小六數學溫習摘要

Primary 6 Mathematics Revision Summary

6M2 體積（二）

6M2 Volume II

把容器內部可容納的空間與液體單位連繫起來，並利用排水量求不規則物體的體積。

Connect internal container volume with liquid units, and use displaced water to measure irregular objects.

學習重點

What to learn

- 容量描述容器最多可盛載多少；計算長方體容器容量，要量內部的長、闊和深。
  Capacity describes how much a container can hold. Use internal dimensions for a rectangular container.
- 1 cm^3 = 1 mL；1000 cm^3 = 1 L；1 m^3 = 1000 L。
  Use the conversions 1 cm^3 = 1 mL, 1000 cm^3 = 1 L and 1 m^3 = 1000 L.
- 物體完全浸入水中，所排開水的體積便等於物體體積；讀數須使用相同單位。
  A fully submerged object displaces its own volume of water. Compare readings in the same unit.
- 長方體容器內水位上升時，排開的水量可用內底面積乘水位上升高度求出。
  In a rectangular container, displaced volume equals the internal base area times the rise in water level.

考試前必記

Remember before a test

- 有厚度的容器，外部尺寸不能直接作容量尺寸；左右兩壁及底部要按題意扣除。
  For thick walls, derive internal measurements from the stated wall and base thicknesses.
- 量杯讀數法：浸入後的讀數減浸入前的讀數；物體應不吸水、不溶於水，亦沒有困住氣泡。
  Subtract the initial reading from the final reading. Use an object that does not absorb or dissolve in water or trap air.
- 用溢水法時，開始水位須達溢水口；把物體浸沒後，收集全部溢出的水。
  For overflow measurement, start at the outlet level and collect all water displaced by full immersion.
- 先算出體積，再換成題目要求的容量單位；例如 2400 cm^3 = 2400 mL = 2.4 L。
  Calculate volume first, then convert to the requested unit: 2400 cm^3 = 2.4 L.

常見錯誤

Common mistakes

- 把容器外形的體積當作容量，沒有考慮容器壁佔去的空間。
  Treating external volume as capacity and ignoring the walls.
- 把水位上升後的總高度當作上升高度，沒有減去原來水位。
  Using the final depth instead of the increase in depth.
- 物體仍有一部分露出水面，就把排水量當作它的全部體積。
  Using partial immersion to infer the object's total volume.
- 漏收溢水，或水灑出容器後仍只用水位差計算。
  Losing overflow water or relying on level rise after water has spilled.

快速自查

Quick check

□ 能分清容量和外部體積 I can distinguish capacity from external volume.	□ 能換算立方厘米毫升和升 I can convert cm^3, mL and L.
□ 能用前後讀數求物體體積 I can use the change in readings.	□ 能檢查物體是否完全浸沒 I can check full immersion.

自編例題

Original worked example

長方體水箱內底長 18 cm、闊 12 cm，放入一塊完全浸沒的石頭後，水位升高 2.5 cm，沒有溢水。石頭體積是多少？

A cuboid tank has an internal base 18 cm long and 12 cm wide. After a stone is fully submerged, the water rises by 2.5 cm without overflowing. Find the stone's volume.

思考與解答：內底面積 = 18 × 12 = 216 cm^2；石頭體積 = 216 × 2.5 = 540 cm^3。

Reasoning and answer: Internal base area = 18 × 12 = 216 cm^2; stone volume = 216 × 2.5 = 540 cm^3.

再試與答案：內部長 25 cm、闊 16 cm、深 15 cm 的長方體容器，容量是多少升？答案：6000 cm^3 = 6 L。

Further practice and answer: A cuboid container has internal dimensions of 25 cm by 16 cm by 15 cm deep. What is its capacity in litres? Answer: 6000 cm^3 = 6 L.