

Lesson 19: Volume of Composite Solids

Year 10 Mathematics Unit 1 — Block C | Worksheet

Name _____

Date _____

Class _____

Multiple Choice

Q1. A composite solid is made from a rectangular prism 10 cm by 8 cm by 5 cm with a cylinder of radius 3 cm and height 5 cm on top. What is the total volume?

- A) $400 + 45\pi \text{ cm}^3$ B) $400 + 15\pi \text{ cm}^3$ C) $200 + 45\pi \text{ cm}^3$ D) $400 + 90\pi \text{ cm}^3$

Q2. A cube of side 10 cm has a cylindrical hole of radius 2 cm drilled through its entire height. What is the remaining volume?

- A) $1000 - 40\pi \text{ cm}^3$ B) $1000 - 20\pi \text{ cm}^3$ C) $1000 - 4\pi \text{ cm}^3$ D) $1000 - 400\pi \text{ cm}^3$

Q3. A right-angled triangular prism has a base triangle with sides 6 cm, 8 cm and 10 cm. The prism length is 12 cm. What is its volume?

- A) 288 cm^3 B) 576 cm^3 C) 480 cm^3 D) 144 cm^3

Q4. Which strategy is most efficient for finding the volume of a rectangular block with a cylindrical hole through it?

- A) Addition strategy B) Subtraction strategy C) Multiply all dimensions
D) Divide by the number of faces

Q5. A grain silo consists of a cylinder (diameter 4 m, height 8 m) with a conical roof (same diameter, height 2 m). What is the total volume?

- A) $32\pi + 8\pi/3 \text{ m}^3$ B) $32\pi + 8\pi \text{ m}^3$ C) $16\pi + 8\pi/3 \text{ m}^3$ D) $64\pi + 16\pi/3 \text{ m}^3$

Short Answer

Q6. A trophy has a rectangular base 12 cm by 8 cm by 3 cm with a cylinder (radius 3 cm, height 10 cm) on top. Find the total volume. (2 marks)

Q7. A wooden block 20 cm by 15 cm by 10 cm has a cylindrical hole (diameter 6 cm) drilled through its 10 cm height. Find the volume of wood remaining. (3 marks)

Q8. Explain when the addition strategy is more efficient than the subtraction strategy for finding the volume of a composite solid. Give an example. (3 marks)

Key Formulas

- Write any formulas you need here.