	

	半。) 教師歸納：所以當我們把鏡子放在蝴蝶的對稱軸上時，可以從鏡子裡看到圖形完整的另一半。 4.教師先讓學生猜圖片的另一端會呈現甚麼圖形，並選出答案是 1 或 2。  T: Look at the fish first. Guess the picture on the right side. (學生可能回答：跟左邊的圖形一樣或跟左邊的圖形相反) T: And guess which picture is correct? 1or2?   (學生可能回答：1，因為摺起來會疊在一起；2，因為兩隻魚長一樣。) 5.教師請學生拿出鏡面紙，檢驗答案是否正確 T: Put the mirror on the **line of symmetry**, and check your answer. Which picture is true?			

3. 檢查生活中各種平面圖形是否為線對稱圖形，並找到對稱軸，畫出對稱軸 4. 找出正多邊形的對稱軸，並了解正多邊形對稱軸數量的關係 5. 判斷平面圖形是否為線對稱圖形，並找到對稱軸，畫出對稱軸	S: Picture 1. T: Great job! Everyone did well. 6.教師詢問哪一個為線對稱圖形? T: Which one is a **symmetrical shape**? 學生可能回答:(1 是、2 不是，因為把鏡面紙放在虛線上，在鏡面紙看到的圖案會是圖 1。) 總結活動 Wrap up 1.教師總結學生的表現與這堂課的學習內容，包括：「對稱軸」與「線對稱圖形定義及特徵」的概念。 (1)對摺後兩邊能完全疊合的圖形，就是線對稱圖形。When we fold the shape in half, it can match perfectly. →It is a "**symmetrical shape(線對稱圖形)**". (2)對摺的摺線，就是這個圖形的對稱軸。The fold line is a "**line of symmetry(對稱軸)**". 2.教師提醒學生複習學習內容，預告下節課程有判斷「線對稱圖形」的活動。 **-第二節課-** 引導活動 Warm up (一)判斷線對稱圖形 1.教師詢問此圖形是否為線對稱圖形  T: Is it a symmetrical shape? S: Yes, it is. T: Why? (學生可能回答：對摺後兩邊能完全疊合)	5' 5'	口語評量 學生能說出線對稱圖形的特徵	



T: Very good! When we fold the shape in half, it can match perfectly. So, it is a symmetrical shape.

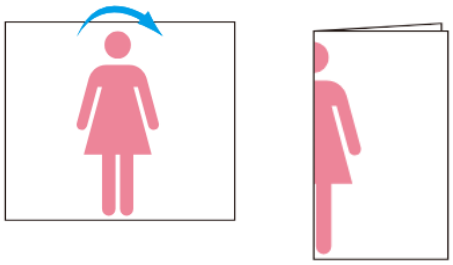
發展活動 Development

(一)畫出對稱軸

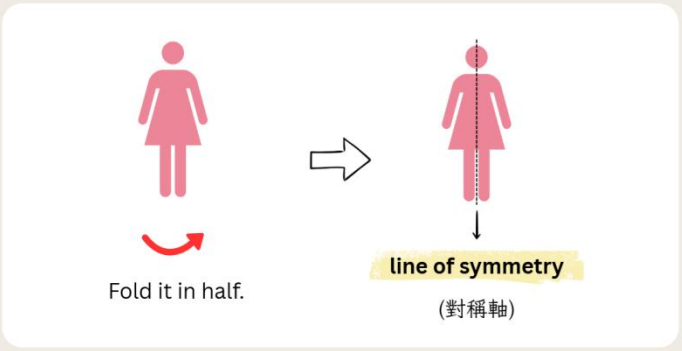
10’

口語評量
學生能說出如何找到並畫出對稱軸

1.教師詢問學生如何找到對稱軸
T: Can you find the line of symmetry?
S: Yes!
T: How can you find it? Answer my question in English.
S: Fold it in half.



T: Very good! When we fold it in half, we can find the line of symmetry.



2.教師詢問學生如何畫出對稱軸
T: How can we draw the line of symmetry?
(學生可能回答：沿著對稱軸用直尺畫)
T: Good job! Take out your rulers and draw the line of symmetry.

	2.練習畫出生活中圖形的對稱軸  (1)教師詢問哪些「是」線對稱圖形、哪些「不是」線對稱圖形 (2)承(1)，教師詢問學生是如何得知？  T: Which one is a symmetrical shape? Which one is not a symmetrical shape? Answer my questions in English. S: Picture 1 and Picture 3 are symmetrical shapes. Picture 2 and Picture 4 are not symmetrical shapes. T: Why? (學生可能回答：因為如果把圖 1 跟圖 3 對摺，會發現圖案兩邊可以完全疊在一起，但是圖 2 跟圖 4 怎麼摺應該都沒辦法。) T: Good job! Picture 1 and Picture 3 are symmetrical shapes. When we fold them in half, they can match perfectly. Picture 2 and Picture 4 are not symmetrical shapes. When we fold them in half, they can't match perfectly.		口語評量 學生能說出如何判斷線對稱圖形 實作評量 學生能畫出生活中不同圖形的對稱軸	

Picture 1 and Picture 3 are **symmetrical shape(線對稱圖形)**.

(1)  (3) 

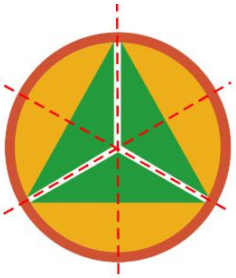
When we fold them in half, they can match perfectly.
對摺後兩邊能完全疊合。

Picture 2 and Picture 4 are not **symmetrical shape(線對稱圖形)**.

(2)  (4) 

When we fold them in half, they can match perfectly.
對摺後兩邊能完全疊合。

(3)教師請學生拿出附件檢查自己是否判斷正確，並把是線對稱圖形的對稱軸畫出來
T: Check your answer. If the shape is a symmetrical shape, you should draw the line of symmetry.

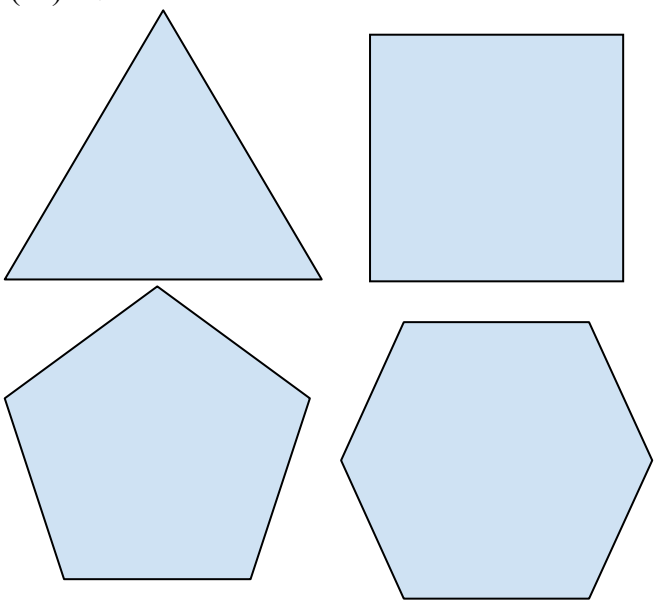
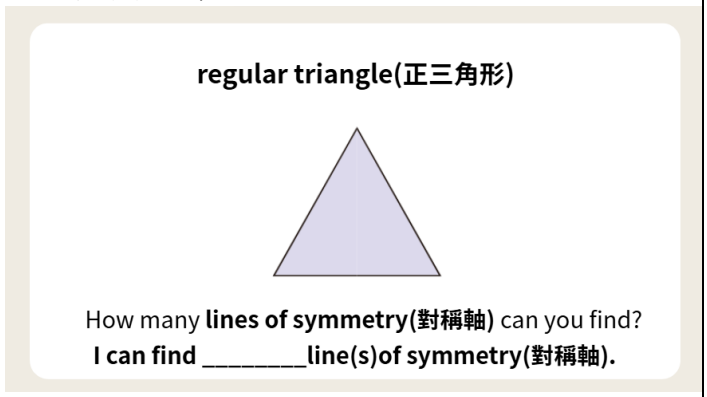
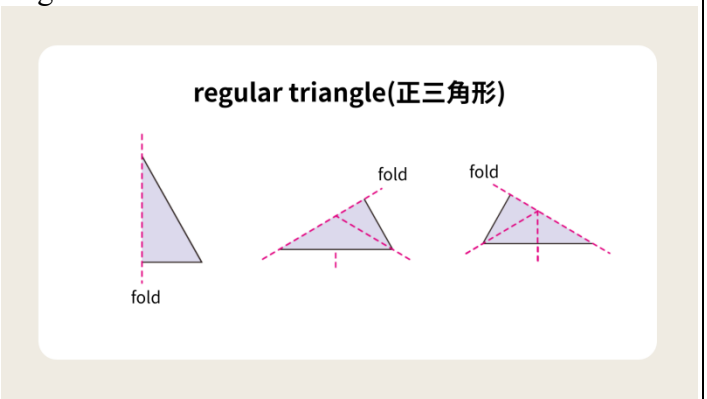


Picture 1

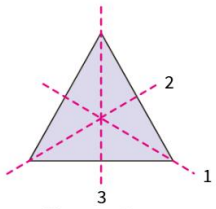
Picture 2

Picture 3

Picture 4

	(二)正多邊形與對稱軸的關聯  1.教師請學生拿出附件  T: Fold the regular triangle. How many lines of symmetry can you find? Answer my question in English.  S: I can find _(number)_line(s)of symmetry. T: Take out another picture(square, regular pentagon, regular hexagon), how many lines of symmetry can you find?	10’	實作評量 學生能透過摺紙找出正多邊形的對稱軸 口語評量 學生能使用英文目標句型說出正多邊形的對稱軸數量(I can find____line(s) of symmetry.)	

regular triangle(正三角形)



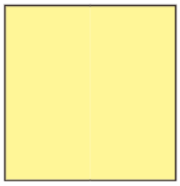
I can find <u>three</u> lines of symmetry(對稱軸).

S: I can find _(number)_line(s)of symmetry.

(教師給予以下圖片，並重複相同教學步驟)

四邊形

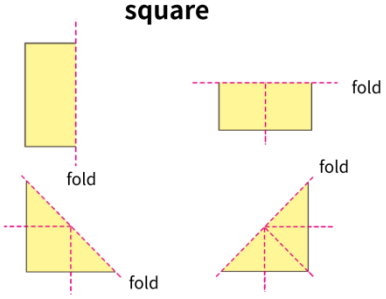
square



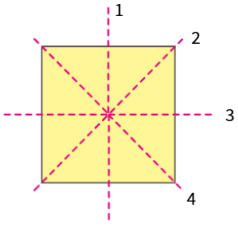
How many **lines of symmetry(對稱軸)** can you find?

I can find _____line(s)of symmetry(對稱軸).

square

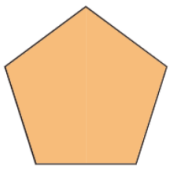


square



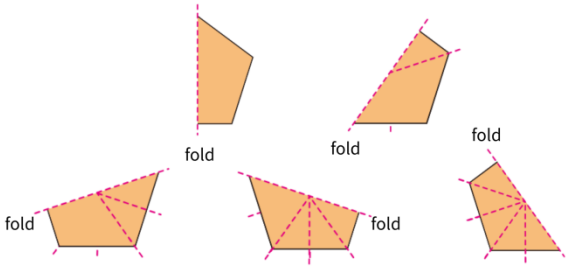
I can find <u>four</u> lines of symmetry(對稱軸).

regular pentagon(正五邊形)

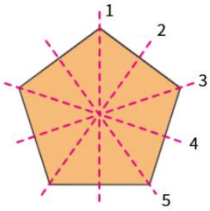


How many **lines of symmetry(對稱軸)** could you find?
I can find _____line(s)of symmetry(對稱軸).

regular pentagon(正五邊形)

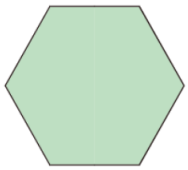


regular pentagon(正五邊形)

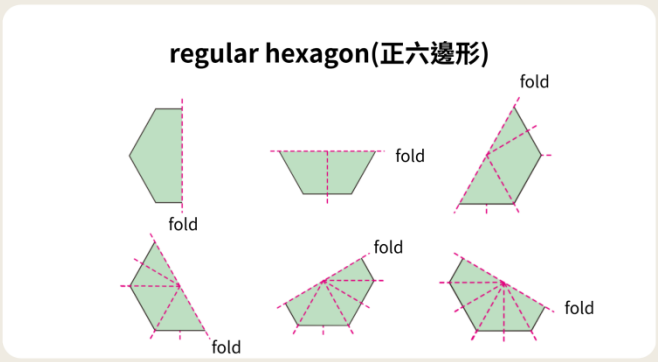
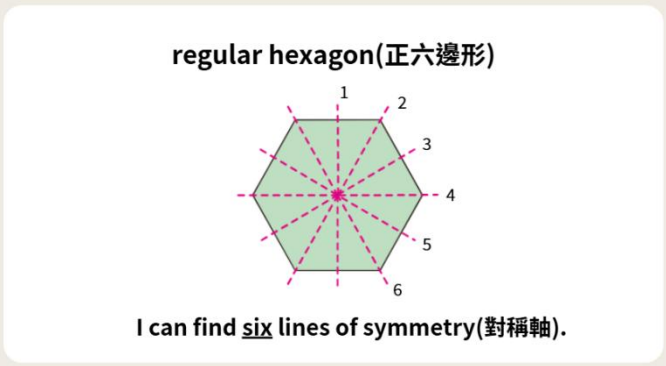
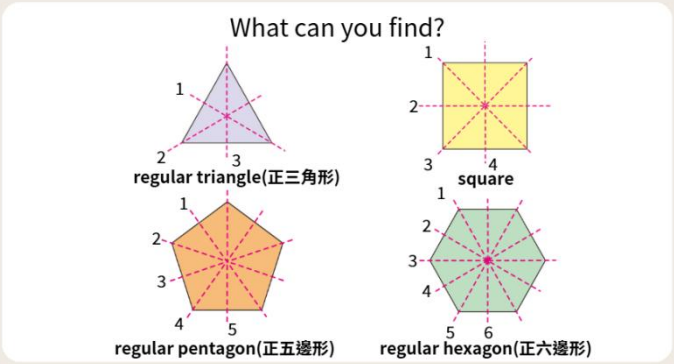


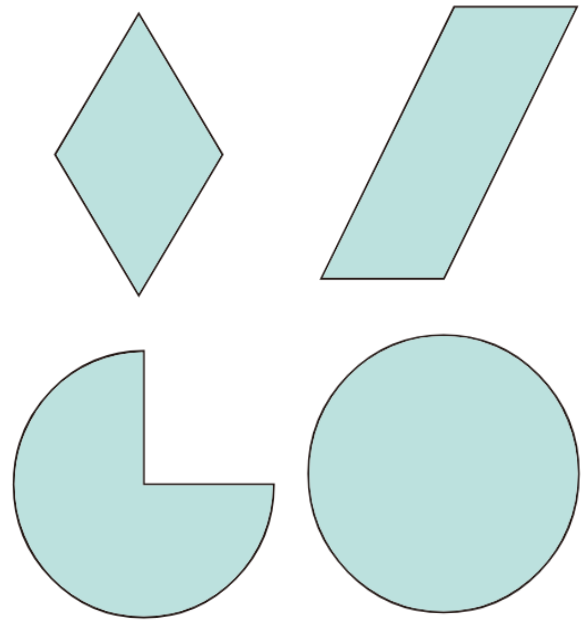
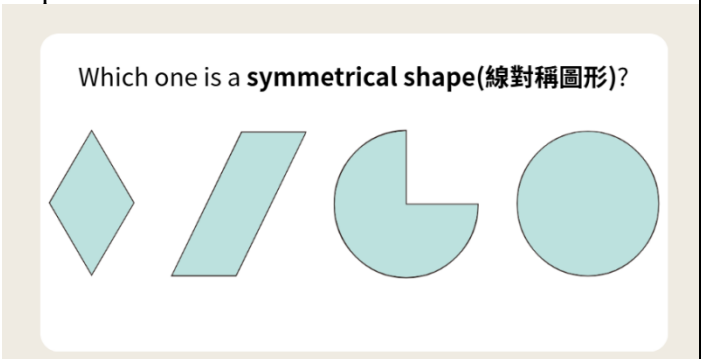
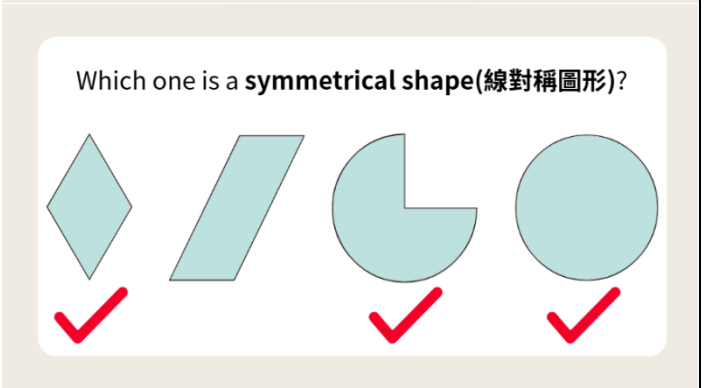
I can find <u>five</u> lines of symmetry(對稱軸).

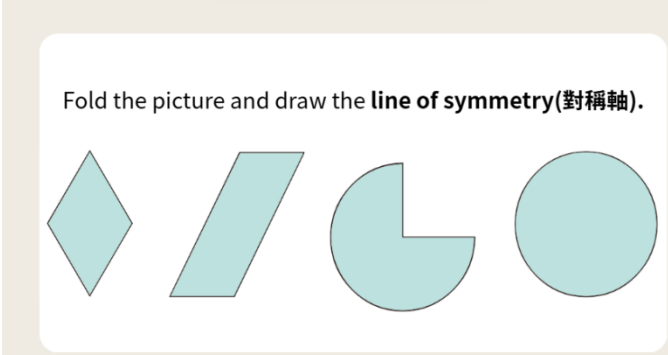
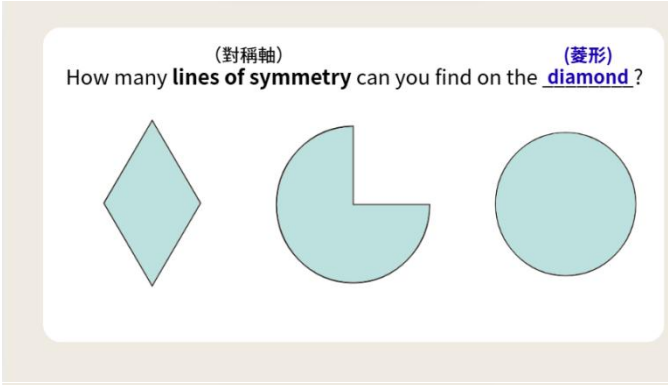
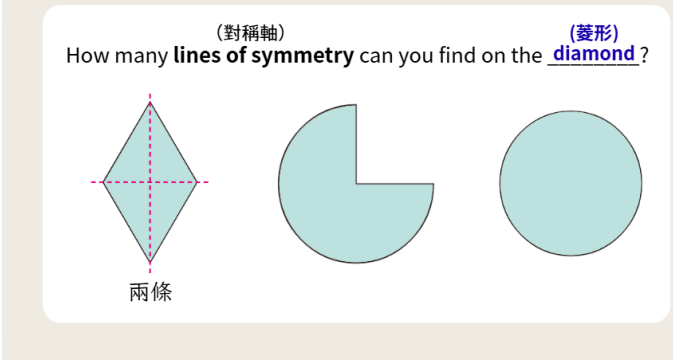
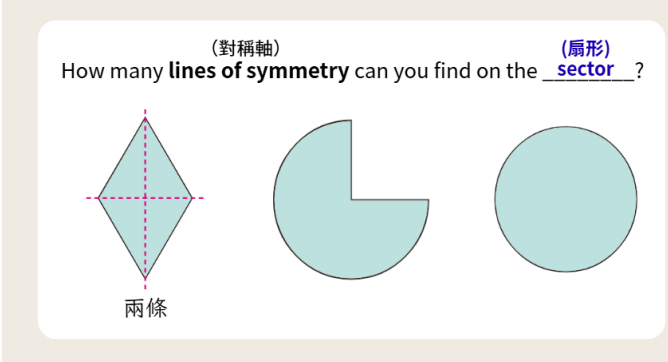
regular hexagon(正六邊形)

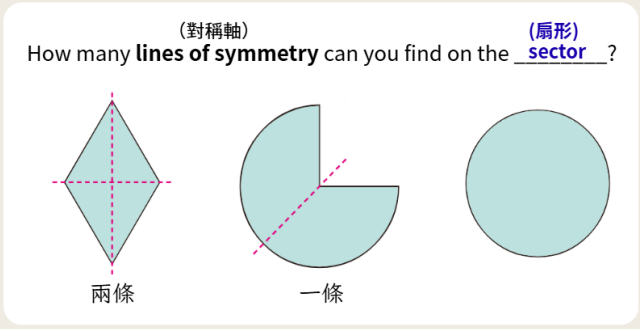


How many **lines of symmetry(對稱軸)** can you find?
I can find _____line(s)of symmetry(對稱軸).

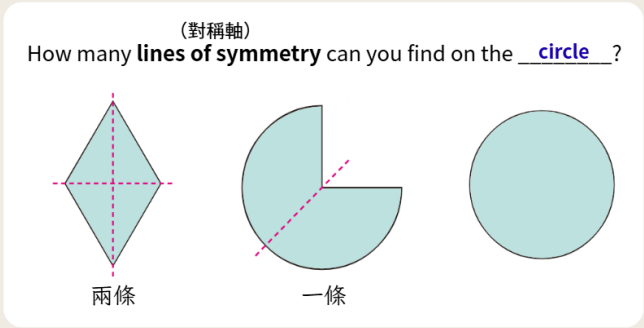
	  2.教師請學生觀察 T: What can you find?  (學生可能回答：正三角形有三條邊所以有三條對稱軸、正方形有四條邊所以有四條對稱軸.....) T: Everyone did a great job. 3.教師歸納：正多邊形的對稱軸數量和圖形的邊長數量會是一樣的。 (三)平面圖形對稱軸	10’	口語評量 學生能說出線對稱圖形的特徵	

	 1.教師請學生拿出附件，詢問哪些是線對稱圖形，哪些不是。 T: Take out the picture. Which one is a symmetrical shape?   (學生可能回答：菱形、圓形、扇形) T: Which one isn't a symmetrical shape? (學生可能回答:平行四邊形) 2..教師請學生拿出附件摺摺看，並把圖形的對稱軸畫出來。		實作評量 學生能夠透過判斷哪些平面圖形是線對稱圖形，透過摺紙檢驗並畫出對稱軸	

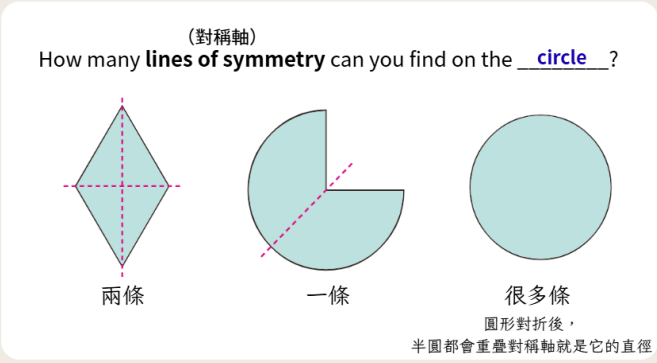
	T: Fold the picture and draw the line of symmetry to check the answer.  T: How many lines of symmetry can you find on the diamond(菱形)? Answer my question in English.   S: I can find two lines of symmetry. T:Great job! The diamond has two lines of symmetry. It's a symmetrical shape. And how many lines of symmetry can you find on the sector(扇形)?  			



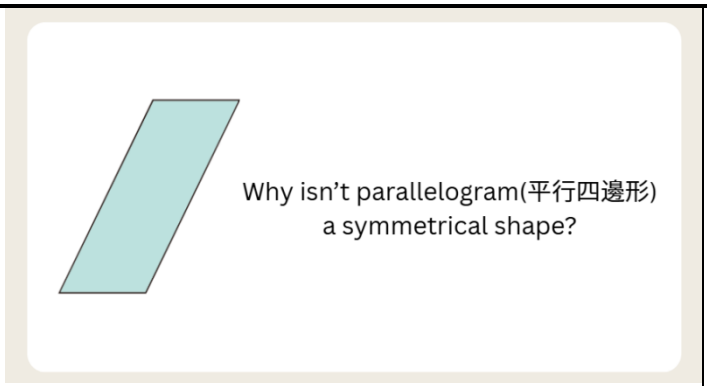
S: I can find a line of symmetry.
T:Yes! The sector(扇形) has a line of symmetry. It's a symmetrical shape. And how many lines of symmetry can you find on the circle?

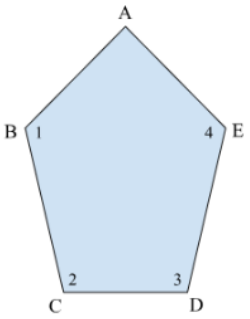
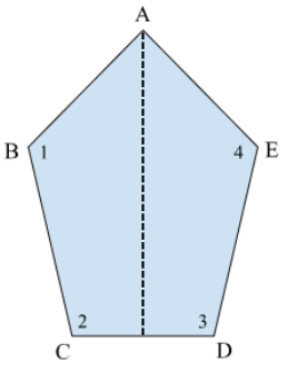
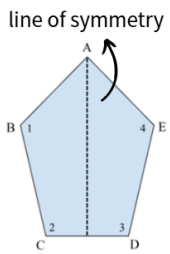


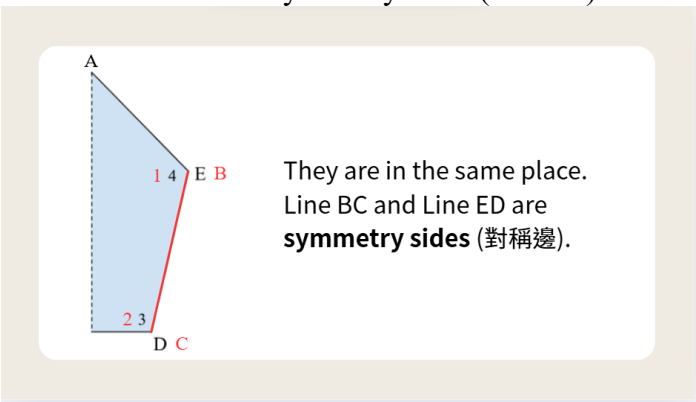
S: I can find many lines of symmetry.
T:Why?
(學生可能回答：因為不管怎麼對摺都是對稱的。)
T: That's right! The circle has many lines of symmetry.
T: What else can you find about the line of symmetry on the circle?
(學生可能回答：圓的直徑就是圓的對稱軸。)

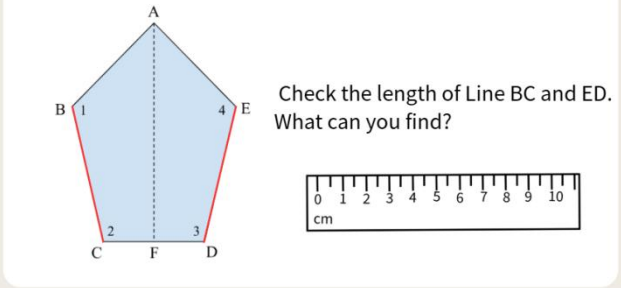


T: But why isn't parallelogram (平行四邊形) a symmetrical shape?

	 (學生可能回答：對摺後，兩邊都不會長一樣，所以他不是線對稱圖形。) T: Excellent! 總結活動 Wrap up 1.教師總結今日課堂，包括:判斷線對稱圖形、正多邊形的對稱軸等於邊數以及平面圖形與其對稱軸判斷。 T: Tell me what we learned today. (學生可能回答：判斷圖形的對稱軸) T: How many lines of symmetry can you find on the regular triangle? Answer my question in English. S: I can find three lines of symmetry. T: How many lines of symmetry can you find on the square? S: I can find four lines of symmetry. T: Yes. T: 正多邊形的對稱軸跟他的邊長又有什麼關係？ (學生可能回答：正多邊形的對稱軸數量和它的邊長數量會是一樣的。) T:Great! T: Next, Is the diamond a symmetrical shape? S: Yes. T: How many lines of symmetry can you find on the diamond? S: I can find two lines of symmetry. T:Great job! Is the circle a symmetrical shape? S: Yes. T: How many lines of symmetry can you find on the circle? S: I can find many lines of symmetry. T: Why does the circle have many lines of symmetry? (學生可能回答：因為圓形的直徑就是他的對稱軸) T: Everyone did a great job! 2.教師提醒學生複習學習內容，並預告下次會教對稱點、對稱邊和對稱角。	5’		

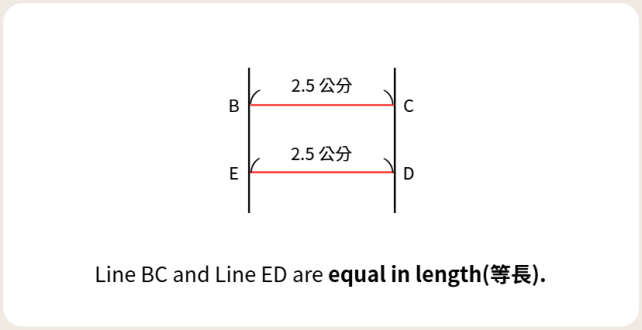
6. 能找到線對稱圖形的對稱點、對稱邊、對稱角，並認識其性質 7. 能知道連接兩對稱點的直線和對稱軸垂直，且兩對稱點到對稱軸的距離相等	**-第三節課-** 引導活動 Warm up 1.教師詢問此圖形是否為線對稱圖形  T: Is it a symmetrical shape? S: Yes, it is. T: Why? (學生可能回答：對摺後兩邊能完全疊合) T: Good job! When we fold the shape in half, it can match perfectly. 2.教師詢問對稱軸在哪裡 T: Can you find the line of symmetry? S: Yes. T: Great! Draw the line of symmetry and check your answer with your classmates.  3.教師歸納 T: Everyone did a great job! Line AF is the line of symmetry.  	5’	口語評量 學生能說出線對稱圖形的特徵 實作評量 學生能找到並畫出對秤軸	

	發展活動 Development (一)發現對稱點 1.教師發下圖形紙卡 2.教師引導學生發現對摺後 B、E 點的關係 T: Fold the shape in half. What's the relationship between Point B and Point E? (學生可能回答：他們會在相同的位置) 3.教師引導學生了解 B、E 為對稱點 T: Yes, they are at the same place, so we say "Point B and Point E are symmetry points." 4.教師引導學生發現 C、D 對稱點 T: Are there any other symmetry points ? S: Yes! Point C and Point D! T: Why? Answer my question in English. S: Because they are at the same place. T: Great! So, how can we say? S: Point C and Point D are symmetry points. T: Great job! (二)發現對稱邊 1.教師請學生沿著對稱軸對摺圖卡，請學生觀察線段 BC 和線段 ED，並詢問發現了什麼。 T: Fold the shape in half again. What's the relationship between Line BC and Line ED? (學生可能回答：線段 BC 和線段 ED 重疊在一起。) 2.教師說明線段 BC 和線段 ED 為對稱邊。 T: Yes! They are at the same place, so we say "Line BC and Line ED are symmetry sides (對稱邊)."  3.教師請學生用尺量量看線段 BC 和線段 ED，並詢問發現了什麼。 T: Open the shape. Use a ruler to check the length of Line BC and ED. What can you find?	5' 5'	實作評量 學生能透過對摺發線對稱點 口語評量 能說出目標句型(__and__ are symmetry points.) 實作評量 學生能透過將圖形對摺，發現對稱邊，並以測量的方式，了解對稱邊長度相等 口語評量 能說出目標句型(__and__ are symmetry sides.)	



(學生可能回答：線段 BC 和線段 ED 一樣長，都是 2.5 公分。)

T: Very good! Line BC and Line ED are equal in length(等長).

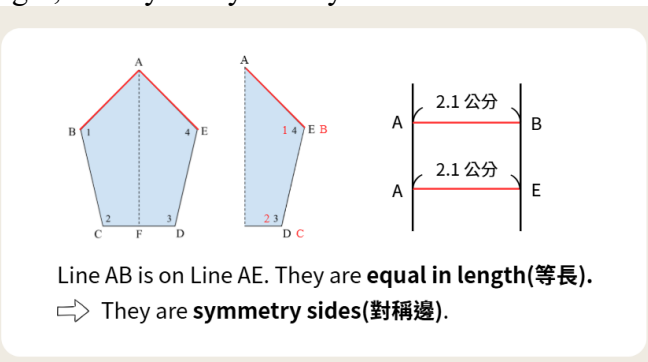


4.教師詢問還有沒有其他對稱邊。

T: Are there any other symmetry sides?

(學生可能回答：線段 AB 和線段 AE 也是對稱邊，他們重疊，而且都是 2.1 公分。)

T: Yes! Line AB is on Line AE. They are equal in length, so they are symmetry sides.



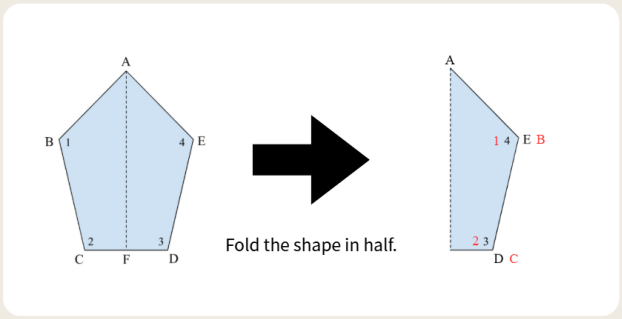
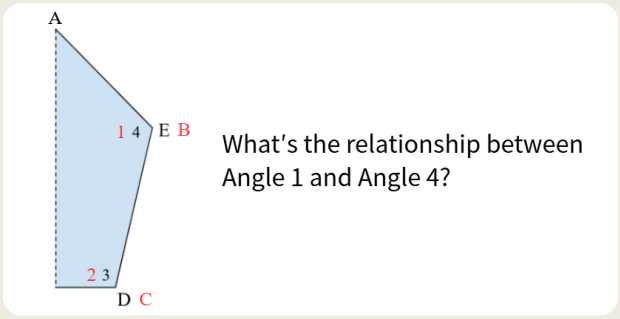
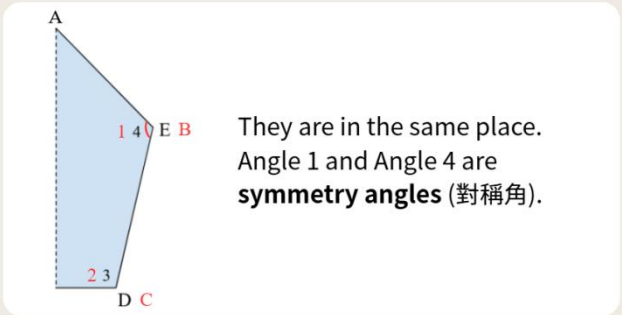
(三)發現對稱角

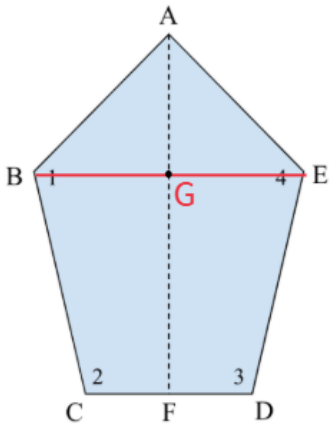
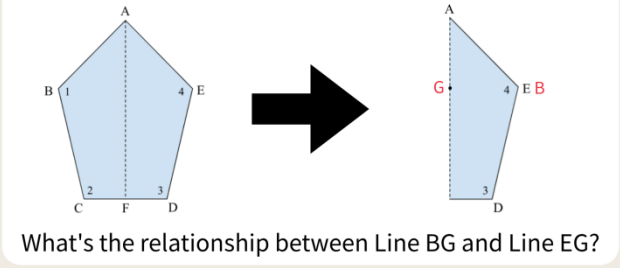
1.教師請學生觀察角 1 和角 4，詢問學生發現了什麼。

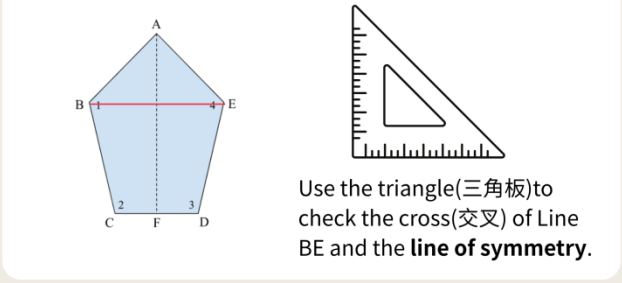
T: Fold the shape in half again. What's the relationship between Angle 1 and Angle 4?

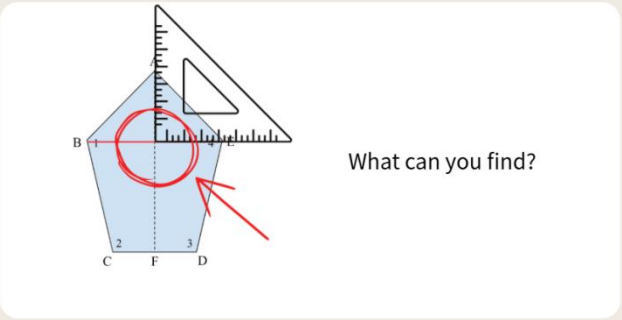
10'

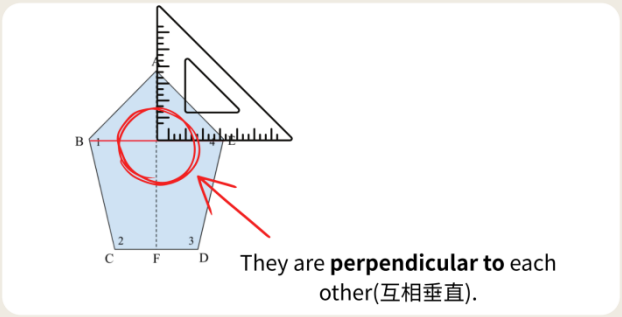
實作評量
學生能透過摺紙，

	  (學生可能回答：角 1 和角 4 重疊在一起) 2.教師說明說明角 1 和角 4 為對稱角。 T: Excellent! They are at the same place, so we say "Angle 1 and Angle 4 are symmetry angles (對稱角)."  3.教師請學生量量看角 1 和角 4，並詢問發現了什麼。 T: Open the card. Check the degree of Angle 1 and Angle 4. What can you find? (學生可能回答：角 1 是 100 度，角 4 也是 100 度，它們一樣大。) T: Good job! Angle 1 is 100 degrees, and Angle 4 is 100 degrees. They have the same angles. 4.教師詢問還有沒有其他對稱角。 T: Are there any other symmetry angles? (學生可能回答：角 2 和角 3 也是對稱角，他們有		發現對稱角，並以測量方式，了解對稱角的角度相同 口語評量 能說出目標句型(__and__ are symmetry angles.)	

	重疊，而且都是 125 度。) T: Yes! Angle 1 is on Angle 4, and they have the same angles. (四)兩對稱點和對稱軸互相垂直平分 1.教師請學生把點 B 和點 E 連起來，線段 BE 和對稱軸相交於點 G。  2.教師請學生沿著對稱軸對摺。 T: Fold the card in half. 3.教師詢問學生線段 BG 和線段 EG 是否會重疊。  T: What's the relationship between Line BG and Line EG? S: Line BG is on Line EG. They're at the same place. 4.教師詢問線段 BE 是否會和對稱軸垂直。 T: Use the triangle(三角板)to check the cross(交叉) of Line BE and the line of symmetry. What can you find?	10'	實作評量 學生能透過對摺發現到兩對稱點的連線和對稱軸互相垂直，且兩對稱點到對稱軸距離會相等。	

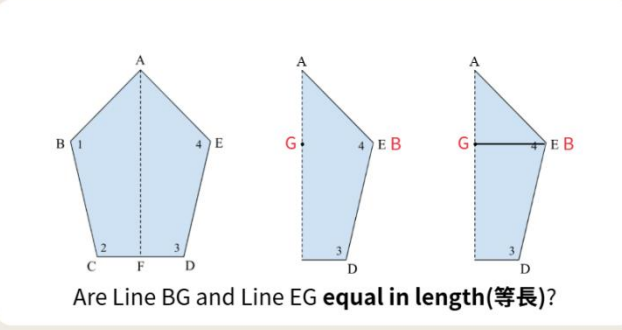






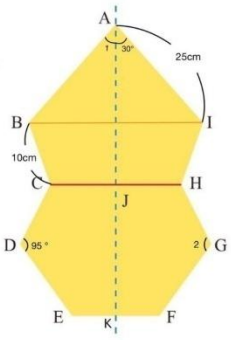
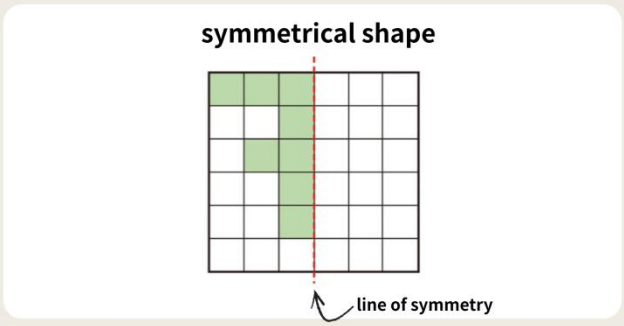
(學生可能回答：他們互相垂直)
T: They are **perpendicular to** each other.

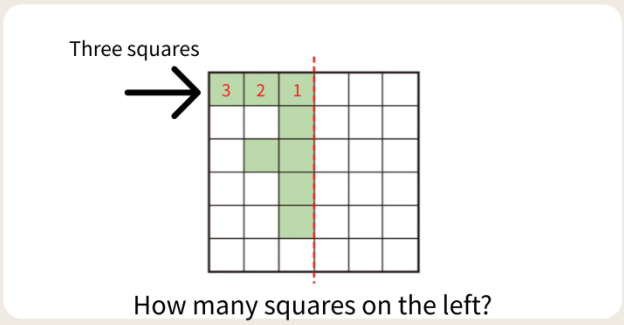
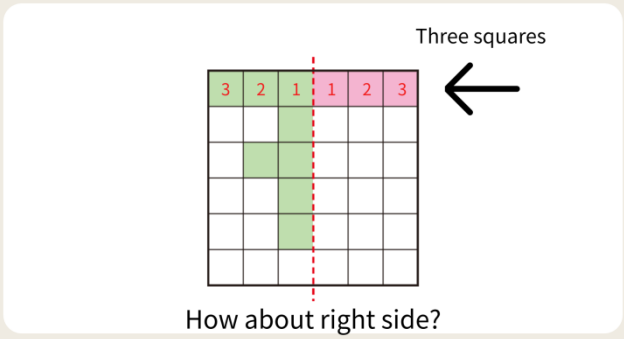
5.教師詢問學生線段 BG 和線段 EG 是否會一樣長。
T: Are Line BG and Line EG equal in length?

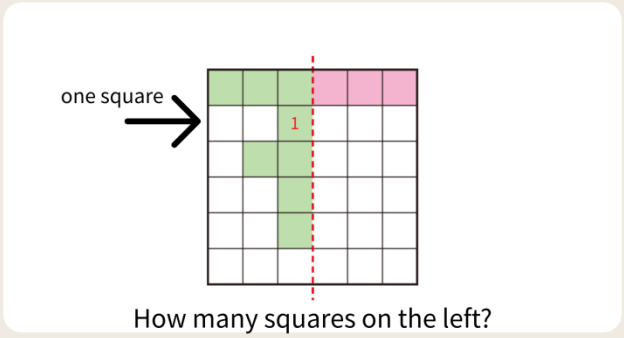


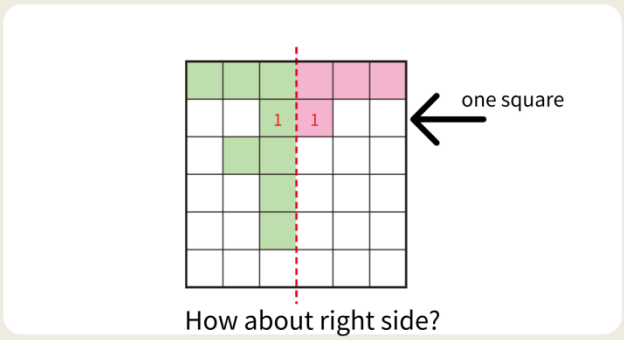
S: Yes, they are.

	6.教師歸納 (1)兩對稱點的連線和對稱軸互相垂直 (2)兩對稱點到對稱軸的距離相等 總結活動 Wrap up 1.教師總結今日課程內容:包括對稱邊、對稱點、對稱角之性質，以及兩對稱點到對稱軸的距離會相等。 -對稱點- T: They are at the same place, so we say “Point B and Point E are symmetry points.” -對稱邊- T: Line AB is on Line AE. They are symmetry sides, and they are equal in length, -對稱角- Angle 1 is on Angle 4. They are symmetry angles, and they have the same angles. -對稱點到對稱軸的距離會相等- (1)兩對稱點的連線和對稱軸互相垂直 (perpendicular to) (2)兩對稱點到對稱軸的距離相等 2.教師事先分好組別，把學生分成五組。 3.簡述學習單內容，請學生帶回家完成並上傳至padlet. 4.教師提醒學生複習學習內容，並預告下次會教線對稱圖形。 -worksheet-	5’	實作評量 完成線對稱圖形學習單	

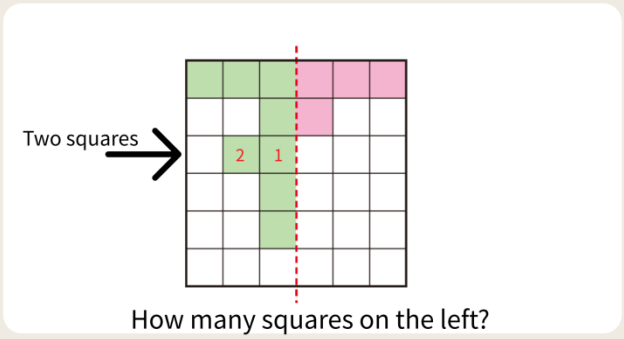
8. 透過塗色方式畫出線對稱圖形的另一半 9. 能使用線條繪製出線對稱圖形的另一側	**Symmetry Hunt** Group:_____ Name:_____  1.Is it a **symmetrical shape(線對稱圖形)**? Circle the answer. Yes No 2.Which line is the **line of symmetry(對稱軸)**?_____ 3.Line AB is_____**centimeters(公分)**. Line IH is_____**centimeters(公分)**. 4.Angle 1 is_____degrees. Angle 2 is_____degrees. 5.Are Line BI and Line AK **perpendicular to(互相垂直)** each other? Yes No 6.Are Line CJ and Line HJ **equal in length(等長)**? Yes No **-第四節課-** 引導活動 Warm up  1.教師先向學生說明此圖為線對稱圖形 T: This is a symmetrical shape, the red line is its line of symmetry. 2.教師複習對稱軸的特性 教師提問：要怎麼確認此條線為圖形的對稱軸呢? (學生可能回答：對摺會相同。) 3.教師歸納	3’	實作評量 學生能塗色出線對稱圖形的另一半 口語評量 學生能用英文說出畫幾個方格	

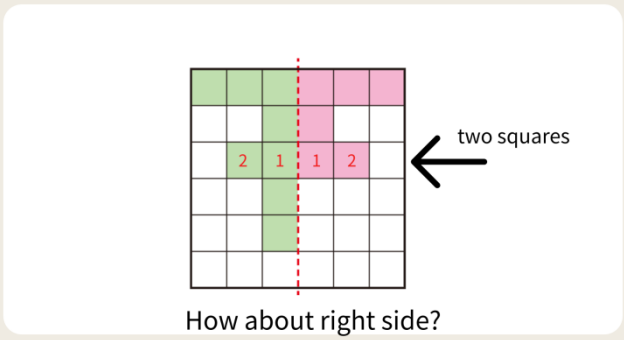
	T: Look at the picture, what the right side will be? Answer my question in English. S:The left and right sides are the same. 發展活動 Development (一)利用格子，畫出線對稱圖形的另一半   1. 教師引導學生畫出第一排的對稱圖形 T: How many squares on the left? S: Three squares. T: How about the right side? S: Three squares. T: Excellent! 2.教師引導學生畫出第二排的對稱圖形 T: How many squares on the left? S: One square. T: How about the right side? S: One square. T: Great job!	10’		

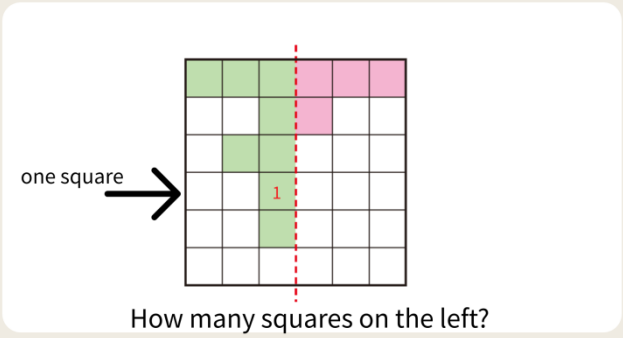


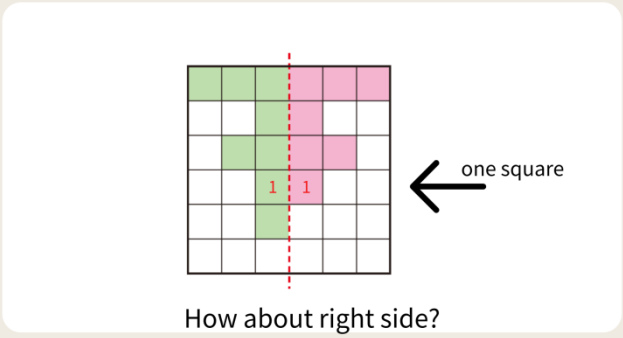


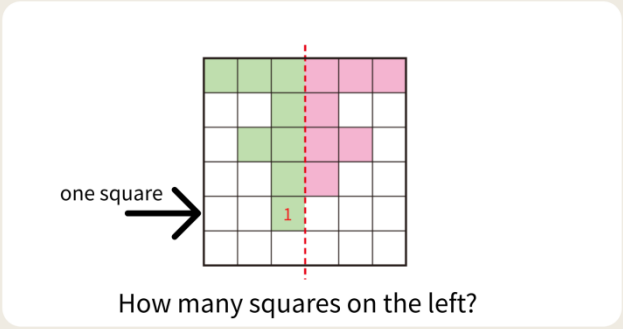
3.教師帶領學生完成圖形，並重複上述指令
教師提問：接下來請大家完成剩下的幾排，每一排都塗了幾格呢?
T: How many squares on the left?
T: How about the right side?

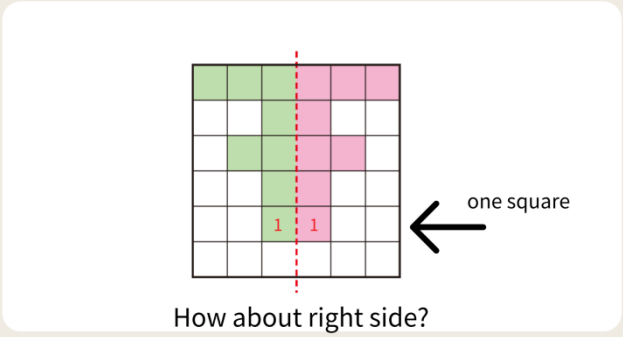






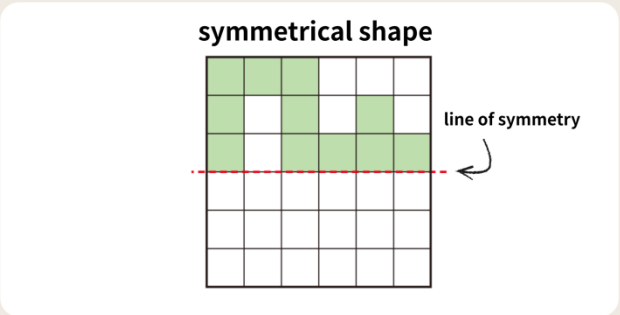




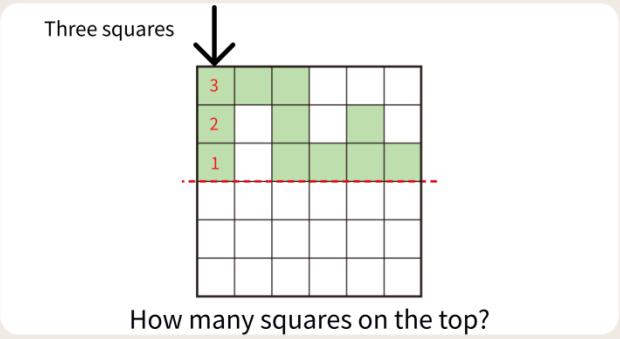


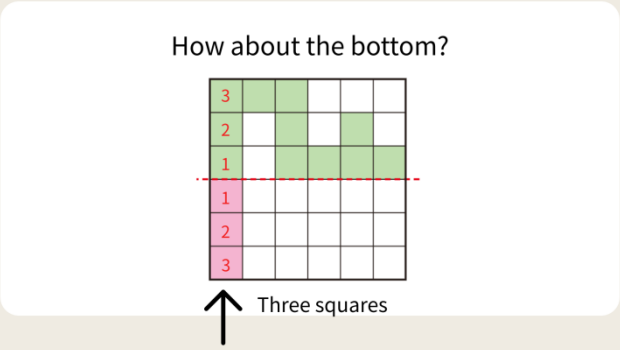
4.教師請學生思考當線對稱圖形在水平時，該如何完成線對稱圖形。

(1)教師請大家看此圖



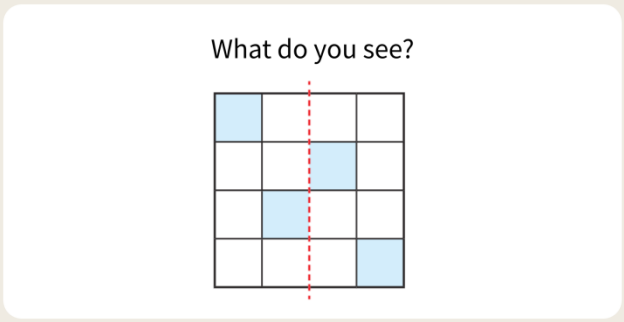
(2)教師詢問：如果對稱軸是水平線的話，代表圖形會如何呢?
T: Look at the picture, what the bottom will be?
Answer my question in English.
S: The top and the bottom are the same.
5.教師帶領學生完成最左邊第一排，其餘排數由學生自行完成。





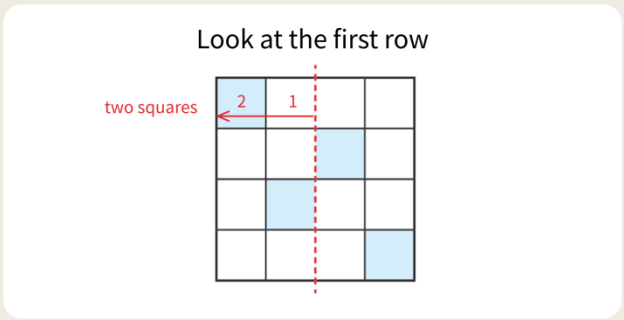
T: How many squares on the top?
S: Three squares.
T: How about the bottom?
S: Three squares.
T: Yes, everyone did a great job. And it's your turn to finish the picture.

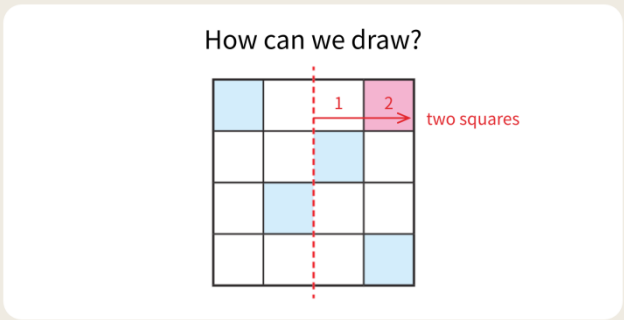
6.教師請學生觀察對稱軸兩邊



(1)T: What do you see?
(學生可能回答：中間為對稱軸，但圖形兩邊並不對稱。)
(2)T: 沒錯，那如果我們要讓此圖成為線對稱圖形，我們該如何做呢?
(學生可能回答：要讓左右兩邊圖形對稱。)
T: How can we draw to let it become a symmetrical shape?
(學生可能回答：看跟對稱軸距離幾個格子)
T: Great! It's correct.

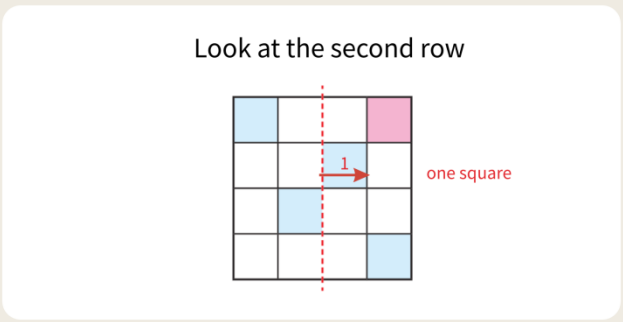
7.教師帶領學生完成圖形
(1)教師提問：先看第一列，最左邊的圖形距離對稱軸幾格呢?

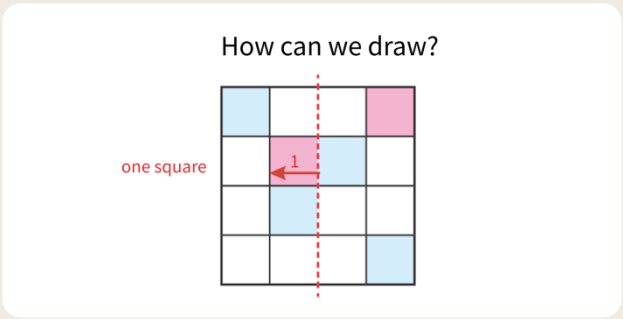




S: Two squares.
(2)教師提問：第二列線對稱圖形的對稱軸右邊塗

了一格，代表左邊要距離對稱軸幾格呢?

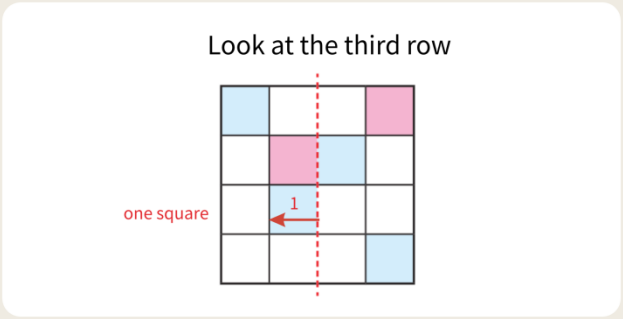


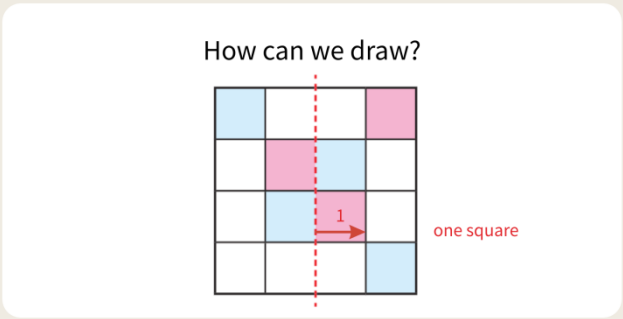


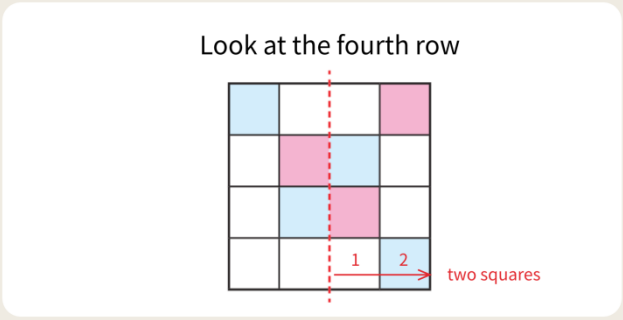
S: One square.

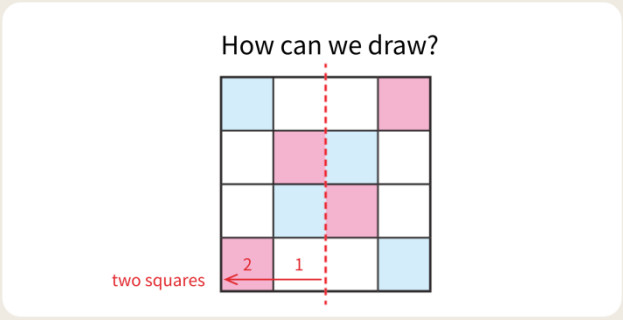
(3)教師提問：剩下的兩列呢?

(教師巡視行間，檢查學生答案)



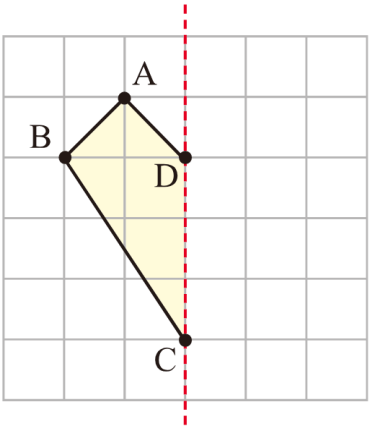






(第三列的對稱軸右邊要塗一格，第四列的最左邊要塗一格。)

(三)方格紙上繪製線對稱圖形



1.教師引導學生發現只要找出對稱點就能夠畫出線對稱圖形的另一半

T: This picture is the left side of a symmetrical shape, and the red line is the line of symmetry.

T: How can you draw the right side of this picture?

(學生可能回答：直接畫，讓左右對稱；用尺畫出另一邊的圖形；找出對稱點再畫)

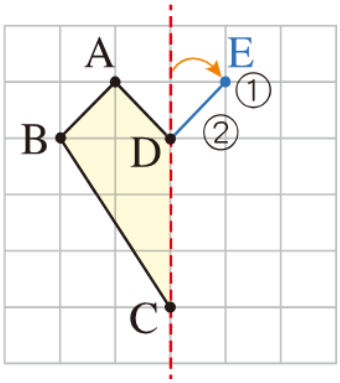
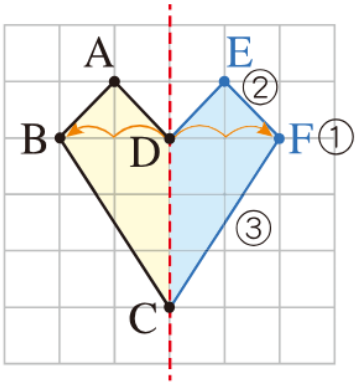
T: Think about it. How can we draw to let it become a symmetrical shape?

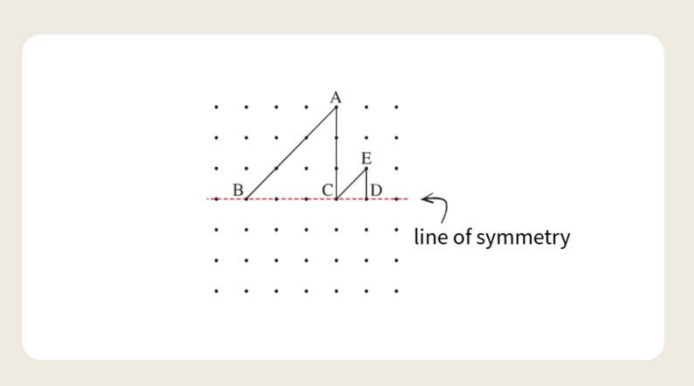
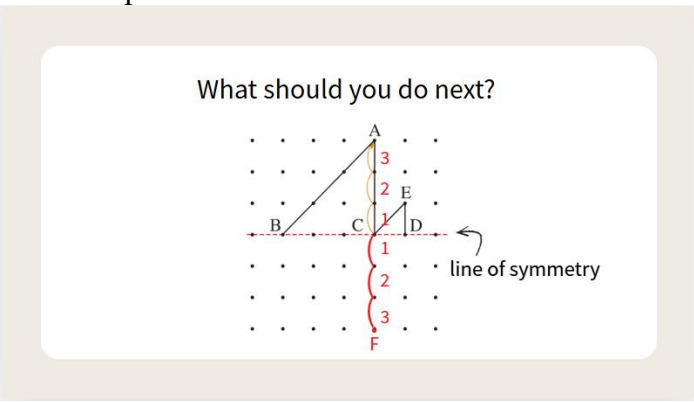
(學生可能回答：找到對稱點就可以)

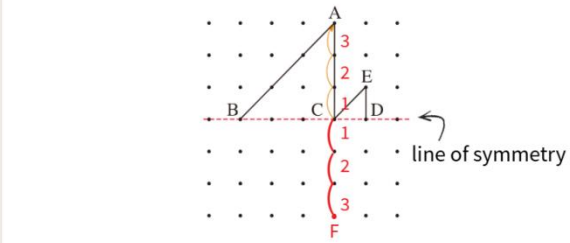
10’

實作評量
學生能在方格紙上完成線對稱圖形的另一半

口語評量
學生能用英文說出距離幾格

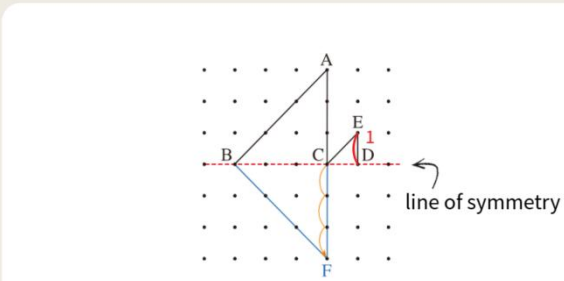
	T: Good idea! Why? (學生可能回答：因為線對稱圖形有對稱點，找到對稱點再把點連起來，就可以確定是一個線對稱圖形) T: Great! That's the correct answer! 2.教師引導學生找出對稱點並用直線將點連起來 T: Which points are on the left of this picture? (學生可能回答：A、B 和 C 點) T: How can we find their symmetry points? (學生可能回答：看跟對稱軸距離幾個格子) T: Excellent! T: How many squares between point A and the line of symmetry? S: One! T: Find and draw the symmetrical point of point A, and write point "E". (教師巡視行間，檢查學生做的是否正確) T: Everyone did a great job! What should you do next? (學生可能回答：用直尺把 D、E 點用直線連起來) T: That's right!  3.承(2)，教師引導找到 B、C 對稱點並用直線將點連起來 4.完成此線對稱圖形 教師請學生將線對稱圖形的右半邊塗上顏色。  			

	(三)方格點對稱圖形練習 1.教師展示方格點尚未完成的線對稱圖形，詢問學生該如何將另一半畫出。 T: This picture is the top of a symmetrical shape, and the red line is the line of symmetry. T: How can you draw the bottom of this picture?  (學生可能回答：跟剛剛一樣先找到對稱點，再連線。) T: That's right. We need to find symmetry points first. 2.教師引導學生找出對稱點，並將圖形完成。 T: Which points are on the top of this picture? (學生可能回答：A、E點) T: How can we find their symmetry points? (學生可能回答：看跟對稱軸距離幾個格子) T: Excellent! T: How many squares are between point A and the line of symmetry? Answer my question in English. S: Three squares. T: Find and draw the symmetrical point of point A, and write point "F".  (教師行間巡視，檢查學生做的是否正確) T: What should you do next?	12'	實作評量 學生能在方格點上完成線對稱圖形的另一半 口語評量 學生能用英文說出距離幾格。	



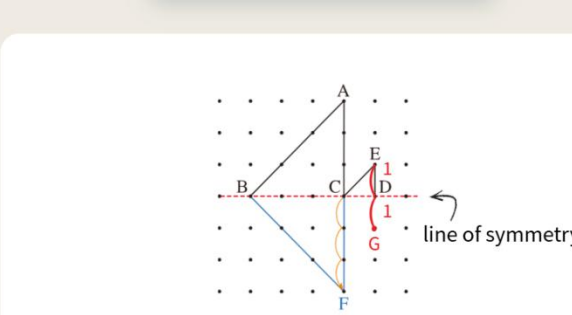
(學生可能回答：用尺把 B、F 和 F、C 連接。)

T: Great! How many squares are between point E and the line of symmetry? Answer my question in English.



S: One square.

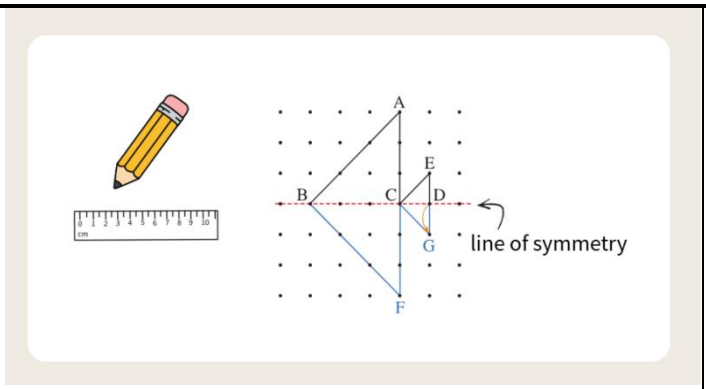
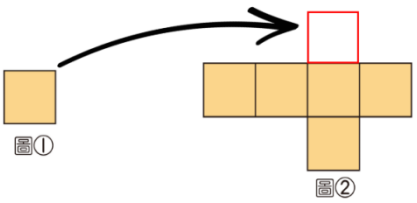
T: Good. Find and draw the symmetrical point of point E and write point “G”.

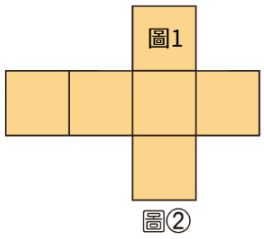
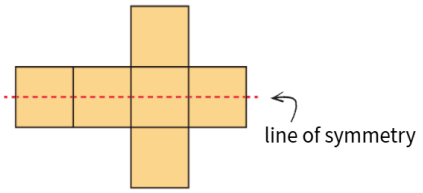
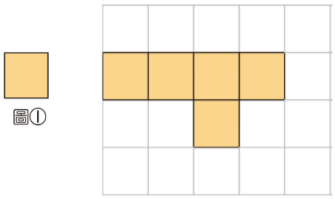
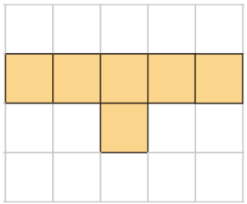
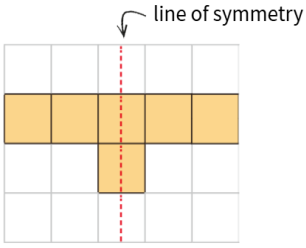


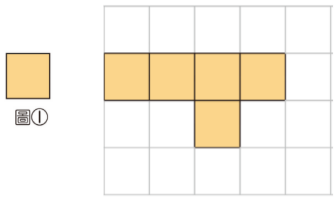
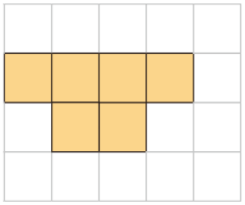
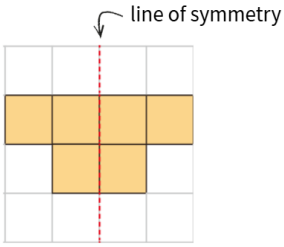
(教師行間巡視，檢查學生做的是否正確)

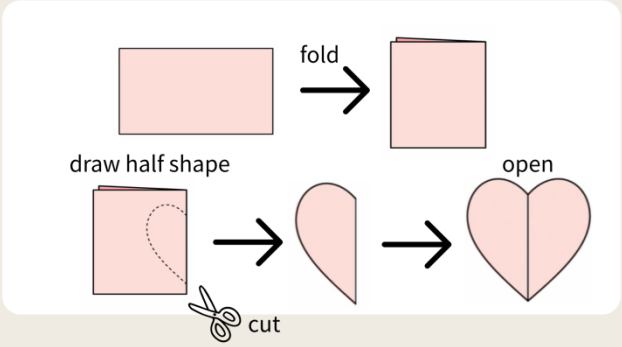
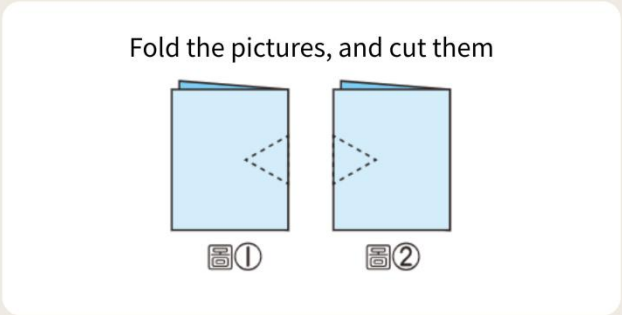
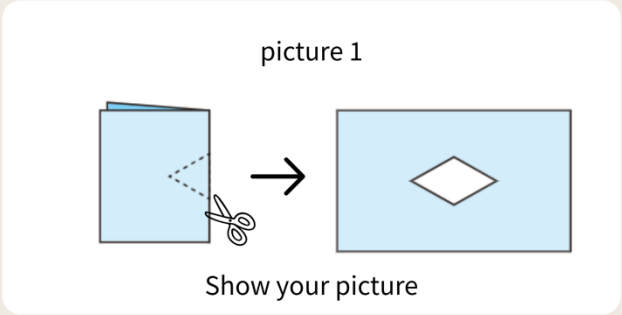
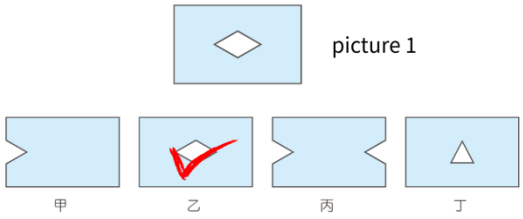
T: What should you do next?

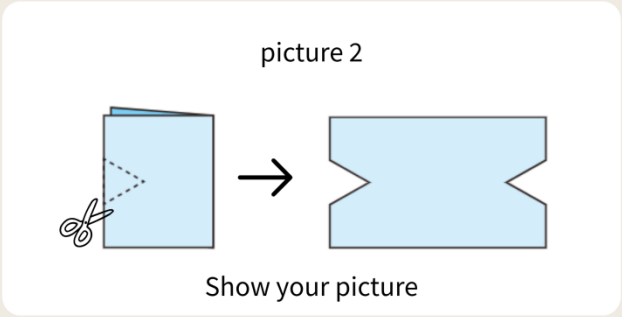
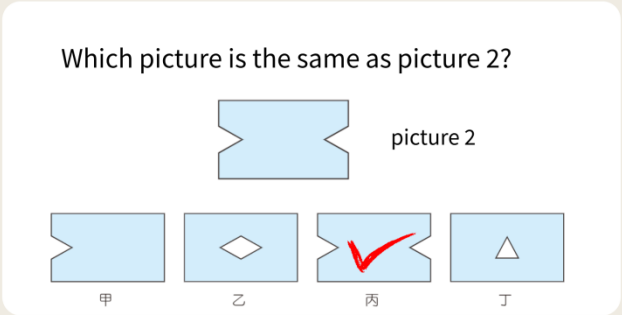
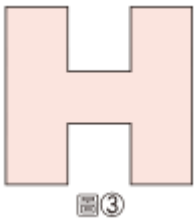
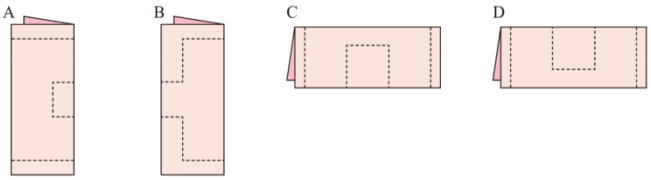
(學生可能回答：用尺把 C、E 和 E、D 連接。)

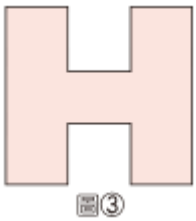
10. 利用線對稱做簡單幾何推理 11. 透過剪紙，做出線對稱圖形	 T: Everyone did a great job! 總結活動 Wrap up 1.教師總結今日課堂內容:如何將線對稱圖形的另一半畫出來。 T: Today, we learned how to draw the other side of a symmetrical shape. Tell me the steps. (學生可能回答：先找出對稱點，數數看他和對稱軸之間有幾格) T: Nice! What should you do next? (學生可能回答：在對稱軸的另一邊把對稱點標出來。) T: Excellent! What should you do next? (學生可能回答：把對稱點連接起來，重複這幾個步驟。) T: Very good. **-第五節課-** 引導活動 Warm up 1.教師複習線對稱圖形的特徵。 教師提問：什麼樣的圖形是線對稱圖形呢? (學生可能回答：對摺後左右兩邊會一樣。) 2.教師示範排列線對稱圖形。 T: Take picture 1 here. Is it a symmetrical shape?  S: Yes. T: How do you know?	5’ 5’	實作評量 學生能排列出線對稱圖形，並找出對稱軸。	

	 圖② (學生可能回答：上下對折，上面和下面會長一樣。) T: Excellent! There is a line of symmetry in the middle of the picture.  發展活動 Development (一)排出線對稱圖形 1.教師詢問圖 1 要放在圖 2 的哪裡才能變成線對稱圖形。 T: Look at these cards. Put picture 1 to picture 2 and let it be a symmetrical shape. What can you do?  (學生可能回答：放在最右邊) T: Great! Can you find the line of symmetry?  (學生可能回答：正中間。) T: Why?  (學生可能回答：從正中間對折，左右兩邊長的一	10’	實作評量 學生能排列出線對稱圖形，並找出對稱軸。	

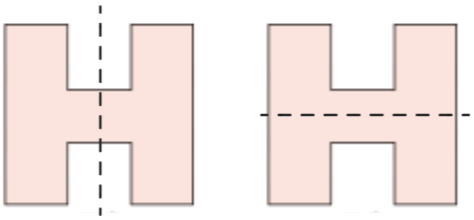
	樣。) T: Nice! Where else can you put it?  (學生可能回答：下面凸起來那塊的左邊。) T: That's right! Can you find the line of symmetry?  (學生可能回答：一樣是正中間。) T: Why?  (學生可能回答：因為從正中間對折，左右兩邊會長的一樣。) (二)剪出線對稱圖形 1.教師詢問學生要如何剪出線對稱的愛心形狀? T: How can we cut a symmetrical heart shape? (學生可能回答：把紙對摺，在紙上畫出愛心的一半再去剪) T: Why? (學生可能回答：對摺的那條線是圖形的對稱軸，所以畫一半再剪，打開就會得到一顆完整的愛心形狀。) T: Yes, great job! 2.教師請學生拿出一張紙，並開始剪出愛心的線對稱形狀。	5'	實作評量 學生能剪出線對稱圖形。	

	 (三)剪出不同的線對稱圖形 1.教師請學生拿出附件 教師提問：拿出附件並把紙對摺後再沿著虛線剪開。  2.教師請學生展示圖 1 裁剪後的圖片  T: Show your picture, and check it. 3.教師請學生選出正確答案  T: Which picture is the same as picture 1? S: 乙。 4.教師請學生展示出圖片 2，並如同圖片一的步	5’	實作評量 學生能剪出線對稱圖形。	

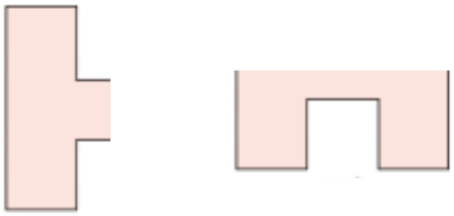
	驟，選擇出相對應的圖形。  T: Show your picture, and check it.  T: Which picture is the same as picture 2? S: 丙。 T: How excellent you are! (四)透過裁剪後的圖形，判斷對摺剪裁前的圖形樣式 下面哪一張沿著虛線剪開後，打開會是圖 3 的 H 形呢？   (1)教師詢問學生要如何剪出圖 3 的形狀?	5’	實作評量 學生能判斷線對稱圖形裁剪前的圖形樣式。 口語評量 學生能說出如何剪裁線對稱圖形	



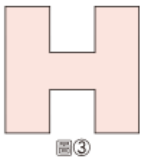
T: How can we cut a H shape?
(學生可能回答：先把紙沿著對稱軸對摺，畫出圖形的一半)
T: Good! Where is the line of symmetry?

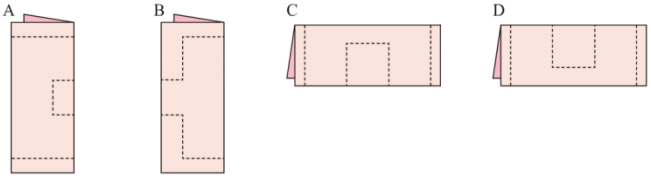


(請學生上台畫出對稱軸)
T: Fold in half. You should draw and cut like these shapes.



(2)找出打開會是 H 的圖形
T: Loot at the picture. There are four cut ways. Which picture is correct?
S: C!
T: Very great!

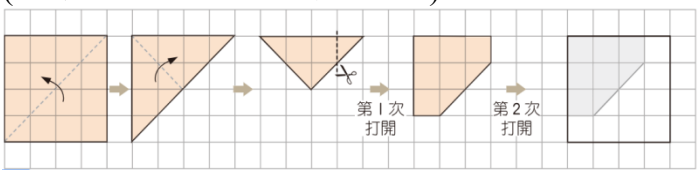
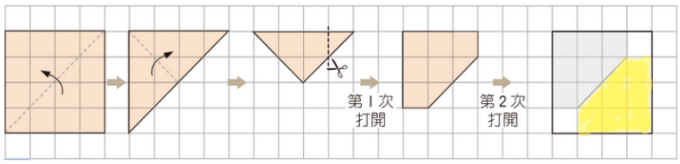
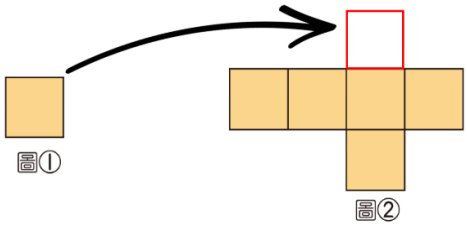
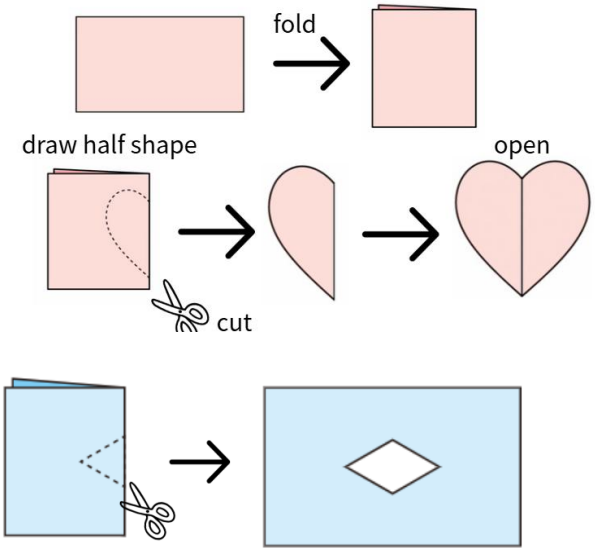


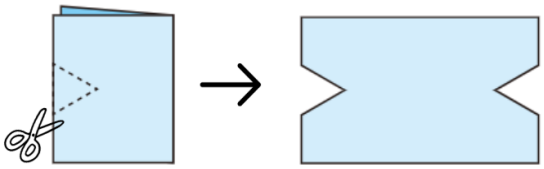


（五）知道對摺兩次剪裁後，攤開的圖形樣式
T: Take out the paper. Follow the steps and draw the open shape at the last picture.

5'

實作評量

	(教師巡視行間，檢查學生答案)   T: How do you know? (學生可能回答：因為最後一個圖形對角線是對稱軸，就可以畫出另一半了) T: What relationship can you find? (學生可能回答：對摺的摺線剛好就是對稱軸) 總結活動 Wrap up (一)教師總結今日上課內容 1.教師總結 T: Today we put picture 1 to picture 2, and picture 2 becomes a symmetrical shape.  T: Also, we learned how to cut symmetrical shapes.  	5’	學生能畫出對摺兩次剪裁後，攤開的圖形 口語評量 學生能說出如何剪裁線對稱圖形	

	 2.教師提問學生今日上課內容 T: When you want to cut a symmetrical shape, what should you do first? (學生可能回答：把紙對摺) T: Good! What should you do next? (學生可能回答：在紙上畫出線對稱圖形的一半) T: Right! And you should draw along the fold line. The fold line will be_____? S: the line of symmetry! T: Everyone did a great job!			

肆、教學評量

單元教學目標	評量方式
1.能透過對摺、鏡射認識線對稱圖形、對稱軸	實作評量 1.學生能將生活中的圖形對摺。 2.學生能透過操作鏡面紙，了解線對稱圖形的特徵。 口語評量 1.學生能說出圖案的特性(左右一樣、上下一樣)。 2.學生能說出對摺後線對稱圖形特徵。
2.能找出正多邊形的對稱軸，並了解正多邊形對稱軸數量的關係	實作評量 1.學生能畫出生活中不同圖形的對稱軸。 2.學生能透過摺紙找出正多邊形的對稱軸。 3.學生能夠透過判斷哪些平面圖形是線對稱圖形，透過摺紙檢驗並畫出對稱軸。 口語評量 1.學生能說出線對稱圖形的特徵。 2.學生能說出如何找到並畫出對稱軸。 3.學生能說出如何判斷線對稱圖形。 4.學生能使用英文目標句型說出正多邊形的對稱軸數量(I can find____line(s) of symmetry.)
4.能找到線對稱圖形的對稱點、對稱邊、對稱角，並認識其性質	實作評量 1.學生能透過對摺發現對稱點。 2.學生能透過將圖形對摺，發現對稱邊，並以

	測量的方式，了解對稱邊長度相等。 3.學生能透過摺紙，發現對稱角，並以測量方式，了解對稱角的角度相同。 口語評量 1.能說出目標句型(__and__are symmetry points.) 2.能說出目標句型(__and__are symmetry sides.) 3.能說出目標句型(__and__are symmetry angles.)
5.能知道連接兩對稱點的直線和對稱軸垂直，且兩對稱點到對稱軸的距離相等	實作評量 學生能透過對摺發現到兩對稱點的連線和對稱軸互相垂直，且兩對稱點到對稱軸距離會相等。
6.透過塗色方式、線條畫出線對稱圖形的另一半	實作評量 1.學生能塗色出線對稱圖形的另一半。 2.學生能在方格紙上完成線對稱圖形的另一半。 3.學生能在方格點上完成線對稱圖形的另一半。 口語評量 1.學生能用英文說出畫幾個方格。 2.學生能用英文說出距離幾格。
7.透過剪紙，做出線對稱圖形	實作評量 學生能透過實作活動，剪出線對稱圖形。 口語評量 學生能說出如何剪裁線對稱圖形。