

Aquarium Planner

Mission: The pet store needs to know how many liters of water each fish tank holds and how deep the water will be. Pour water, watch the depth change, and connect cubic centimeters to liters.

Big question: How are volume, depth, and liters connected?

★ Warm-up: Estimation station

Estimate and explain.

A big water bottle holds 1 liter. About how many bottles fill a bathtub: 5, 150, or 5,000? ✓ **About 150.**

1 liter = ___ mL ✓ **1,000.**

Key vocabulary

Cubic centimeter (cm³)	A cube 1 cm on each side; it holds 1 mL.
Liter (L)	1,000 cm ³ of liquid.
Depth	How high the water reaches.
Displace	Push water out of the way by taking up space.

1 Box 1

Depth after 5 L

In the simulator: Drain Tank A and pour exactly 5 liters.

How deep is the water?

Answer: _____ cm ✓ **5**

2 Box 2

Compare tanks

Pour 10 L in each tank and record the depth.

Tank	Base (cm ²)	Depth (cm)
A 50×20×30	1000	10
B 40×25×20	1000	10
C 60×30×40	1800	5.56

3 Box 3

Same depth?

Tanks A and B are different shapes but 10 L made the same depth. Why?

☐ They have the same base area (1,000 cm²) ☐ They have the same height ☐ Coincidence

✓ **They have the same base area (1,000 cm²)**

4 Box 4

Add a rock

In the simulator: In Tank A, pour 10 L, then add the 1,000 cm³ rock.

How deep is the water now?

Answer: _____ cm ✓ **11**

5 Box 5

Legend: fish rule Legend only

A rule says 1 small fish per 4 liters. How many small fish can live in Tank C ($60 \times 30 \times 40$ cm) when full?

Answer: _____ fish ✓ **18**

Show your thinking:

6 Box 6

Store sign

Write a sign explaining how to find how many liters a tank holds.

Look for: Multiply the dimensions; Divide by 1,000 for liters; a number from the simulator



Exit ticket: answer the big question in your own words

How are volume, depth, and liters connected?

Look for: A tank's volume is length $\times$ width $\times$ height in cubic centimeters. $1,000 \text{ cm}^3 = 1$ liter. The water's depth depends on the base: $\text{depth} = \text{volume of water} \div (\text{length} \times \text{width})$. A rock takes up space, so the water rises.

Completion codes

Students see a code like **ABC-I3** when they finish. The first part must match below. The letter is the level (E = Explorer, I = Investigator, L = Legend), and the number at the end is how many stars they earned.

Level	Code starts with
 Explorer	KQE-E
 Investigator	VI2-I
 Legend	DM4-L

! Watch for these misconceptions

- "Volume and area are the same." Area is 2-D square units; volume is 3-D cubic units.
- "Add the dimensions." Volume multiplies them.
- "Composite figures: multiply all the numbers you see." Split into separate prisms first.