

*What is problem solving?*

# 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***

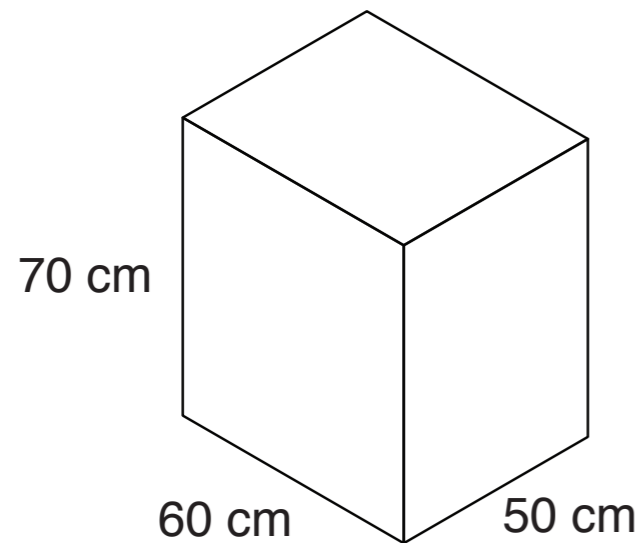
*Problem Solving Solved*



### Understand the question



The diagram shows a cuboid.



1

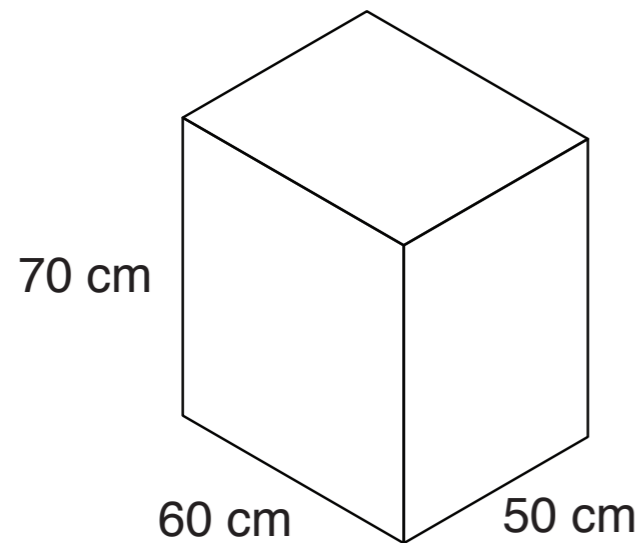
What questions might go with the diagram?  
Just write questions, don't answer them yet.





## 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?

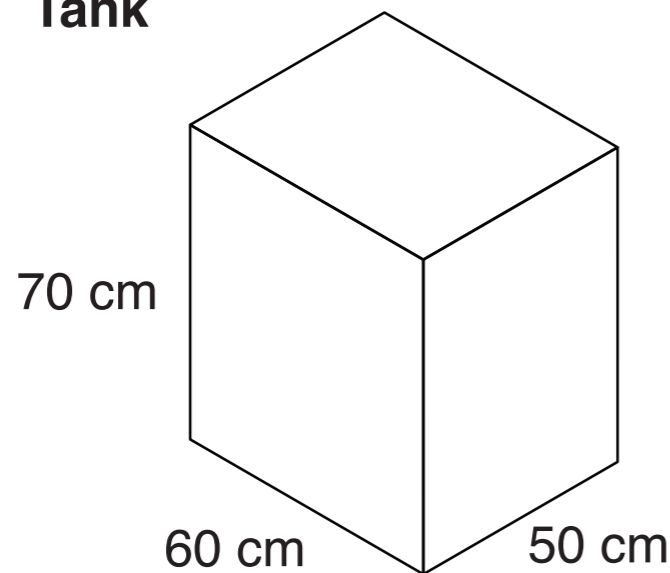


## Understand the question

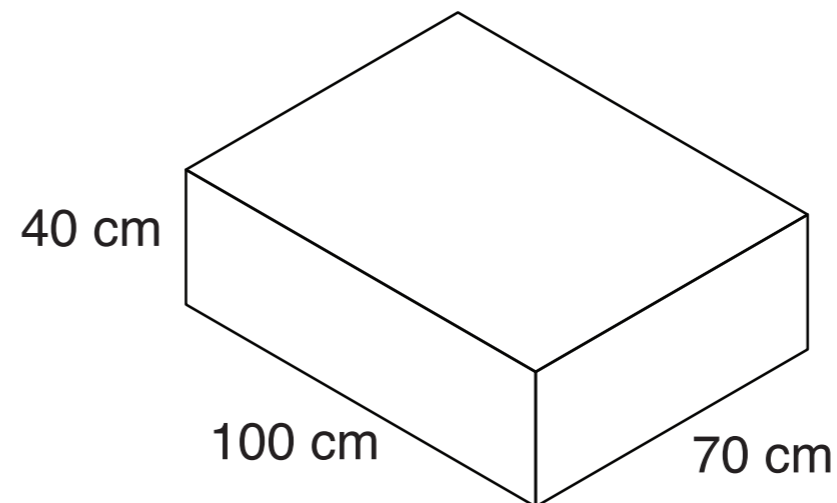


The tank is full of oil for a car.  
The container is empty.

Tank



Container



2

Draw a sketch to show the information.

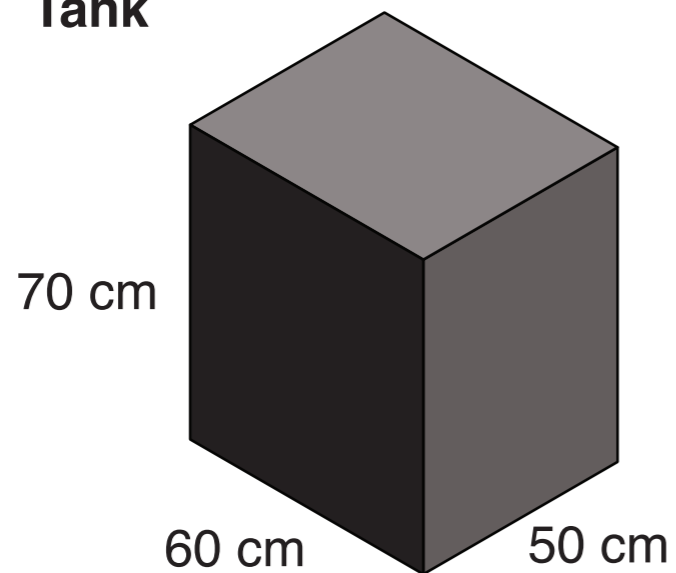




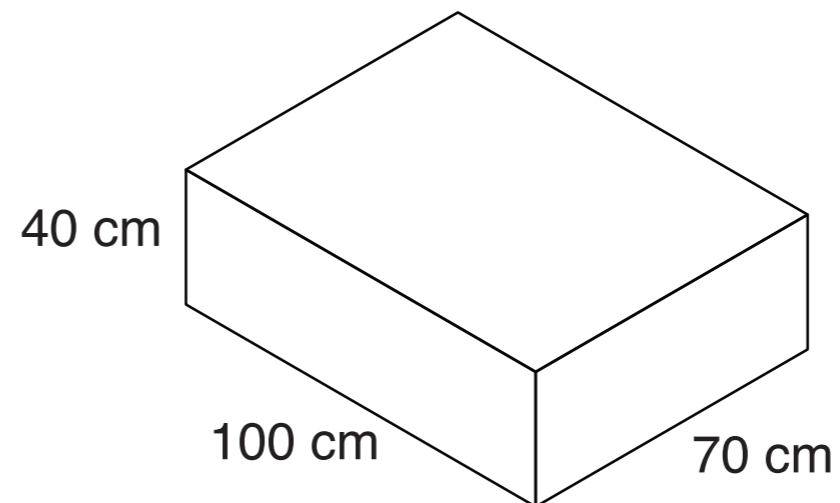
## Understand the question

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

Tank



Container



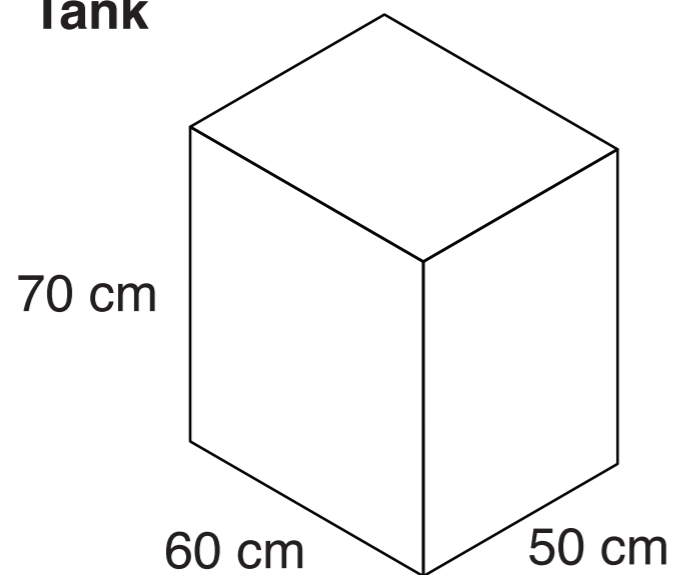


**Understand the question**

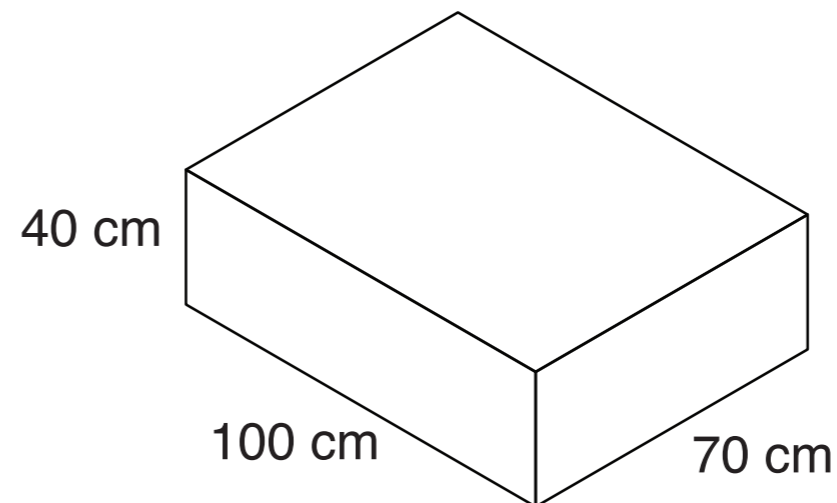


**The oil from the tank is put into the container.**

**Tank**



**Container**



**3**

**Draw a sketch to show the information.**



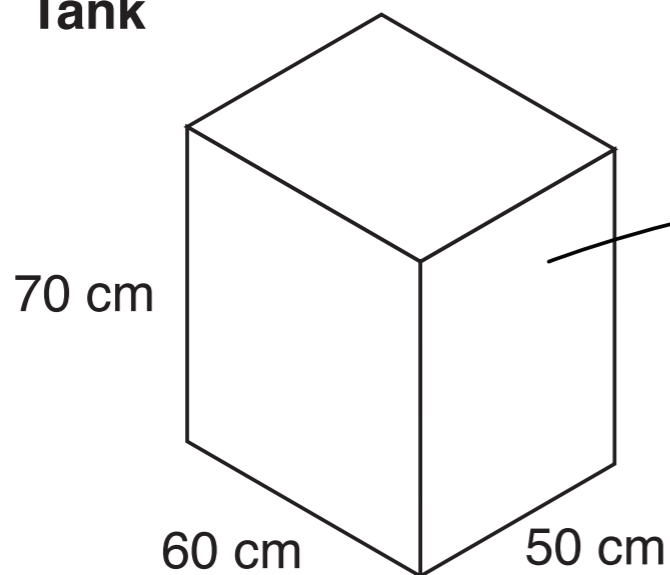




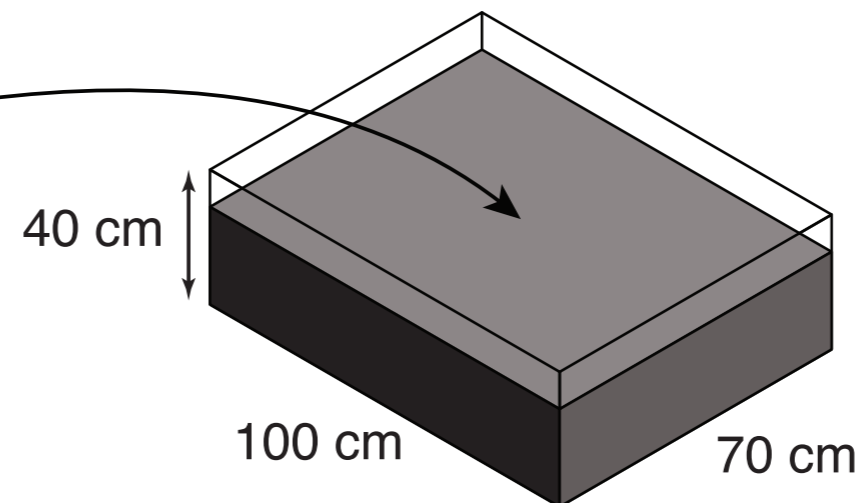
## Understand the question

The oil from the tank is put into the container.

Tank



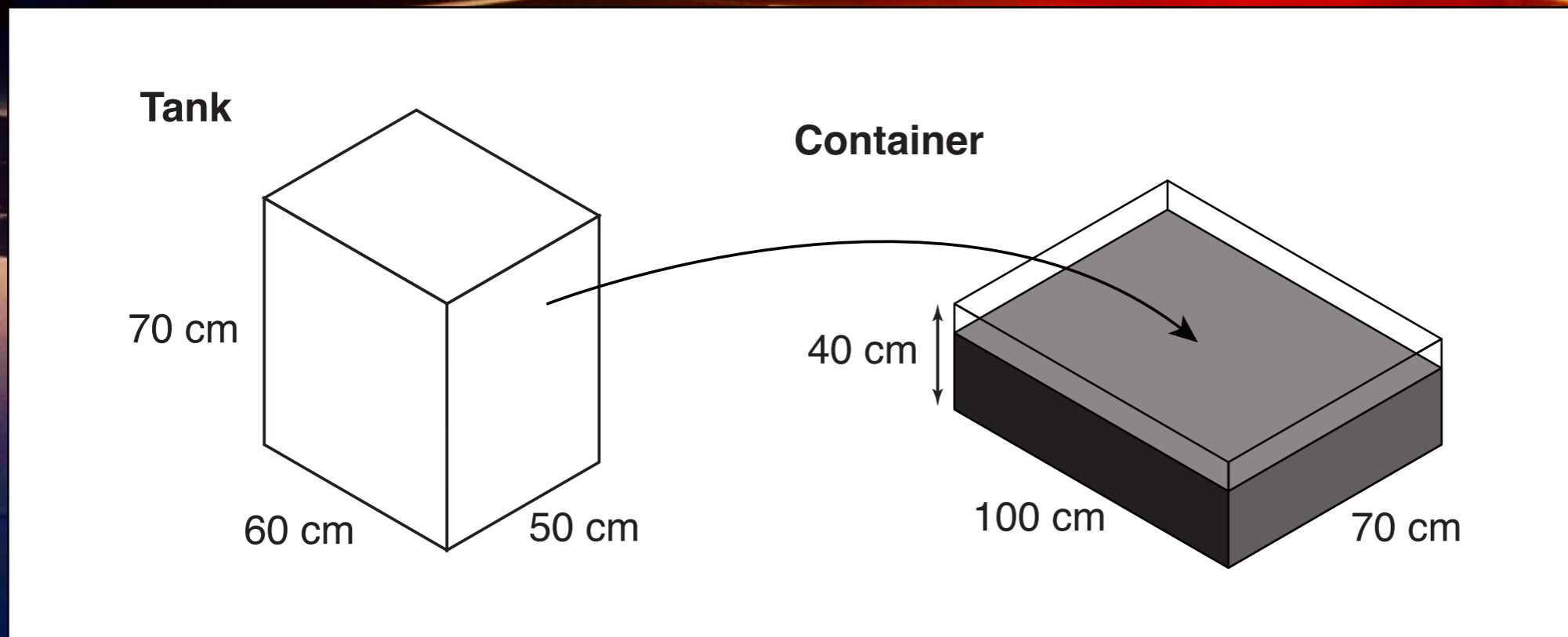
Container



**?** Ask your own questions



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

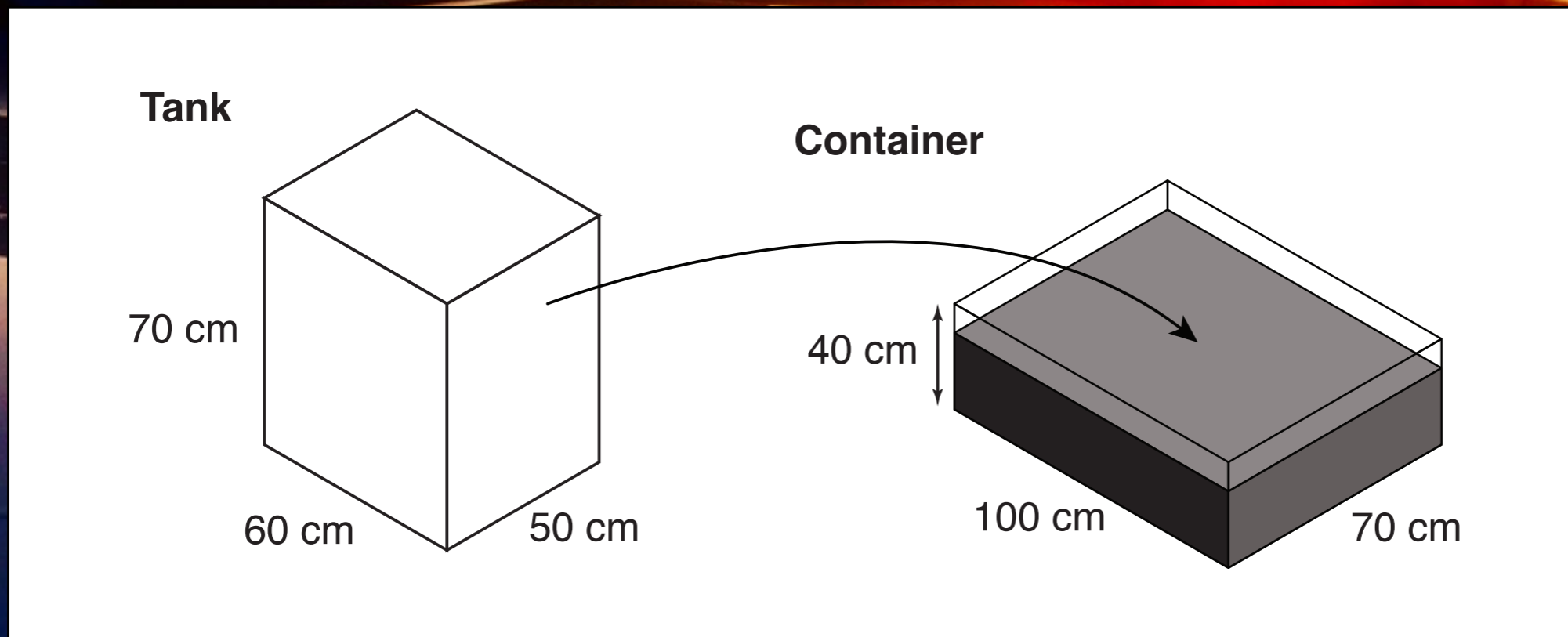


**4** Write and answer a question about the tank.  
Write and answer a question about the container.  
Answer your questions.



**?** 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:  $7\,000\text{ cm}^2$

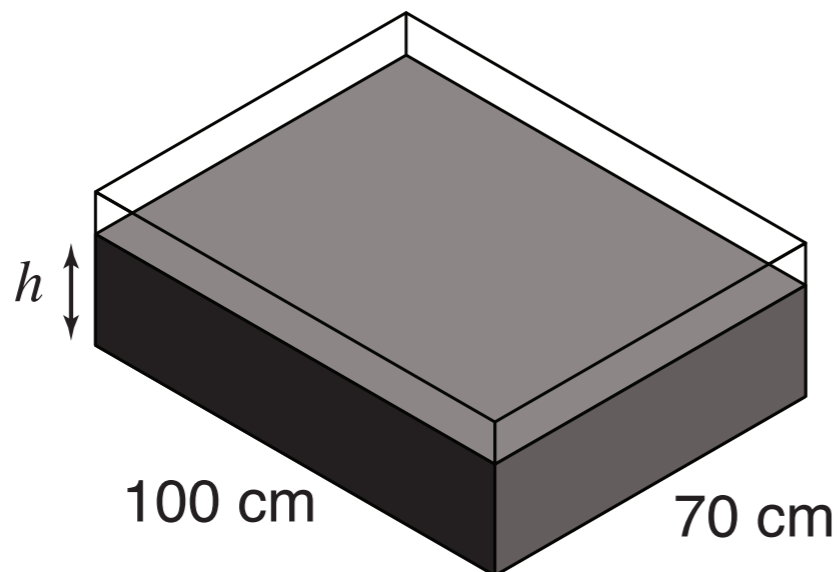


**Connect ideas**



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

**Container**



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

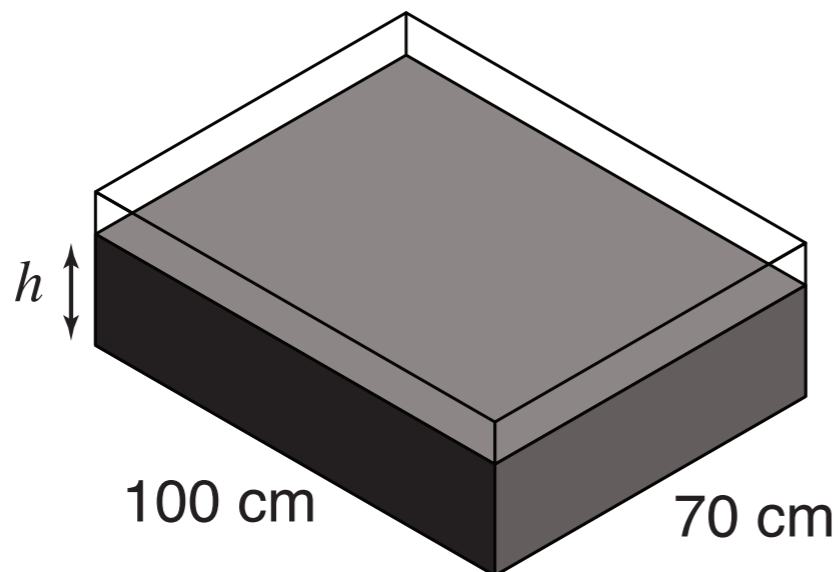
**Area of base =  $7\,000\text{ cm}^2$**



**Connect ideas**

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

**Container**



**Volume of oil = 210 000 cm<sup>3</sup>**

**Area of base = 7 000 cm<sup>2</sup>**

**Height of oil:            210 000 ÷ 7 000 = 30 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*

”

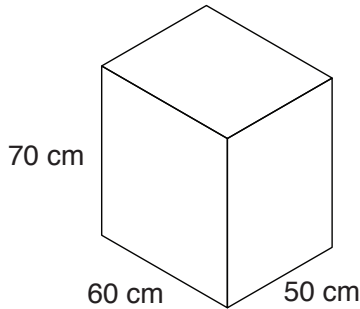
- **Learn from what you have done**
- **Try something different**

# 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.



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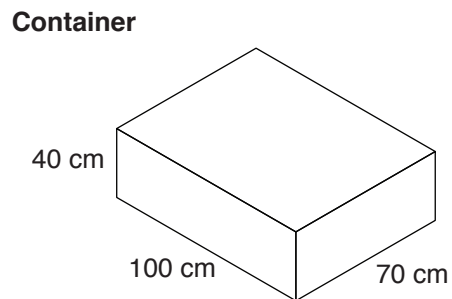
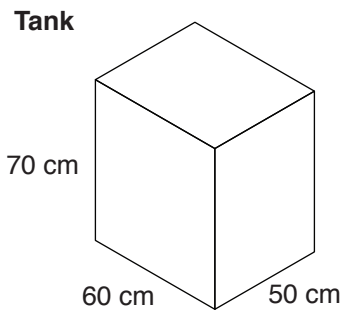
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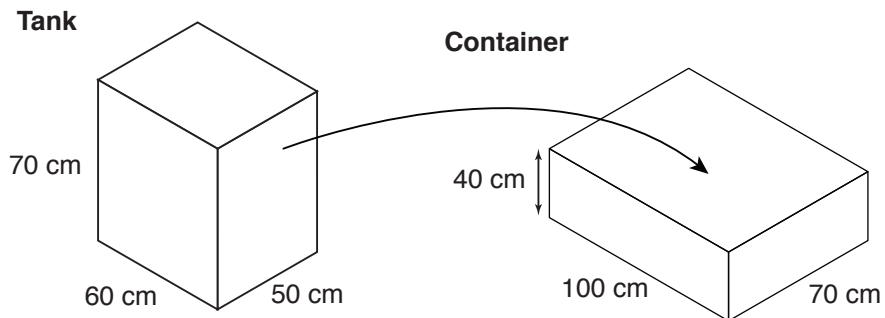
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- 2 The diagram shows a **tank** and a **container**.  
The tank is full of oil.  
The container is empty.  
Draw a sketch to show the information.



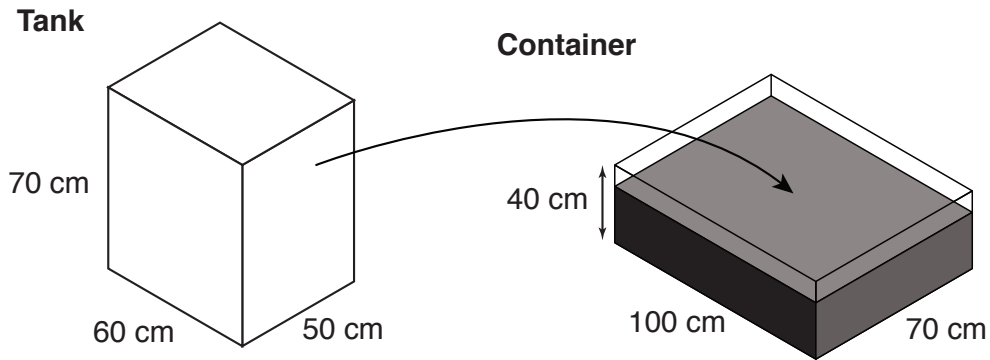
- 3 The oil from the tank is put into the container.  
Draw a sketch to show the information.



# What is problem solving?



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- 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.

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Answer \_\_\_\_\_

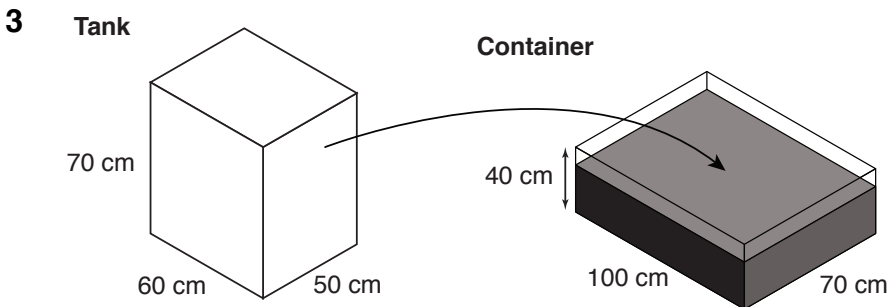
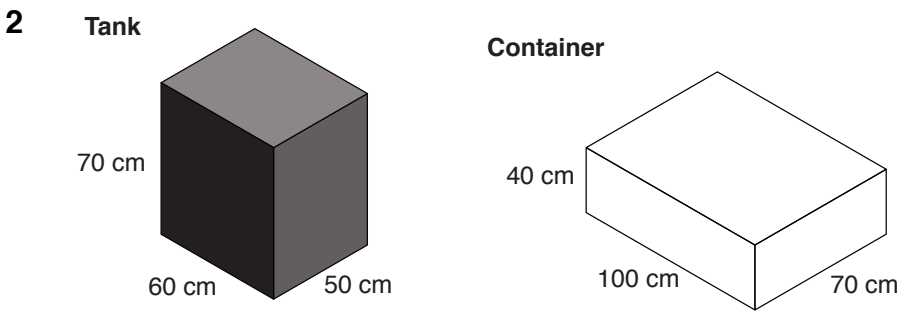


# What is problem solving? Answers



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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 =  $210\,000 \div 7\,000 = 30 \text{ cm}$