

What is problem solving?

A photograph of a parking lot filled with cars, captured during a golden sunset. The sun is low on the horizon, casting a warm, orange glow over the scene. The cars are parked in neat rows, and their surfaces reflect the bright light. A semi-transparent dark rectangular box is centered over the image, containing the text 'Introducing Problem Solving' in a large, white, sans-serif font.

Introducing Problem Solving

What is problem solving?

“ **Problem solving is knowing what to do....
... when you don't know what to do.** ”

- **25% of the marks on Foundation**
- **30% of the marks on Higher**

What is problem solving?

 ***Understand the question***

 ***Ask your own questions***

 ***Connect ideas***

 ***Change direction***

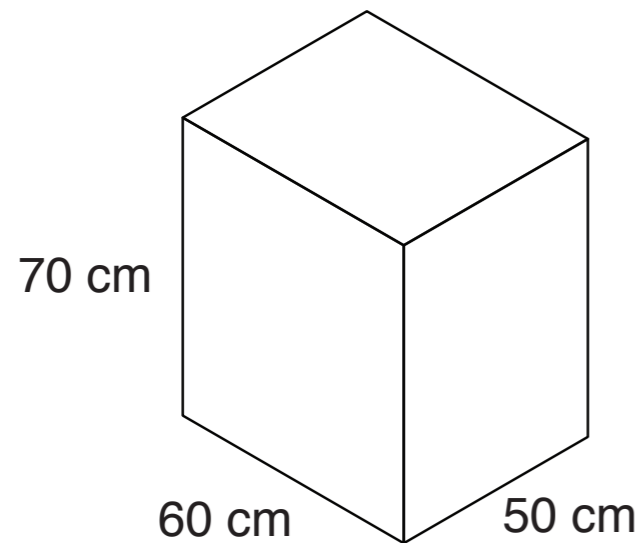
Problem Solving Solved



Understand the question



The diagram shows a cuboid.



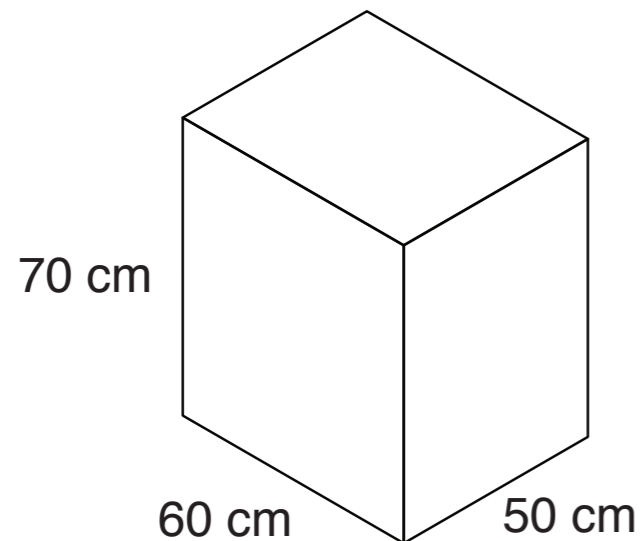
1

What questions might go with the diagram?
Just write questions, don't answer them yet.



● Understand the question

The diagram shows a cuboid.



- **What is the volume?**
- **What is the area of the base?**
- **What is the surface area?**
- **Draw an accurate net.**
- **Make an isometric drawing.**

Did you have any other questions?

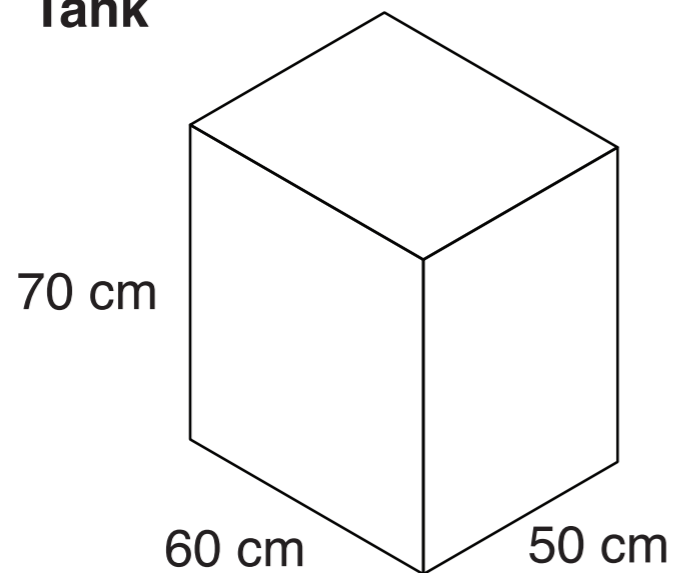


Understand the question

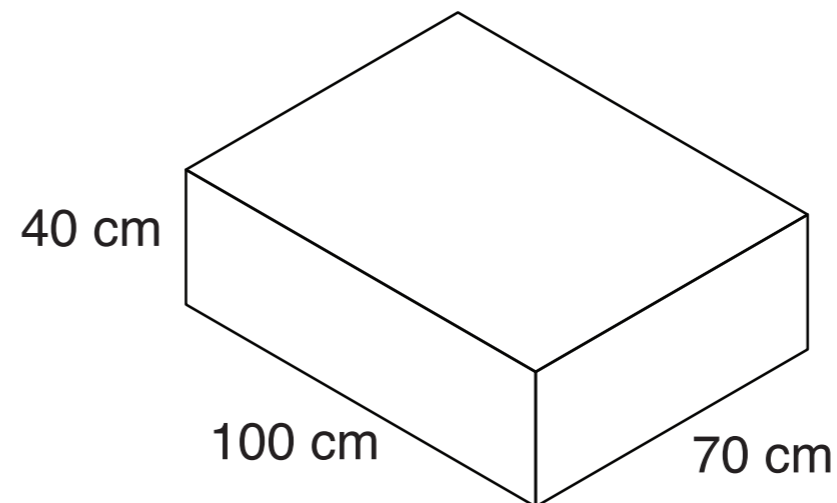
The tank is full of oil for a car.
The container is empty.



Tank



Container



2

Draw a sketch to show the information.

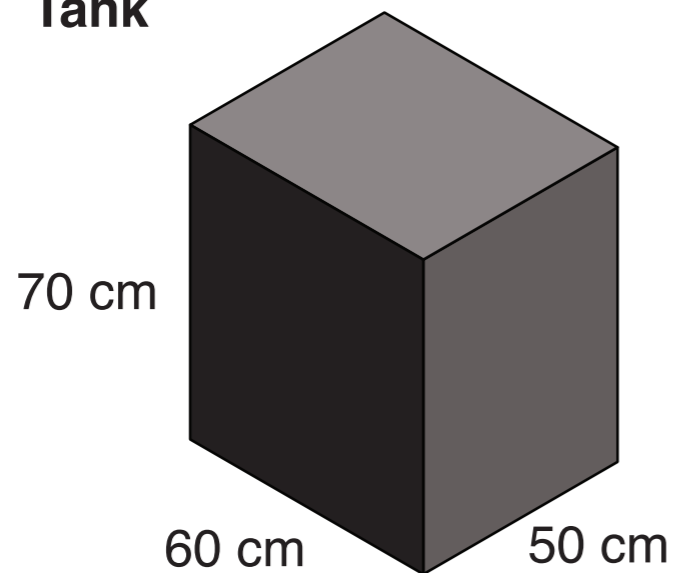




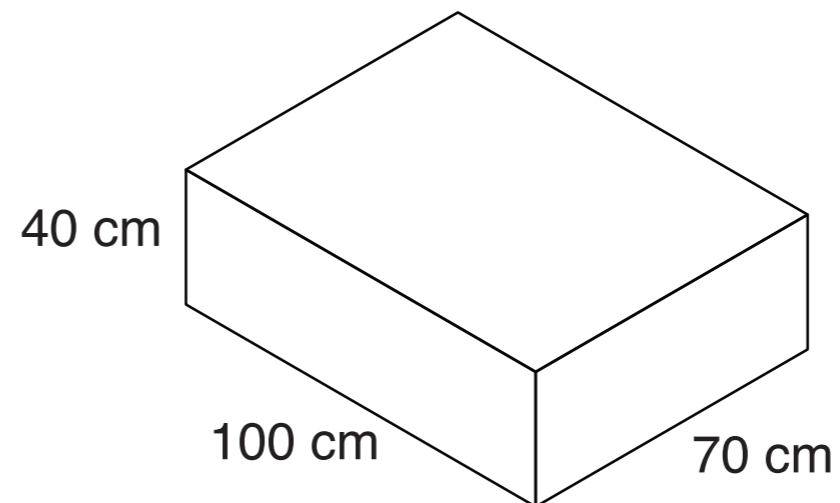
Understand the question

The tank is full of oil for a car.
The container is empty.

Tank



Container



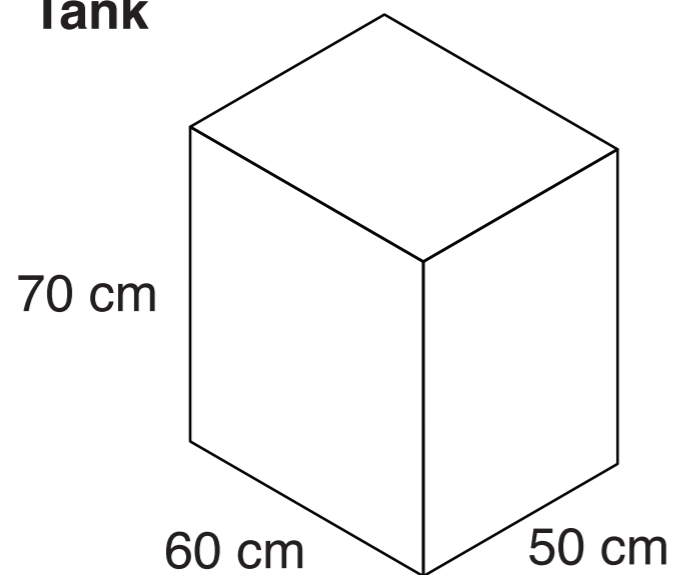


Understand the question

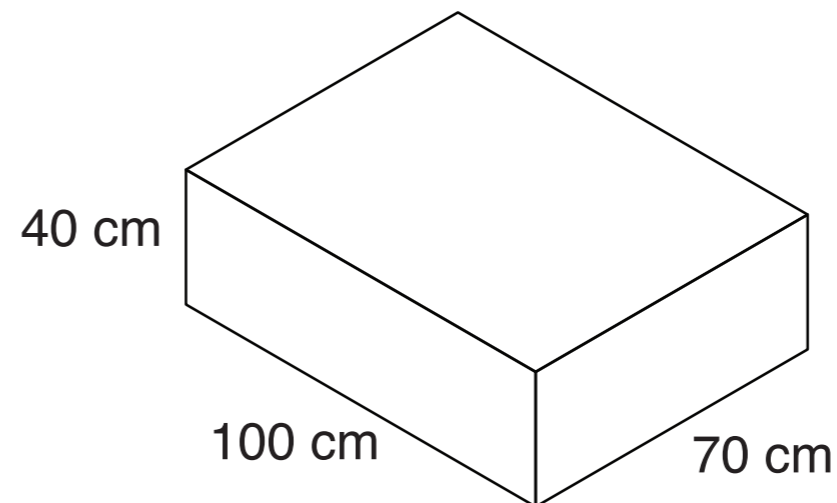


The oil from the tank is put into the container.

Tank



Container



3

Draw a sketch to show the information.

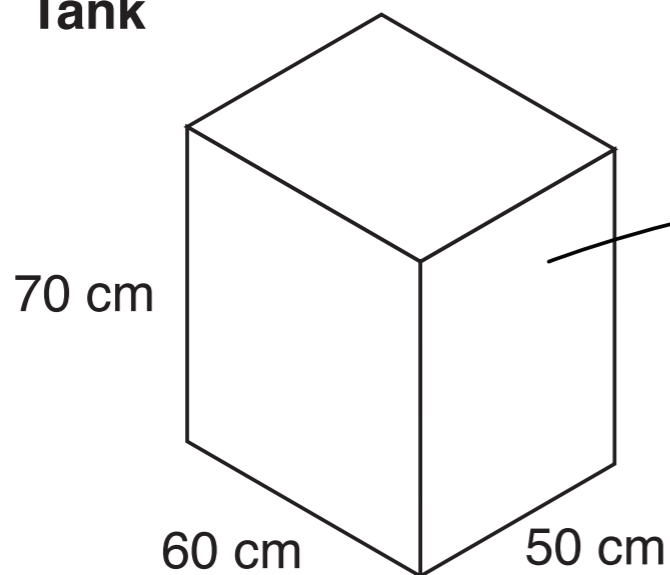




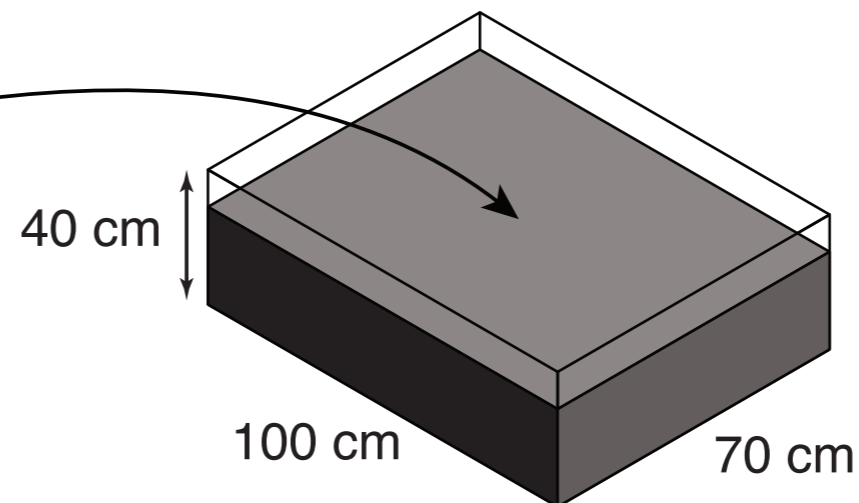
Understand the question

The oil from the tank is put into the container.

Tank



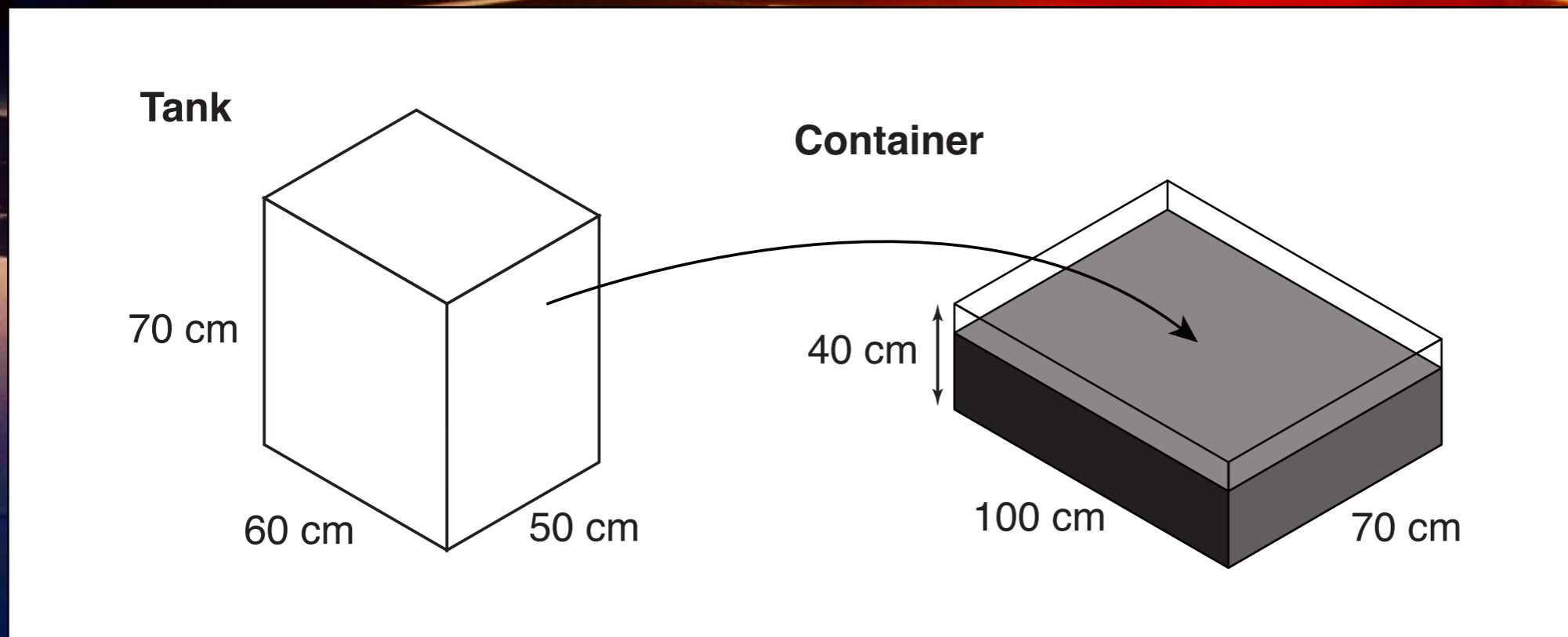
Container



? Ask your own questions



What information is needed to work out the height of the oil in the container?

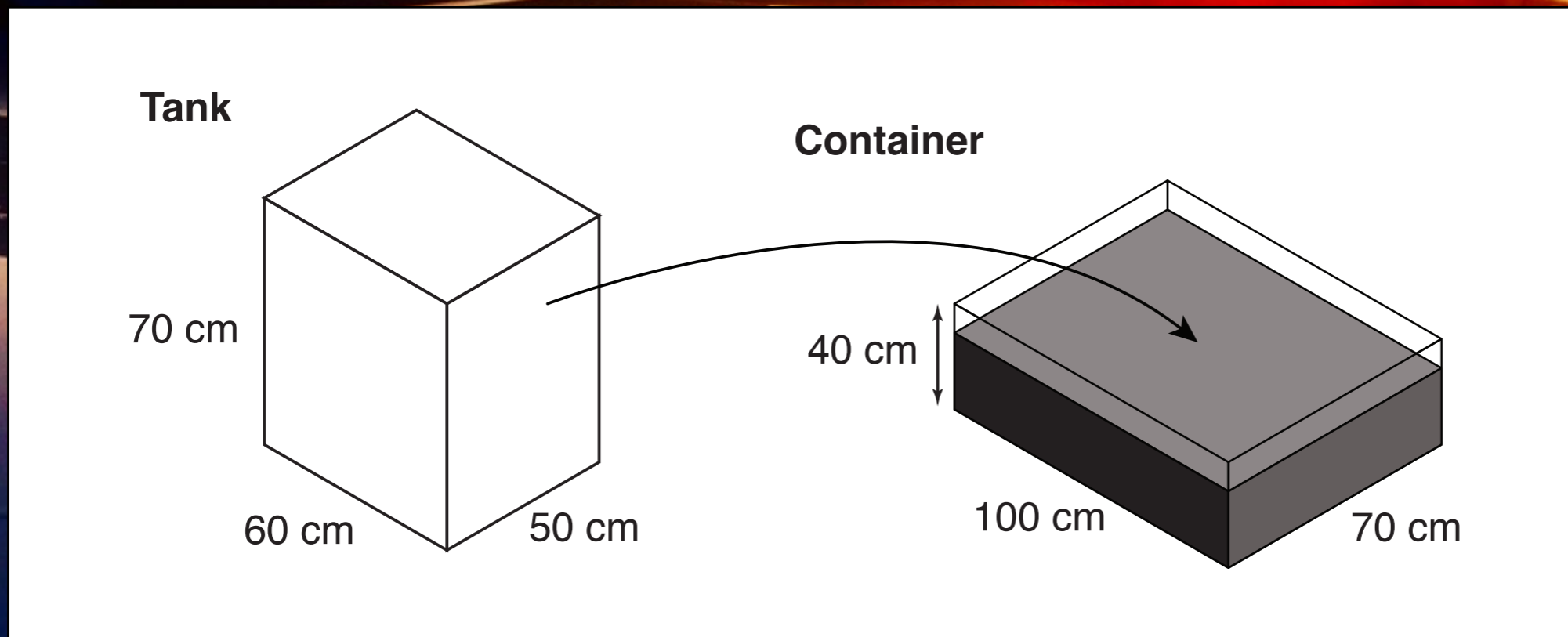


4 Write and answer a question about the tank.
Write and answer a question about the container.
Answer your questions.



? Ask your own questions

What information is needed to work out the height of the oil in the container?



Volume of the tank: $210\,000\text{ cm}^3$
Base area of the container: $7\,000\text{ cm}^2$

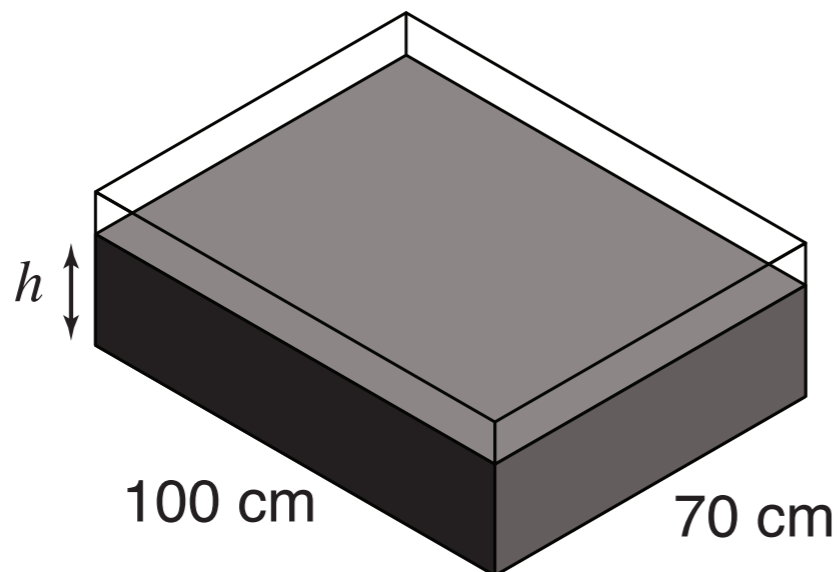


Connect ideas



5 Work out the height of oil in the container.

Container



Volume of oil = $210\,000\text{ cm}^3$

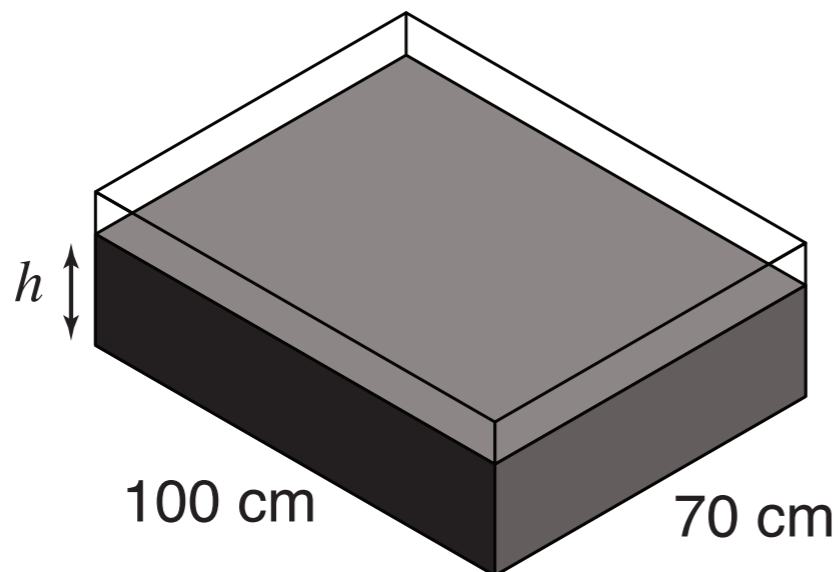
Area of base = $7\,000\text{ cm}^2$



Connect ideas

5 Work out the height of oil in the container.

Container



Volume of oil = $210\,000\text{ cm}^3$

Area of base = $7\,000\text{ cm}^2$

Height of oil: $210\,000 \div 7\,000 = 30\text{ cm}$

What is problem solving?



Change direction

If things don't work out...

“

**Don't do the same thing over and over...
... expecting to get different results.**

Einstein

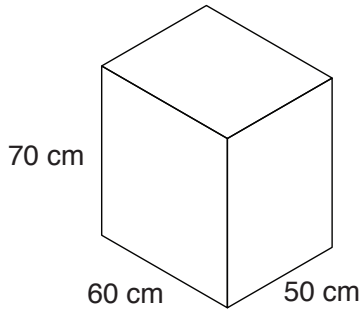
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- **Learn from what you have done**
- **Try something different**

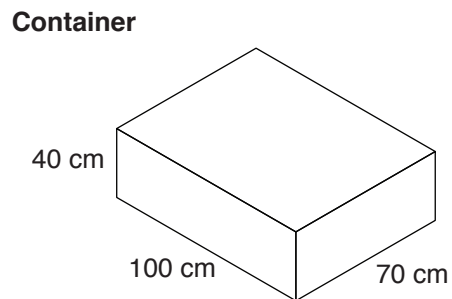
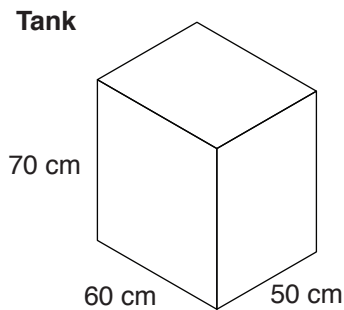
What is problem solving?

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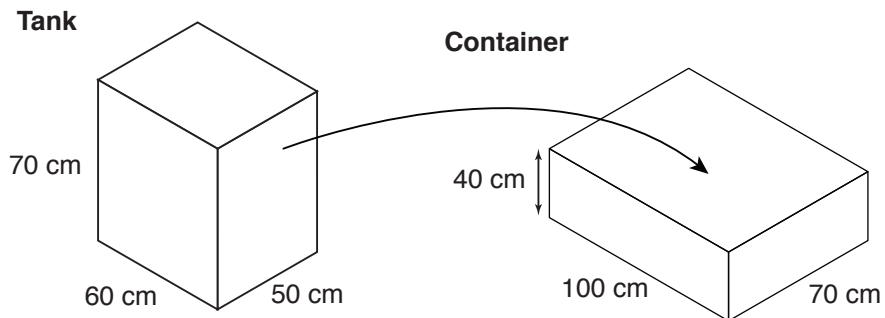
- 1 The diagram shows a **cuboid**.
What questions might go with the diagram.
Do not answer your questions at this stage.



- 2 The diagram shows a **tank** and a **container**.
The tank is full of oil.
The container is empty.
Draw a sketch to show the information.



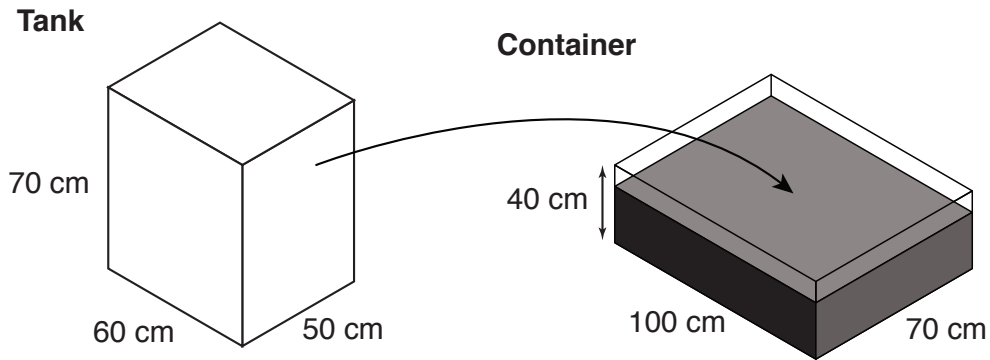
- 3 The oil from the tank is put into the container.
Draw a sketch to show the information.



What is problem solving?



*



- 4 What information is needed to work out the height of the oil in the container?
Write a question about the tank.
Write a question about the container.
Answer your questions.

Question about the tank: _____

Answer: _____

Question about the container: _____

Answer: _____

- 5 Work out the height of the oil in the container.

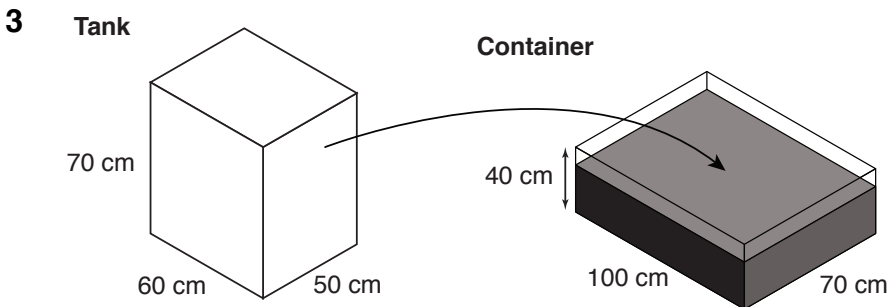
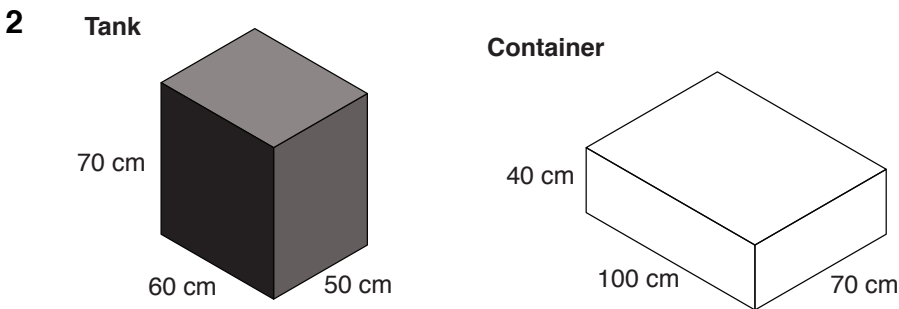
Answer _____

What is problem solving? Answers



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- 1 Possible answers include:
What is the volume?
What is the area of the base?
What is the surface area?
Draw an accurate net.
Make an isometric drawing.



- 4 What is the volume of oil in the tank?
 $70 \times 60 \times 50 = 210\,000 \text{ cm}^3$
What is the area of the base of the container?
 $100 \times 70 = 7\,000 \text{ cm}^2$
- 5 Height of oil = $210\,000 \div 7\,000 = 30 \text{ cm}$