CH.16 VOLUME OF IRREGULAR SOLIDS

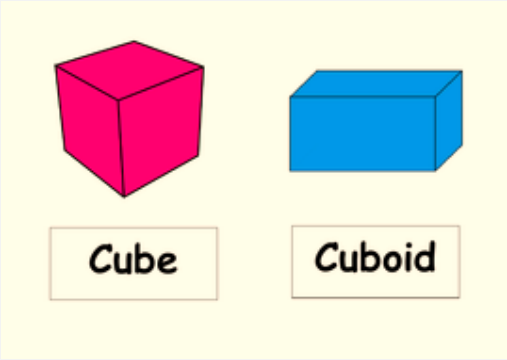
OBJECTIVES

- After this lesson, students can…

Find the volume of irregular solids by the displacement method

WARM UP QUESTION

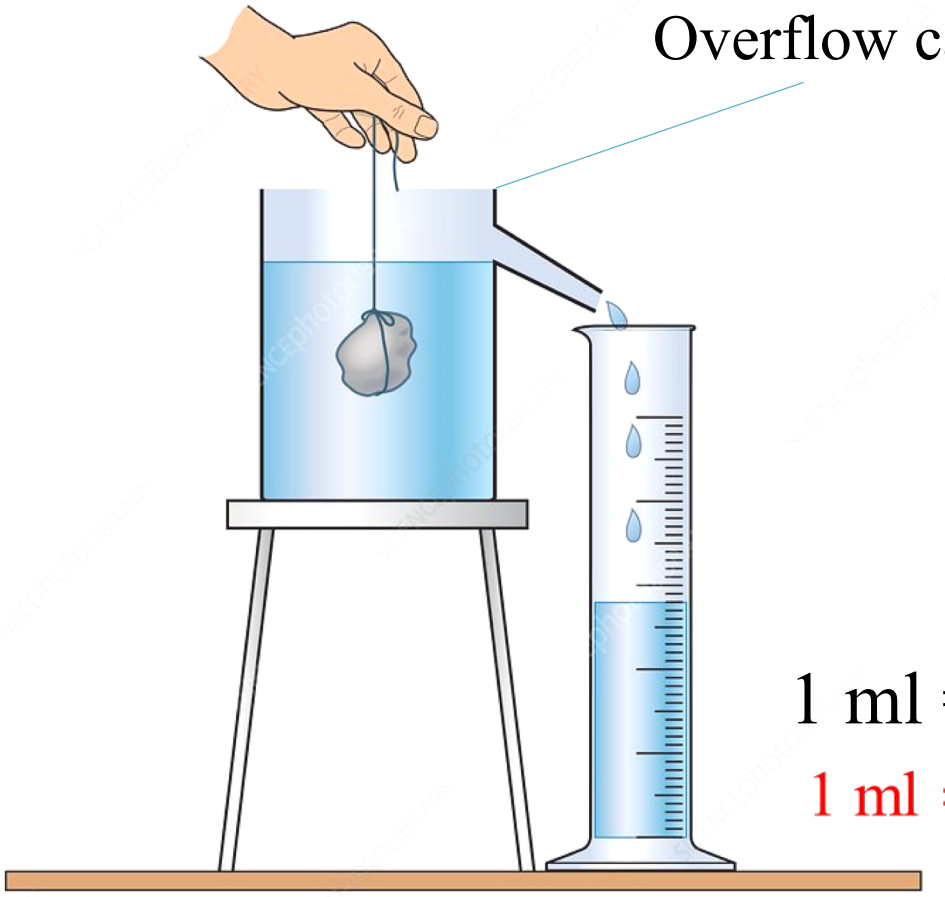
- How to find the volume of regular solids like cubes and cuboids?



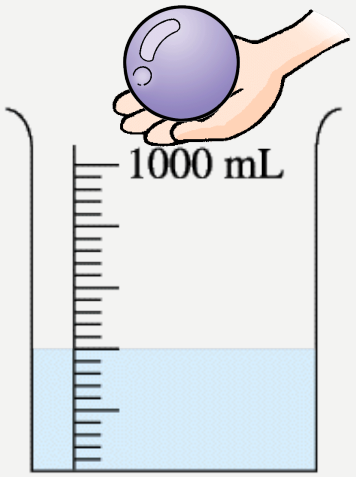
- We can measure its length, width and height and calculate its volume.

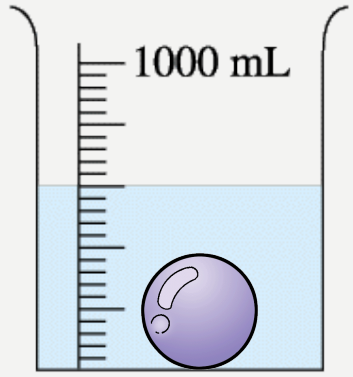
WHAT ABOUT IRREGULAR SOLIDS?

Displacement method



Mr. Tsui finds the volume of the crystal ball by the displacement method.





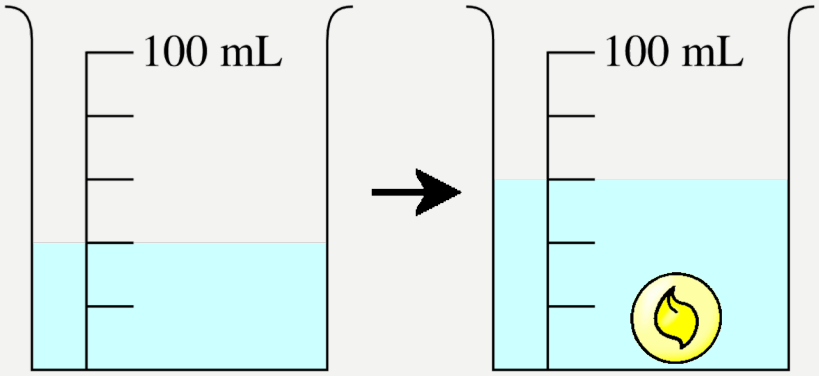
The volume of the water is 400 mL, or 400 cm^3.

The volume of the water and the crystal ball together is 600 cm^3.

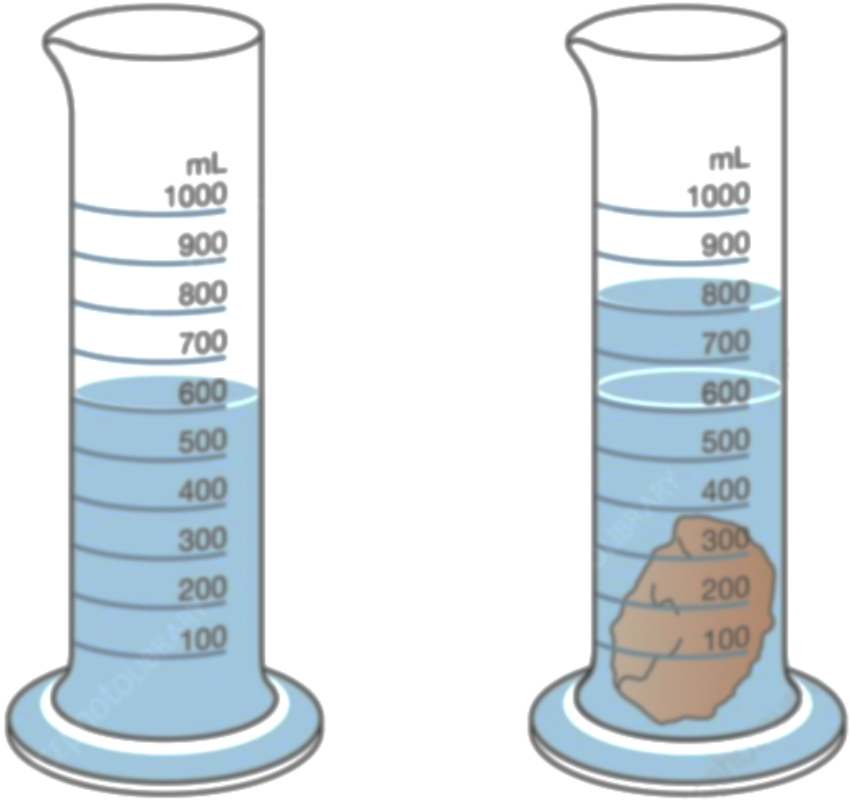
$600 - 400 = 200$

So the volume of the crystal ball is 200 cm^3.

Mr. Tsui finds the volume of the Marble by the displacement method.



The volume of  is 20 cm^3.


mL
1000
900
800
700
600
500
400
300
200
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mL
1000
900
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700
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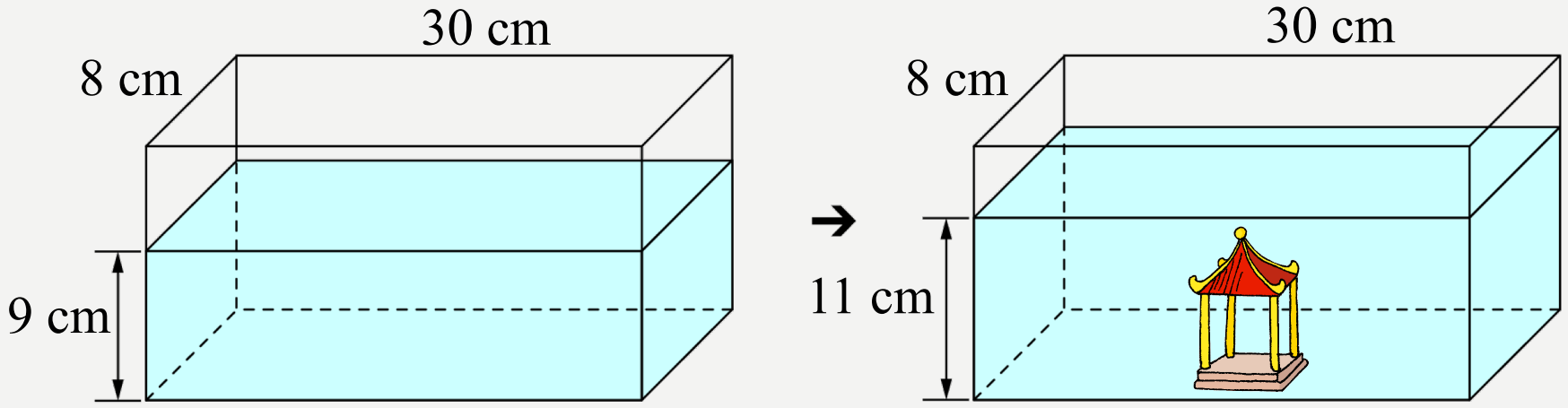
500
400
300
200
100

CONCLUSION:

We can find the volume of irregular solids by the _____ method.

The _____ risen is the volume of the solid.

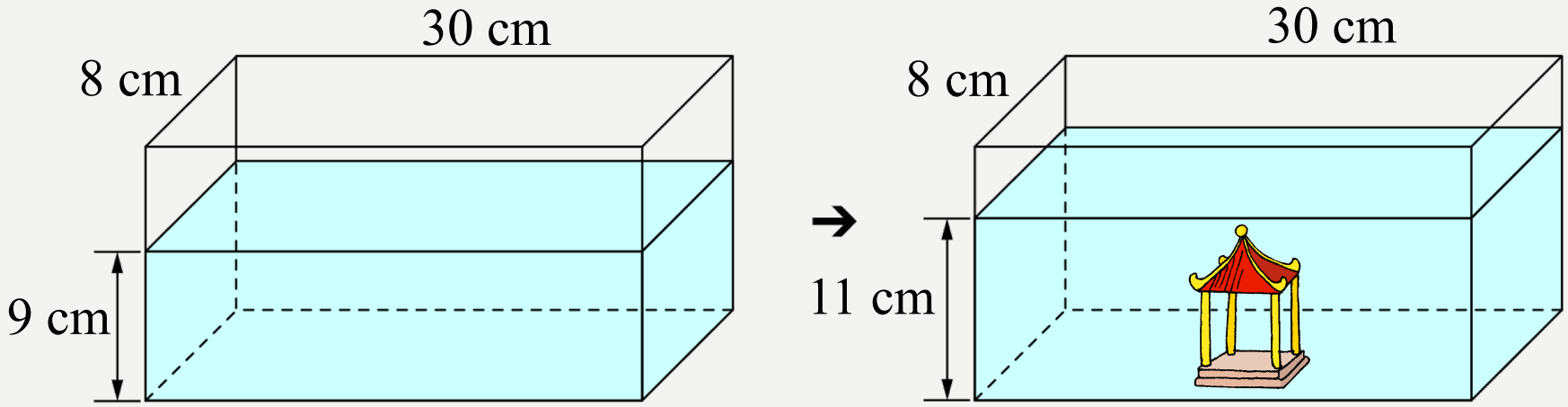
Example 1



What is the volume of the ornament?

(a) $11 - 9 = 2$

The water level has risen by 2 cm.

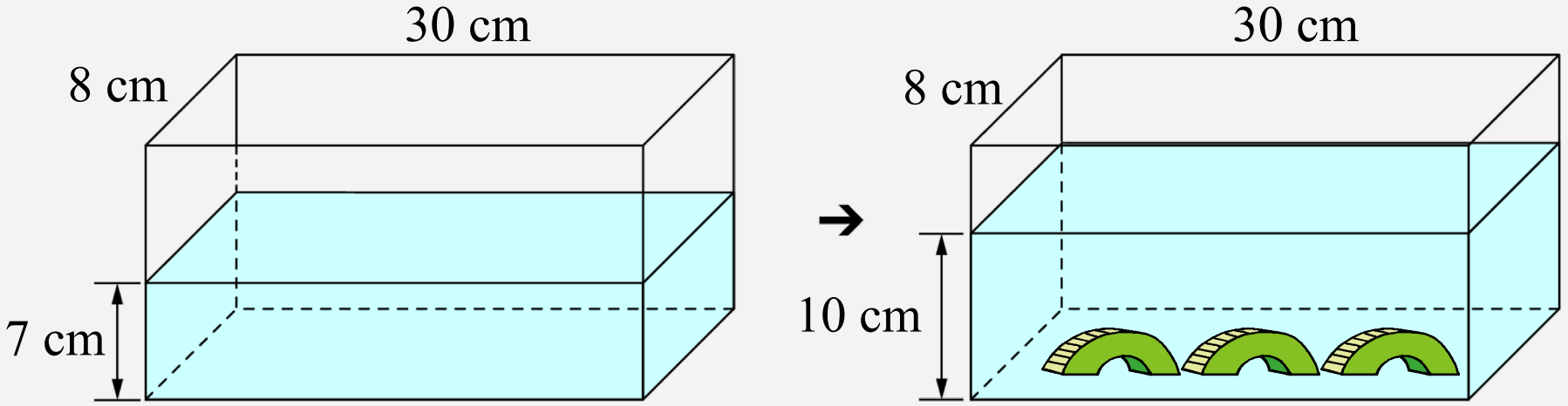


What is the volume of the ornament?

(*b*) $30 \times 8 \times 2 = 480$

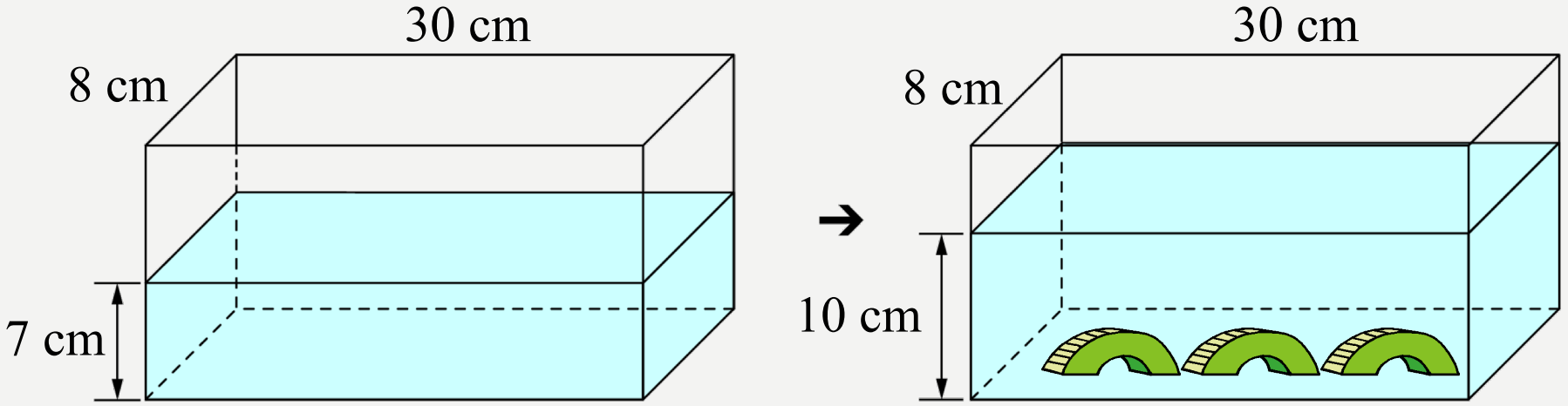
The total volume of the ornaments is $480\ cm^3$.

Example 2



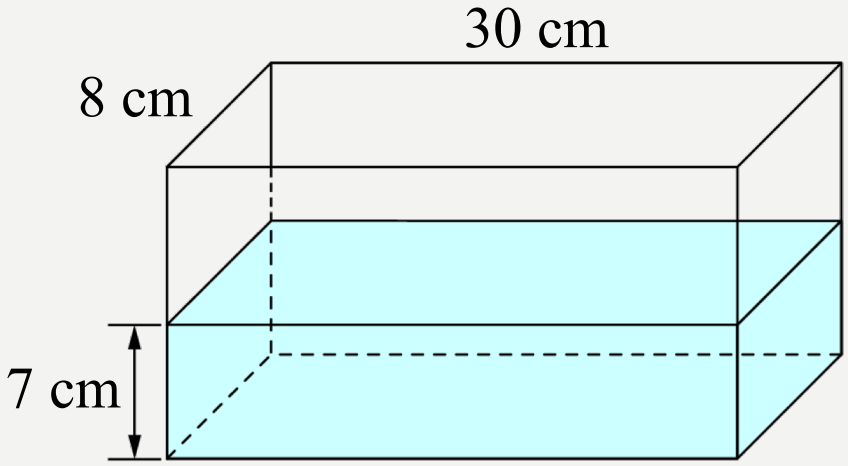
(a) 10 − 7 = 3

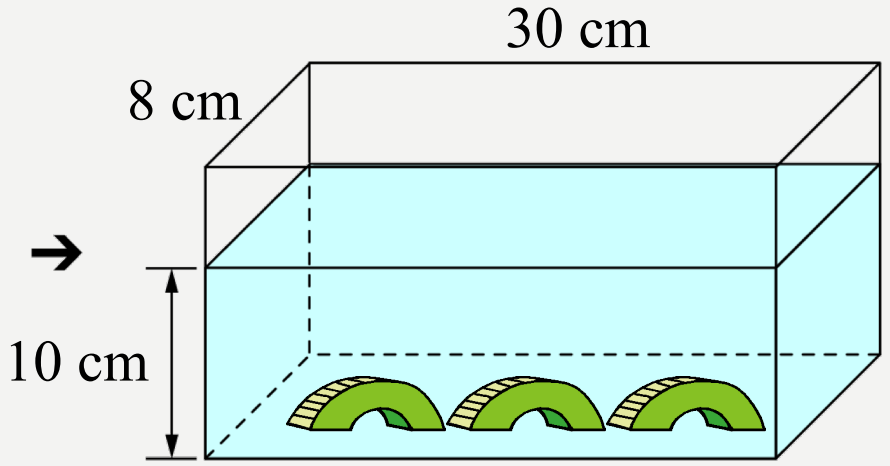
The water level has risen by 3 cm.



(*b*) 30 × 8 × 3 = 720

The total volume of the 3 minibridges is 720 cm^3.





(c) 720 ÷ 3 = 240

The volume of each minibridge is 240 cm^3.

Activity time

1. Form a group of 4
2. Each group has a box and a solid
3. Discuss how to find the volume of the solid
4. Write your findings on whiteboard
5. Present your idea and findings

Extended question

Can we use the displacement method to find the volumes of a table tennis ball and a piece of sugar cube? Why?

Review of the lesson

- Students show good problem solving skills and calculation accuracy
- Students show huge motivation on the learning tasks
- Misconception found, weight and volume
- Better understanding of students thinking process including those error and mistakes