



**HONG KONG GREENMECH
CONTEST 2022/23
香港機關王競賽**

**機關王影片賽
隊伍訓練工作坊**

主辦機構



香港青年協會
the hongkong federation of youth groups



資助機構

π 創新科技署
Innovation and Technology Commission

支持機構



流程

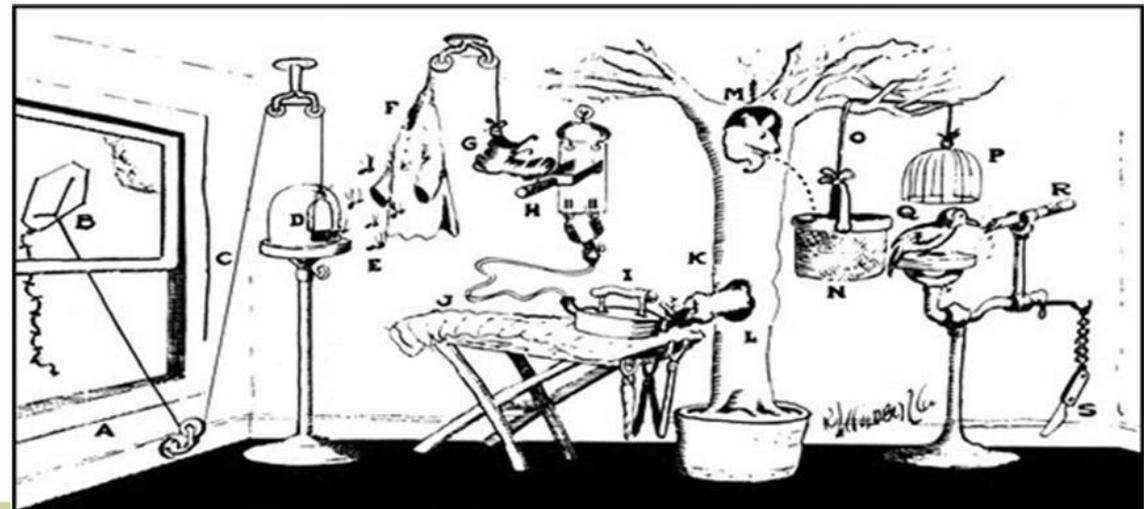
- 認識香港機關王競賽
- 簡介機關王影片賽規則
- 認識基本影片剪接技巧
- 認識基本搭建技巧



甚麼是機關王？



- 概念源自魯布•戈德堡機械
- 包括多個連鎖反應的機關裝置
 - 除第一關可以人手啟動以外，其餘所有關卡均由上一個關卡自動觸發





簡介機關王影片賽規則



比賽資訊

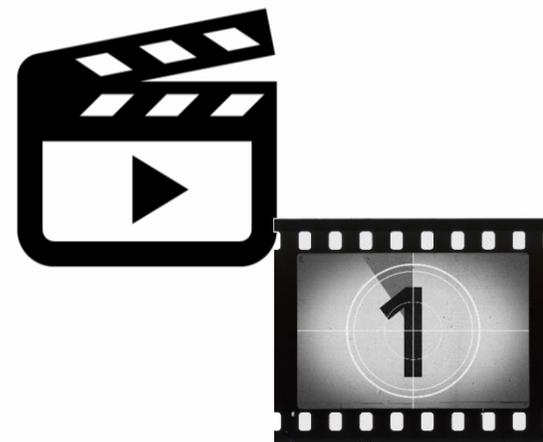
- 隊伍數目：20隊
- 截止遞交影片日期：
2023年4月11日（星期二）晚上11時59分
- 網上公佈得獎名單：
2023年5月6日（星期六）
- 頒獎典禮時間：
2023年5月13日（星期六）下午



評分項目

- 香港機關王影片賽總分為**100分**：

一條影片
(2分鐘內)



影片內容



- 以「SDG 目標14」為題設計連鎖機關作品
- 呈現最少5個關卡
 - 除第一關以人手啟動，其他關卡必須由上一個關卡觸發
 - 運用機關王組件搭建具故事性的機關作品



保育和可持續地使用海洋和海洋資源以促進可持續發展



競賽形式

- 製作一條影片（必須為2分鐘內）
 - 其中不少於30秒為機關運作展示片段
 - 運用關卡展示作品的故事性
 - 加入字幕註明關卡分佈（第一關、第二關...）
 - 可運用旁述、字幕的方式介紹，語言必須為中文或英文
 - 最後部分必須加入大會指定圖片（為持兩秒）



作品要求



- 連鎖機關作品的正投影不可超出**100cm x 60cm**
- 各關卡均**不可**加入任何編程部份
- 隊伍需以**智高積木**製作連鎖機關的主體
- 每一隊只可遞交一段影片
- 影片畫質要求不低於**720p**（解像度：1280x720）



影片限制



- 請勿使用其他品牌之積木零件
- 影片中不得含有不雅、粗言穢語、暴力或淫穢內容。
- 影片中所有內容（包括圖片及音樂）必須為原創或已授權，如涉及抄襲、版權侵犯或違法行為，隊伍將會被取消參賽資格；任何有關版權等一切法律責任須由參加者自行負責，主辦機構無需承擔以上的責任



安全性指引



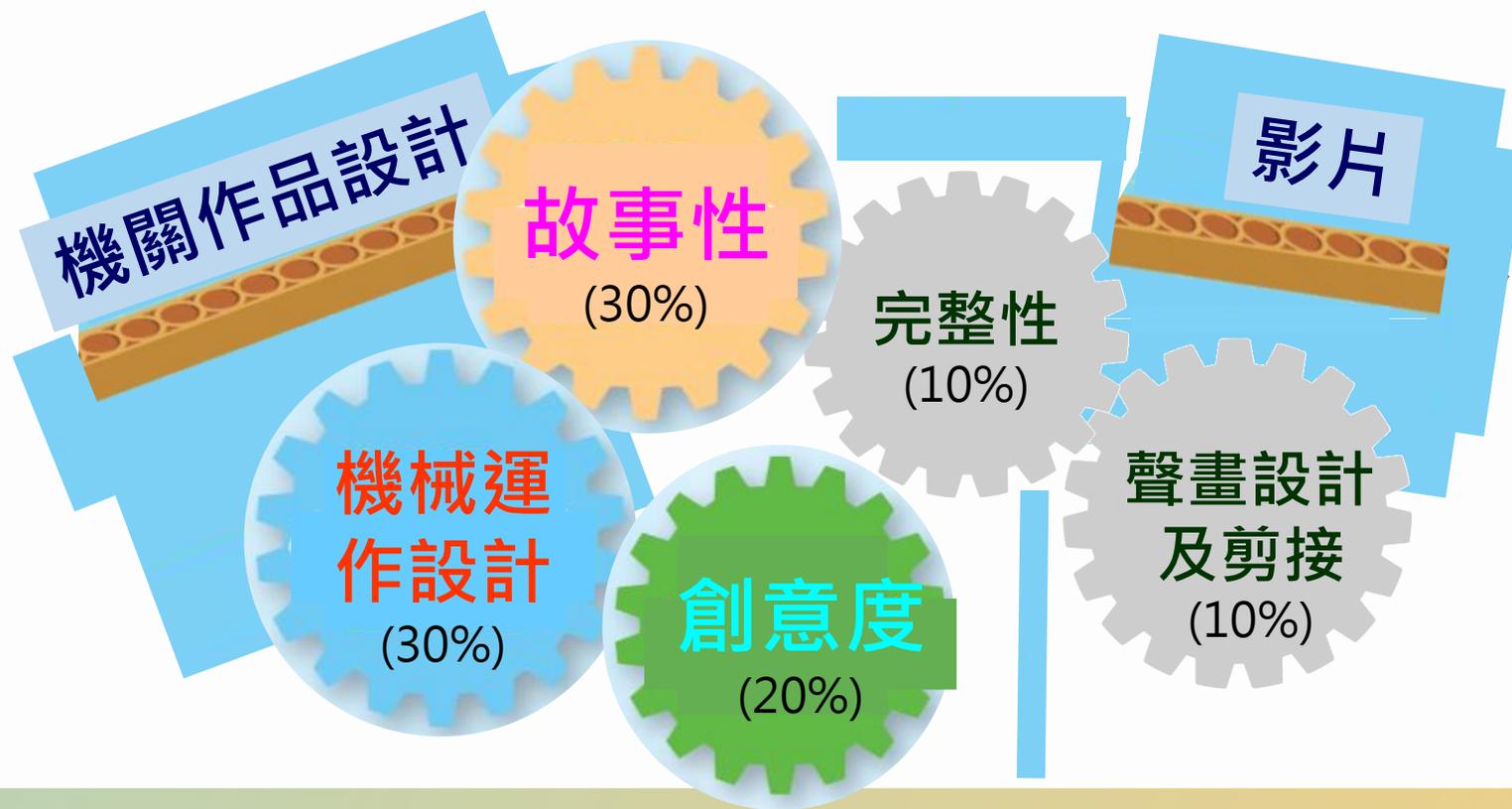
注意安全

- 於作品中使用化學物品**必須**經隊伍負責人批准及監督下使用
- 運用鋁罐、膠樽等其他物料來搭建機關作品時，**必須**注意安全
- 搭建機關作品時，**必須**注意現場環境的安全

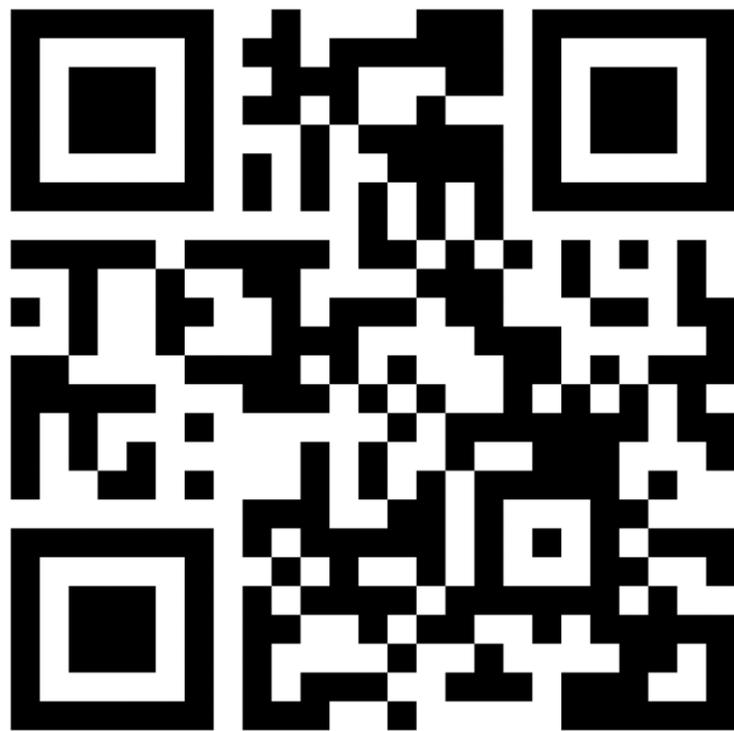


評審項目

- 香港機關王影片賽總分為100分



下載競賽規則



https://bit.ly/GMV_22_23



獎項

- 機關王影片大獎
 - (各組別設金、銀、銅獎各一個)
- 最具創意獎
 - (每組別均設有一個)
- 最佳拍攝及剪接獎
 - (每組別均設有一個)

獎項數目可能會因應參加隊伍的數目而有所調整



機關王影片賽重要日程

日期	活動
1月至4月	隊伍開始準備工作 設計機關作品
1月至3月	知識產權自學課程及評核（必須出席）
4月11日前	遞交作品短片
5月6日	公佈得獎名單
5月13日	出席香港機關王競賽2022/23頒獎典禮



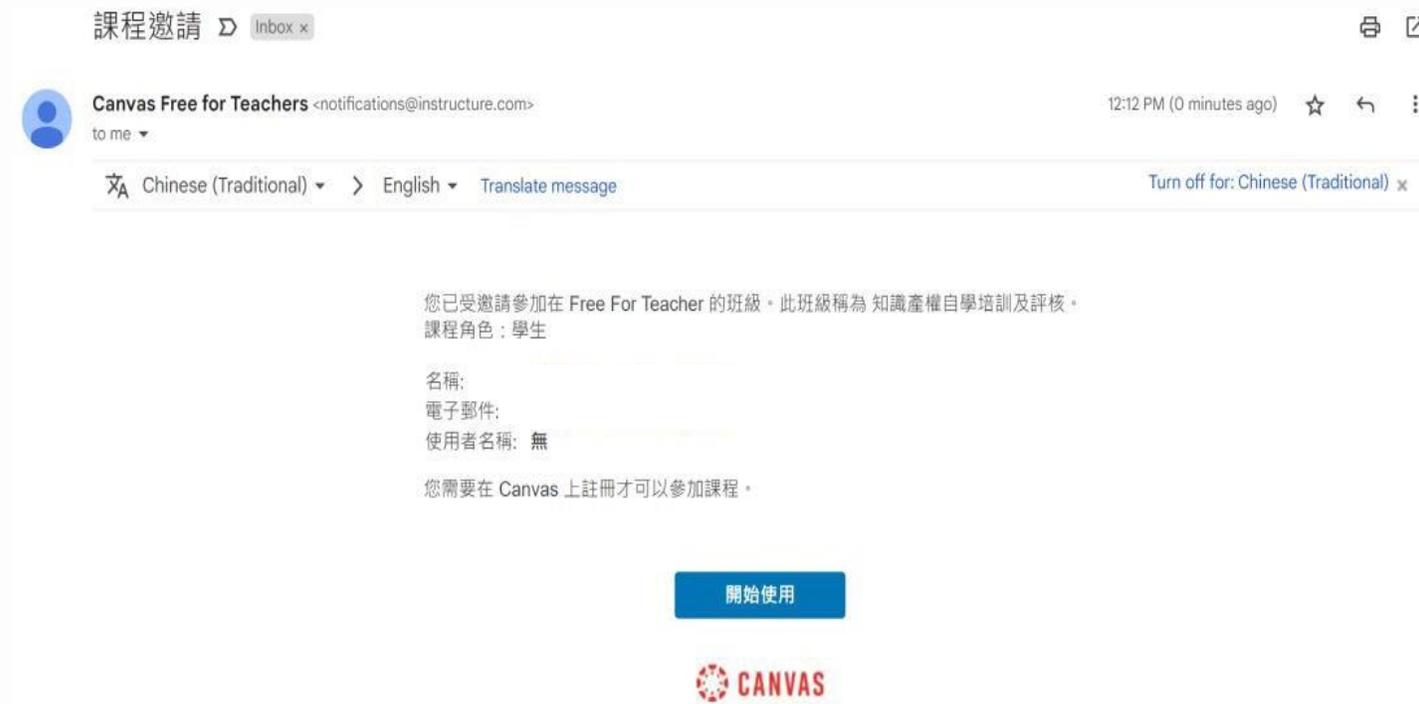
知識產權自學課程及評核

每一個隊伍只需要進行一次評核



知識產權自學課程及評核

1. 電郵收取 Canvas 課程邀請電郵後按 “開始使用”



電郵將會發送給各隊伍的隊長

知識產權自學課程及評核

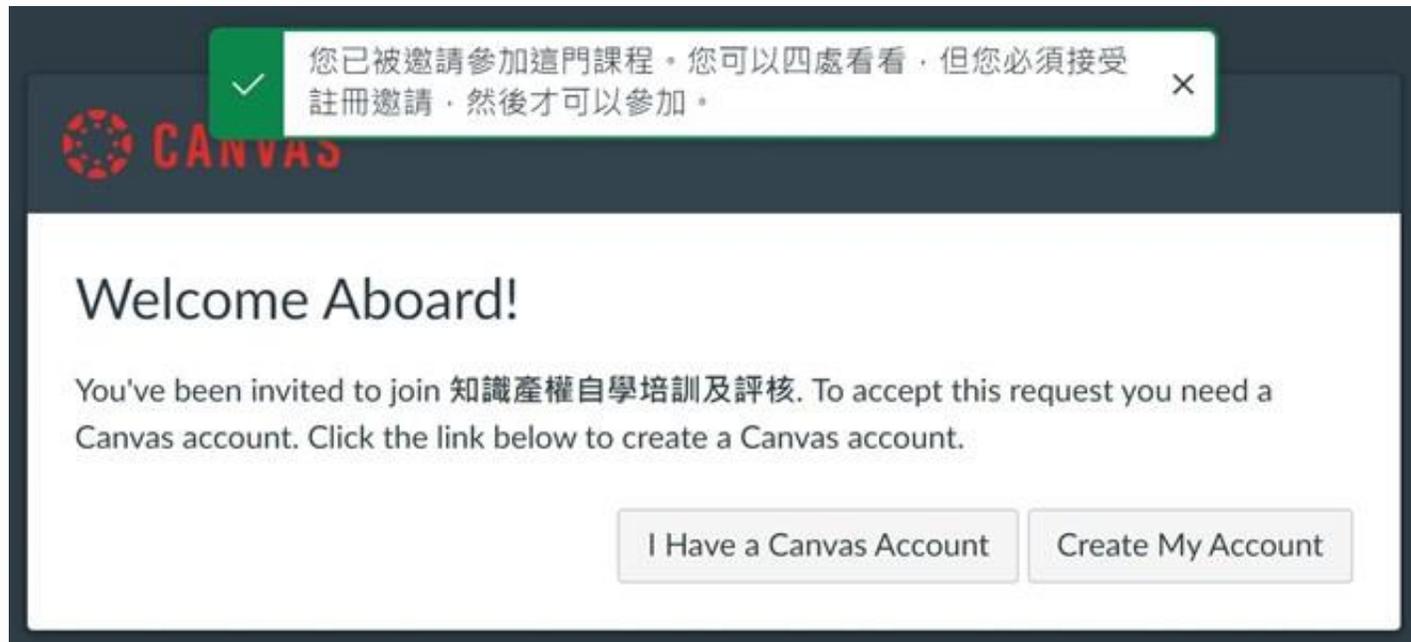
2. 進入課程頁面，按下正上方“接受”

The screenshot shows a web interface for the Knowledge Property Self-learning Course and Assessment. The page title is "知識產權自學培訓及評核 > 單元". On the left, there is a vertical navigation menu with icons for Home, Assignments, Pages, Course Outline, Quizzes, Units, and Collaboration. The main content area features a green notification box stating "您已受惠以下列的使用者身份加入 知識產權自學培訓及評核：學生" (You have joined the Knowledge Property Self-learning Course and Assessment as a student). Below this, there is a "全部收起" (Collapse All) button. The main content area is titled "自學培訓及評核" (Self-learning Training and Assessment) and contains a list of items: "自學培訓簡介" (Self-learning Training Introduction), "知識產權署網頁內容" (Copyright Commission Website Content), "評核" (Assessment) with a note "(共計至少為 20)", and "完成評核" (Complete Assessment). On the right side, there are buttons for "檢視課程流" (View Course Flow), "檢視課程行事曆" (View Course Calendar), and "檢視課程通知" (View Course Notifications). Below these, there is a "待辦事項" (To-do List) section with a red warning icon and the text "載入待辦事項清單失敗" (Failed to load to-do list).



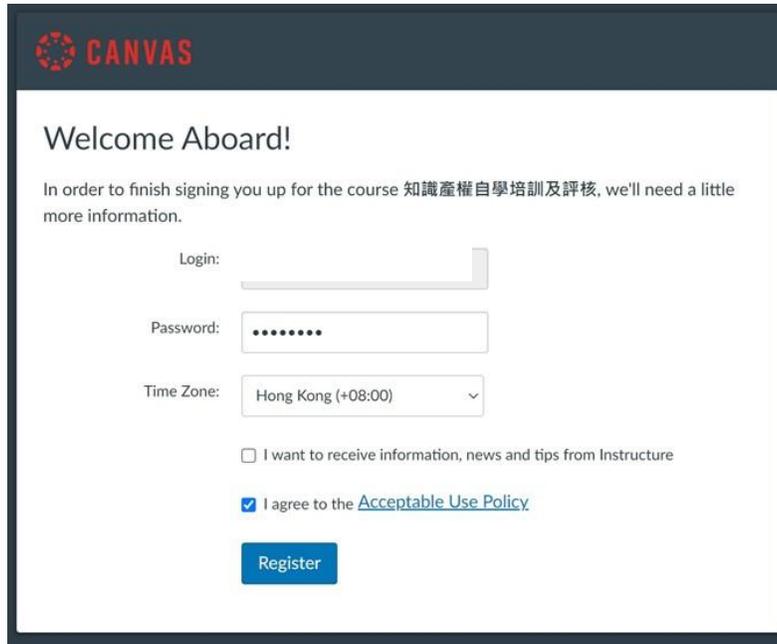
知識產權自學課程及評核

3. 頁面出現以下訊息，如沒有 Canvas 帳戶，請選擇 “Create my Account”



知識產權自學課程及評核

4. 註冊頁面，請不要更改電郵（否則將不能登入自學及評核課程），輸入 Password，更改 Time Zone 至 “Hong Kong (+08:00)” ，及揀選 “I agree to the Acceptable Use Policy” 。完成後按 “Register” （見下圖例子）



The screenshot shows the Canvas registration page. At the top left is the Canvas logo. Below it, the text reads "Welcome Aboard!". A message states: "In order to finish signing you up for the course 知識產權自學培訓及評核, we'll need a little more information." The form includes a "Login:" field, a "Password:" field with masked characters, and a "Time Zone:" dropdown menu currently set to "Hong Kong (+08:00)". There are two checkboxes: "I want to receive information, news and tips from Instructure" (unchecked) and "I agree to the [Acceptable Use Policy](#)" (checked). A blue "Register" button is at the bottom.



知識產權自學課程及評核

5. 註冊後便可進入課程介面開始課程及評核

The screenshot displays the user interface for the 'Knowledge Property Self-Learning Course and Assessment' (知識產權自學培訓及評核) course. The interface is organized into several sections:

- Header:** Shows the course title '知識產權自學培訓及評核 > 單元' and a '全部收起' (Collapse All) button.
- Left Sidebar:** A vertical navigation menu with icons and labels for: 首頁 (Home), 帳戶 (Account), 儀表板 (Dashboard), 課程 (Course), 行事曆 (Calendar), 收件匣 (Inbox), 歷史紀錄 (History), and 支援 (Support).
- Course Content Table:** A table listing course items with progress indicators (radio buttons).

自學培訓及評核		完成一個項目
自學培訓簡介	檢視	<input type="radio"/>
知識產權署網頁內容	標記為已完成	<input type="radio"/>
評核	5分 得分至少為 3.0	<input type="radio"/>
完成評核		
- Right Sidebar:** Contains buttons for '檢視課程流' (View Course Flow), '檢視課程行事曆' (View Course Calendar), and '檢視課程通知' (View Course Notifications). Below these are sections for '待辦事項' (To-do items) and '近期回購' (Recent purchases), both showing '未有內容' (No content) and '現在什麼也沒有' (Nothing at the moment).

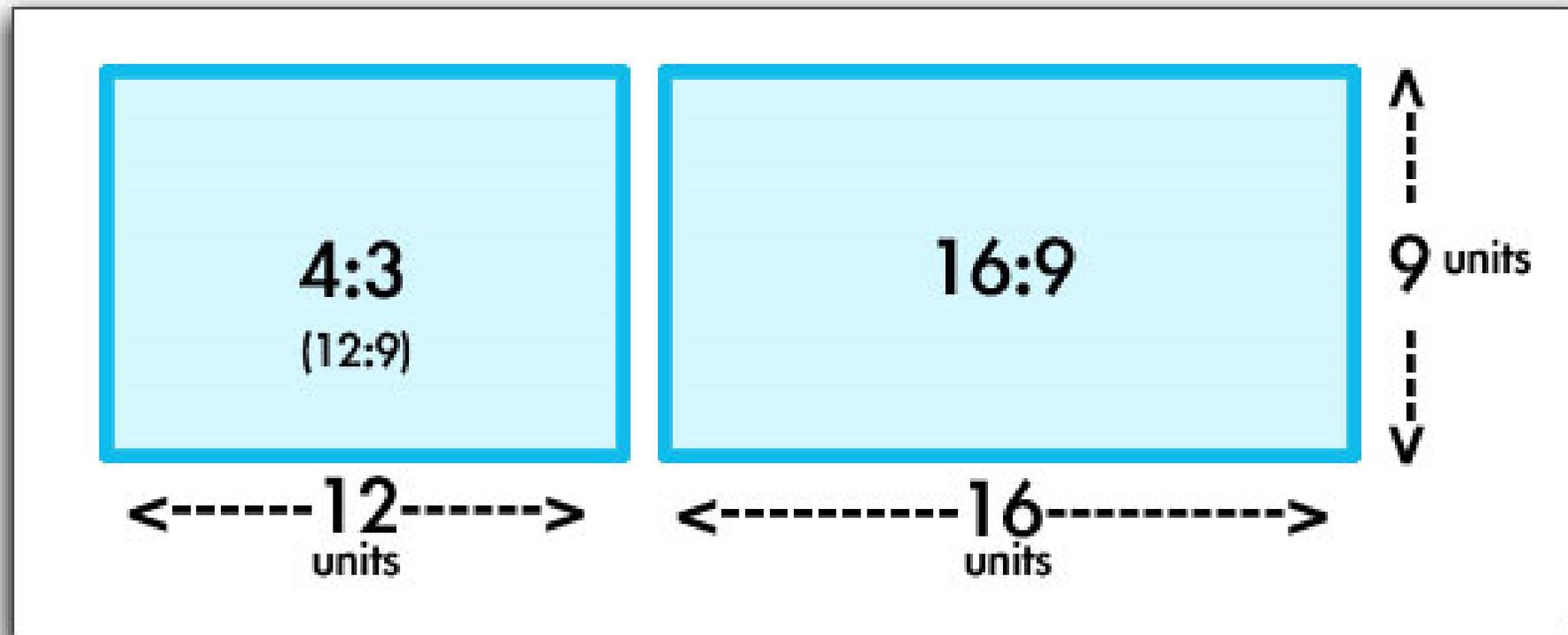




認識基本影片剪接技巧

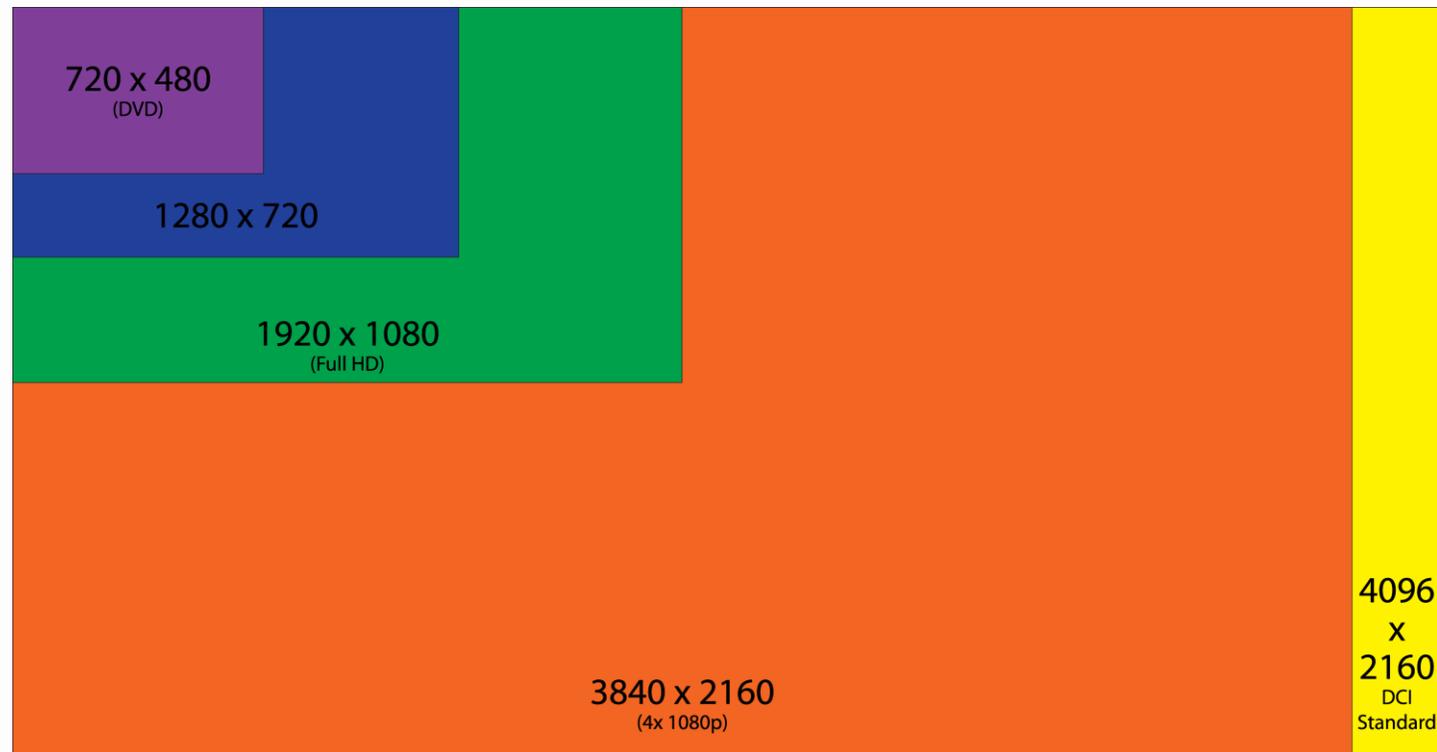


長寬比 Aspect Ratio



解析度 Resolution

- SD, HD, Full HD, 4K, UHD (4K or 8K)



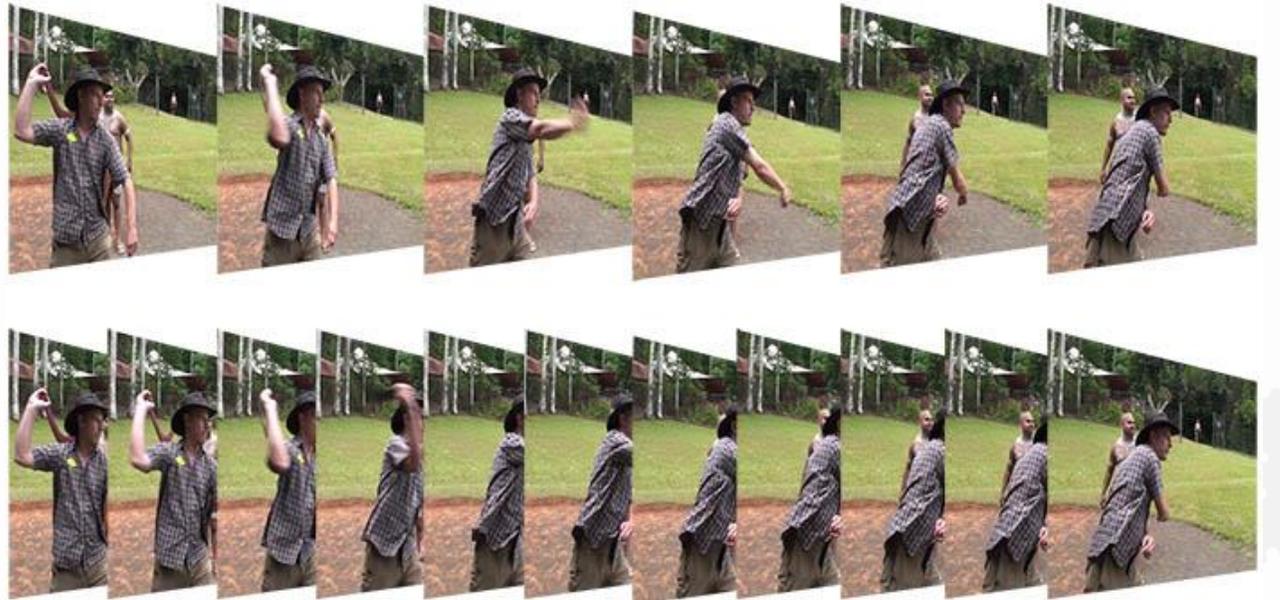
位元率 Bitrate

- SD: 3-9.5Mbps
- Full HD: 36-54Mbps
- 4K: 60-128Mbps



影格率 Frame Rate

- Frames per second
- 2160/60p, 2160/50p, 2160/30p, 2160/25p, 1080/50p, 1080/25p, 1080/50i



攝影器材



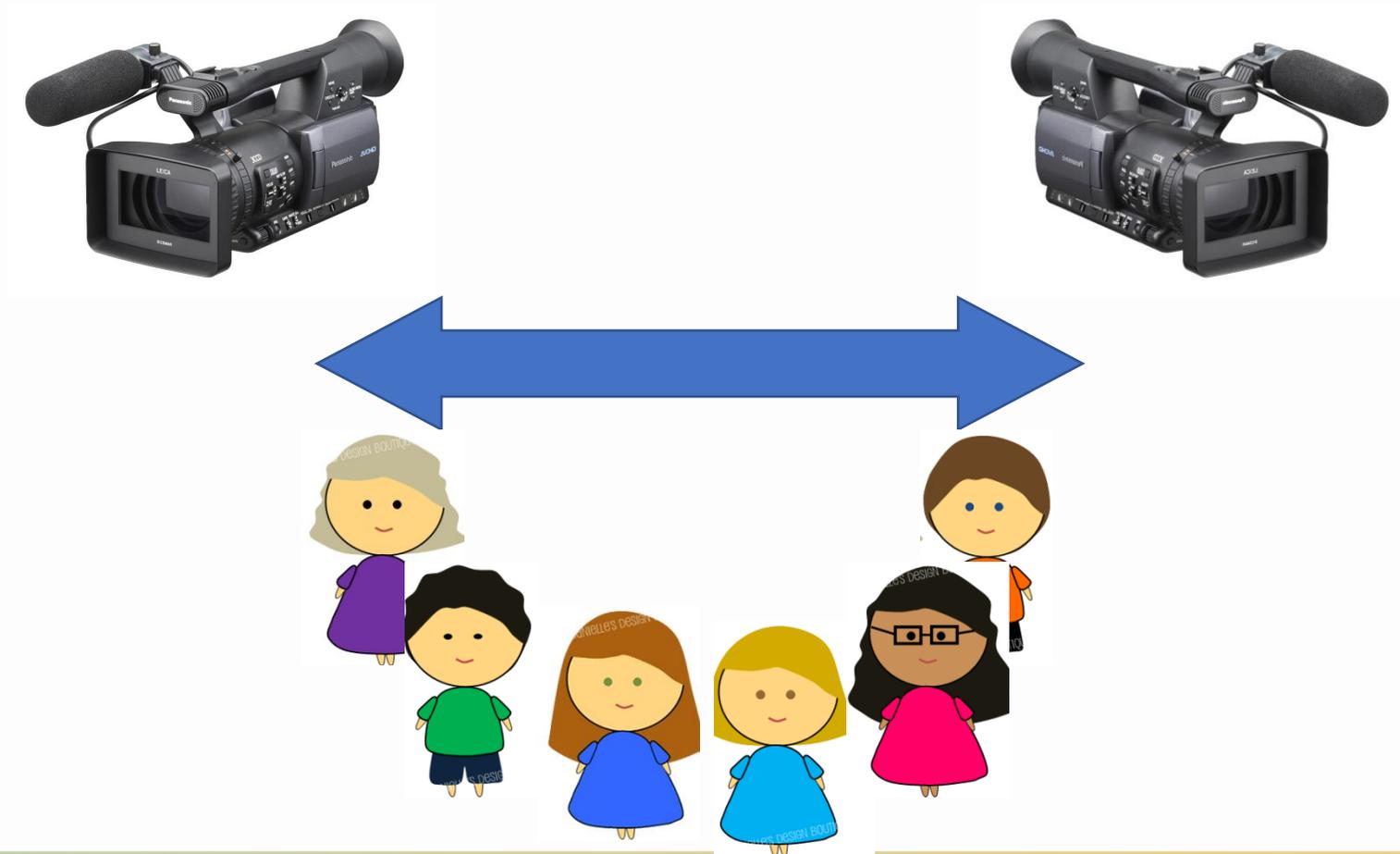
Pan, Tilt and Zoom

- Pan



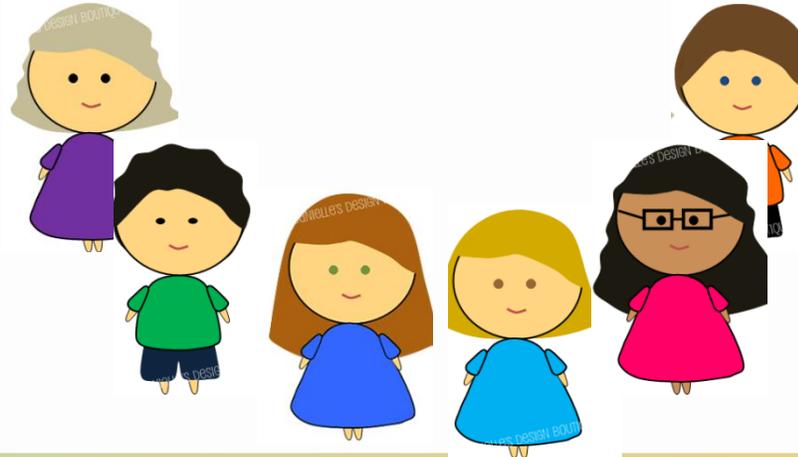
Pan, Tilt and Zoom

- Pan



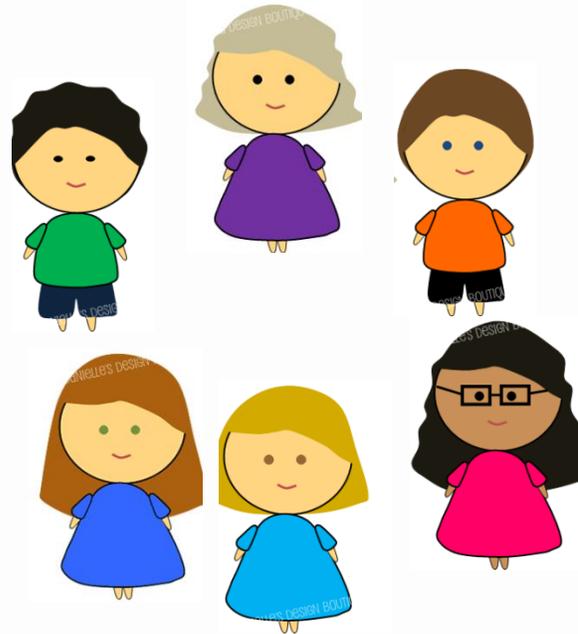
Pan, Tilt and Zoom

- Pan



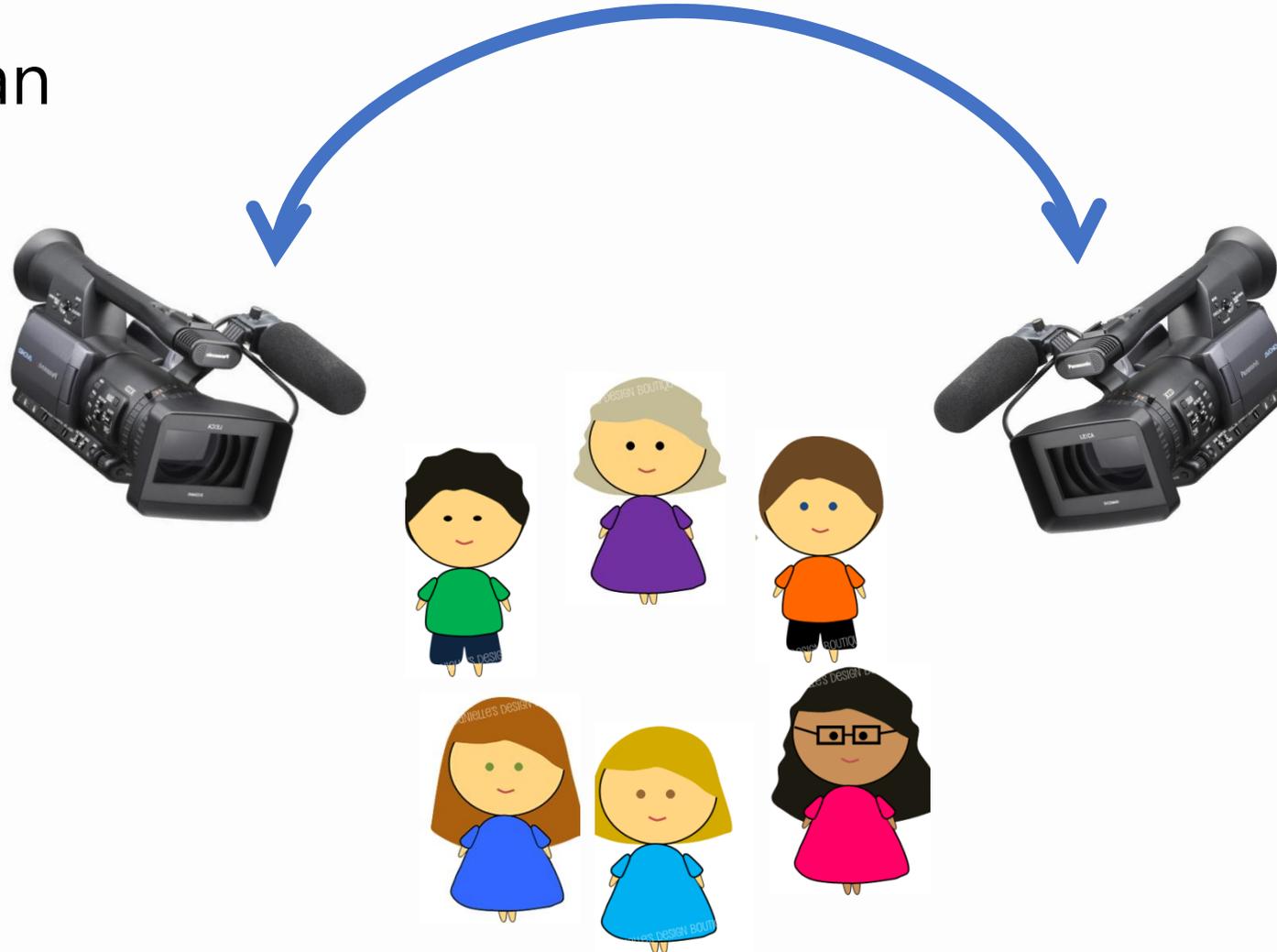
Pan, Tilt and Zoom

- 高角度



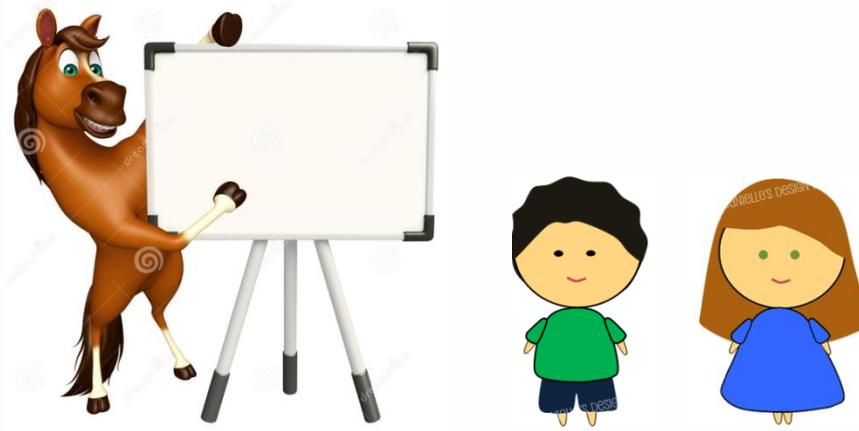
Pan, Tilt and Zoom

- 高角度Pan



Pan, Tilt and Zoom

- 高角度/水平角度/低角度



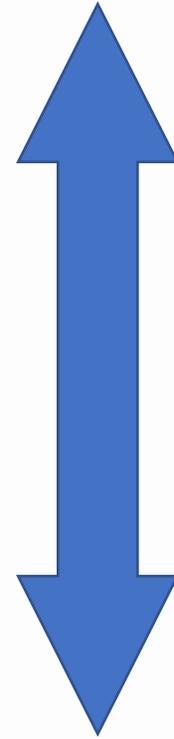
Pan, Tilt and Zoom

- Tilt



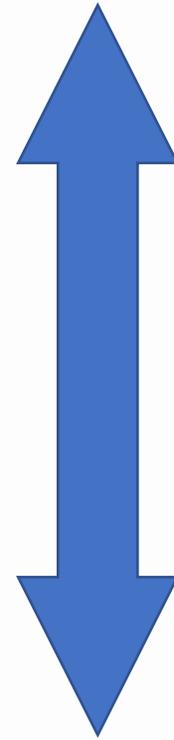
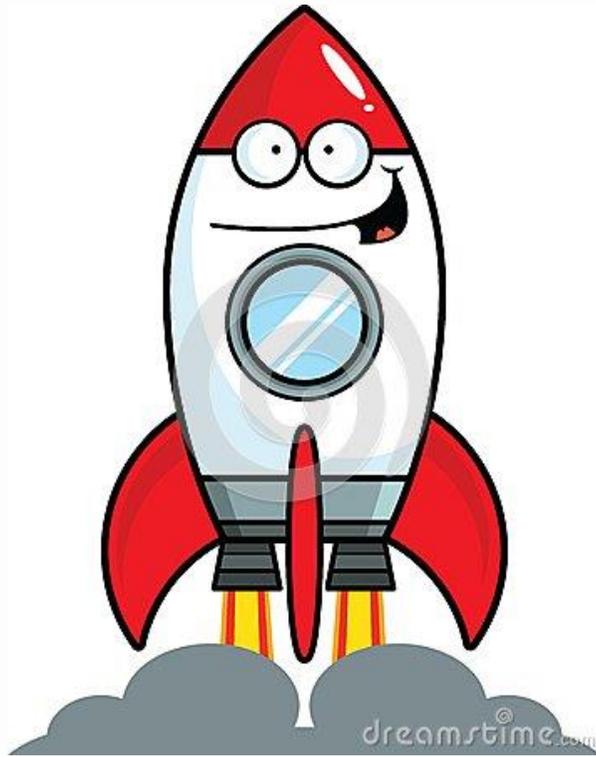
Pan, Tilt and Zoom

- Tilt



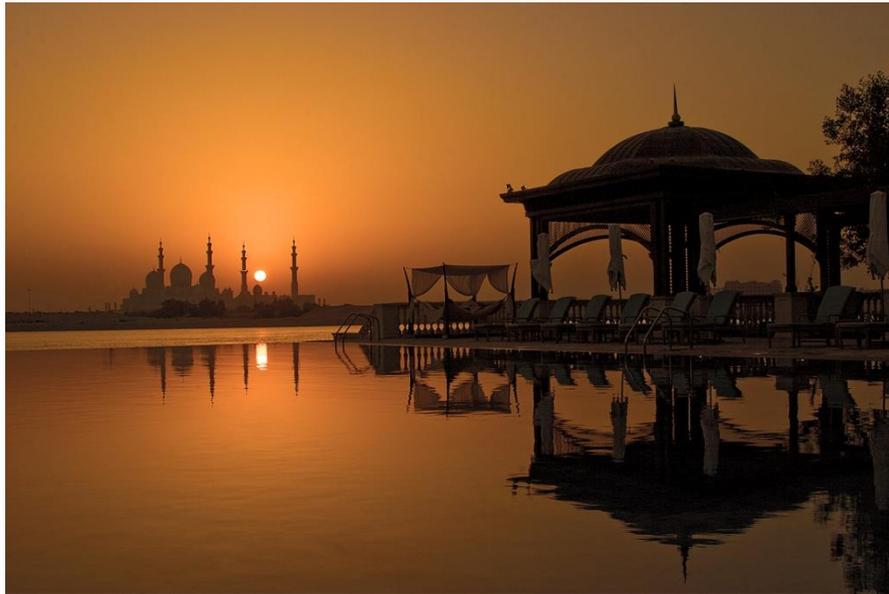
Pan, Tilt and Zoom

- Tilt



Pan, Tilt and Zoom

- Zoom



Zoom out



Zoom in



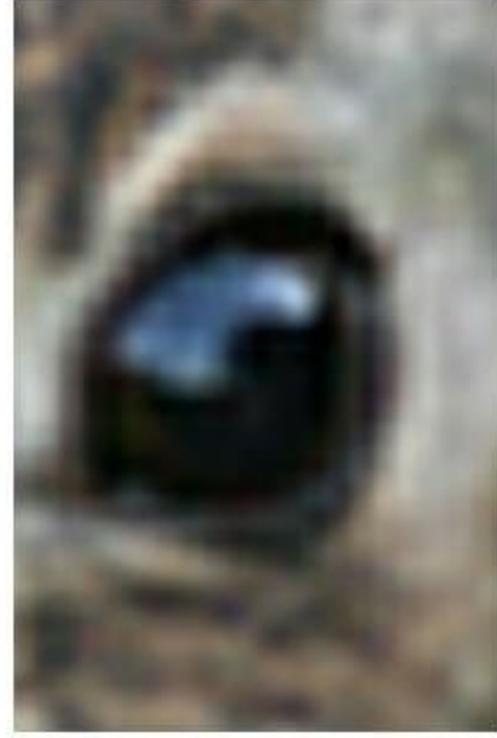
Optical and Digital Zoom



Original



10x Optical



10x Digital



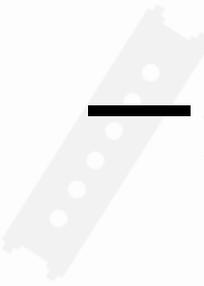
Pan/Tilt + Zoom

Zoom out



Zoom in





一般檔案格式

- MPEG-2, AVCHD, H.264, H.265/HEVC, XAVC S
- .mpg: SD
- .mts: Full HD
- .mt2s: Full HD
- .mp4: SD, HD, Full HD, 4K



影片剪接軟件

- 電腦：Adobe Premiere, Corel Video Studio, Vegas Pro...
- iOS/MacOS: iMovie, Final Cut Pro, Adobe Premiere...
- Android: FilmoraGo...



影片剪接軟件

- 威力導演 (免費版) : <https://bit.ly/321ghir>
- 會聲會影 (免費版) : <https://bit.ly/3yCLd46>
- Lightworks (Win10) : <https://bit.ly/3sgw9s3>



Apps



iMovie

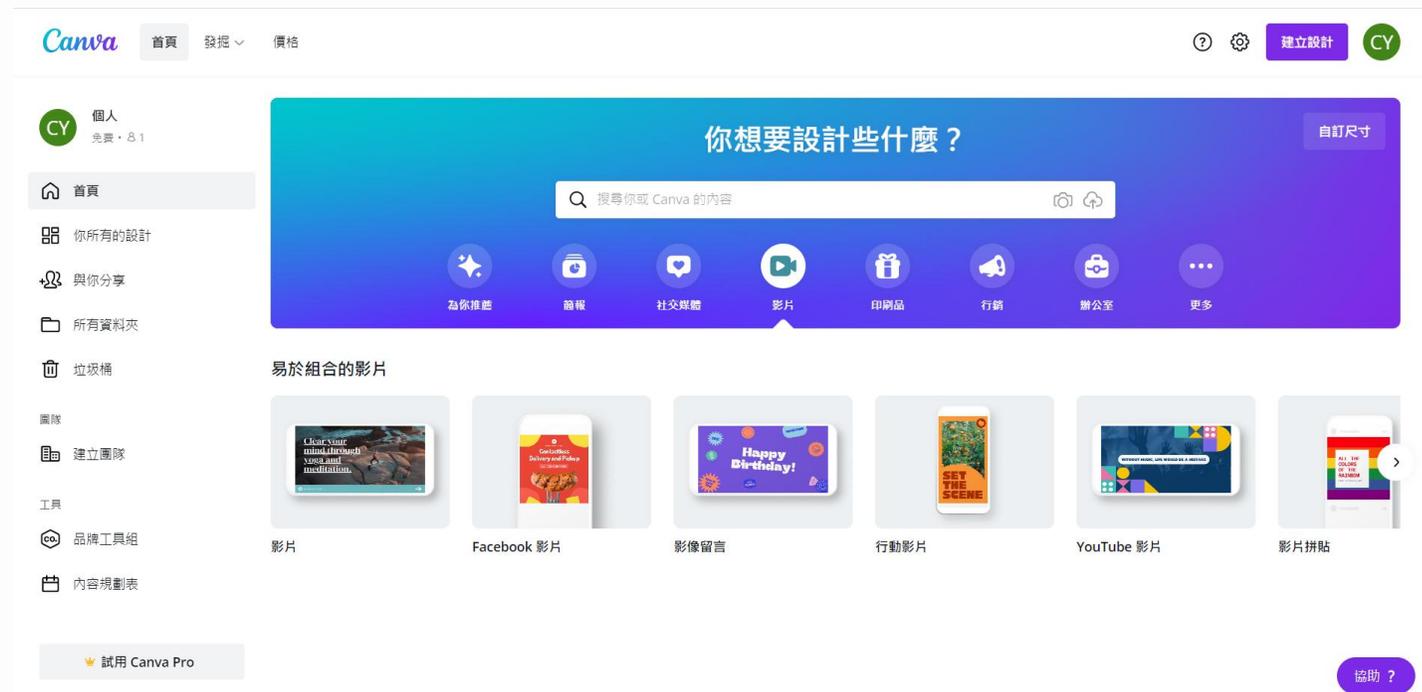


FilmoraGo

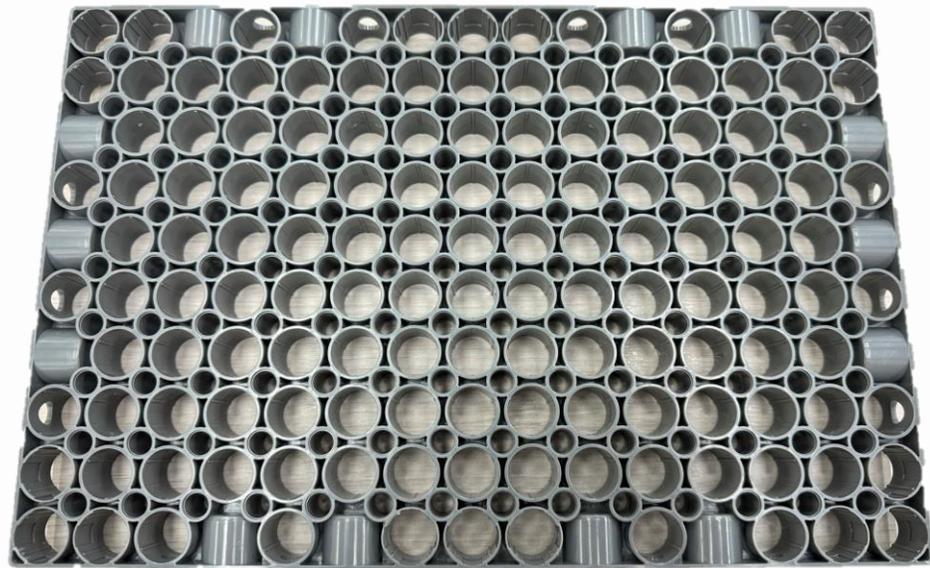


線上影片剪接

- <https://www.canva.com/>



底盤製作



底盤製作

- 底盤組件



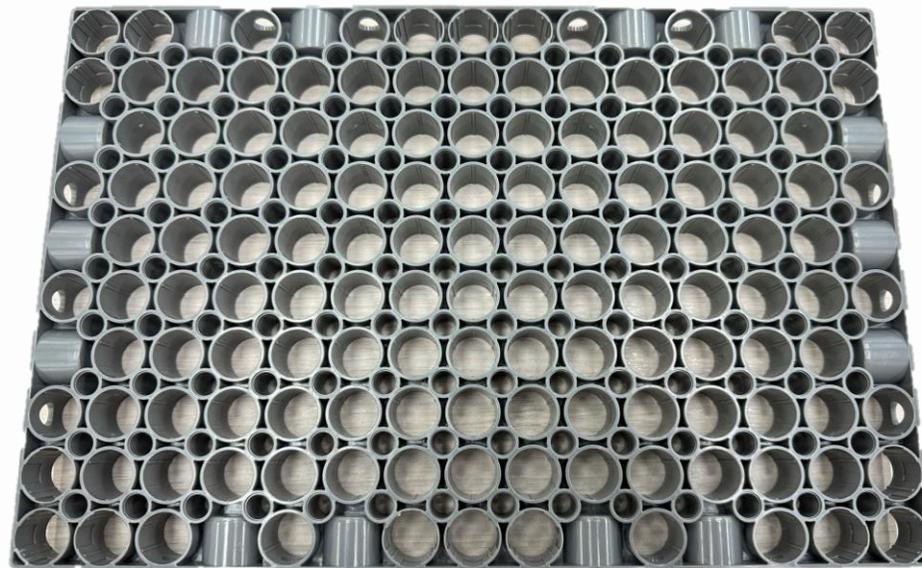
大底盤拆卸器



大底盤結合器



大底盤連接器

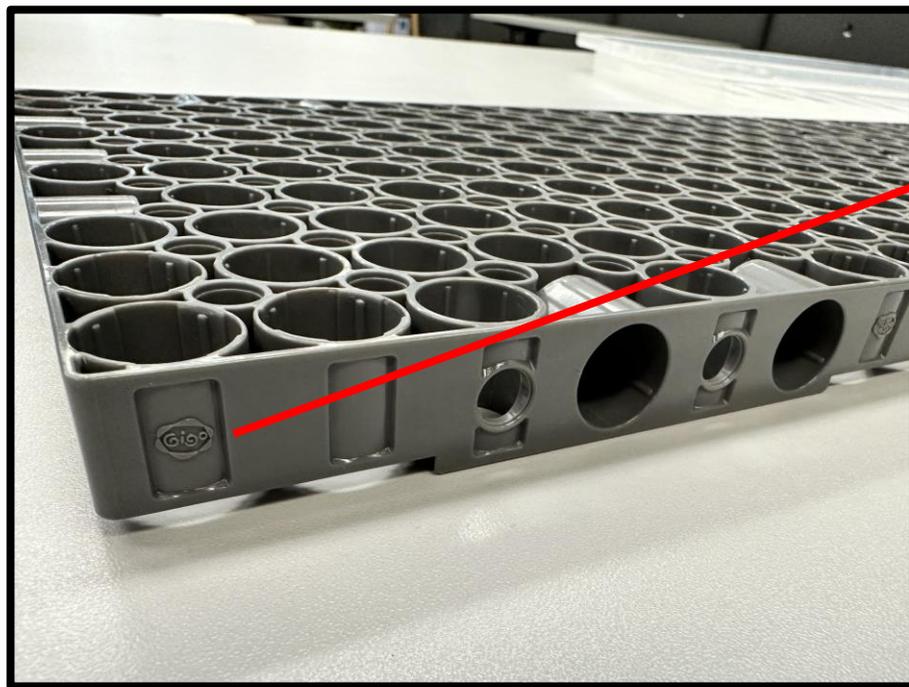


大底盤



底盤製作

- 大底盤

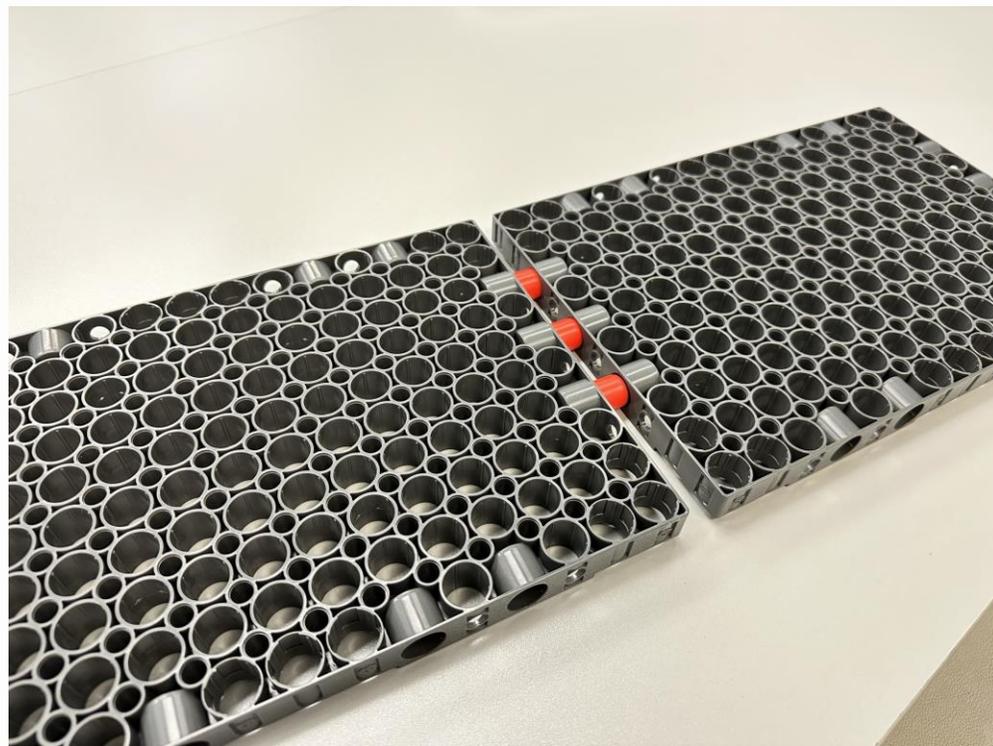


大底盤正面



底盤製作

- 組裝方法



1. 加入大底盤連接器



底盤製作

- 組裝方法



2. 反轉底盤至背面，加入大底盤結合器



底盤製作

- 組裝方法

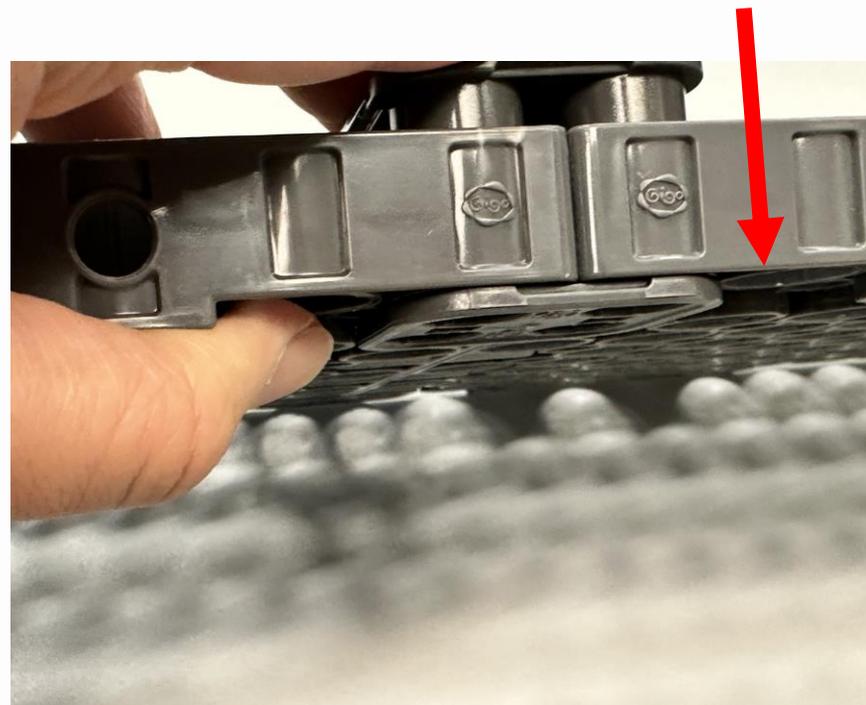
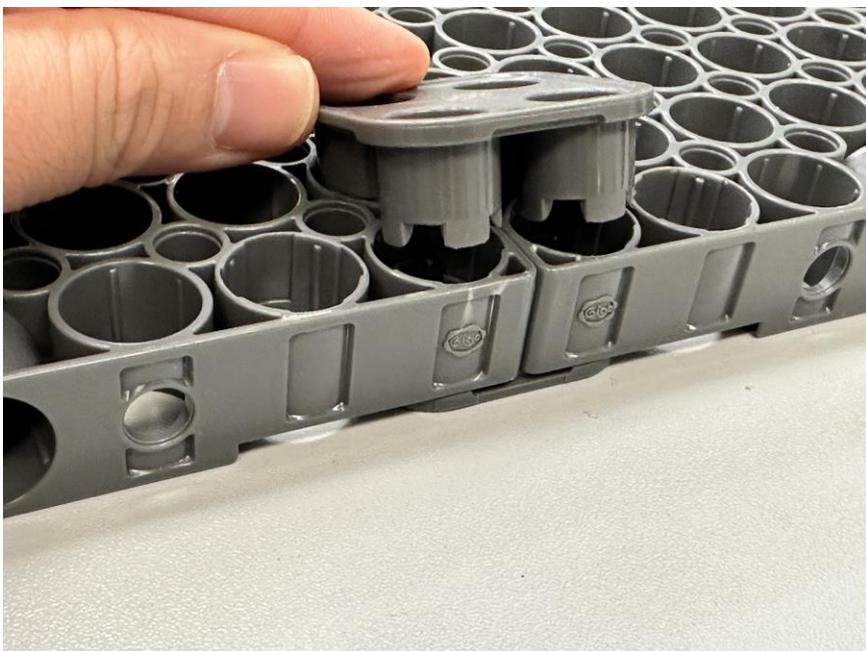


組裝完成！



底盤製作

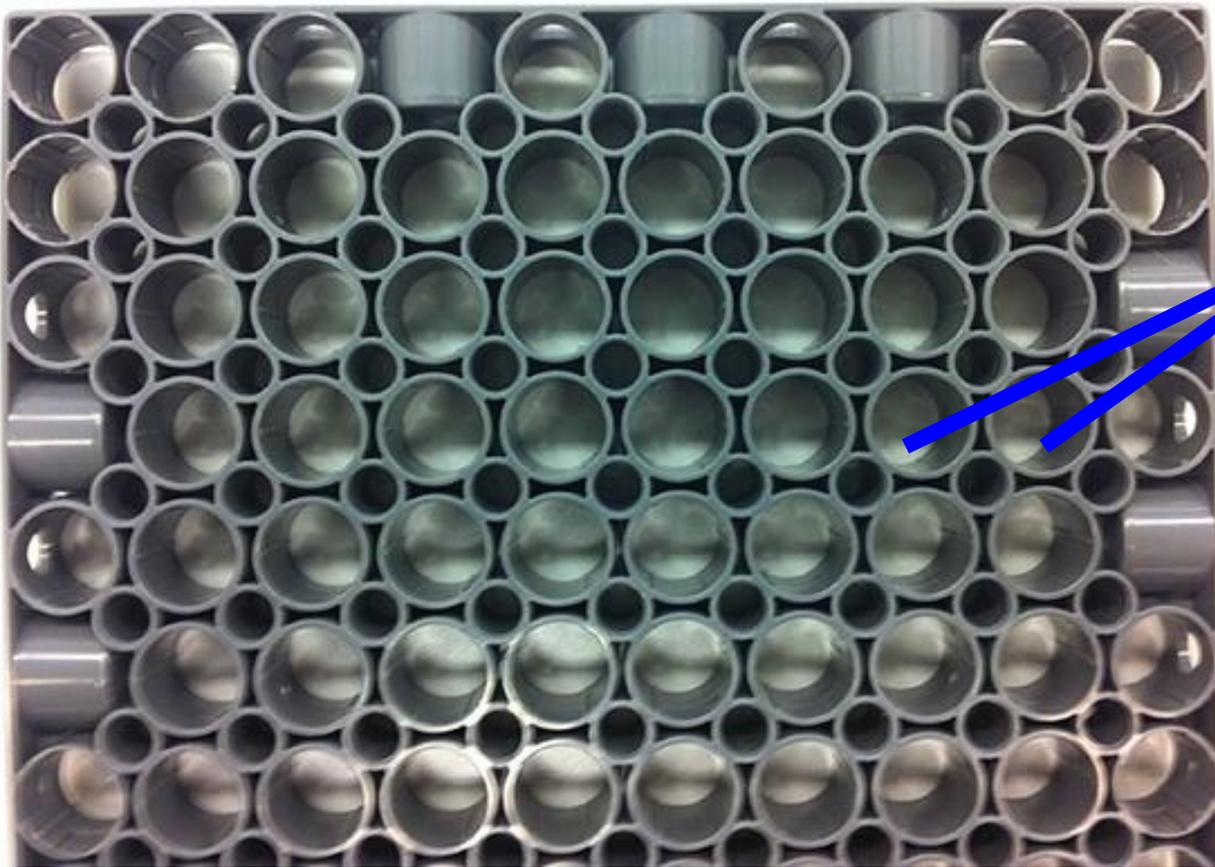
- 拆卸方法



於大底盤正面加入大底盤拆卸器



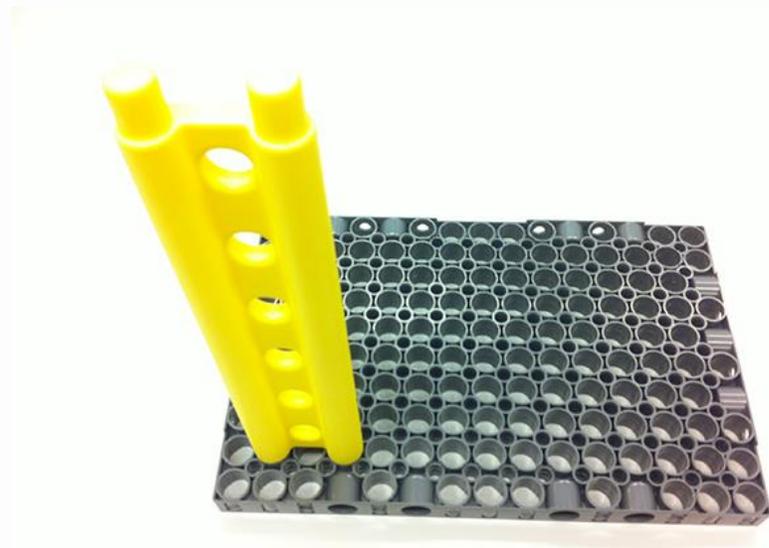
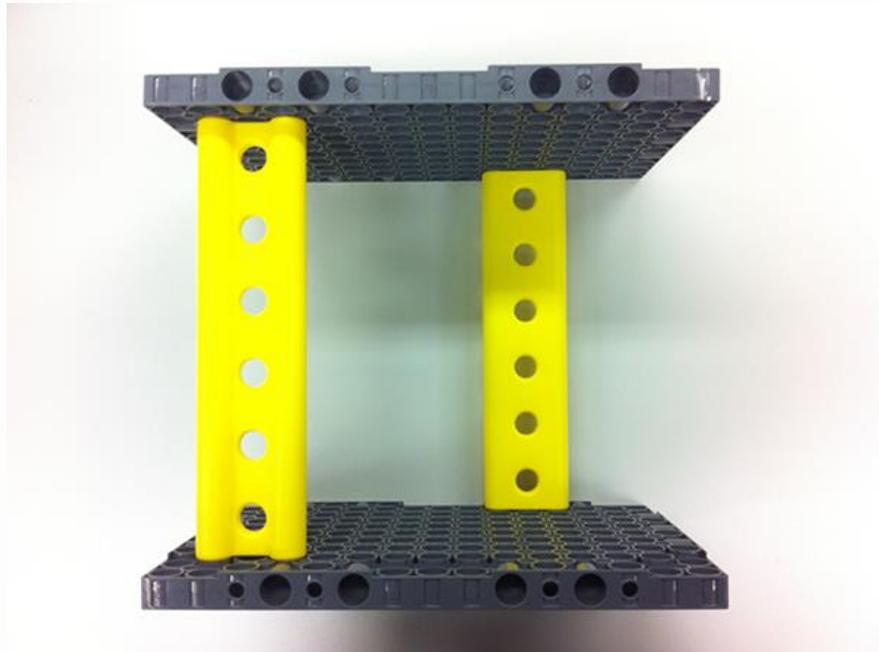
底盤



可配合軌道組件



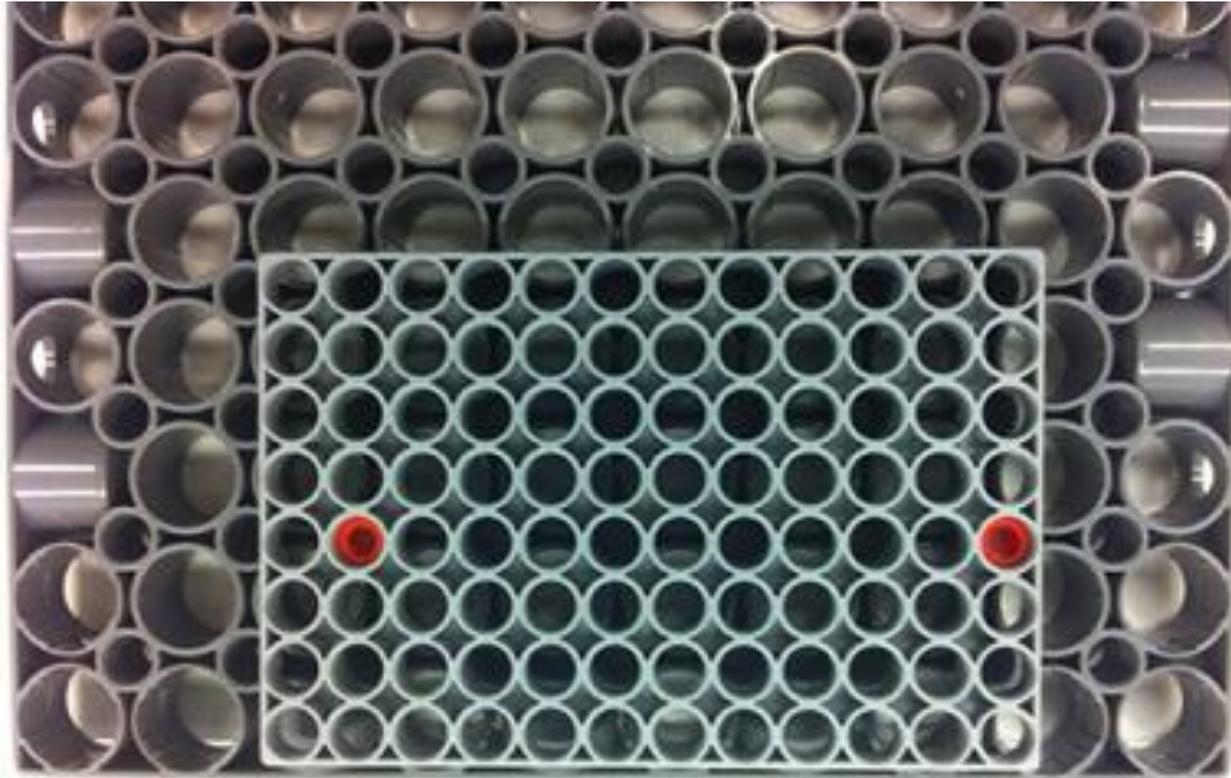
新底板 + 軌道零件



雙層結構



補充底板上小孔的不足

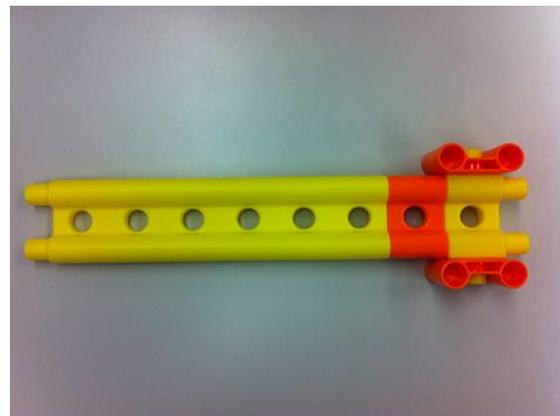
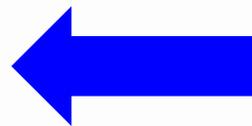
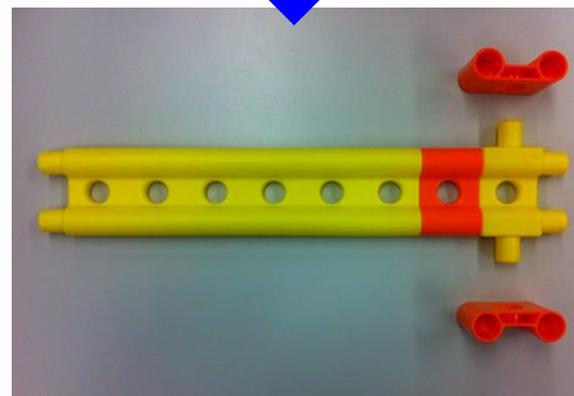
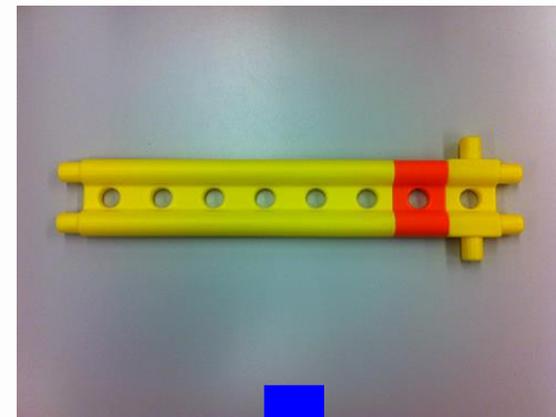
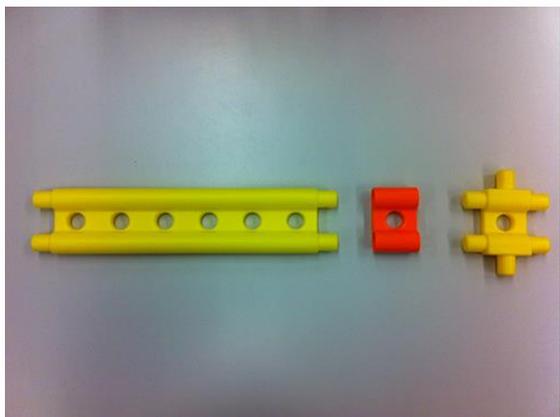


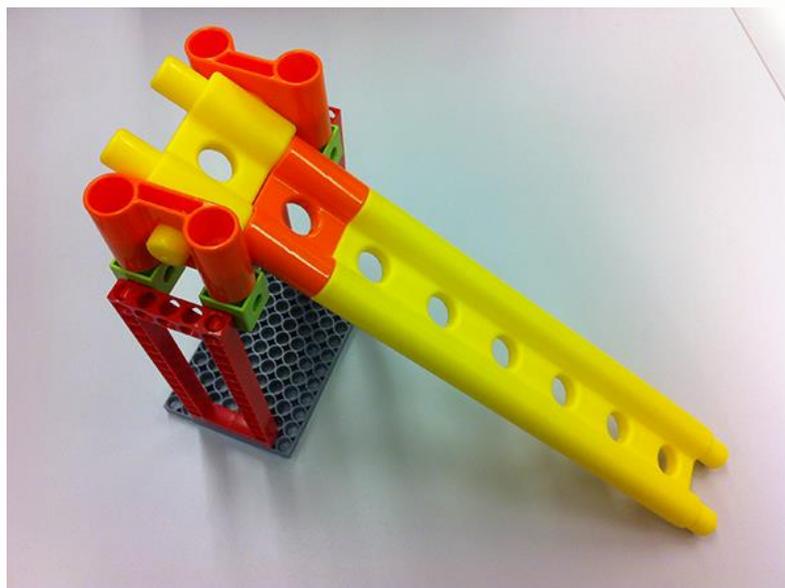
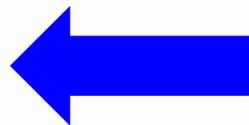
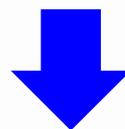
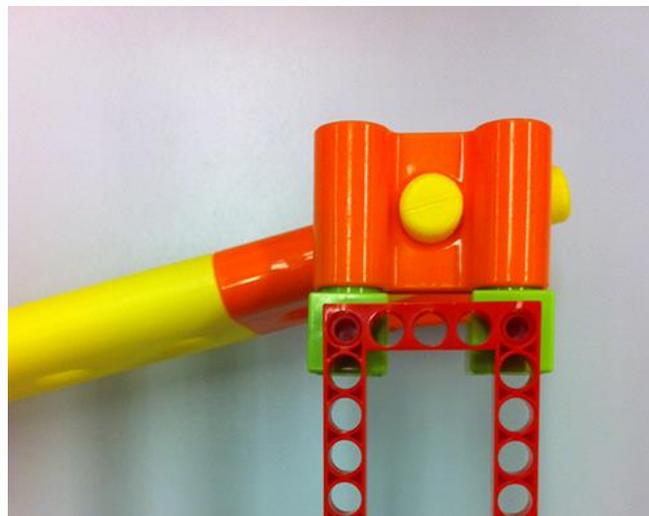
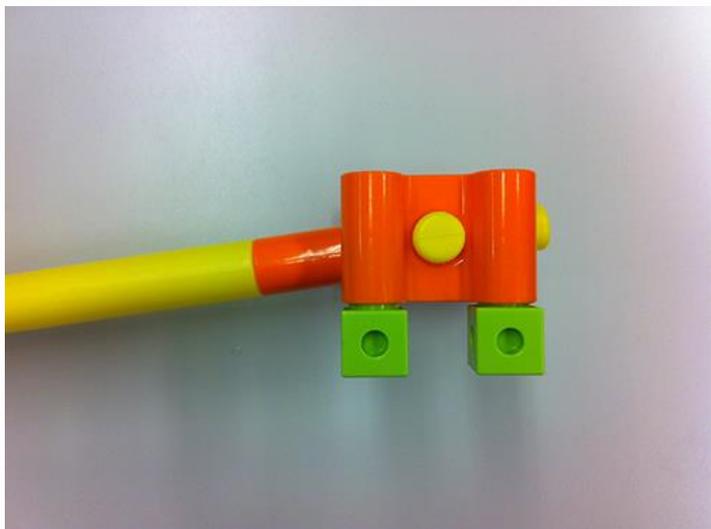


斜台組裝



組裝方法





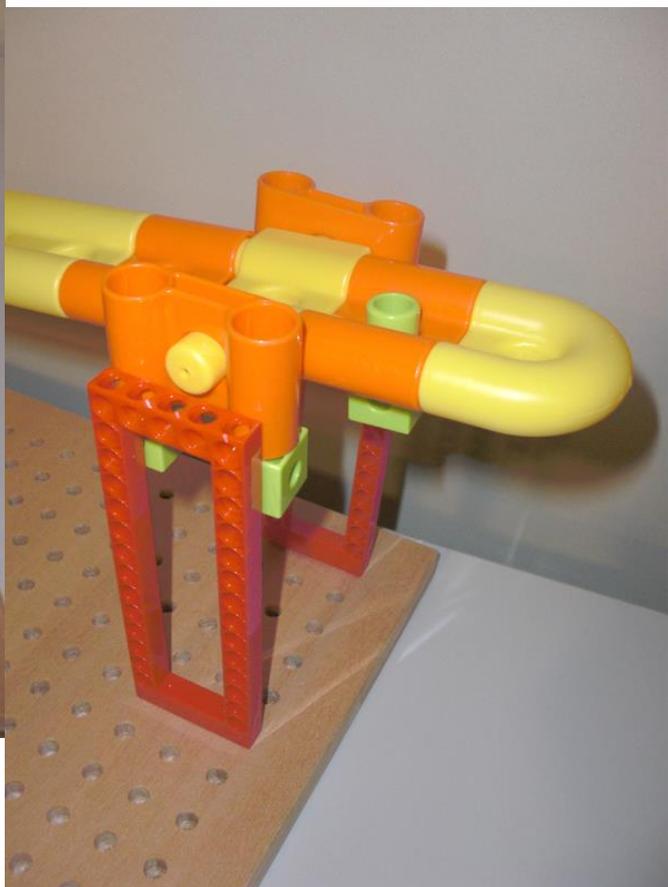
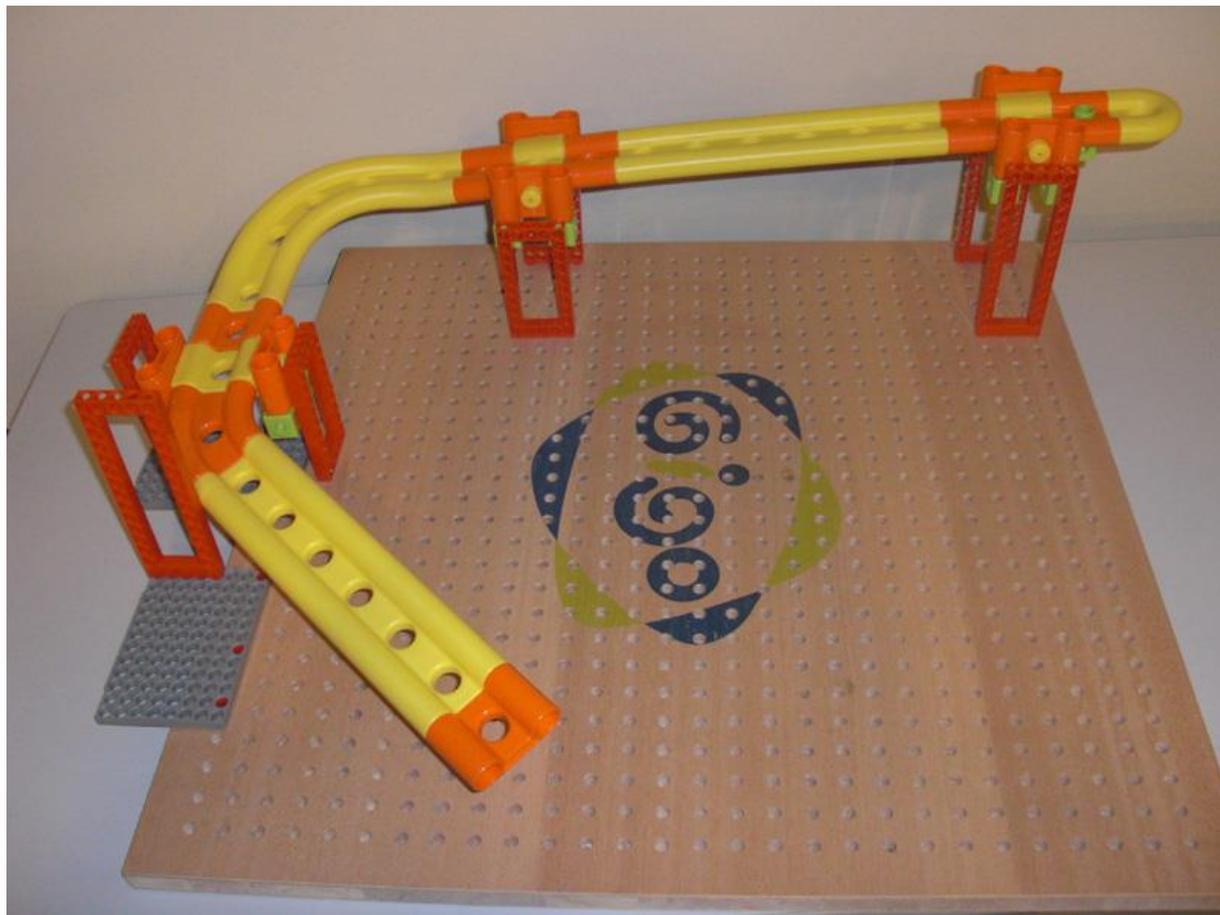
斜台



各種球



小挑戰-斜台轉向





DISASSEMBLE

拆解

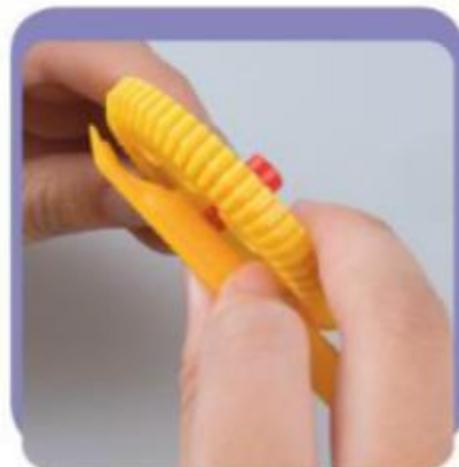




長短結合鍵特點與拆卸



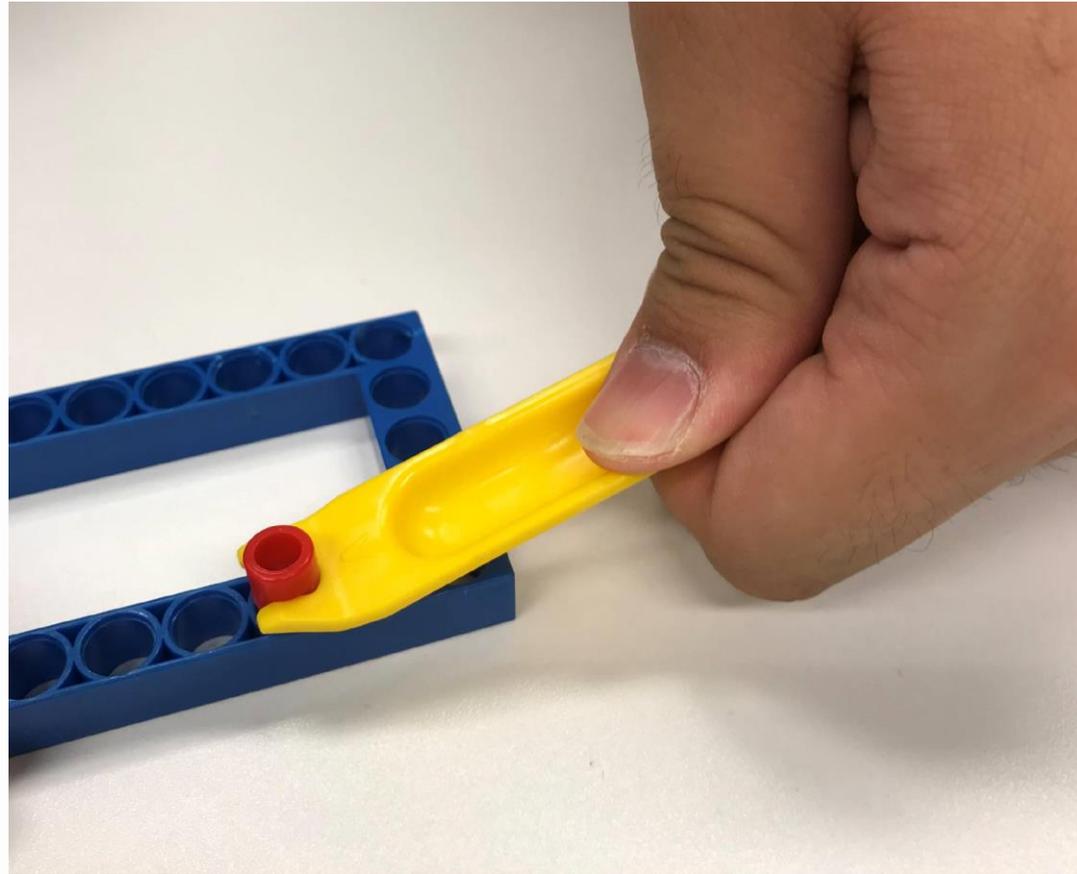
軸扣鍵的拆卸

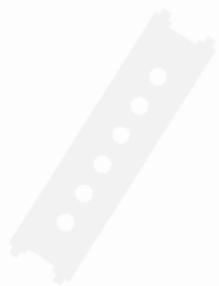


自轉軸鍵的拆卸

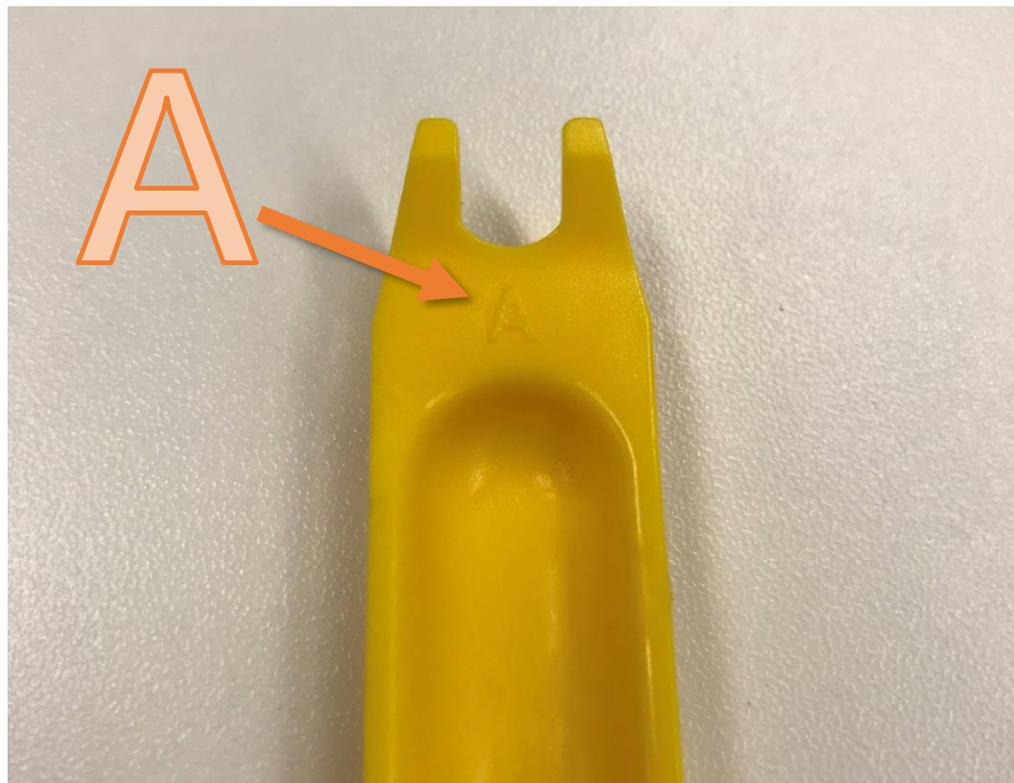


使用扳手去拆除連接器

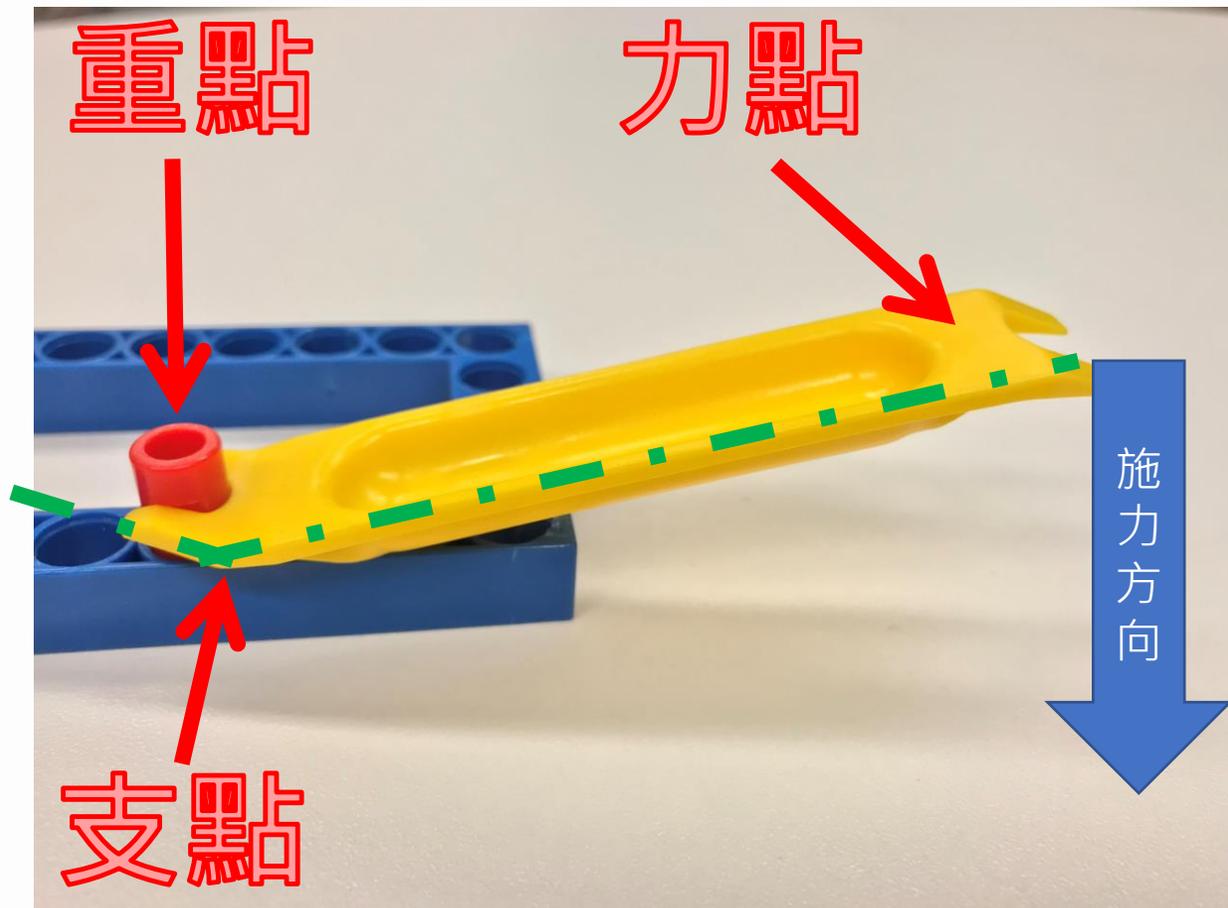




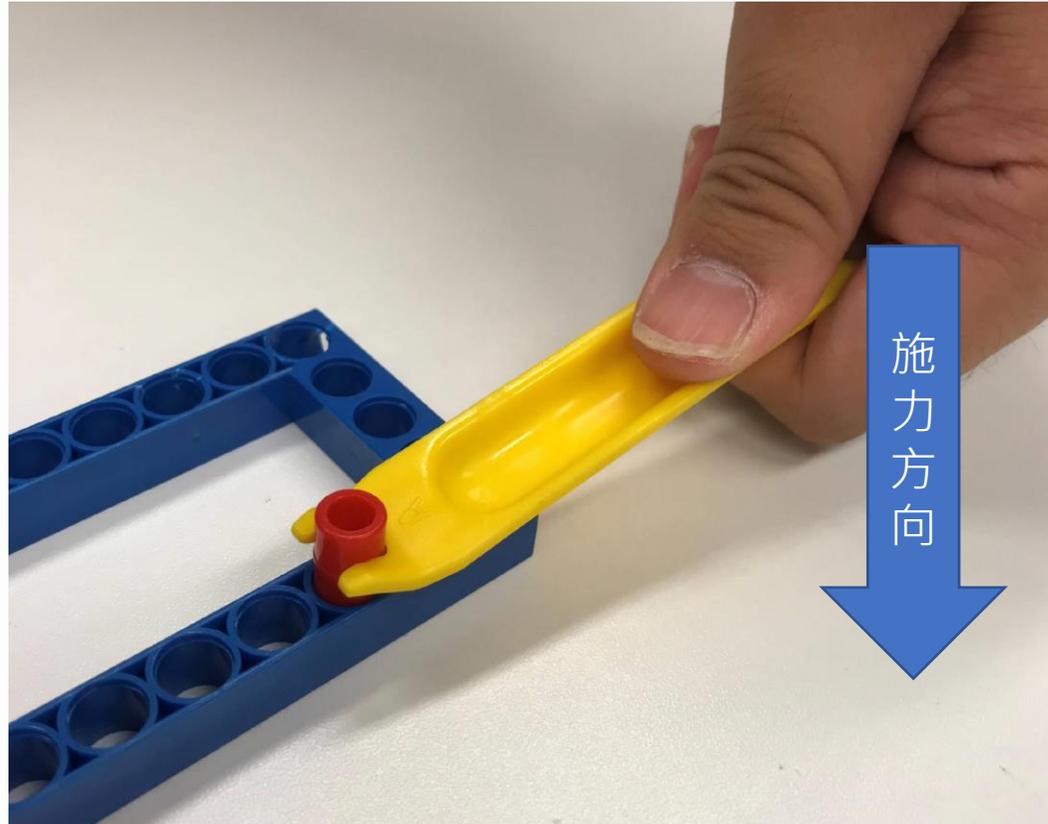
如何使用扳手



以槓桿原理去使用扳手



以槓桿原理去使用扳手





自製斜台

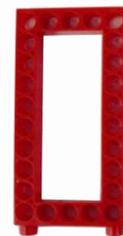


零件介紹

長條

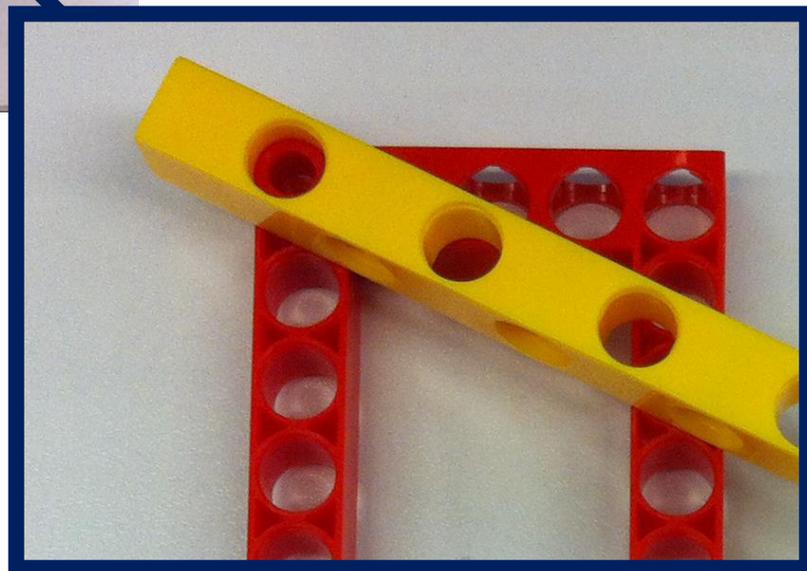
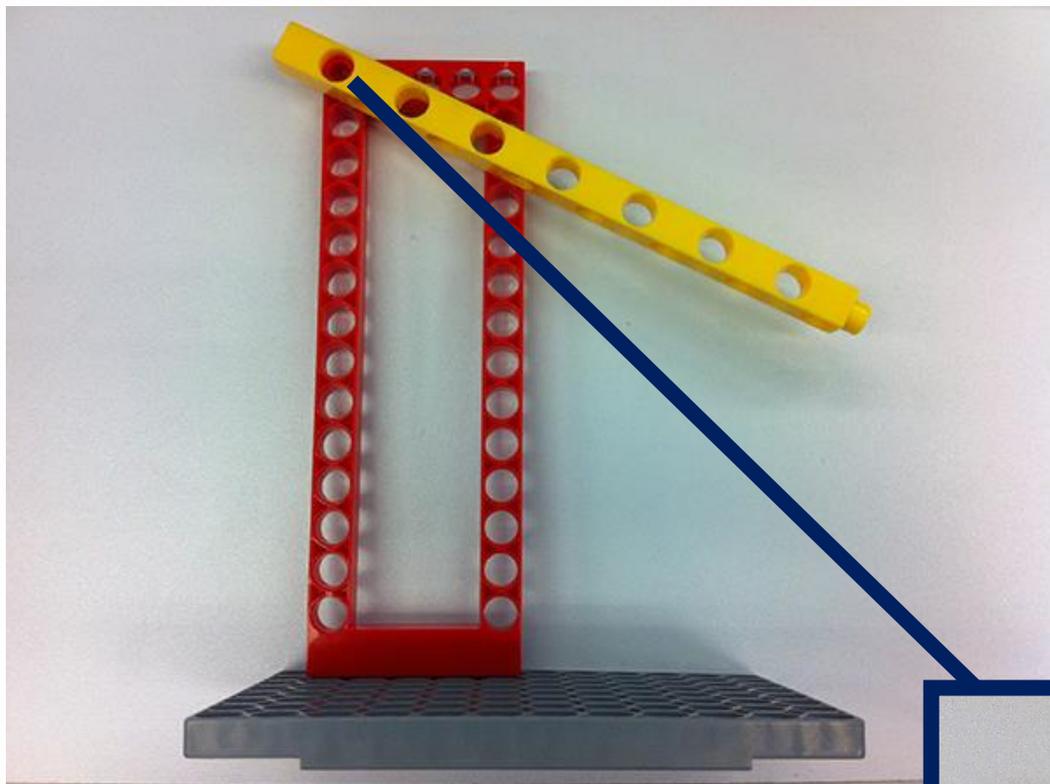


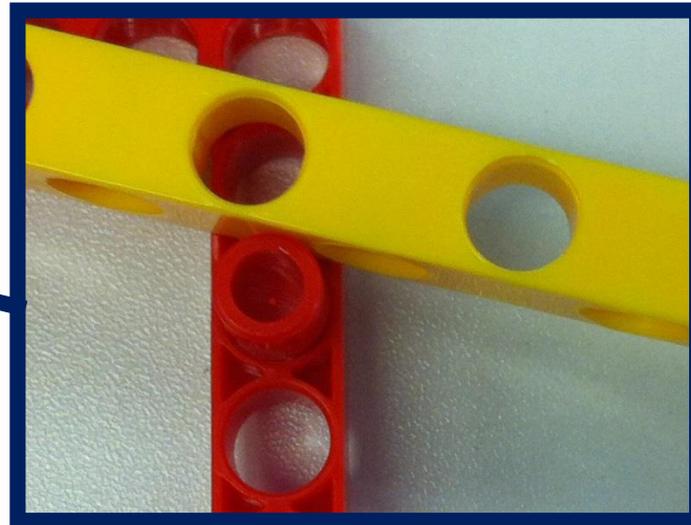
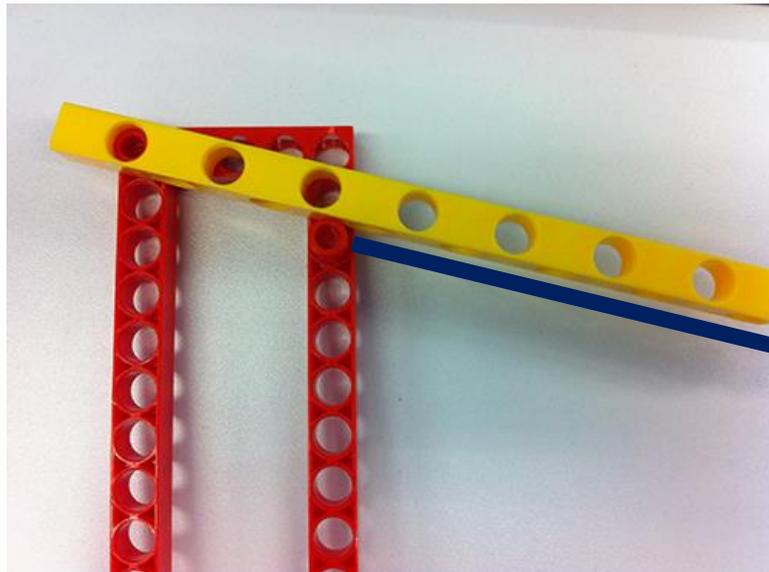
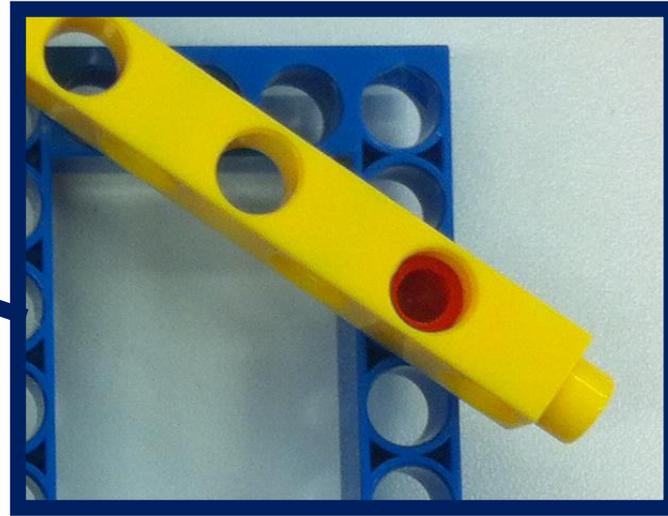
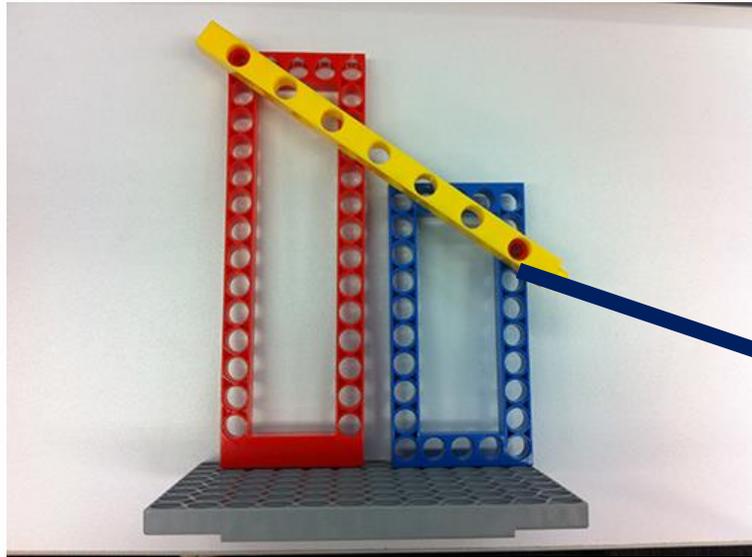
長方框

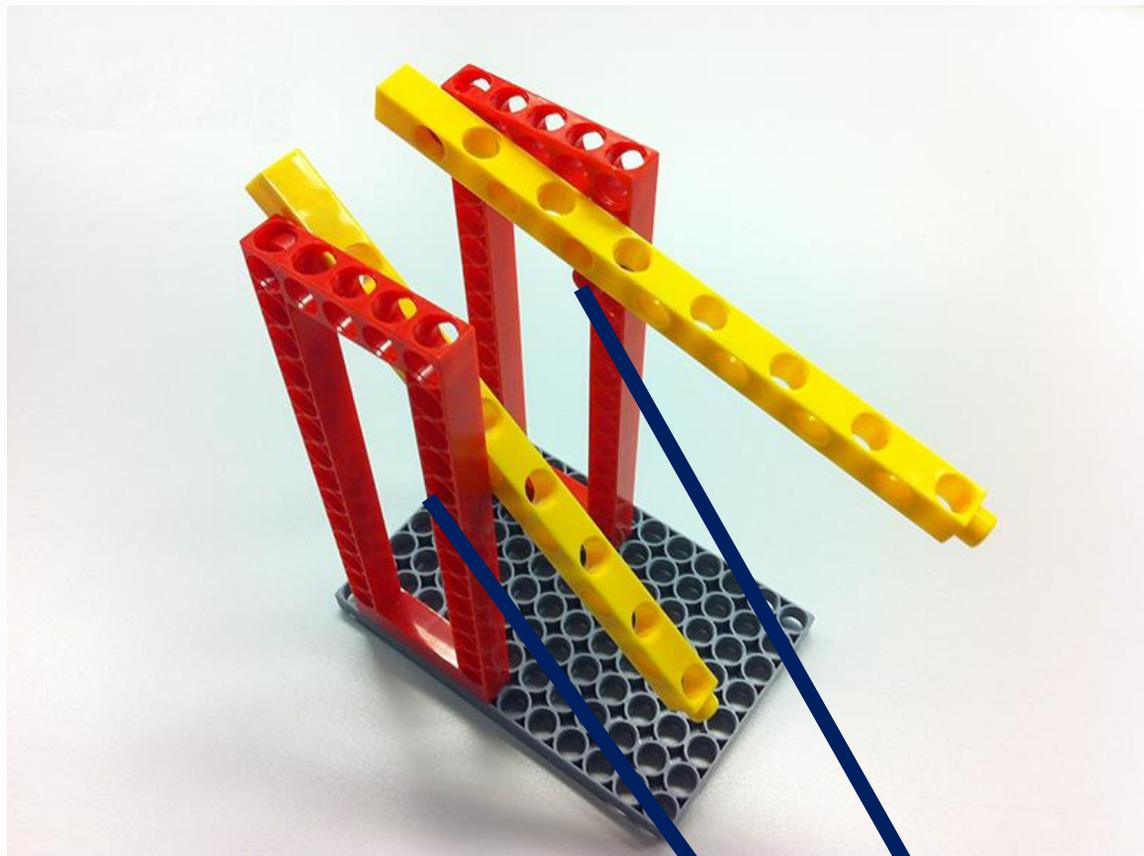


連接器



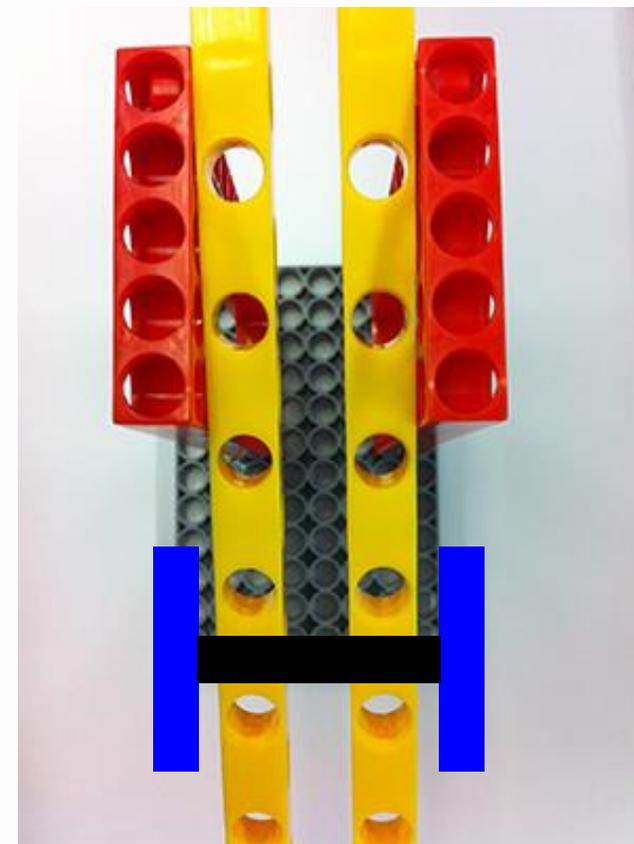
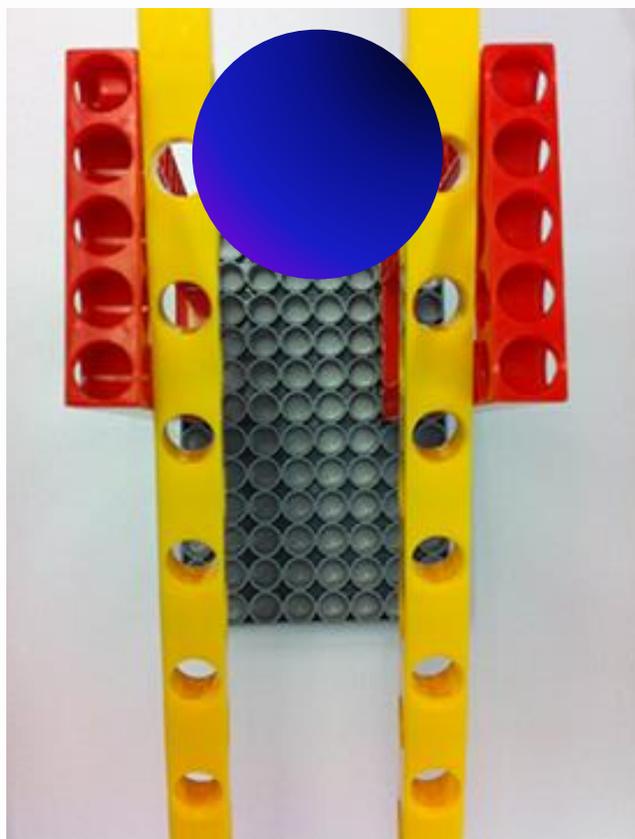
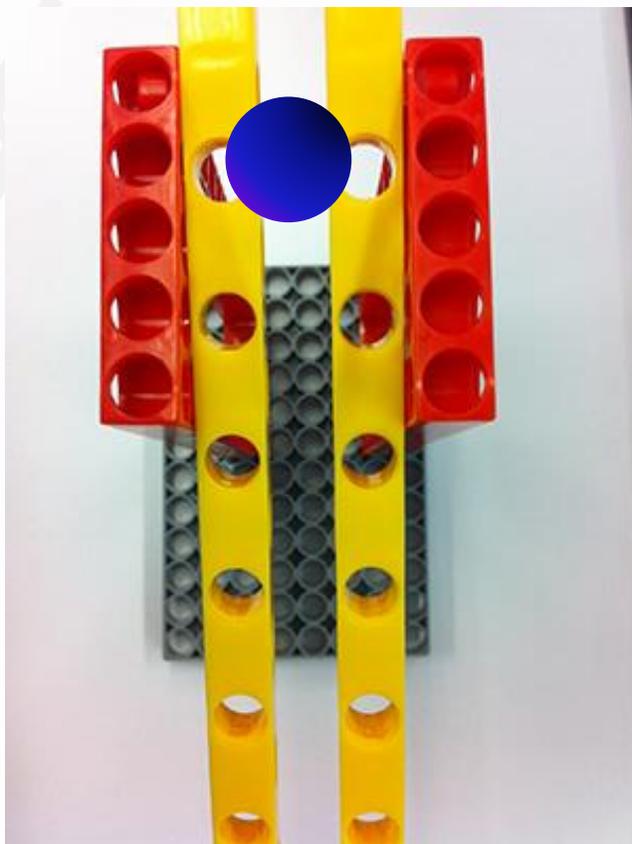






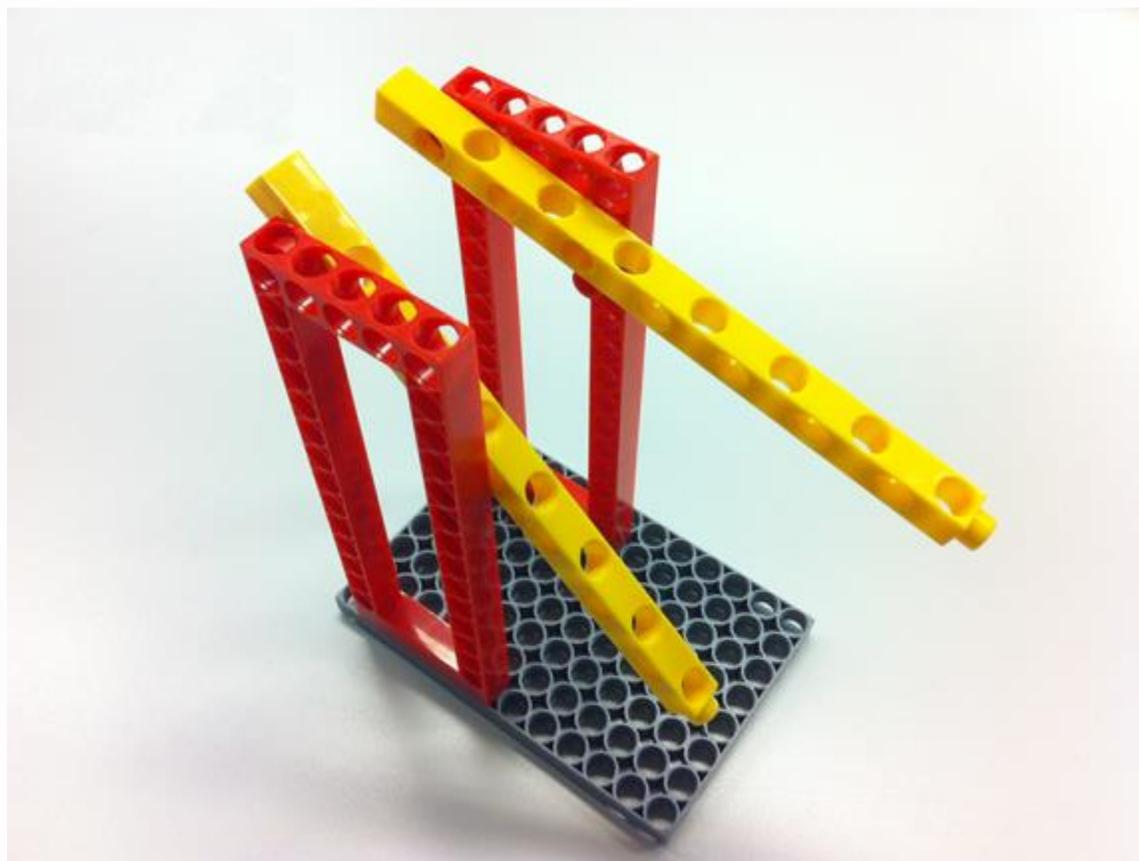
調較不同角度





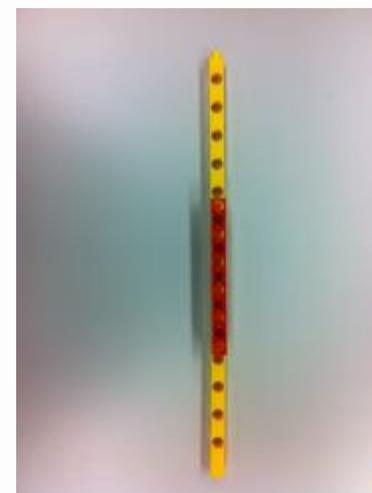
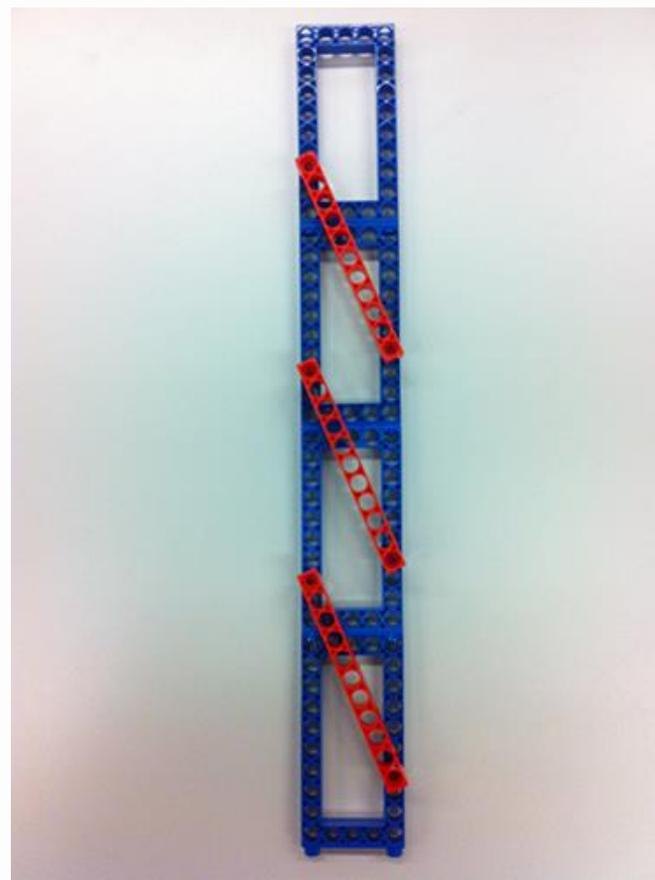
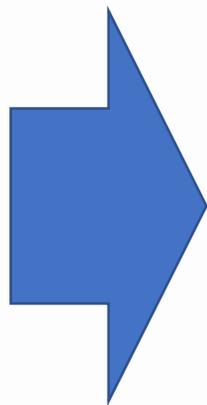
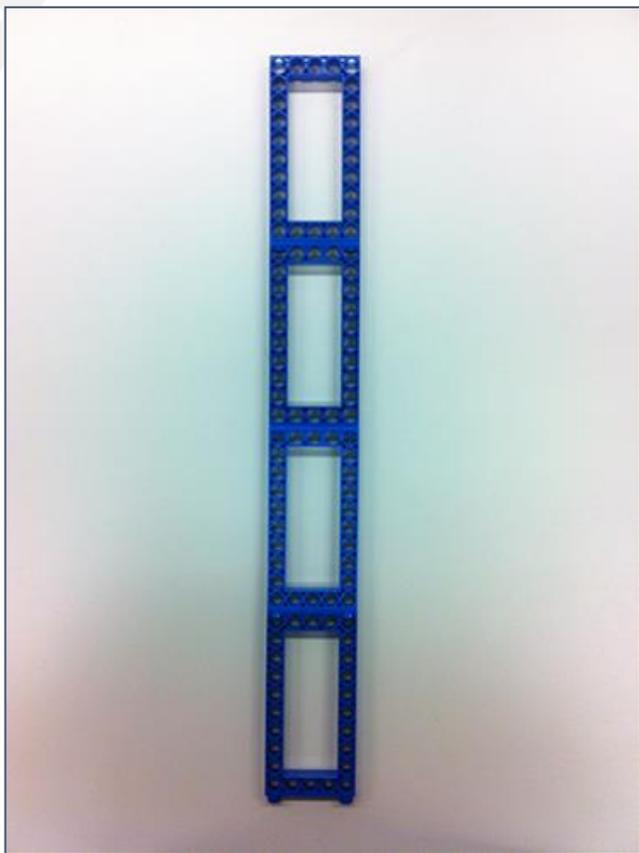
可配合不同動力組件改變軌道闊度





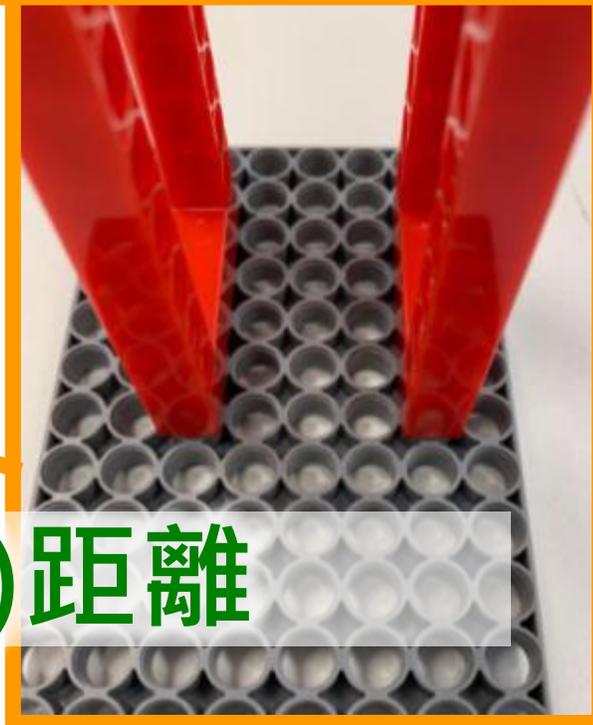
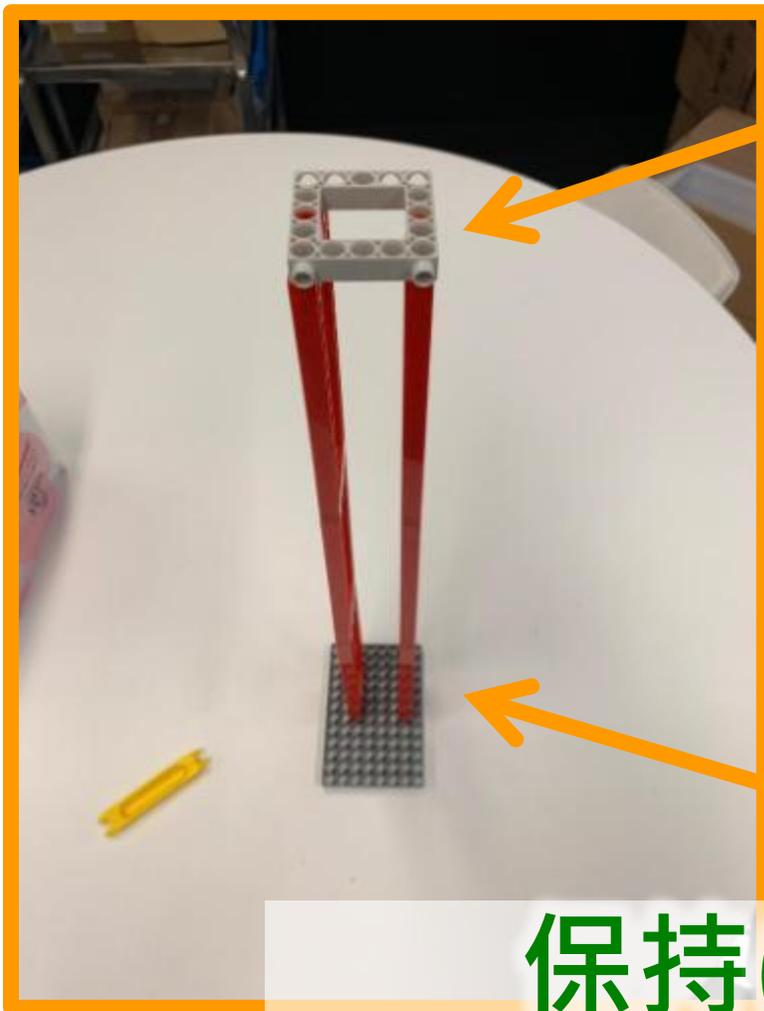
- 挑戰：製作可讓鋼珠 / 波子滾動最少 2 秒的軌道
- 要求 1：起點最少 3 個長紅框高
- 要求 2：最少要轉換方向 2 次





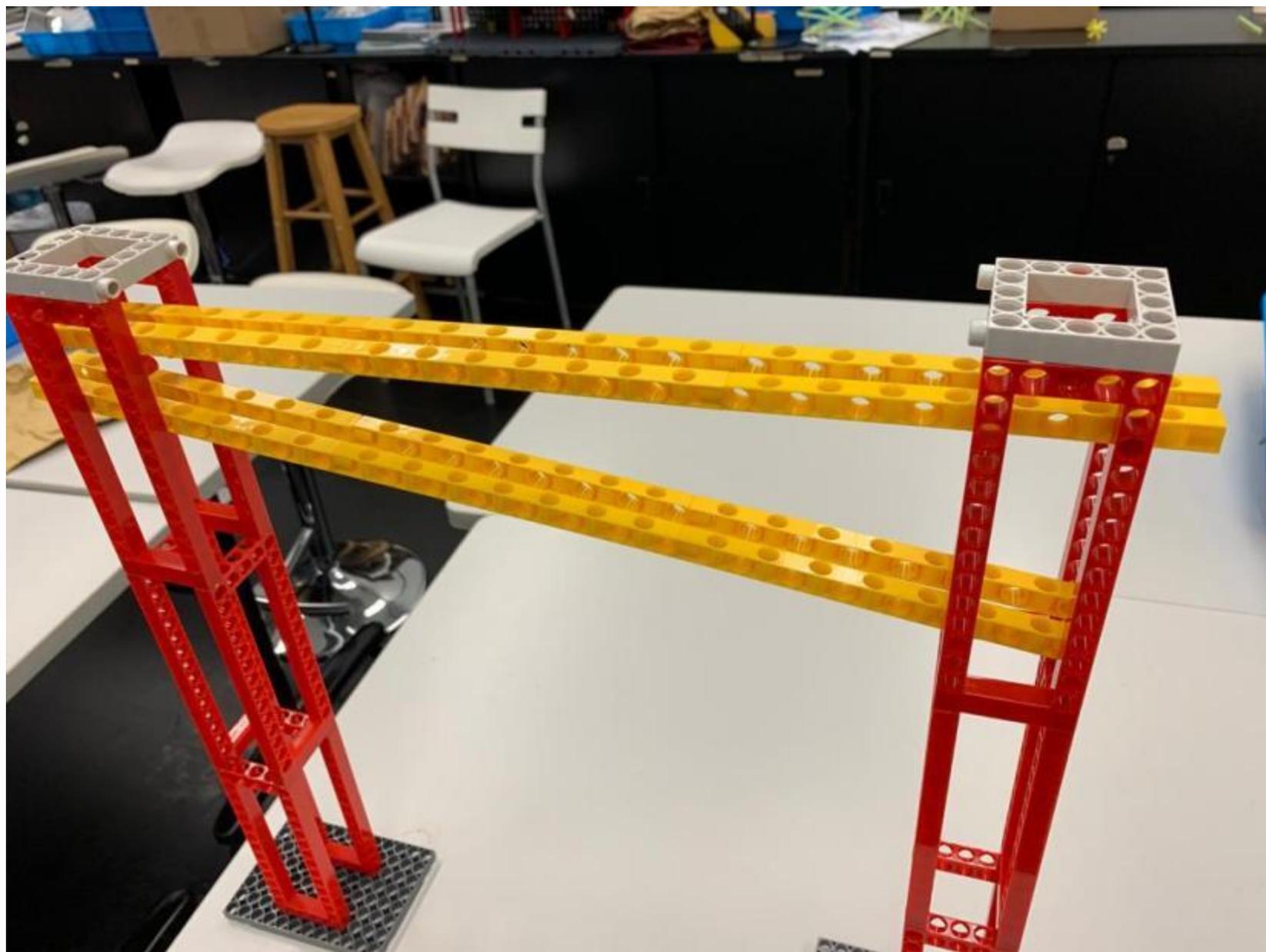
加固(有助提高穩定性)

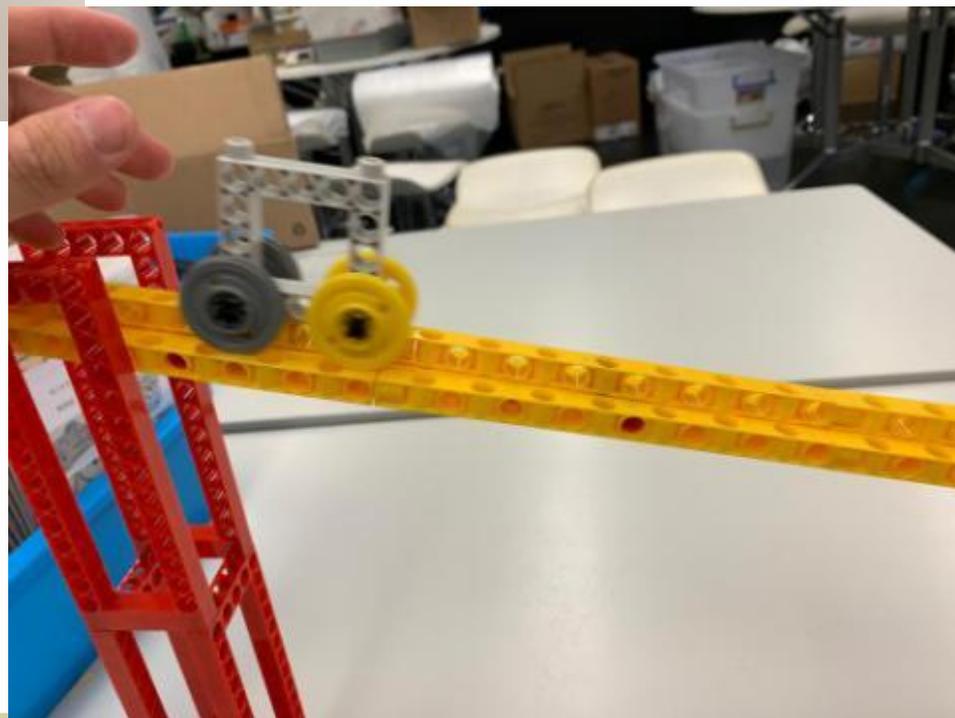
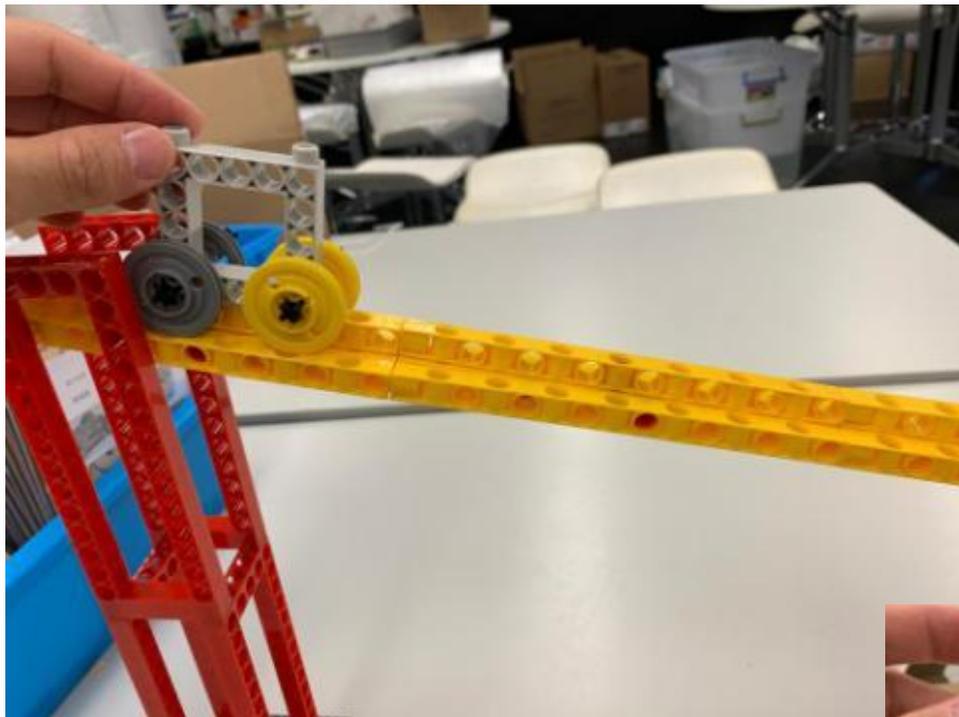


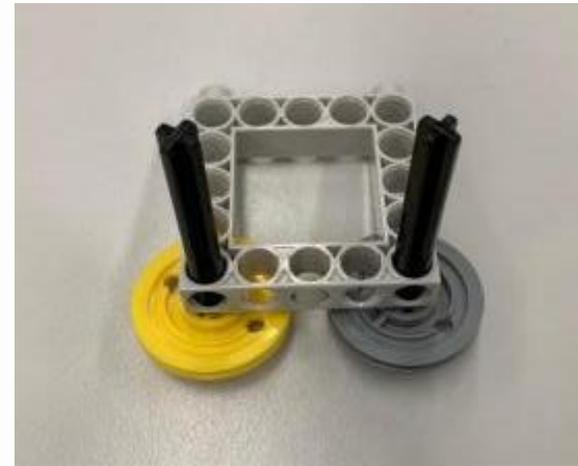
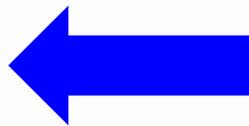
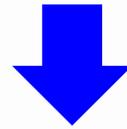
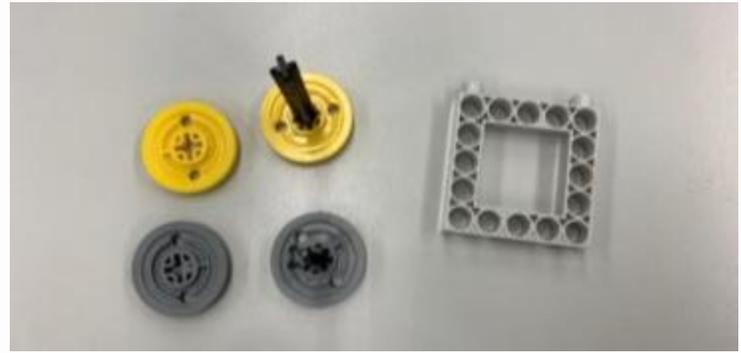
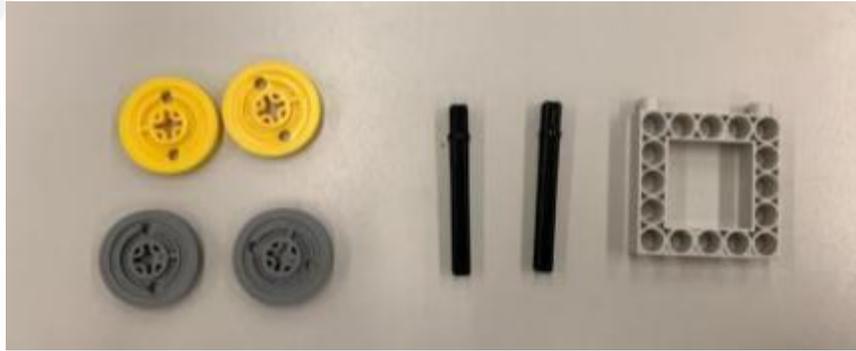


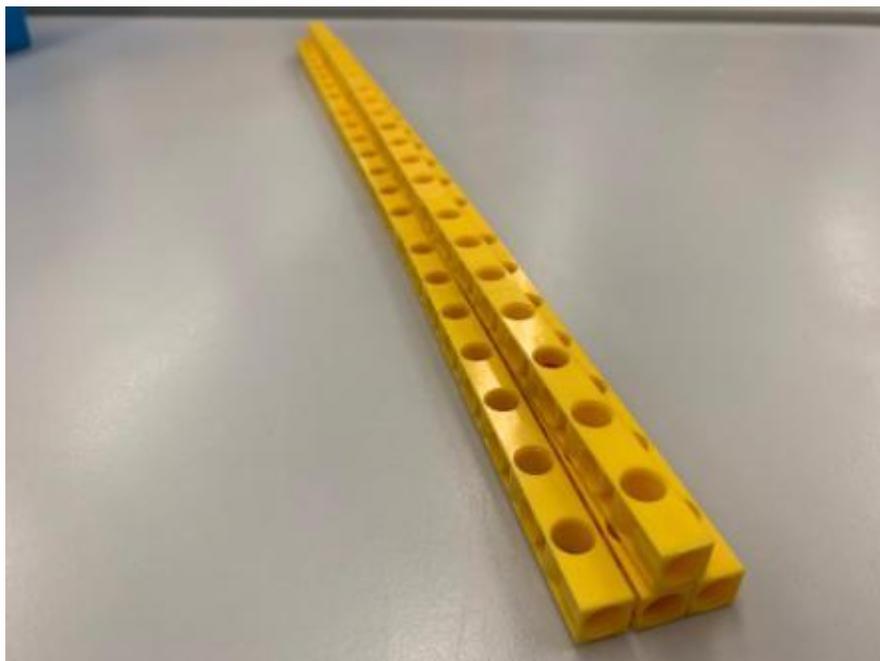
保持(3格)距離











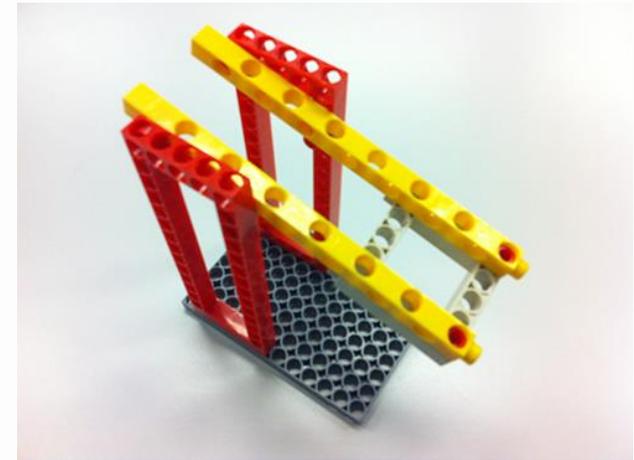
設計合適的軌道



軌道零件 VS 方框+長條



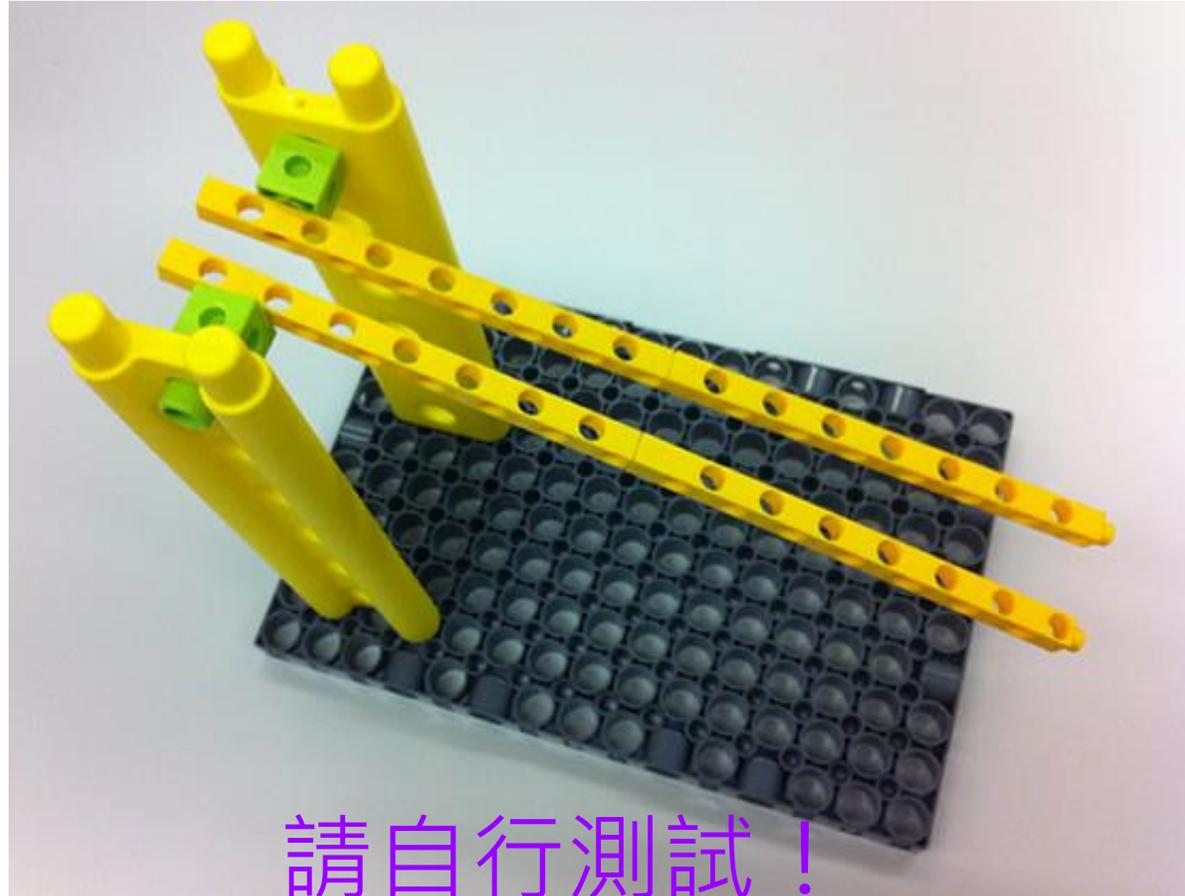
- 製作較快捷
- 較粗略，但調整空間大
- 所佔範圍較大
- 可轉向
- 動力組件變化有限



- 製作較慢
- 較精準
- 所佔範圍較小
- 較穩固(穩定)
- 動力組件變化較大



混合軌道?



軌道還有什麼用途？



<https://www.youtube.com/watch?v=CKbId5T2tSM>

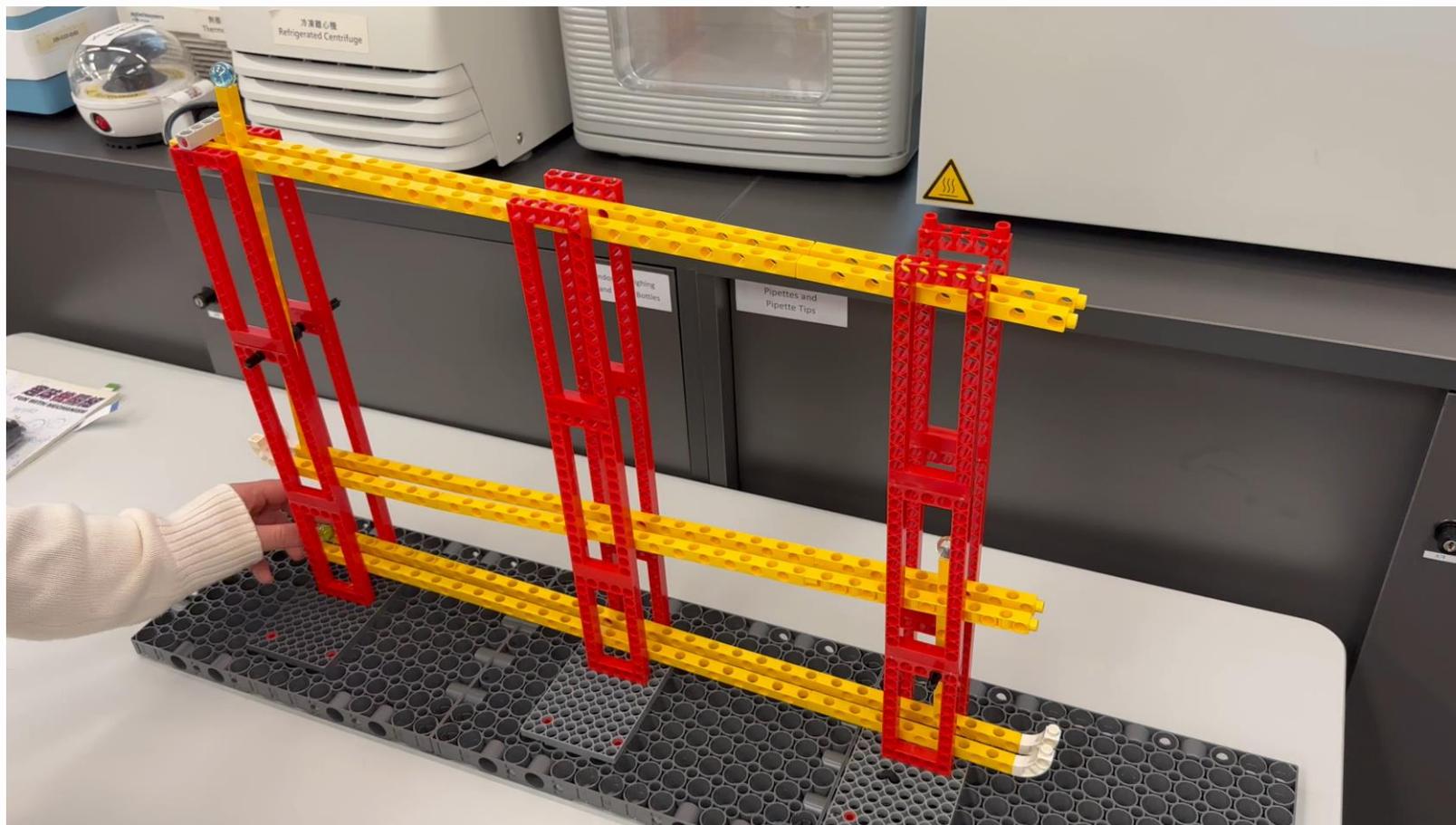




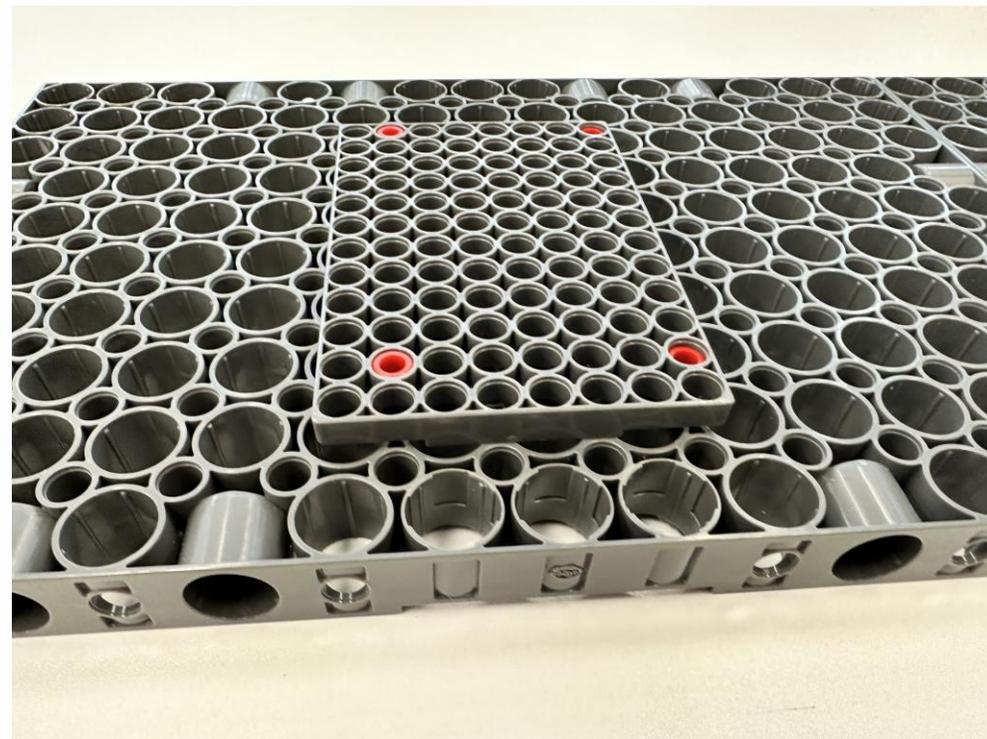
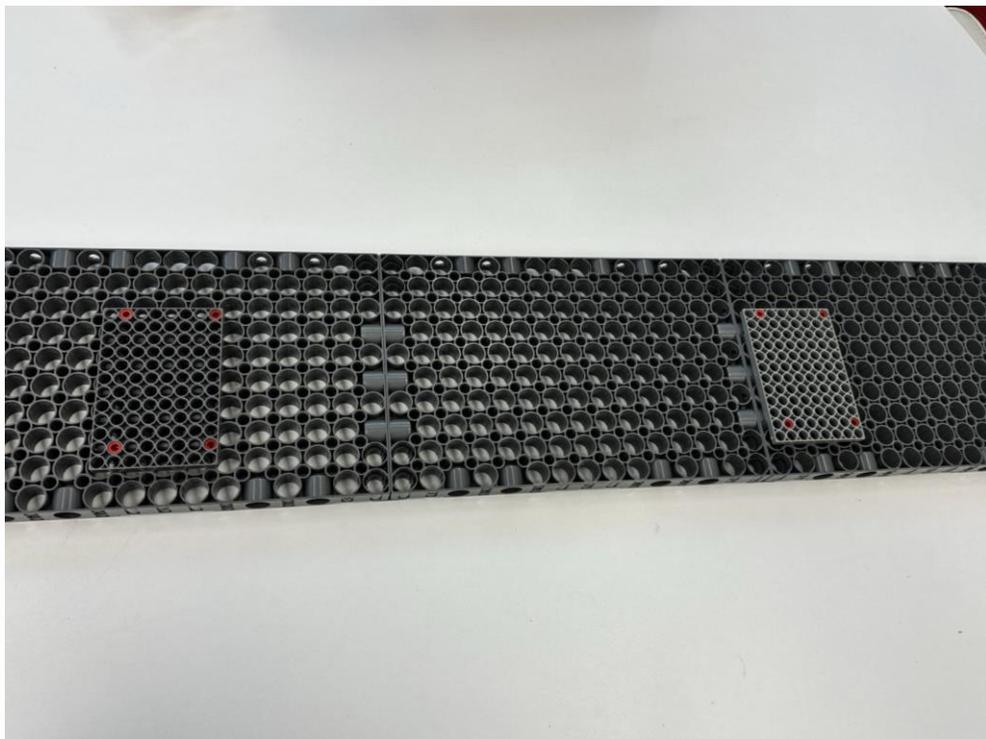
上升裝置



上升軌道



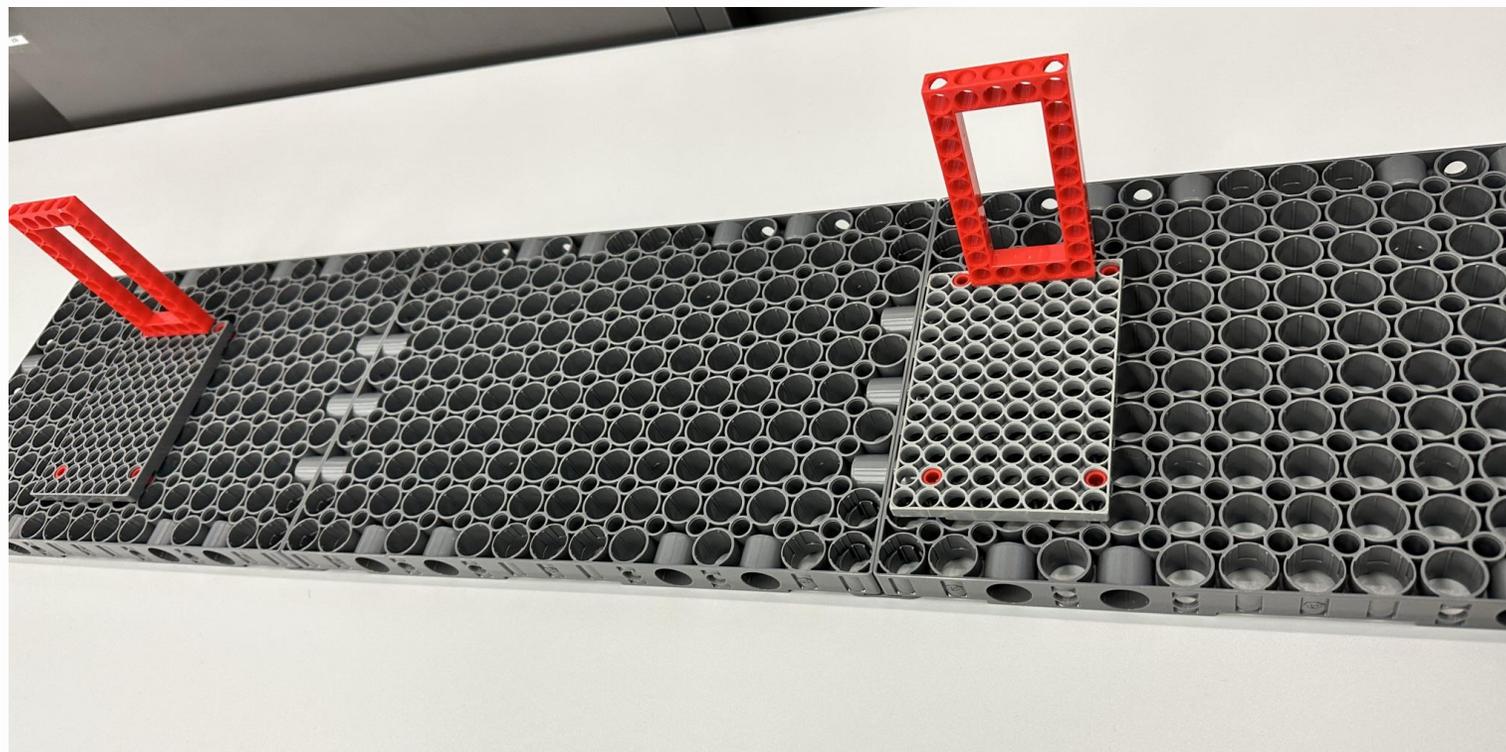
上升軌道



於大底盤加入底板



上升軌道



於各底板上加入1個紅色方框



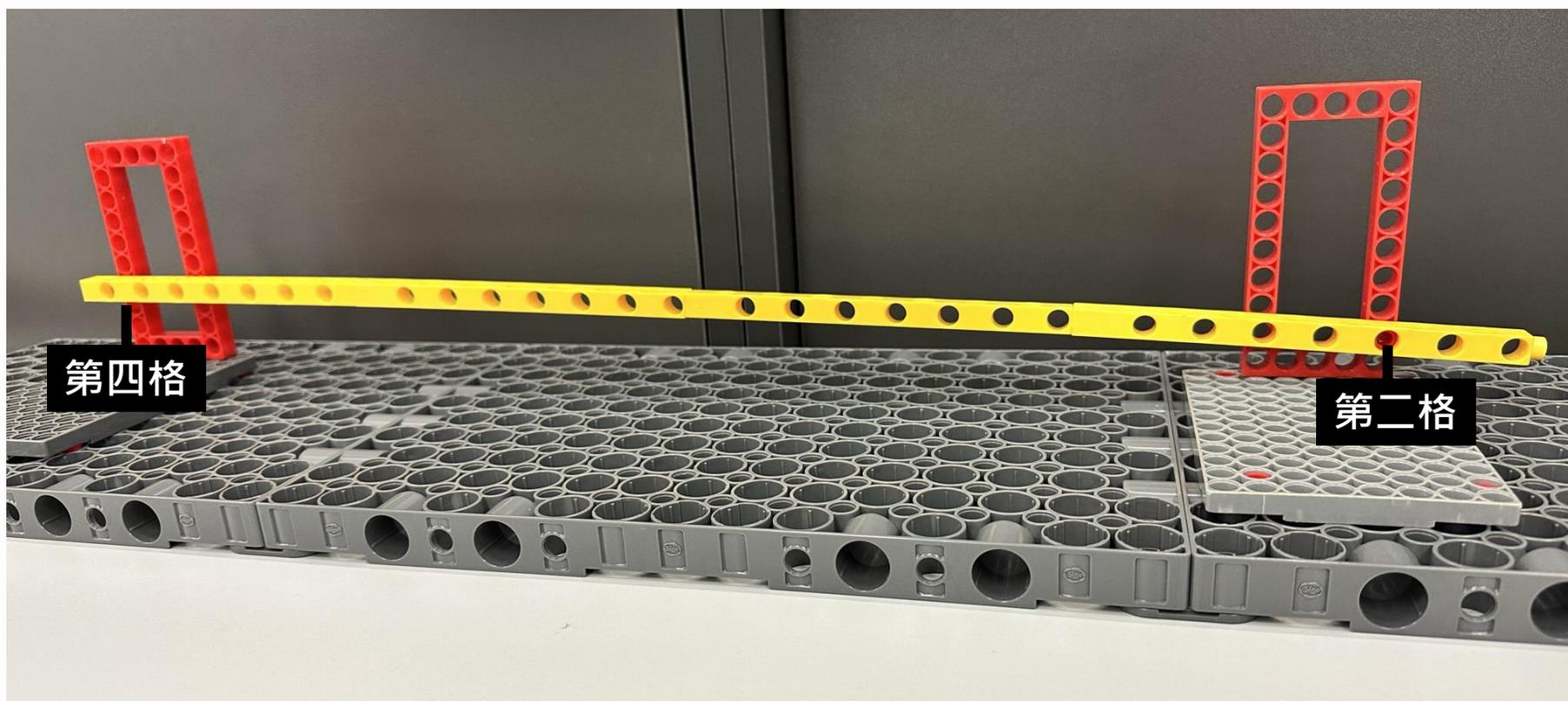
上升軌道



連接4條黃色長條



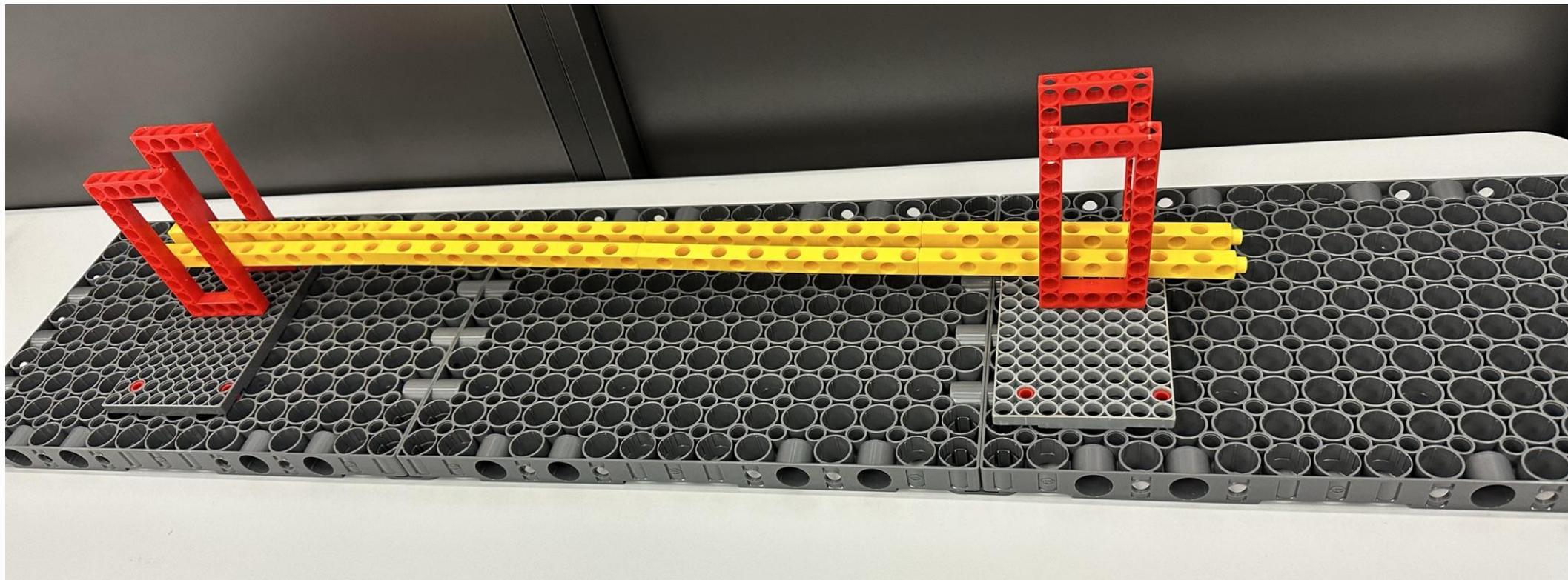
上升軌道



將已連接的黃色長條安裝至紅色方框上



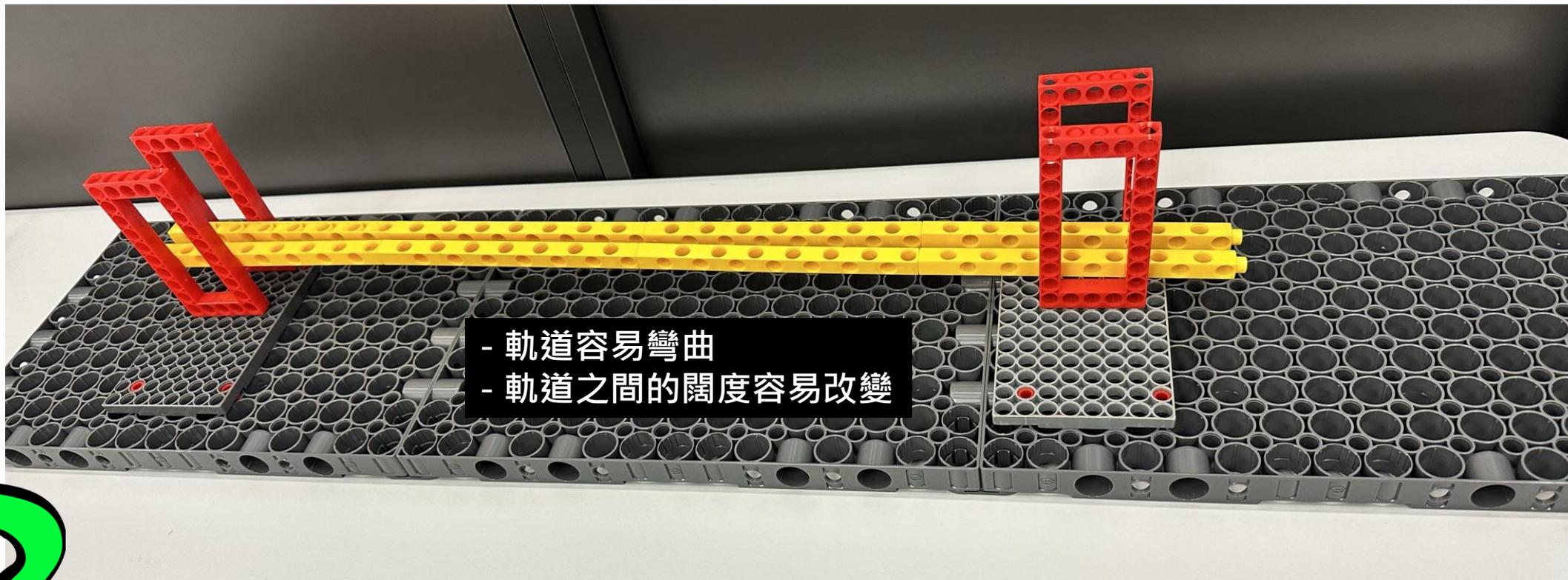
上升軌道



加入紅框及黃色長條形成軌道



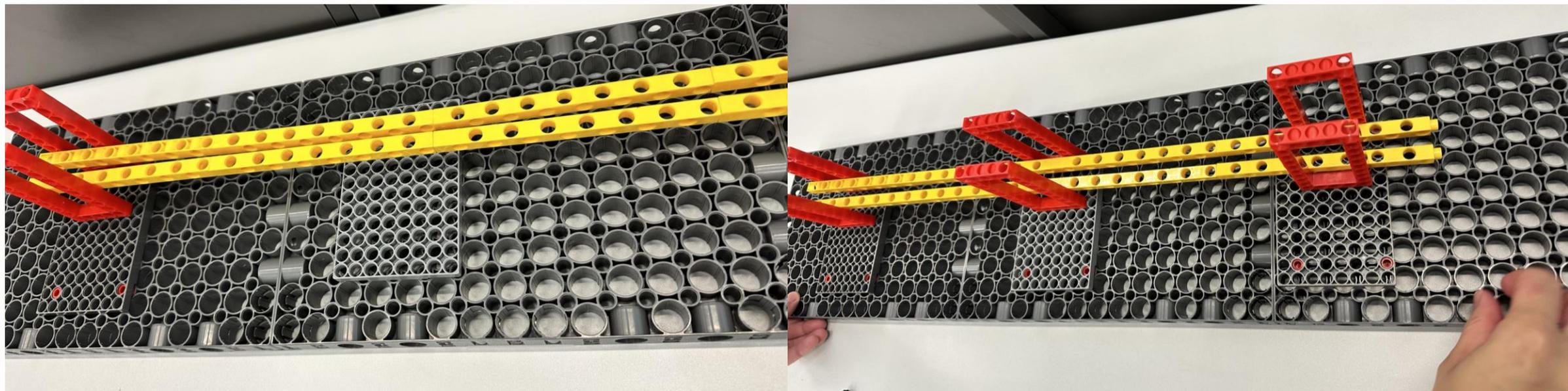
上升軌道



- 軌道容易彎曲
- 軌道之間的闊度容易改變



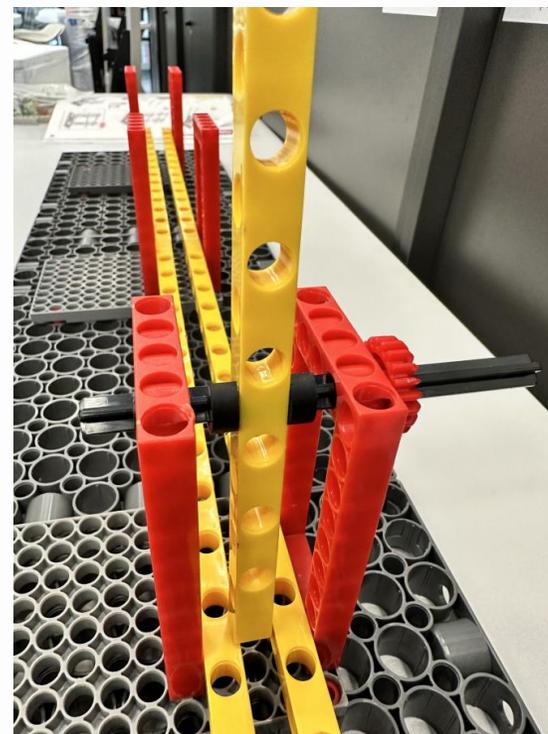
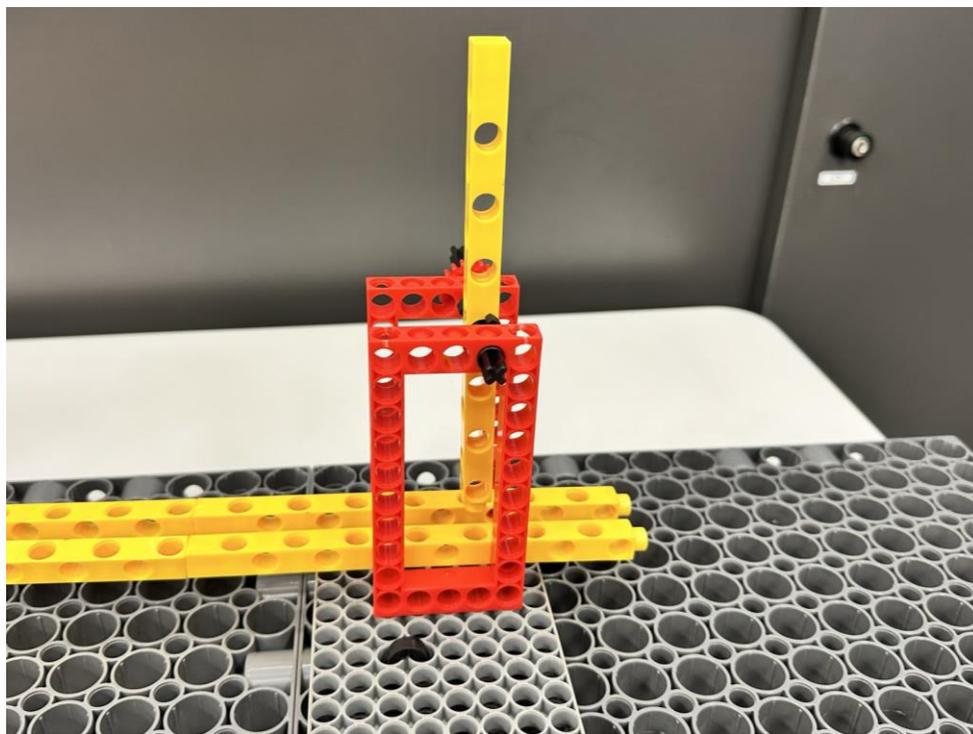
上升軌道



加入多一個支撐架



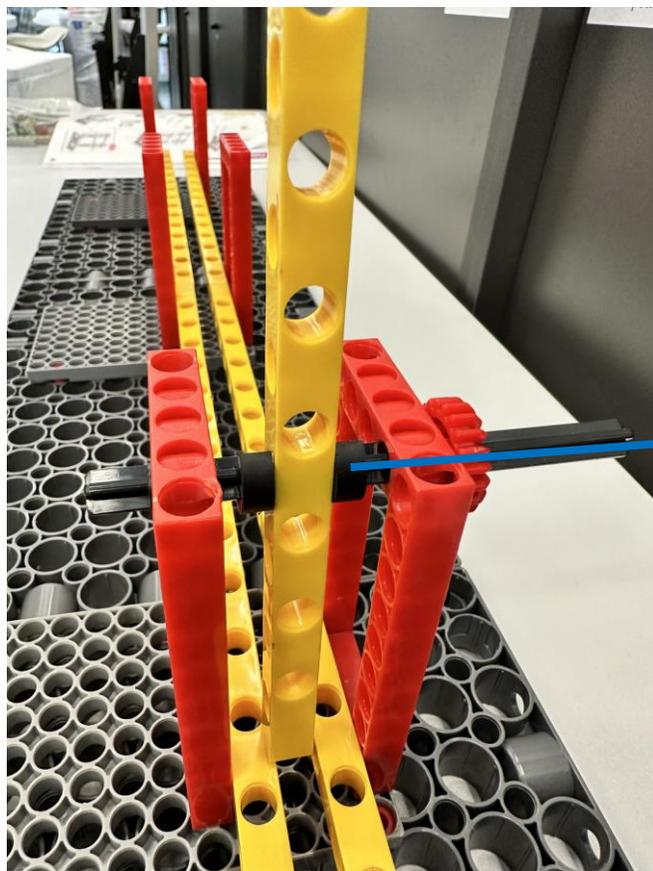
上升軌道



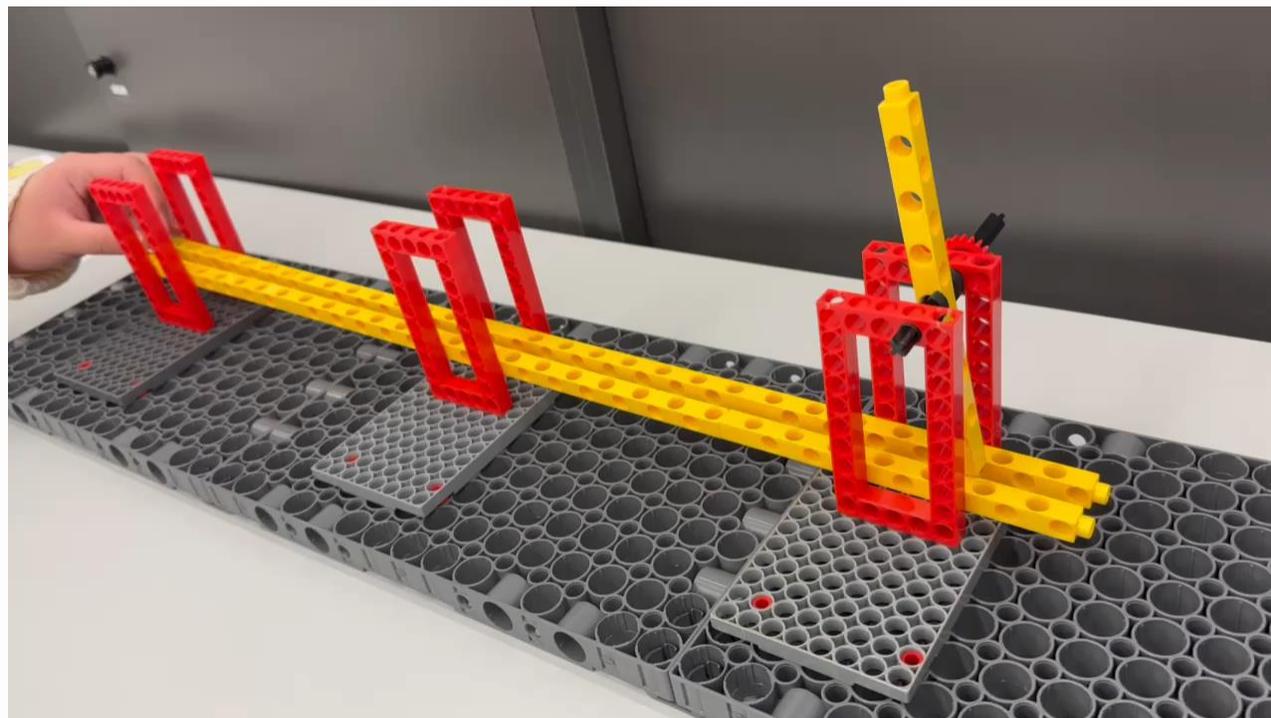
安裝碰撞槓桿



上升軌道



上升軌道



測試！



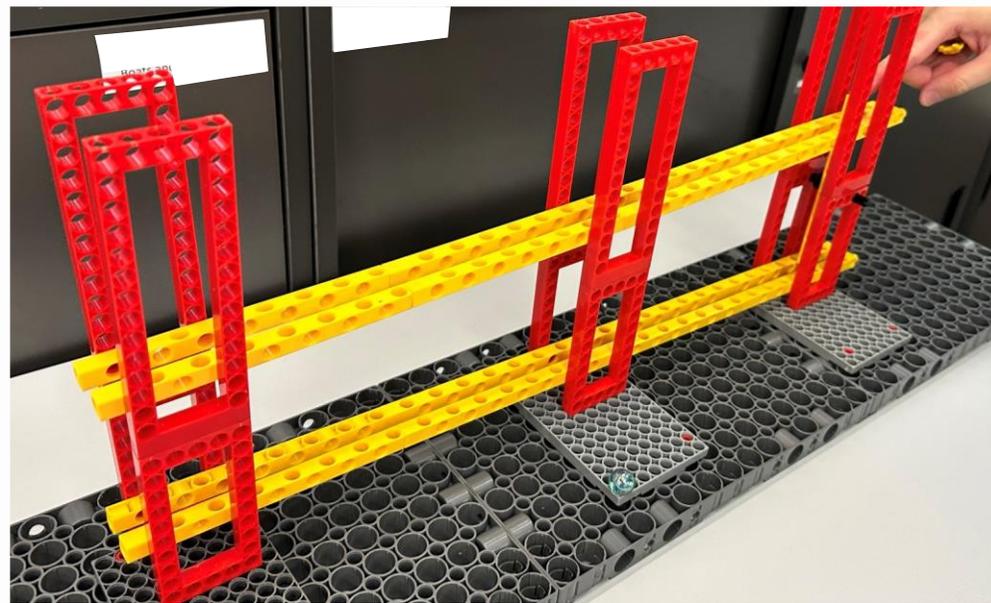
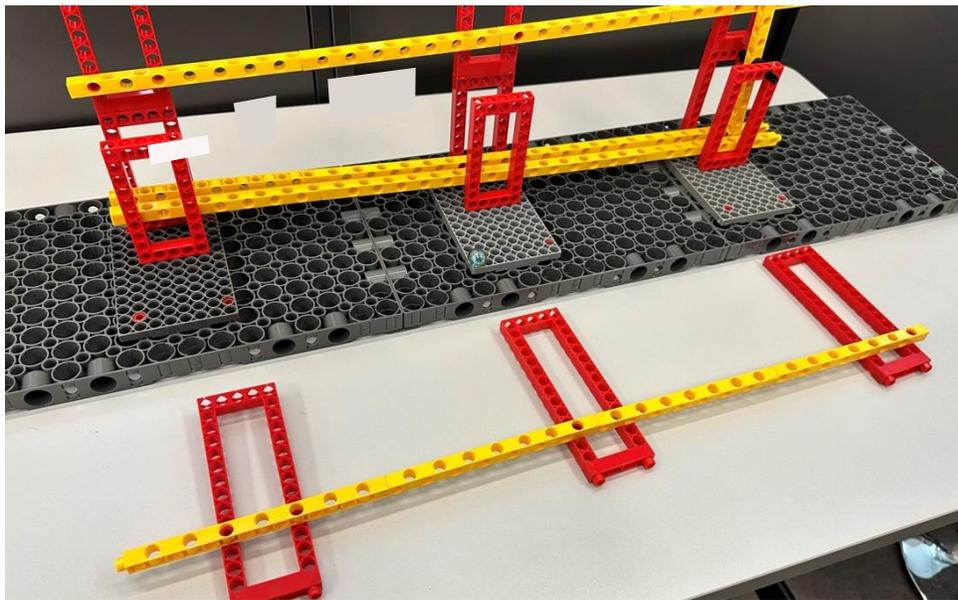
上升軌道



利用長方框興建第二層



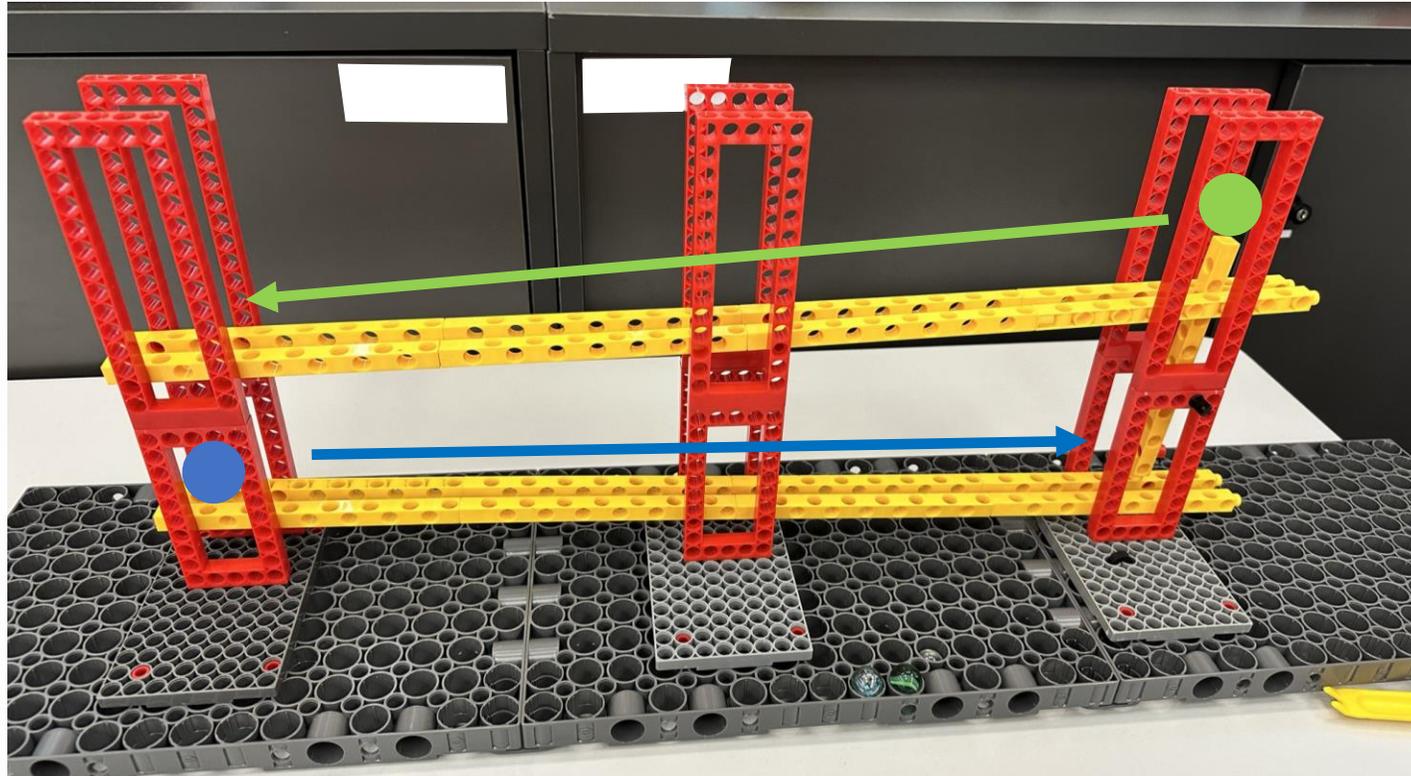
上升軌道



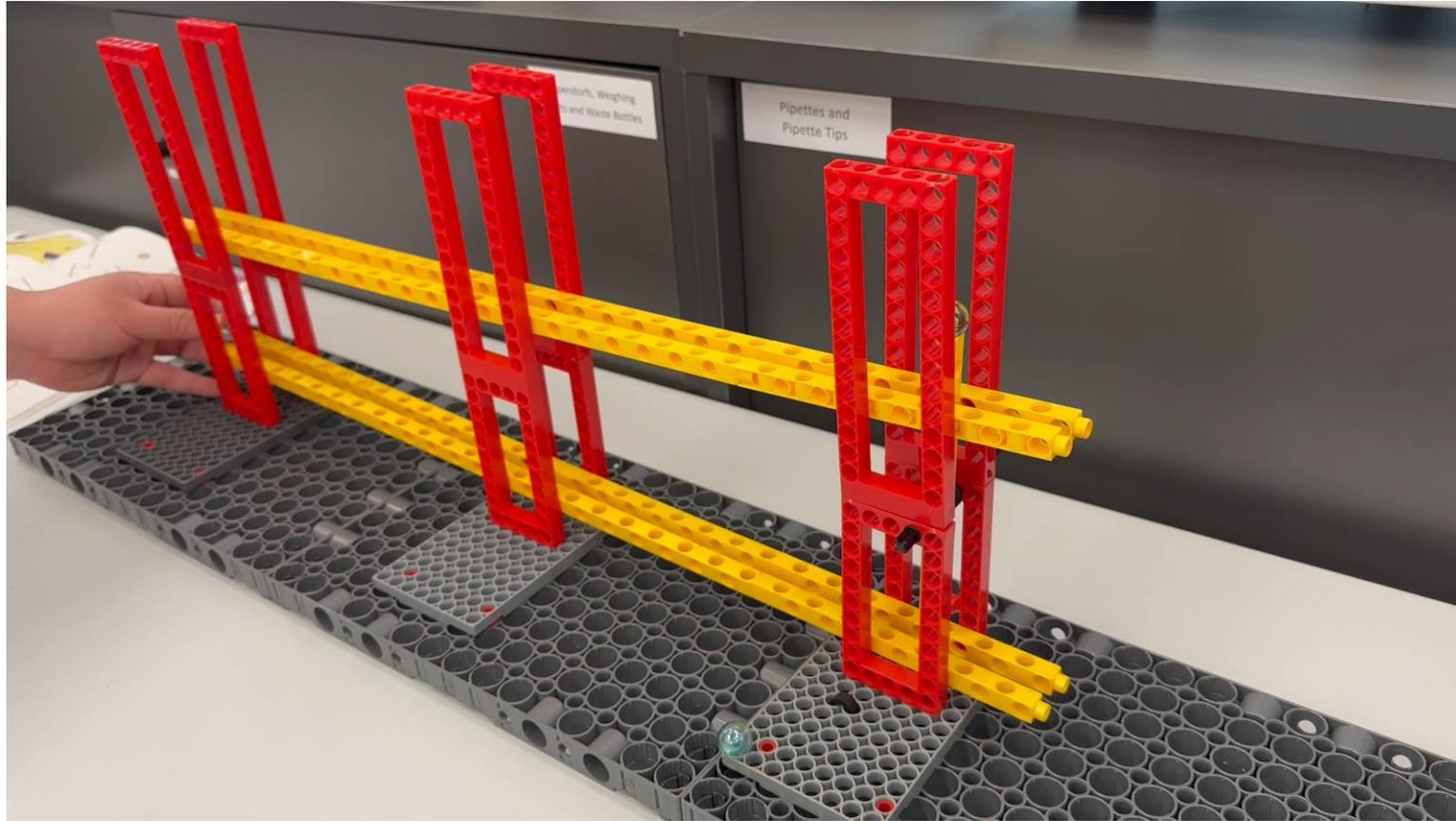
利用長方框興建第二層



上升軌道



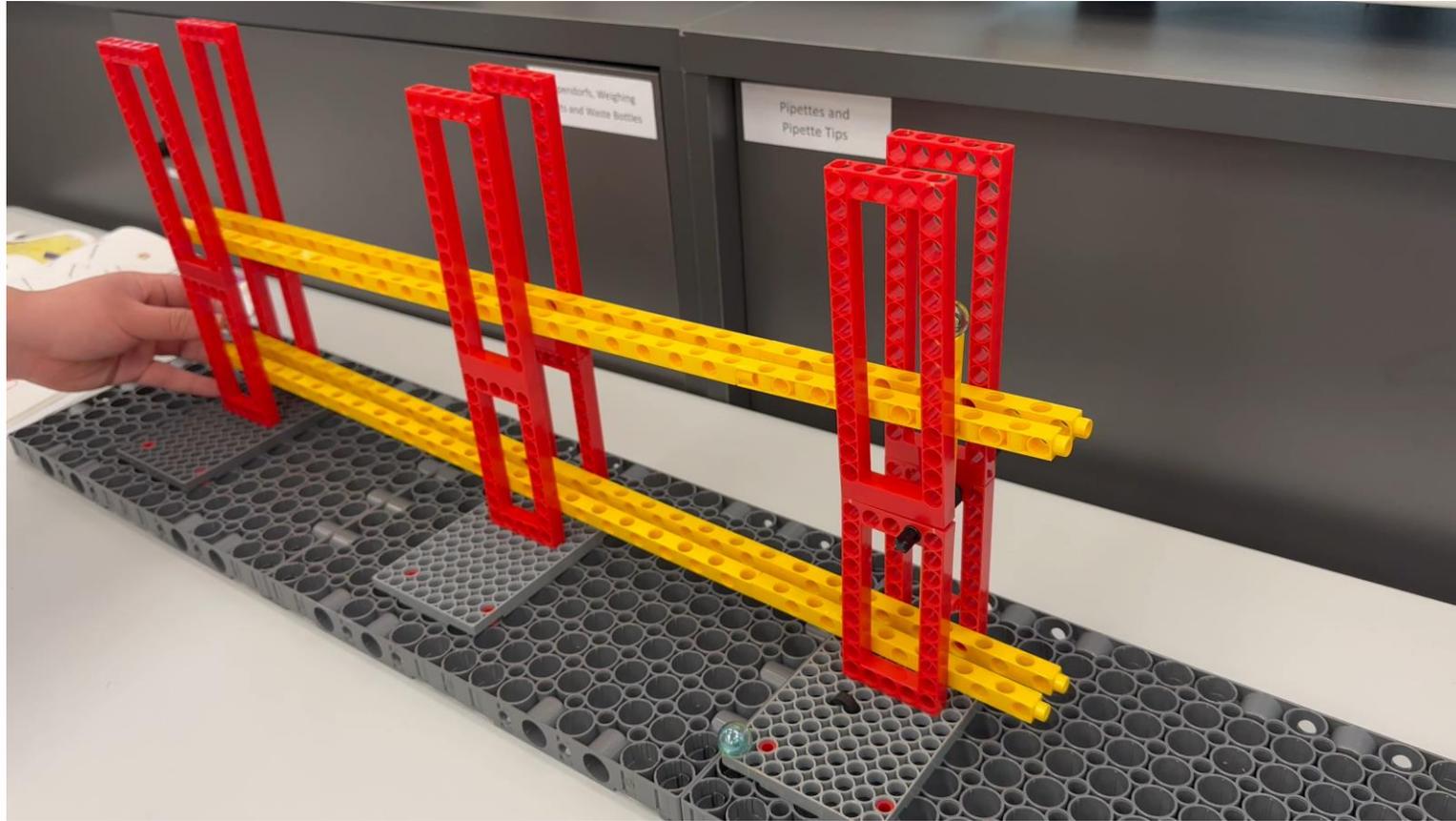
上升軌道



完成圖



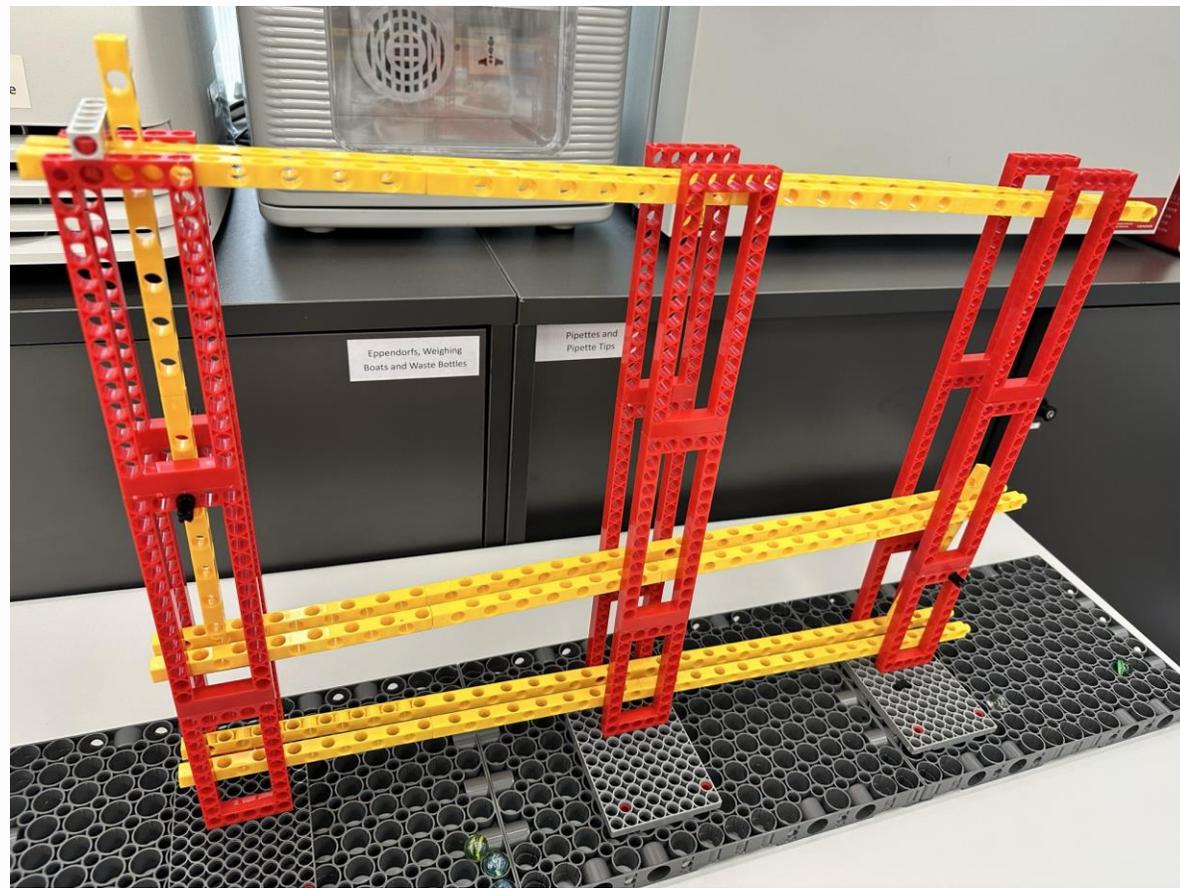
上升軌道



完成圖



上升軌道

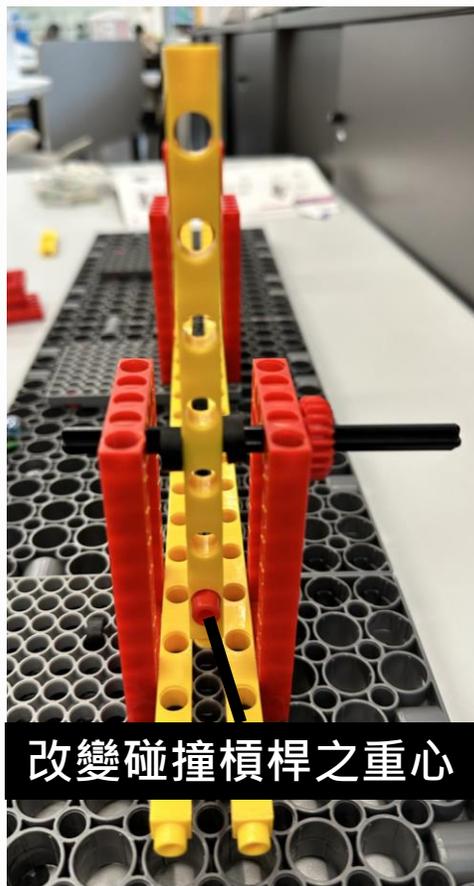


建造第三層



上升軌道

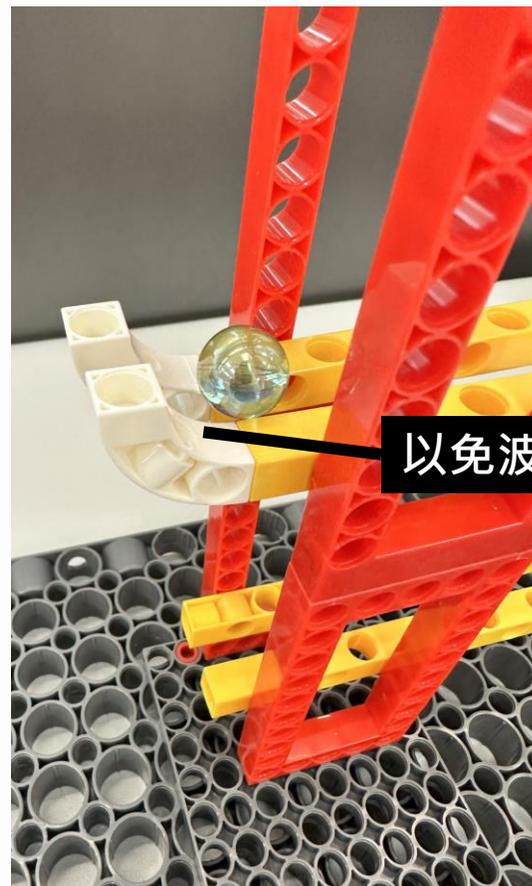
小技巧



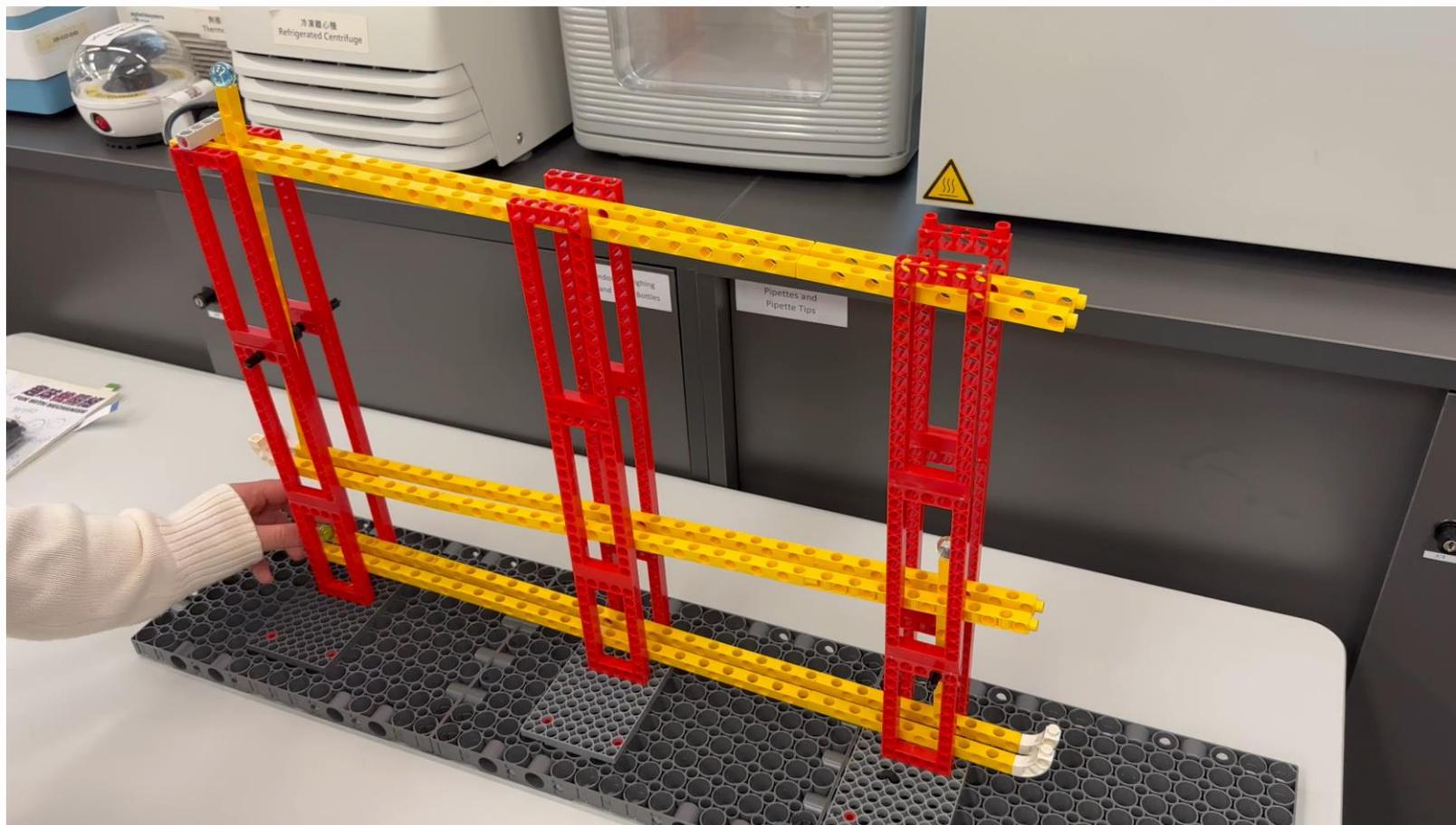
固定



以免波子掉落



上升軌道





聯絡方法

香港青年協會 創新科學中心



Winky Chan / Danny Pang



(852) 2561 6149



greenmech@hkfyg.org.hk



<http://ce.hkfyg.org.hk/>

