GRAYS TUITION CENTRE – Online Tutoring

WEEK: 11

Week Beginning: (01/03/2021)

Subject: MATHS

Year: 8

Lesson Objective:

- Understand how to find and use volumes of cuboids

Class Worksheets

- Pages 2 to 4 from the Learning Pack – see below

Homework

- Pages 6 and 7 from the Learning Pack – see below

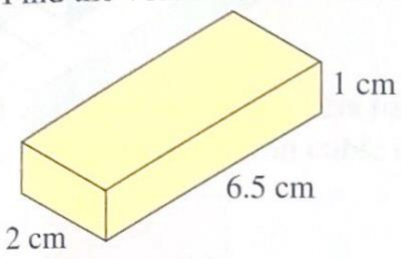
Additional Notes

- All lesson worksheets and **homework for next week (due Week 12)** worksheets can be found below
- Week 10 homework will be marked in lesson hence make sure it is fully complete

Please print 2 a page or open this document during the lesson to save paper!

Volume = (length) × (width) × (height)

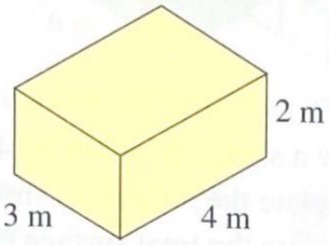
(a) Find the volume of the cuboid



Volume = $2 \times 6.5 \times 1$

= $13\ cm^3$

(b) Find the volume of the cuboid



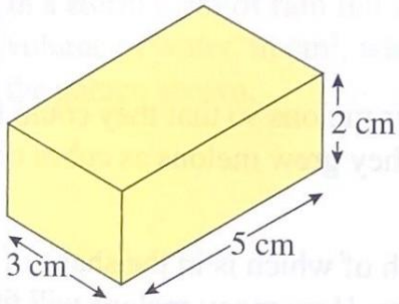
Volume = $3 \times 4 \times 2$

= $24\ m^3$ (note the units)

Exercise 1M

In questions 1 to 6 work out the volume of each cuboid. Give your answer in the correct units.

1



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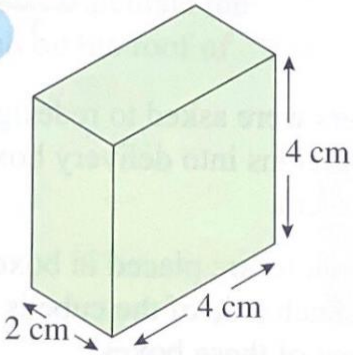

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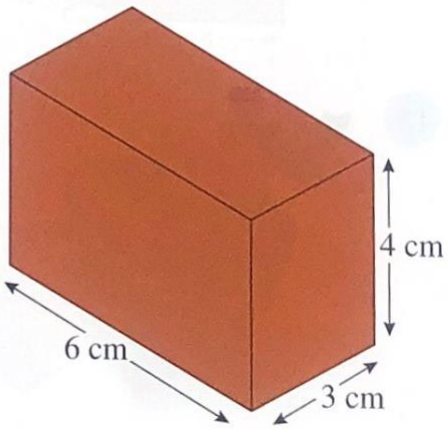

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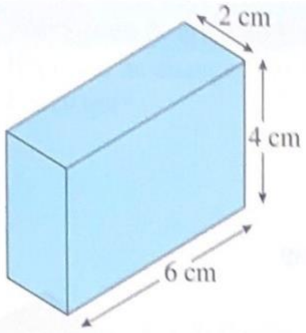

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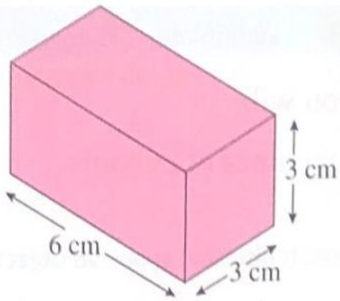

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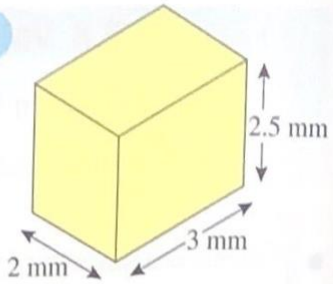
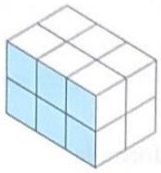


In questions 7 to 12 write down the volume of the object. All the objects are made from centimetre cubes.

7

8



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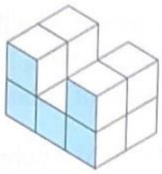

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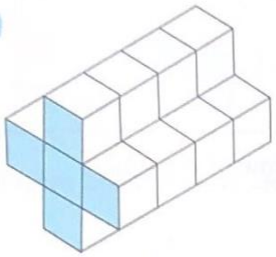

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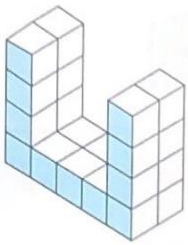

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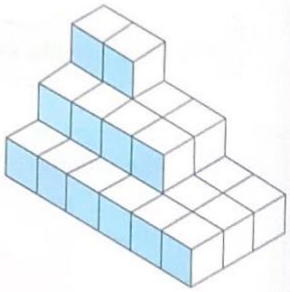
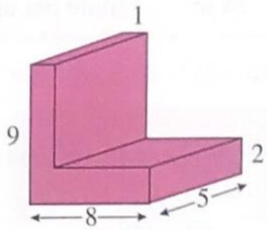


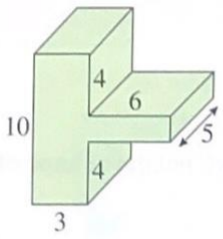
13 (a) Draw a sketch of a 4 m by 4 m by 2 m cuboid.
(b) Calculate the volume of the cuboid.
(c) Calculate the total surface area of the cuboid.

14 Calculate the volume of each girder by splitting them into cuboids. All lengths are in cm.

(a)



(b)

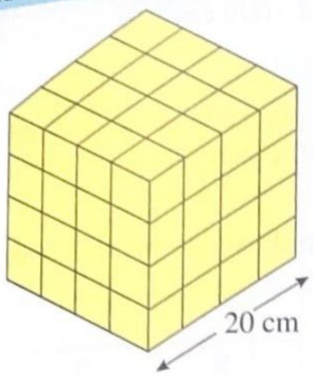


15

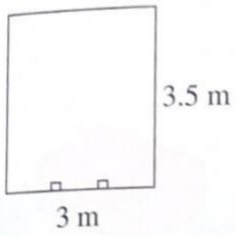
Farmers were asked to redesign their melons so that they could fit more melons into delivery boxes. They grew melons as cubes of side 16 cm.

The melons are placed in boxes each of which is in the shape of a cube. Each side of the cube is 1.28 m. How many melons will fit into one of these boxes?

Exercise 1E

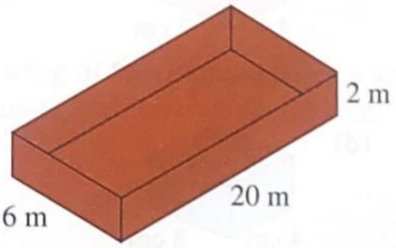
1 

The large cube is cut into lots of identical small cubes as shown. Calculate the volume of each small cube.

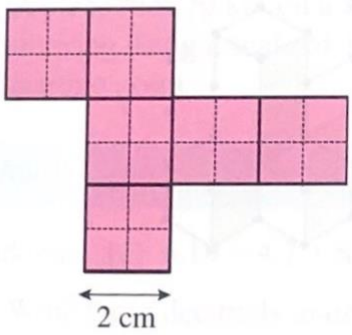
2 

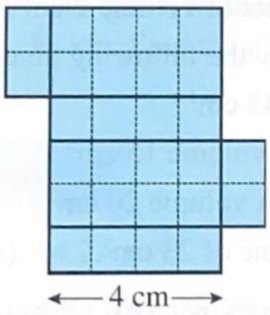
A mine shaft 400 m long is dug with the cross-section shown. Calculate the volume of earth which must be removed to make way for the shaft.

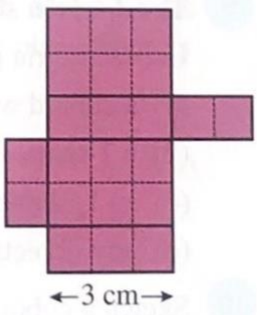
3 The diagram shows an empty swimming pool.
Water is pumped into the pool at a rate of 2 m^3 per minute.
How long will it take to fill the pool?



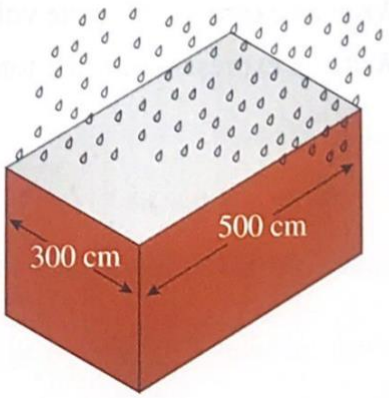
4 The shapes below are nets for closed boxes. Work out the volume of the box in each case, giving your answer in cubic cm.

(a) 

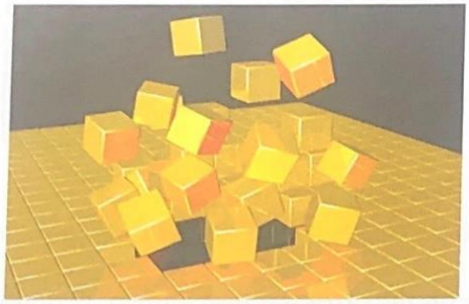
(b) 

(c) 

5 In a storm 2 cm of rain fell in 1 hour. Calculate the volume of water, in cm^3, which fell on the roof of the garage shown.



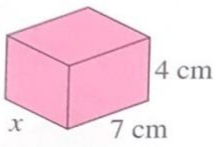
6 The inside of a spaceship orbiting the earth is a cuboid measuring 200 cm by 300 cm by 200 cm. Unfortunately air is leaking from the spaceship at a rate of 1000 cm^3 /sec. How long will it take for all the air to leak out?

7 

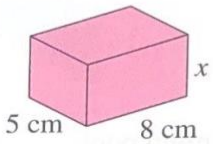
Gold cubes of side 3 cm are placed together in a flat square. The flat square has 30 cubes along each of its sides.

What is the volume of the gold used to make this shape?

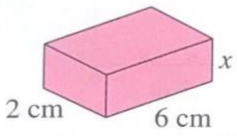
8 Find the length x.

(a) 

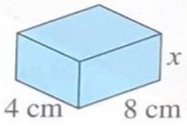
volume = 70 cm^3

(b) 

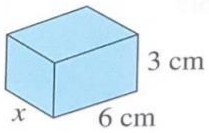
volume = 120 cm^3

(c) 

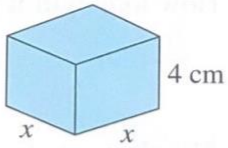
volume = 18 cm^3

(d) 

volume = 32 cm^3

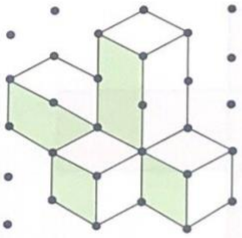
(e) 

volume = 27 cm^3

(f) 

volume = 100 cm^3

9 The diagram shows an object of volume 7 cm^3.



Use isometric paper to draw the following objects:

(a) a cuboid with volume 45 cm^3

(b) a T-shaped object with volume 15 cm^3

(c) an L-shaped object with volume 20 cm^3

(d) any object with a volume of 23 cm^3.

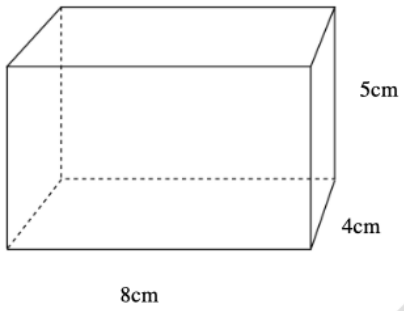
10 Sketch a cuboid a cm by b cm by c cm.

(a) Write an expression for the volume of the cuboid.

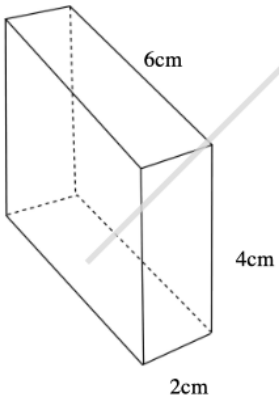
(b) Write an expression for the total surface area of the cuboid.

Homework:

1. What is the volume of this cuboid?



2. Find the volume of this cuboid.



3. The length, width and height of a cuboid are: 5cm, 2cm and 3cm. What is its volume?

4. Find the missing measurements in this table:

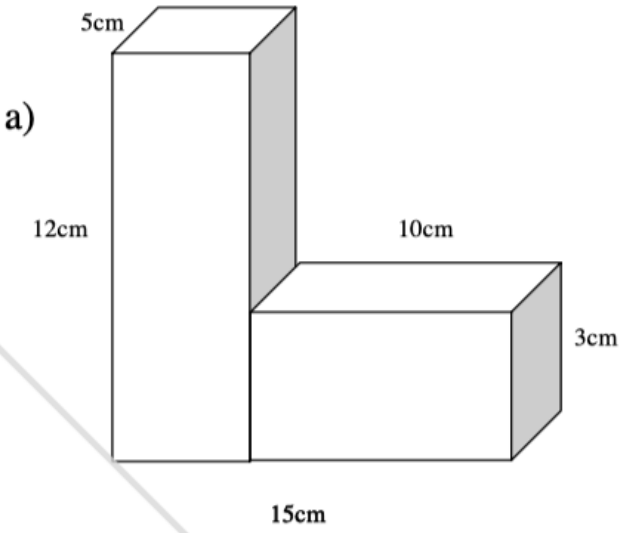
Length	Width	Height	Volume
10cm	4cm	3cm	
	6cm	2cm	$60cm^3$
8cm	2cm		$48cm^3$
10m		6m	$180m^3$
9mm	2mm		$72mm^3$

5. a) A cuboid has a volume of $72cm^3$. If the length, width and height are all whole numbers, how many di□erent sets of measurements can you □nd?

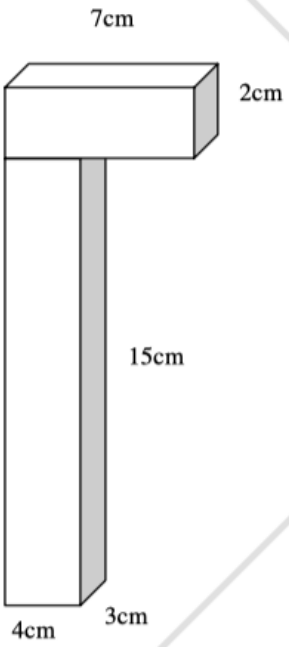
b) How many can you □nd for a cuboid with volume $96cm^3$?

12. Find the volume of these shapes:

a)



b)



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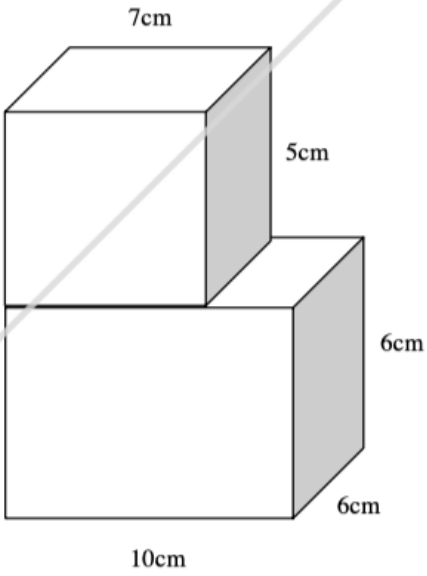

d)