Volume of Solids (2) (Revision)

In the worksheet, you will:

a) revise on finding the number of cubes to be fitted into a solid;
b) revise on drawing the front, back and side view of a solid;
c) revise on finding the number of painted faces in a solid and
d) learn how to find the height of water using **Total Unchanged concept**, after transferring water in between 2 containers.

My Learning Notes on Volume of Solids (2)!

1)

Name: _____ Class: _____

Date	Homework

Volume of Solids (2) (Revision)

1. Karen has 2 rectangular boxes A and B. Both Box A and Box B have square bases of different sizes. The length of the square base of Box A is thrice the length of square base of box. Both boxes have the same height.

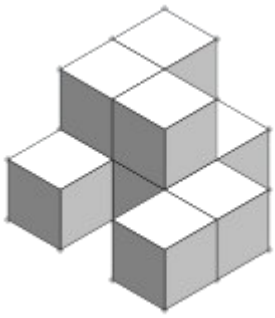
   She packed 378 identical cubes exactly into the larger box. How many such cubes can be packed exactly into the smaller box?

Answer: _____

2. Alex has two rectangular boxes of different sizes. The length, breadth and height of the larger box is twice those of the smaller box. He packed 22 identical cubes exactly into the smaller box. How many such cubes can be packed exactly into the larger box?

Answer: _____

3. The solid figure below is made up of 1-cm cubes which have been glued together. What is the minimum number of 1-cm cubes that are needed to build the solid figure into a cube?

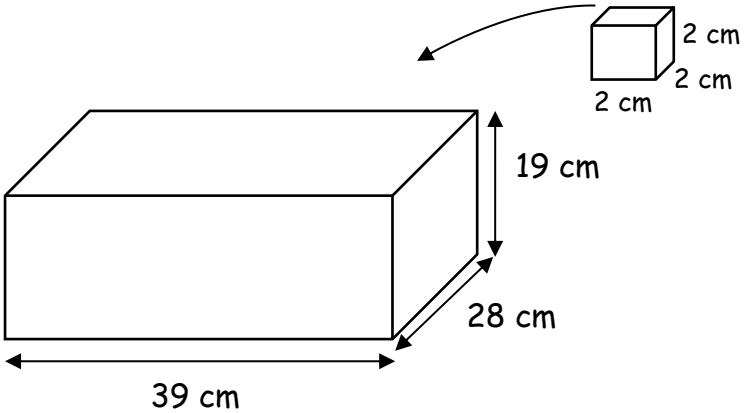


Answer: _____

4. A container measures 17 cm by 9 cm by 15 cm was 75% filled with water. How many 3-cm of ice-cubes can Tim make if he used all the water in the container?

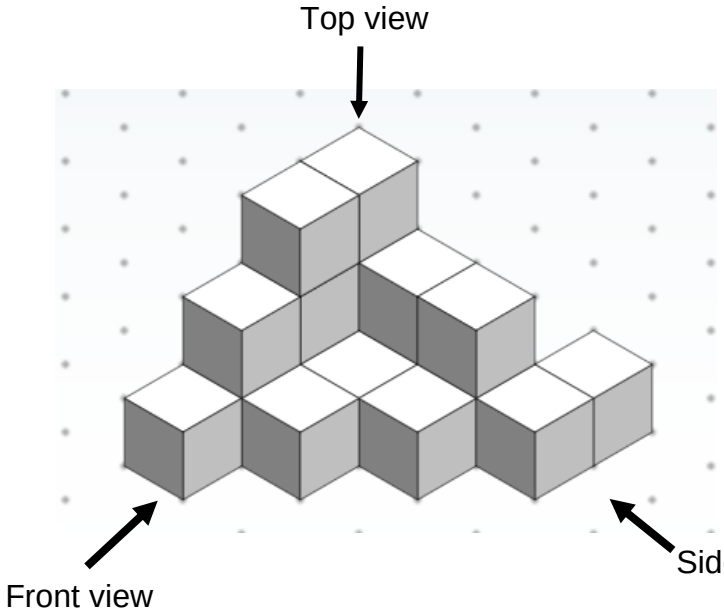
Answer: _____

5. How many 2-cm cubes can be packed into a rectangular box measuring 39 cm by 28 cm by 19 cm?

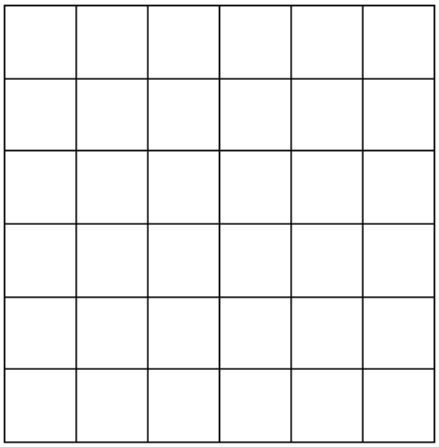


Answer: _____

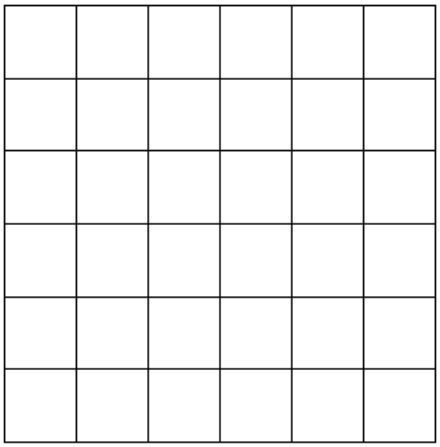
6. The solid is made up of unit cubes. State the number of unit cubes in the blank below and draw the top view, front view and side view of the solid on the given square grids.



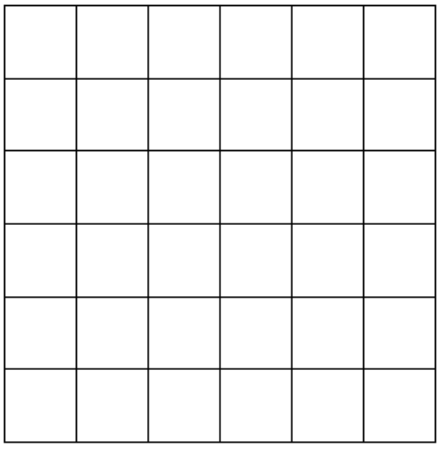
Number of unit cubes: _____



Front view



Top view



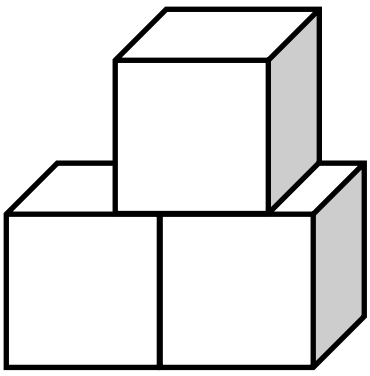
Side view

7. The solid is made up of cubes of edge 5 cm glued together.
   (a) Find the volume of the solid.
   (b) If the solid is dipped into a pail of blue paint, find the total area of the faces which were coated with blue paint.

Answer: (a) _____

(b) _____

8. The figure below is made up of three 2-cm cubes. Find the total surface area of the figure.

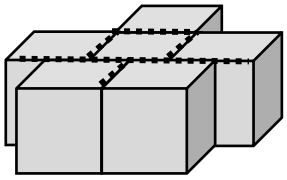


Answer: _____

9. The block of wood shown below was dipped into a pail of paint. The block was then cut into 6 identical cubes along the dotted lines and taken apart.

   (a) How many faces were not painted?

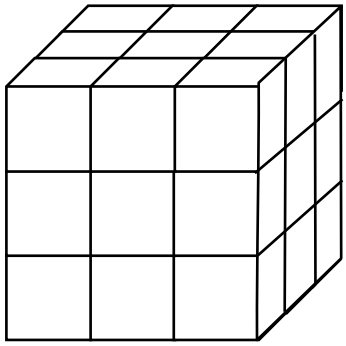
   (b) The total unpainted area of the 6 cubes was 108 cm^2. What was the volume of each cube?



Answer: (a) _____

(b) _____

10. The 2 solids (Solid A and Solid B) below, each are made up of unit cubes which have been glued together. Both solids are then dipped into a can of paint. How many of the unit cubes have:
    (a) only 3 of its faces painted for each of the solid?
    (b) only 2 of its faces painted for each of the solid?
    (c) only 1 of its faces painted for each of the solid?
    (d) none of its faces painted for each of the solid?



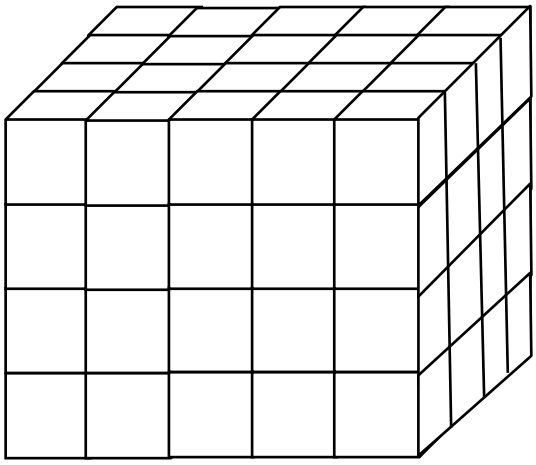
Solid A

Answer: (a) _____

(b) _____

(c) _____

(d) _____



Solid B

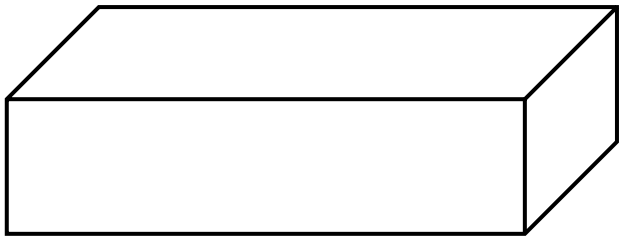
Answer: (a) _____

(b) _____

(c) _____

(d) _____

11. Halim had a rectangular block wood 9 cm by 4 cm by 3 cm. He painted all the faces of the block.



(a) What is the total painted area?

Answer: _____

(b) He then cut the block into 1-cm cubes. How many of these cubes have

(i) 3 of the faces painted? Answer: _____

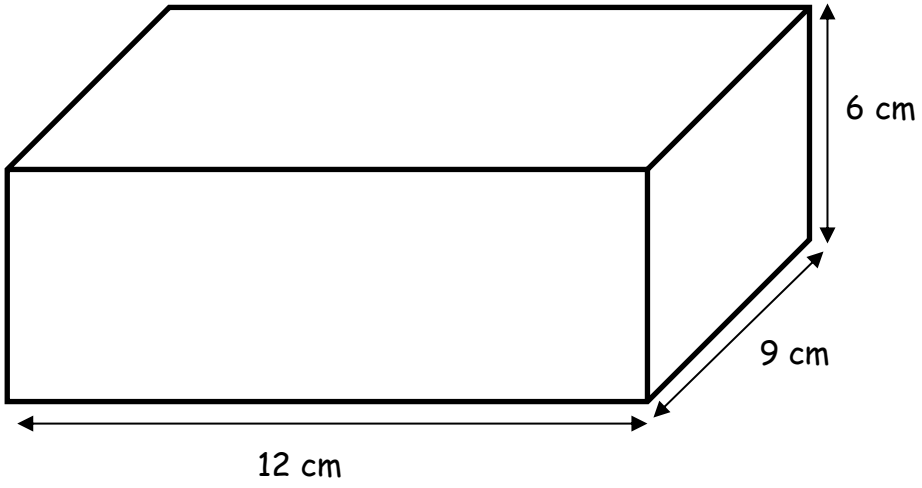
(ii) 2 of the faces painted?

Answer: _____

(iii) 1 of the faces painted? Answer: _____

(iv) none of the faces painted? Answer: _____

12. The diagram below shows **an open-top** box. When it is fully packed with 1-cm cubes, how many cubes touch the inside of the box?



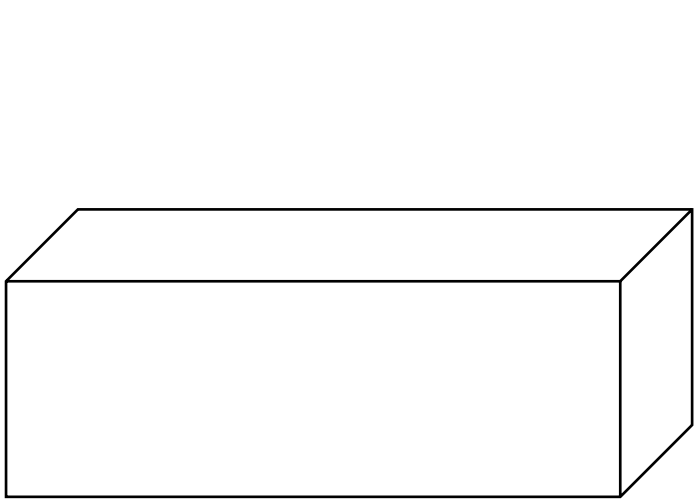
Answer: _____

Variation: If the above diagram is a closed box, how many cubes touch the inside of the box?

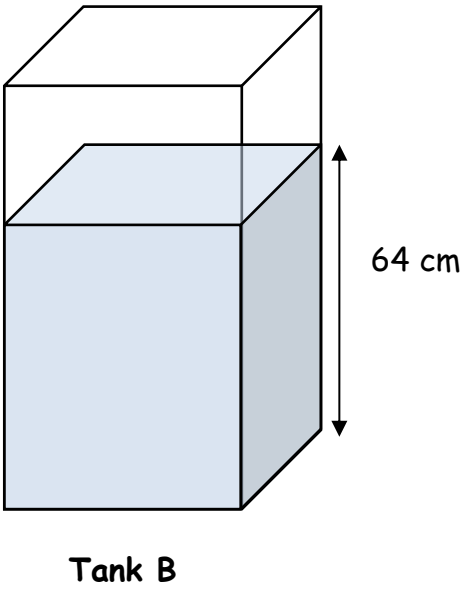
Answer: _____

Internal transfer

13. A and B are two rectangular tanks. The base area of B is 50 cm^2 while that of A is 650 cm^2. At first, Tank B contained water to a height of 64 cm and A was empty as shown below.



Tank A



Tank B

(a) What was the volume of water in Tank B at first?

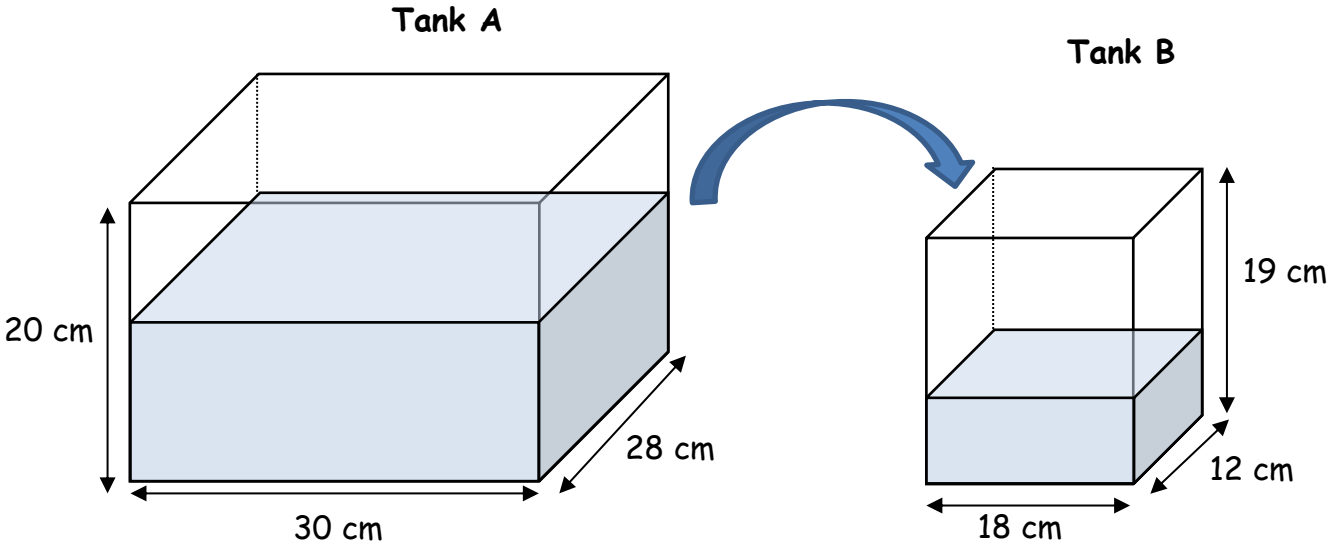
(b) Jane then poured some water from Tank B to Tank A. After that, the height of the water level in Tank B was thrice that in Tank A. What was the new height of the water level in Tank B?

Answer: (a) _____

(b) _____

14. Tank A measuring 30 cm by 28 cm by 20 cm was 60% filled with water.
Tank B measuring 18 cm by 12 cm by 19 cm was $\frac{1}{3}$ -filled with water.

An amount of water was poured from Tank A to Tank B till the height of the water in Tank B was twice the height of the water in Tank A. Find the new height of the water in Tank B.



Answer: _____

Challenge Round **(Optional)**

15. The solid is made up of unit cubes glued together. It is painted in red on all the surfaces including the base.

(a) What is the total painted area?

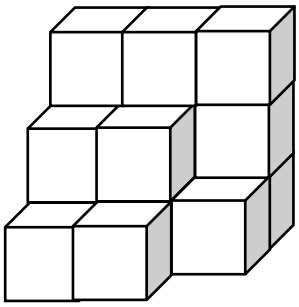
(b) How many of these cubes have

(i) 4 faces painted?

(ii) 3 faces painted?

(iii) 2 faces painted?

(iv) 1 face painted?



Answer: (a) _____

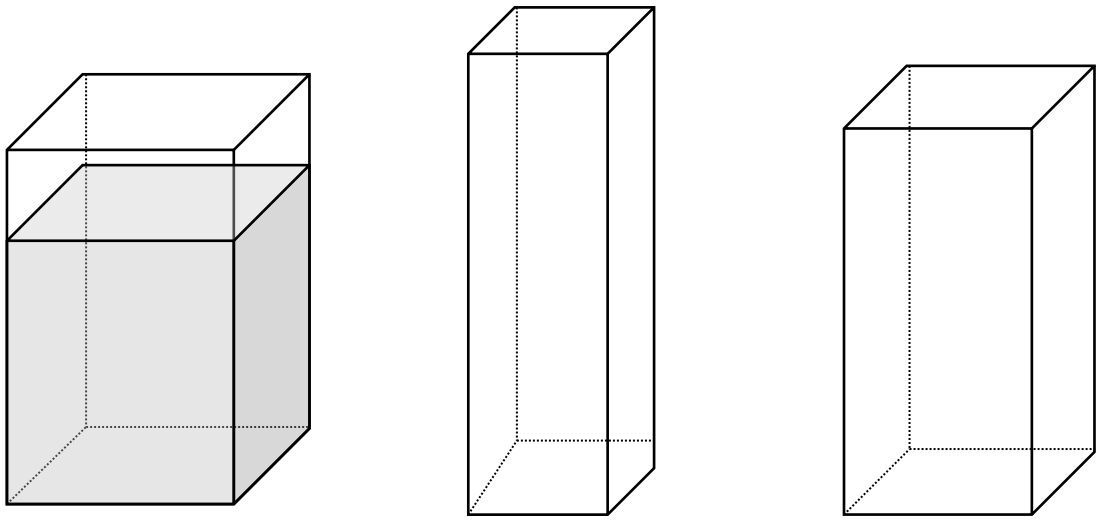
Answer: (b) (i) _____

(ii) _____

(iii) _____

(iv) _____

16. A, B and C are three rectangular containers. The base area of Containers A, B and C are 110 cm^2, 60 cm^2 and 90 cm^2 respectively. At first, Container A has 4460 cm^3 of water while Container B and C were empty as shown below.



Container A Container B Container C

Mrs Fong then poured some water from Container A into Container B and C. After that, the height of the water level in Container C was 3 cm lower than that in Container B and 7 cm lower than that in Container A.

(a) What was the height of the water level in Tank A in the end?

(b) Find the difference in the volume of water between Container B and C in the end.

Answer: (a) _____

(b) _____