

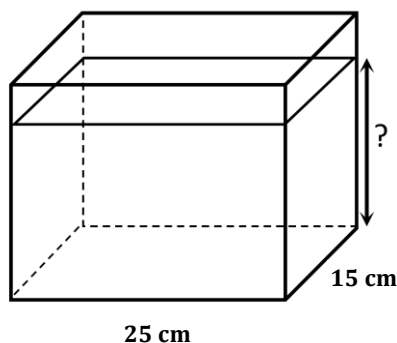
Problem Set

1. The dimensions of several right rectangular fish tanks are listed below. Find the volume in cubic centimeters, the capacity in liters ($1 \text{ L} = 1,000 \text{ cm}^3$), and the surface area in square centimeters for each tank. What do you observe about the change in volume compared with the change in surface area between the small tank and the extra-large tank?

Tank Size	Length (cm)	Width (cm)	Height (cm)
Small	24	18	15
Medium	30	21	20
Large	36	24	25
Extra-Large	40	27	30

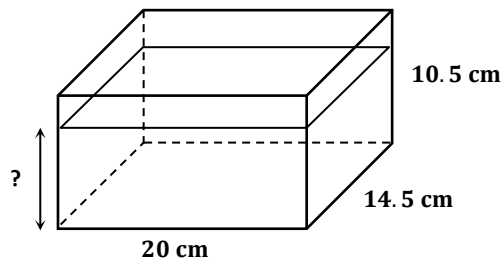
Tank Size	Volume (cm^3)	Capacity (L)	Surface Area (cm^2)
Small			
Medium			
Large			
Extra-Large			

2. A rectangular container 15 cm long by 25 cm wide contains 2.5 L of water.



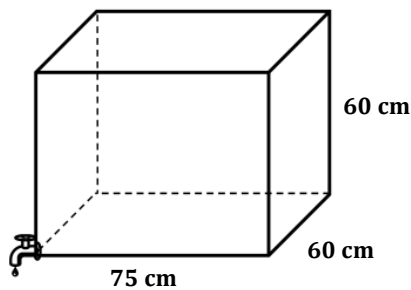
- Find the height of the water level in the container. ($1 \text{ L} = 1,000 \text{ cm}^3$)
- If the height of the container is 18 cm, how many more liters of water would it take to completely fill the container?
- What percentage of the tank is filled when it contains 2.5 L of water?

3. A rectangular container measuring 20 cm by 14.5 cm by 10.5 cm is filled with water to its brim. If 300 cm^3 are drained out of the container, what will be the height of the water level? If necessary, round to the nearest tenth.

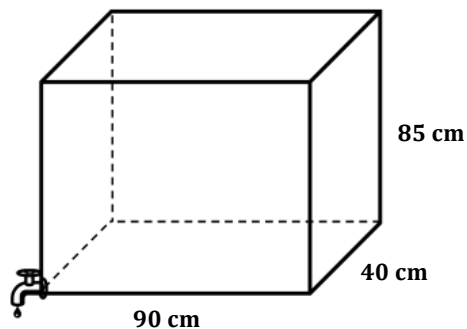


4. Two tanks are shown below. Both are filled to capacity, but the owner decides to drain them. Tank 1 is draining at a rate of 8 liters per minute. Tank 2 is draining at a rate of 10 liters per minute. Which tank empties first?

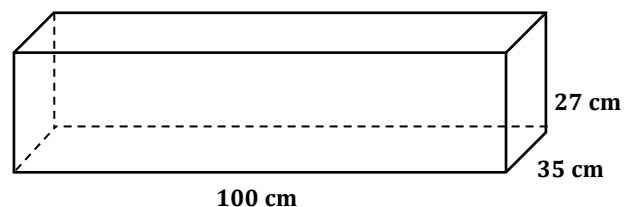
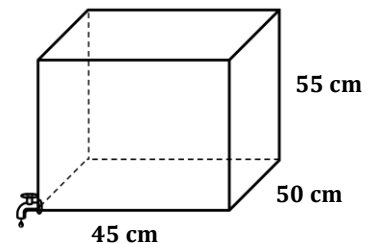
Tank 1



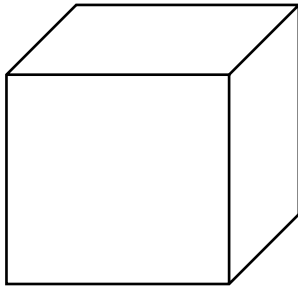
Tank 2



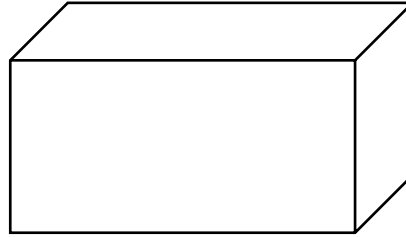
5. Two tanks are shown below. One tank is draining at a rate of 8 liters per minute into the other one, which is empty. After 10 minutes, what will be the height of the water level in the second tank? If necessary, round to the nearest minute.



6. Two tanks with equal volumes are shown below. The tops are open. The owner wants to cover one tank with a glass top. The cost of glass is \$0.05 per square inch. Which tank would be less expensive to cover? How much less?



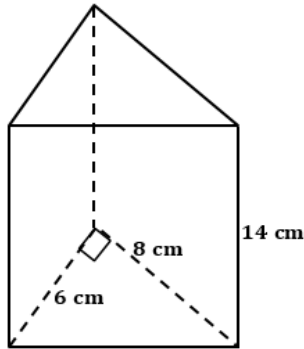
Dimensions: 12 in. long by 8 in. wide by 10 in. high



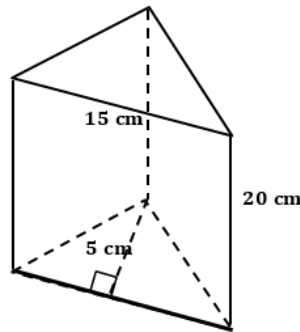
Dimensions: 15 in. long by 8 in. wide by 8 in. high

7. Each prism below is a gift box sold at the craft store.

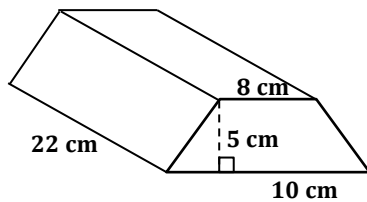
(a)



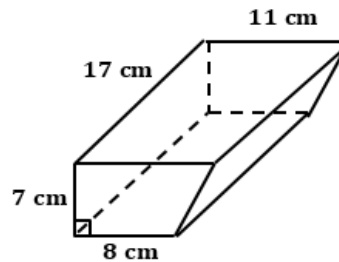
(b)



(c)



(d)



- What is the volume of each prism?
 - Jenny wants to fill each box with jelly beans. If one ounce of jelly beans is approximately 30 cm^3 , estimate how many ounces of jelly beans Jenny will need to fill all four boxes? Explain your estimates.
8. Two rectangular tanks are filled at a rate of 0.5 cubic inches per minute. How long will it take each tank to be half-full?
- Tank 1 Dimensions: 15 in by 10 in by 12.5 in
 - Tank 2 Dimensions: $2\frac{1}{2}$ in by $3\frac{3}{4}$ in by $4\frac{3}{8}$ in