香港教育大學
The Education University of Hong Kong

The Education University of Hong Kong
2021-2022 Quality Education Fund Thematic Network – Tertiary Institutes
STEM Project Team

SCHOOL: SOUTH YUEN LONG GOVERNMENT PRIMARY SCHOOL (P5)

TOPIC: SMART LIGHTING AND LUX MEASUREMENT

Department of Science and Environmental Studies

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目標

1. 以Micro:bit 量度光度 (Light Level)
2. 透過Micro:bit收集的光度(light level)作出比較，借標定(Calibration) 將收集的數據轉換成lux(標準化的單位)
3. 代入轉換成lux的公式到Micro:bit的編程，製作智能燈具

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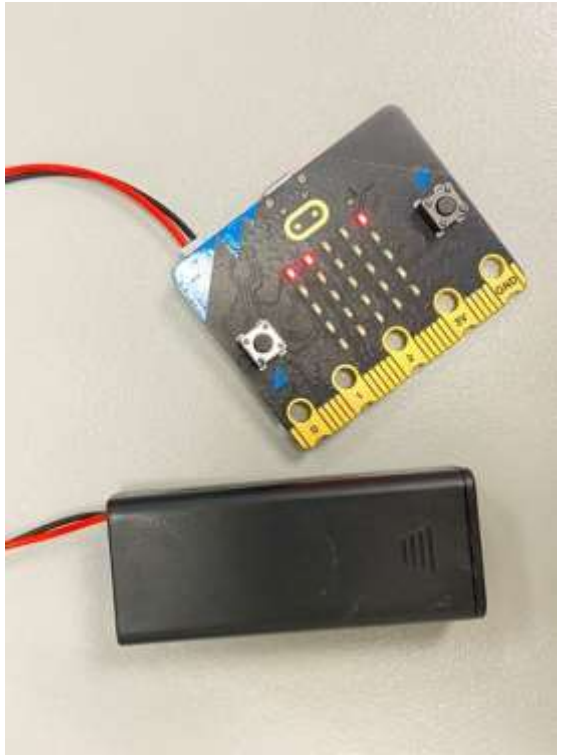
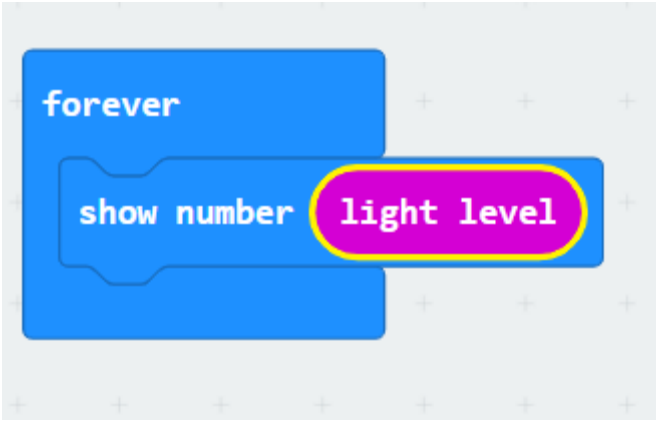
Measuring tools

Lux Meter (~HKD$80)

Micro:bit



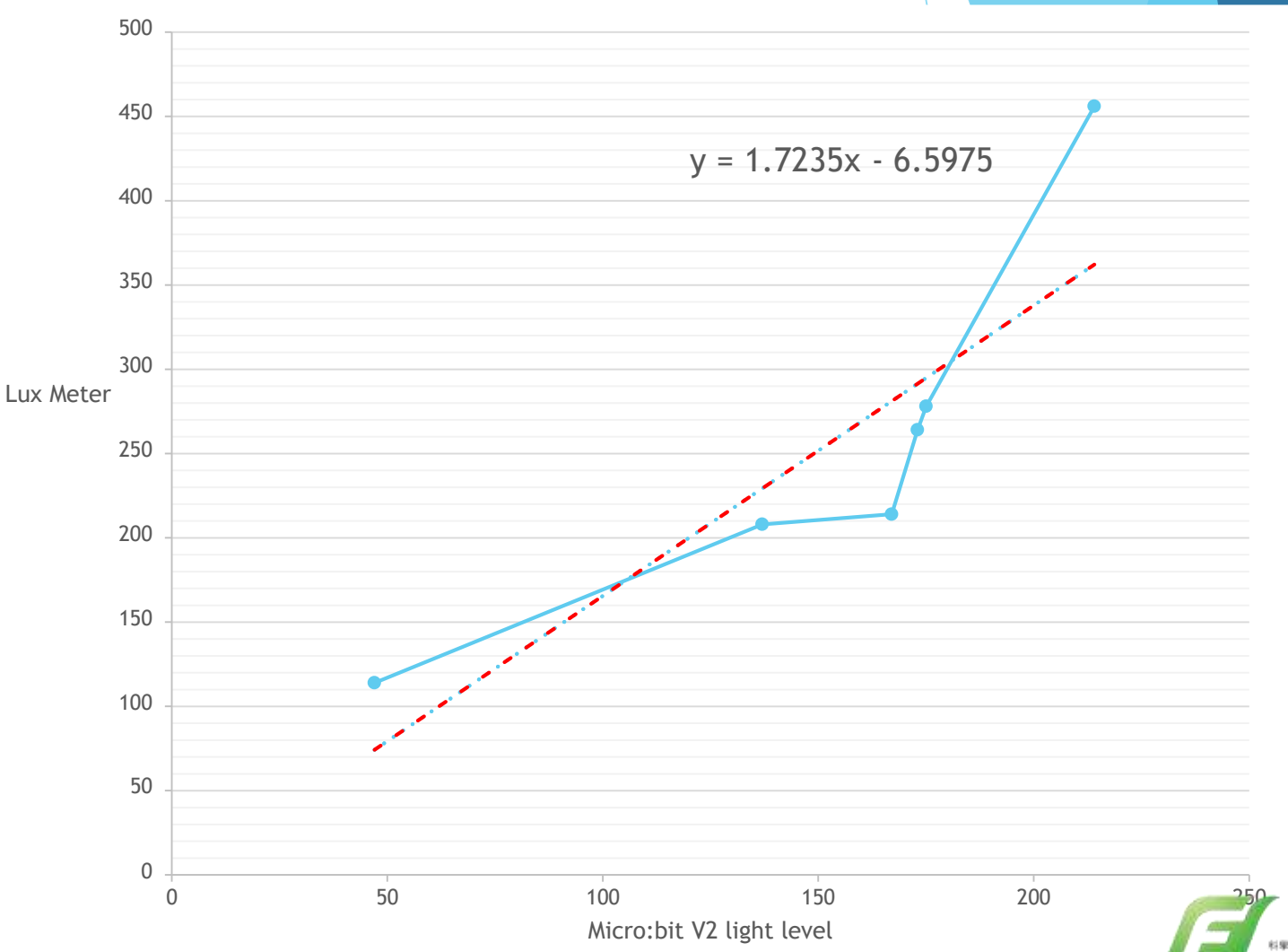
Micro:bit code



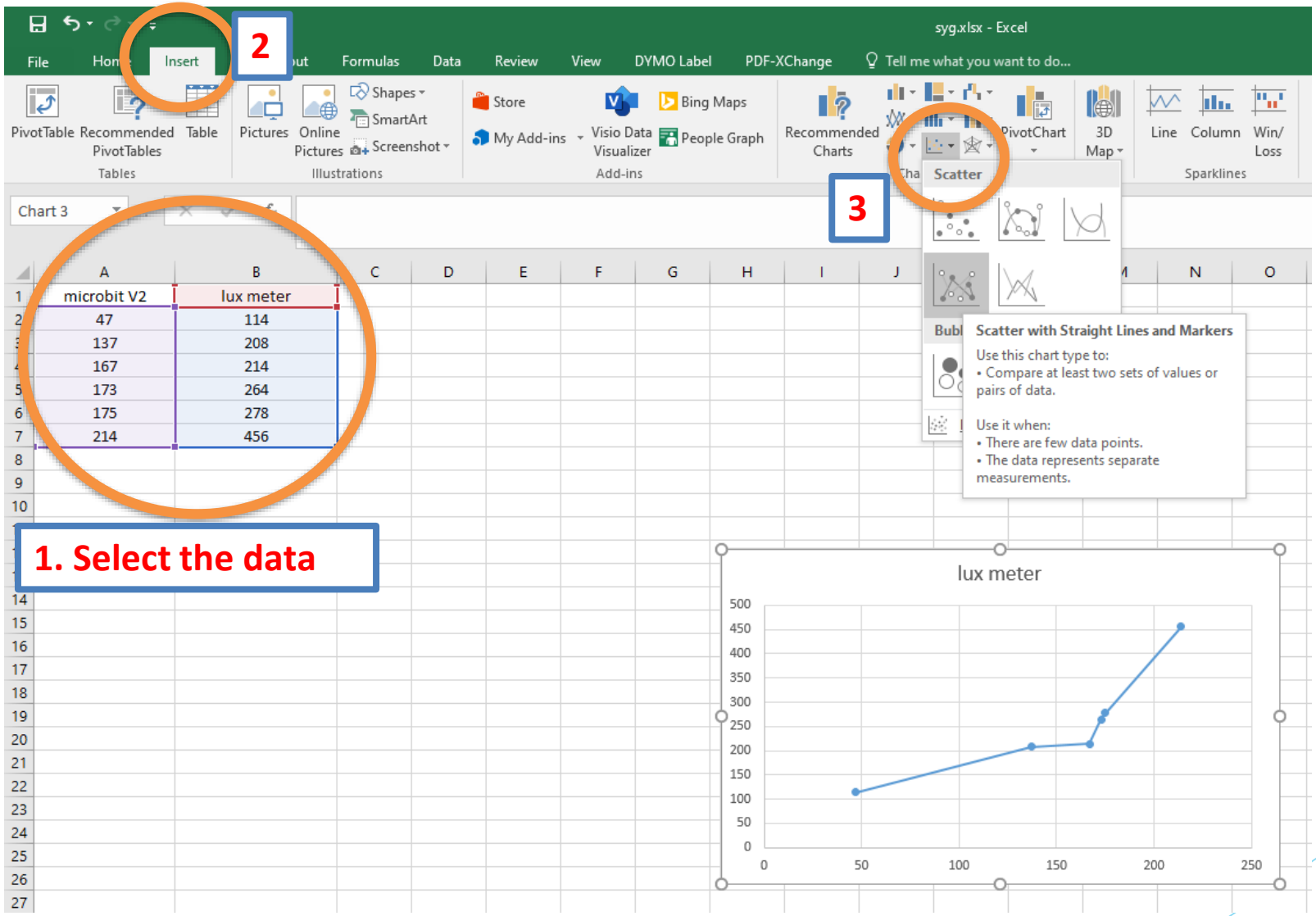
Light level reading:
0 (dark) to **255** (the most intense light the micro:bit can measure)

Calibration (Micro:bit V2)

Light Level Reading	
Microbit V2	Lux Meter
47	114
137	208
167	214
173	264
175	278
214	456



Calibration (Micro:bit V2)



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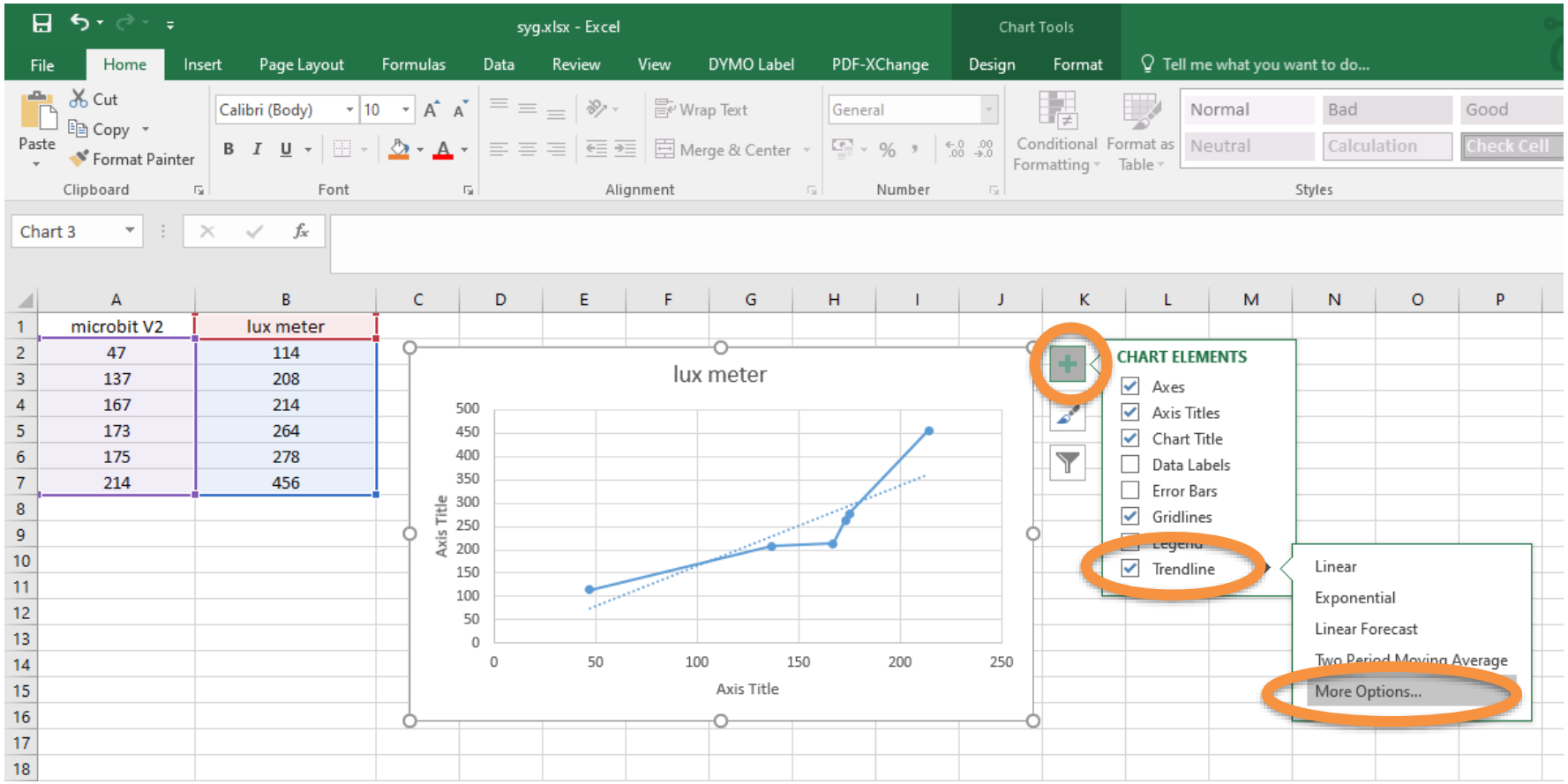
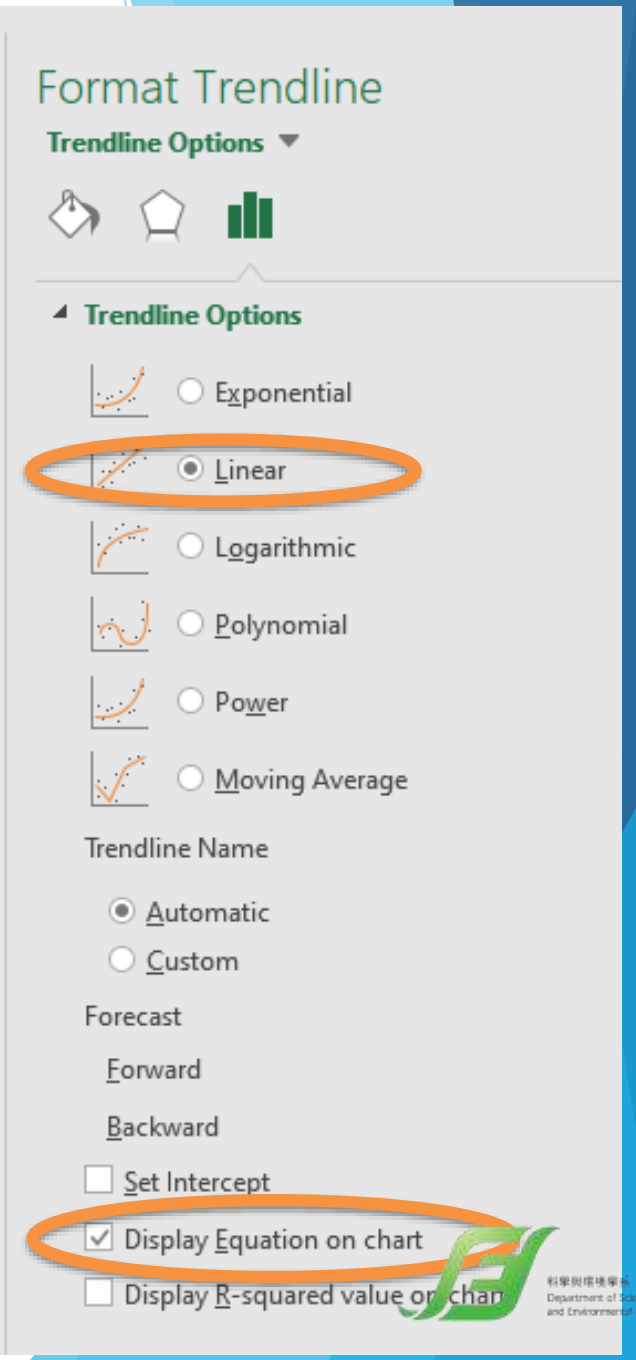
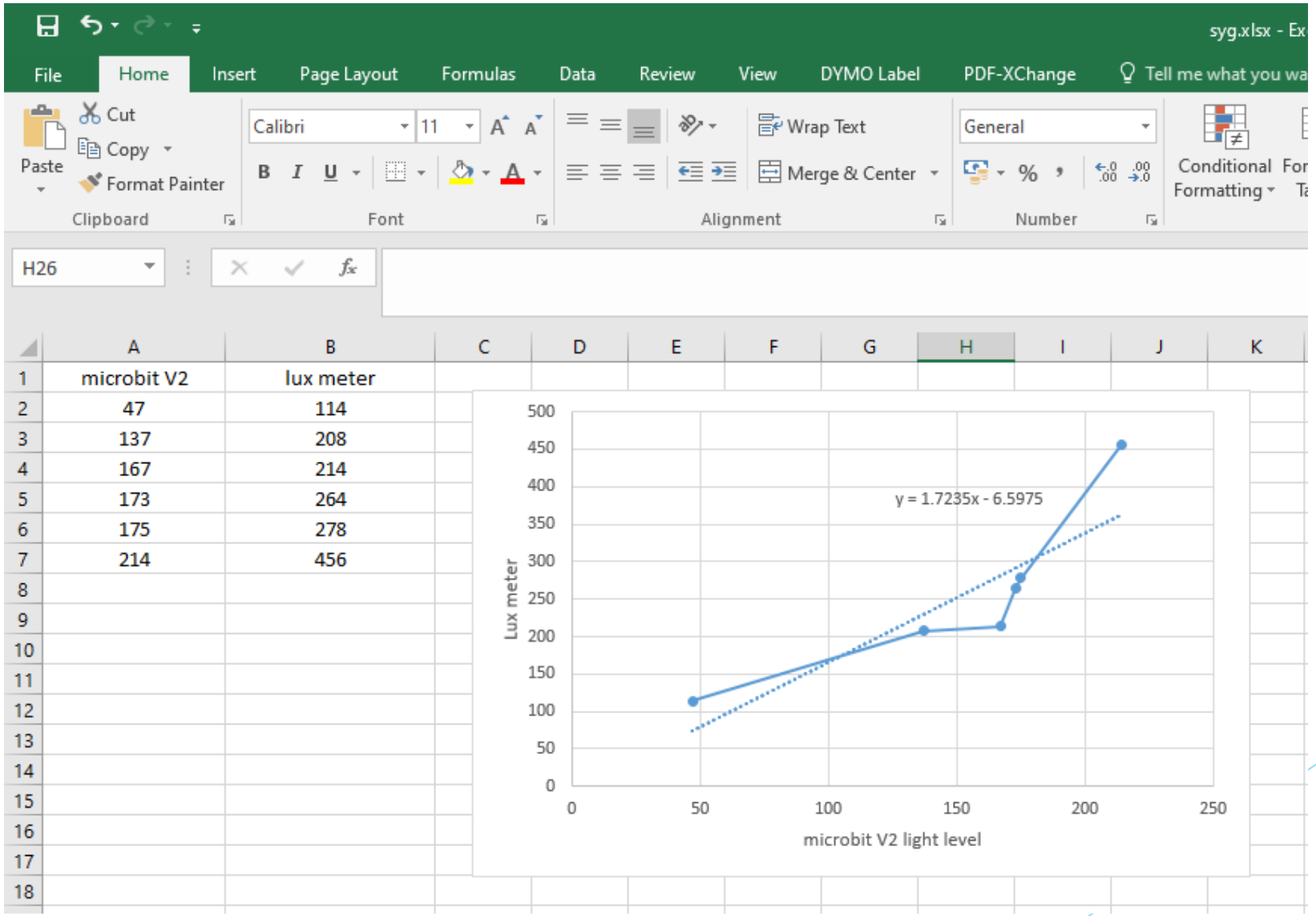
Calibration (Micro:bit V2)





Calibration (Micro:bit V2)



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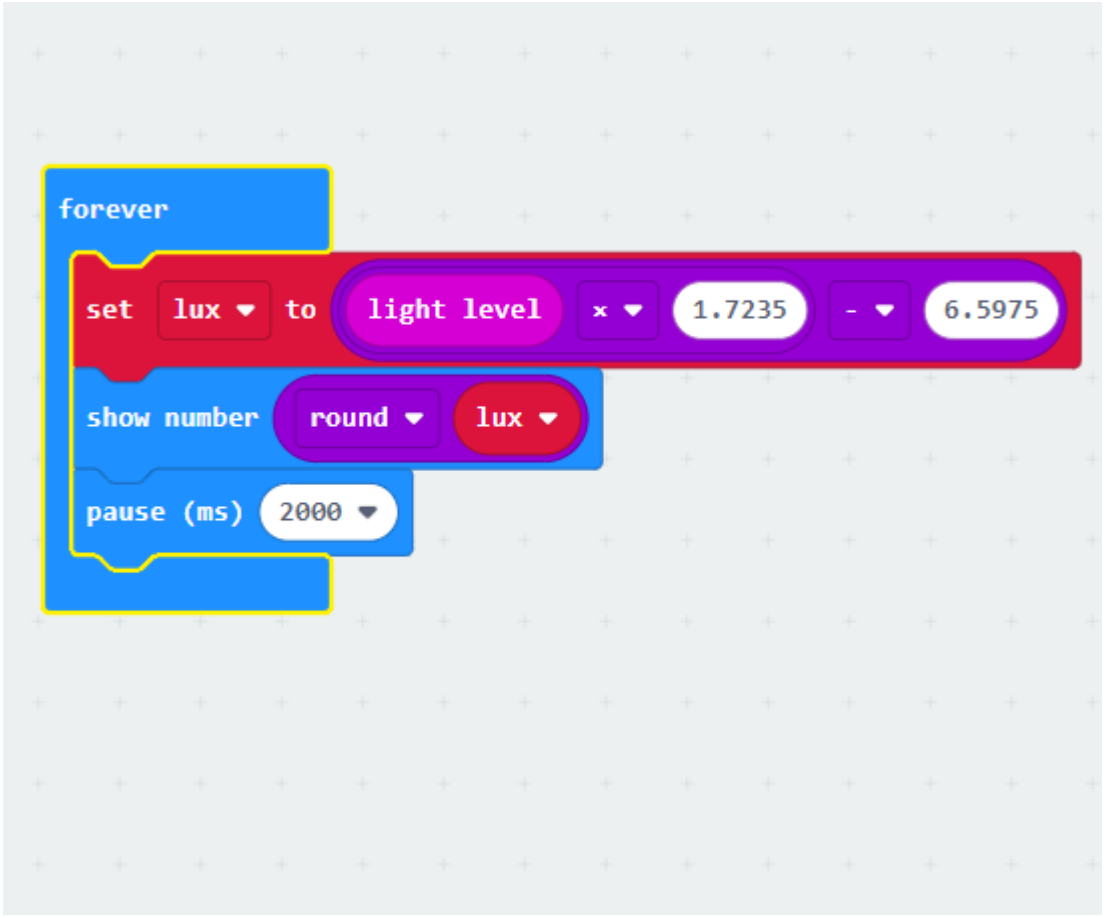
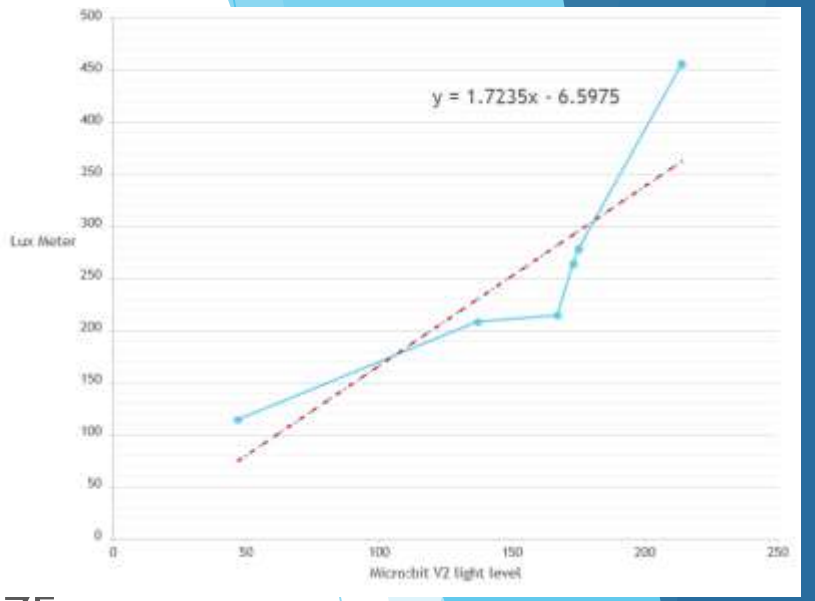
Micro:bit Coding





Equation

y= mx+c

y = 1.7235x -6.5975

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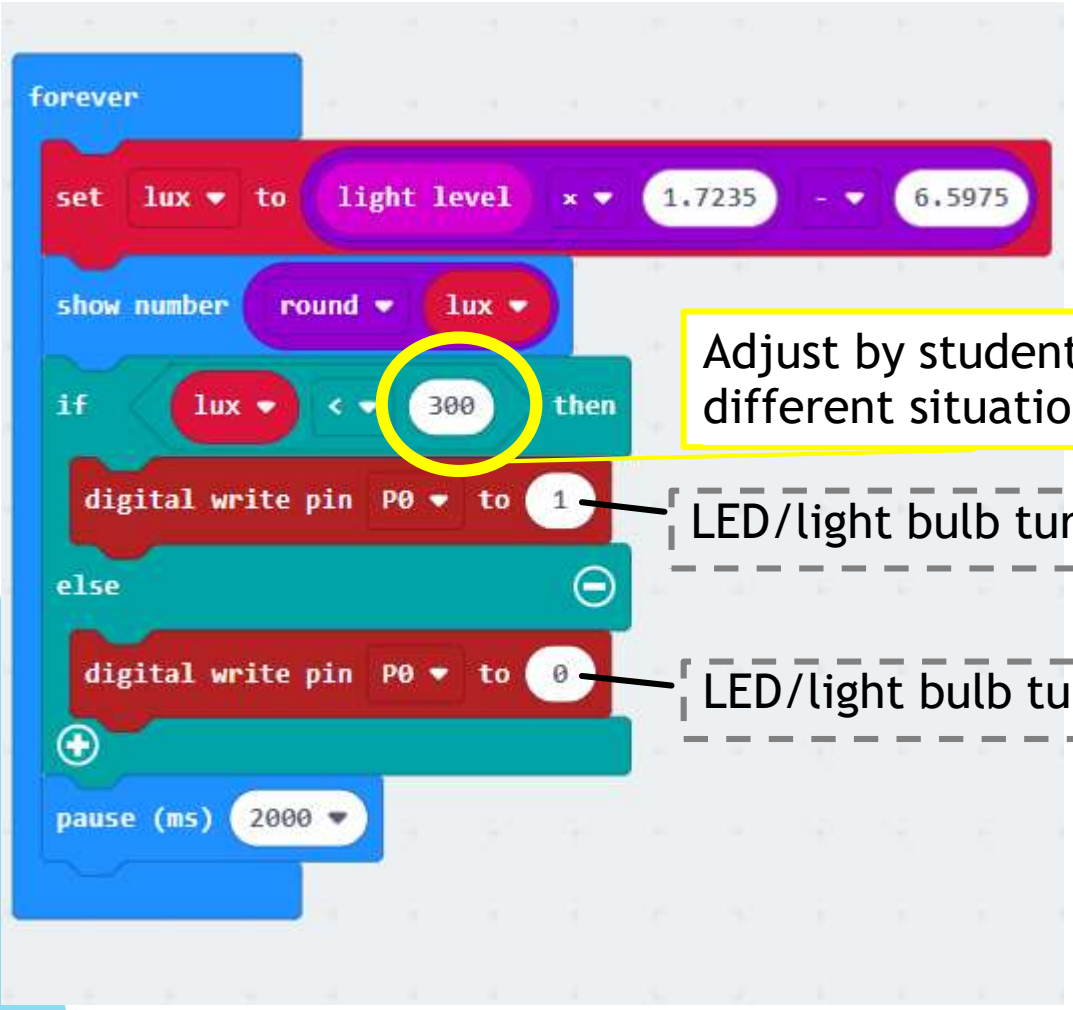
Micro:bit Coding



Adjust by student based on different situation

LED/light bulb turn on

LED/light bulb turn off

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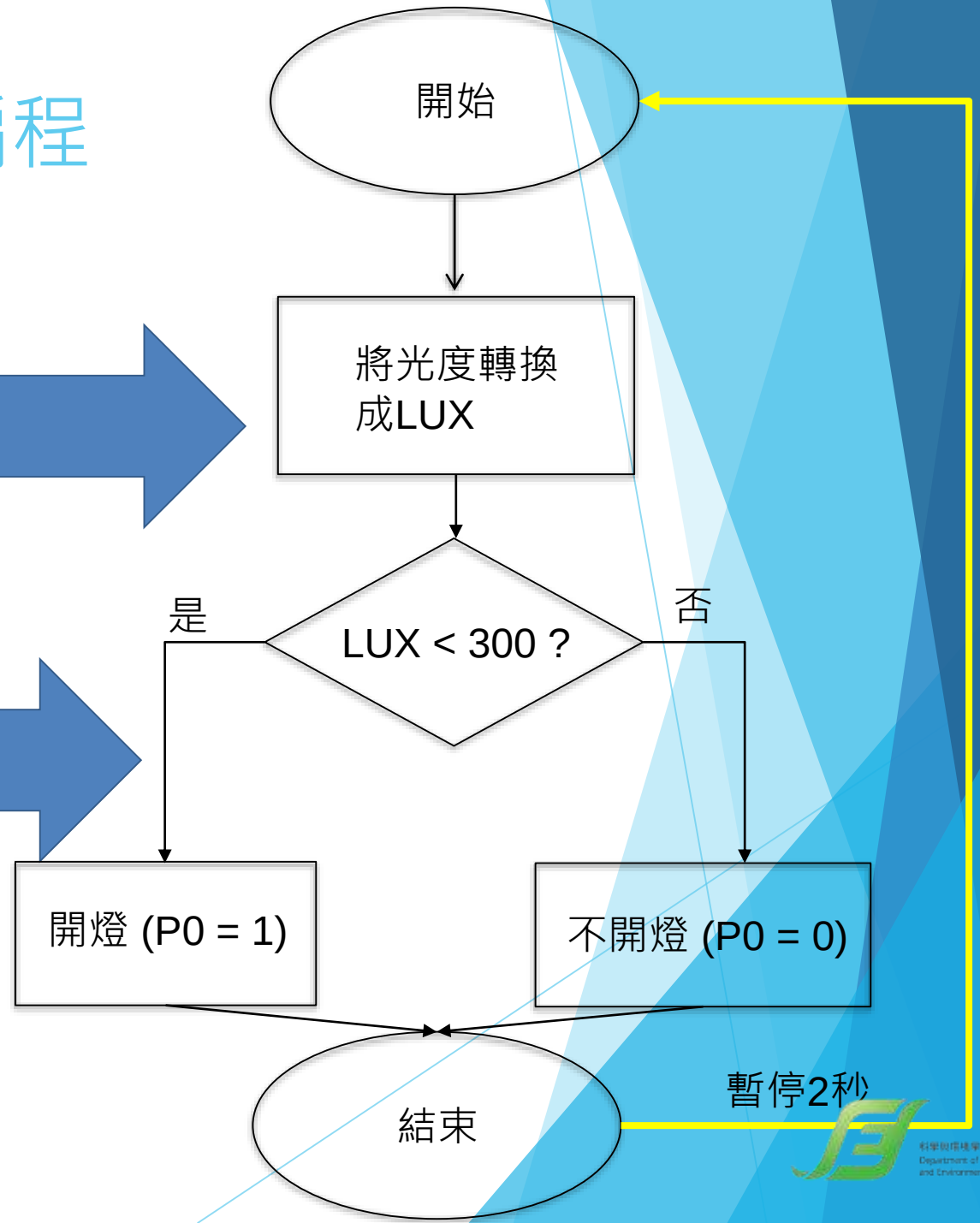
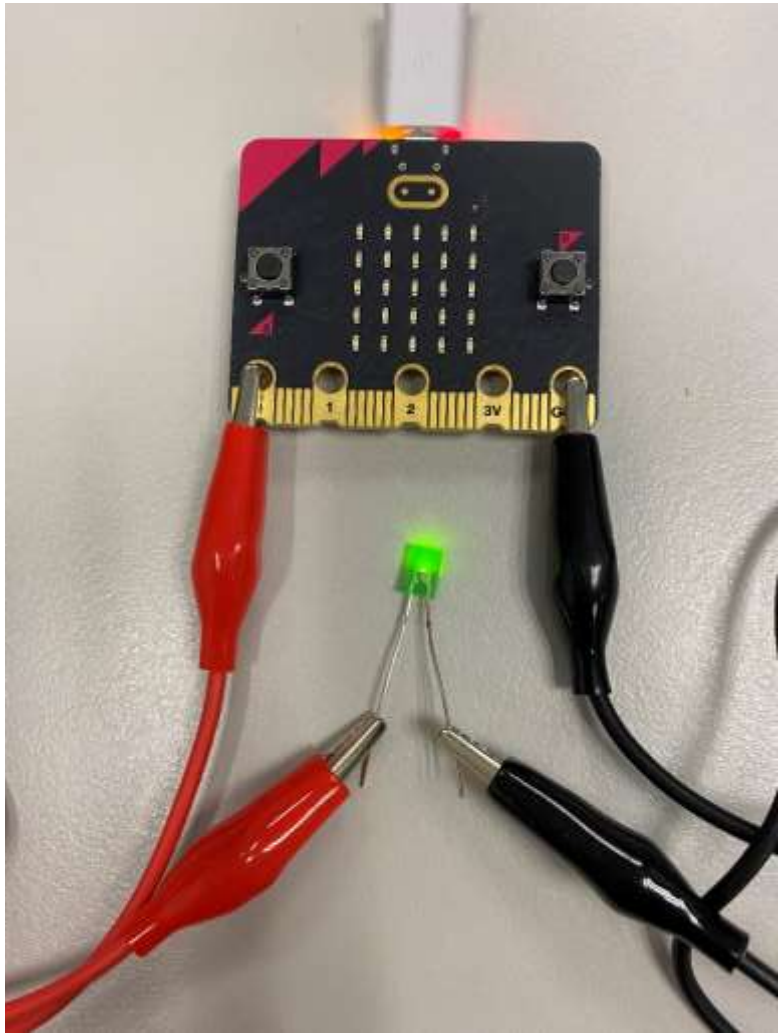
條件式編程



Prototype



- If Lux < 300, LED light turns on.
- If Lux > 300, LED light turns off.