GRAYS TUITION CENTRE – Online Tutoring

WEEK: 15

Week Beginning: (29/06/20)

Subject: MATHS

Year: 8

Lesson Objective:

- Be able to find and use volumes of cuboids
- Revisiting Linear Equations and be able to solve to find x

Class Worksheets

- Pages 1 to 6 from the Learning Pack – See below

Homework
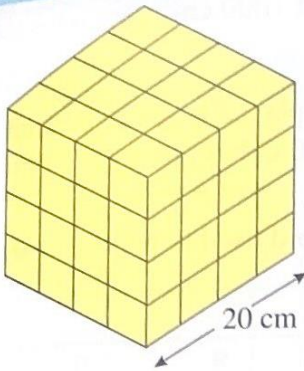
- Page 7 from the Learning Pack – See below

Additional Notes

- All lesson worksheets and **homework for next week (due Week 16)** worksheets can be found below

- Week 14 homework will be marked in lesson hence make sure it is fully complete

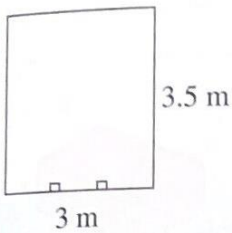## Please print 2 a page or open this document during the lesson to save paper!

Exercise 1E

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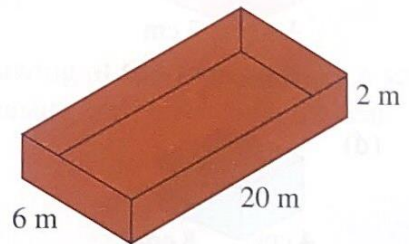
20 cm

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.
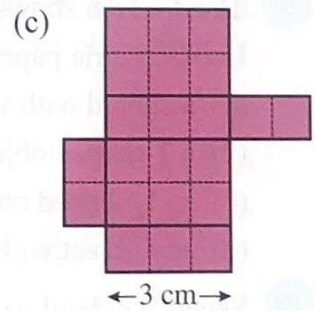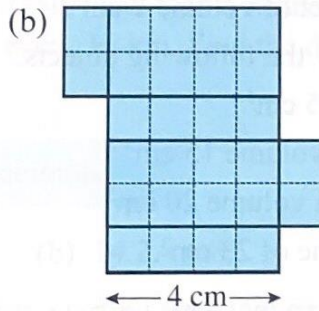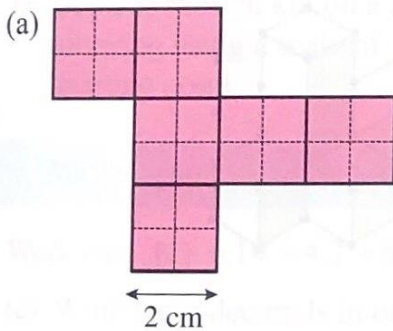
3.5 m

3 m

3 The diagram shows an empty swimming pool.
Water is pumped into the pool at a rate of 2 m³ per minute.
How long will it take to fill the pool?

2 m

20 m

6 m

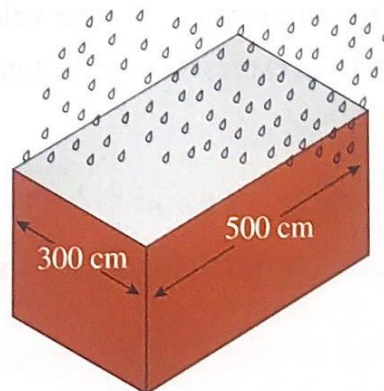**4** The shapes below are nets for closed boxes. Work out the volume of the box in each case, giving your answer in cubic cm.
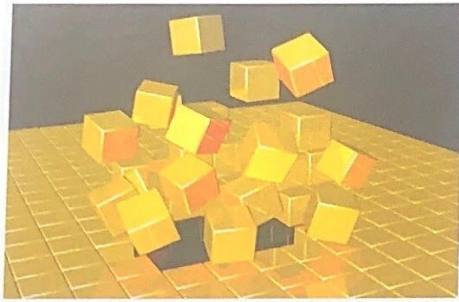
(a)

2 cm

(b)

←— 4 cm —→

(c)

←3 cm→

5 In a storm 2 cm of rain fell in 1 hour. Calculate the volume of water, in cm³, which fell on the roof of the garage shown.

500 cm

300 cm

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.
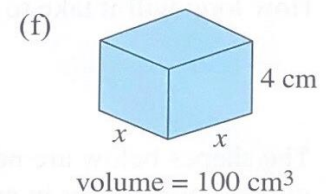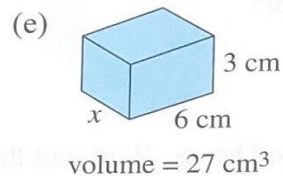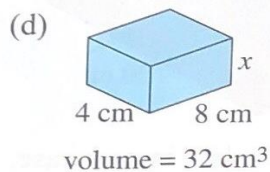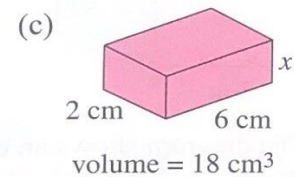   How long will it take for all the air to leak out?

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)
4 cm
x 7 cm
volume = 70 cm^3

(b)
x
5 cm   8 cm
volume = 120 cm^3

(c)
x
2 cm   6 cm
volume = 18 cm^3

(d)
x
4 cm   8 cm
volume = 32 cm^3

(e)
3 cm
x 6 cm
volume = 27 cm^3

(f)
4 cm
x x
volume = 100 cm^3
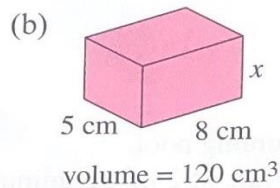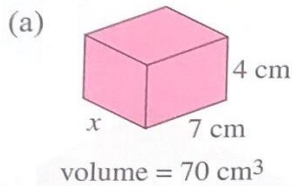
9   The diagram shows an object of volume 7 cm^3.
    Use isometric paper to draw the following objects:
    (a) a cuboid with volume 45 cm^3
    (b) a T-shaped object with volume 15 cm^3
    (c) an L-shaped object with volume 20 cm^3
    (d) any object with a volume of 23 cm^3.
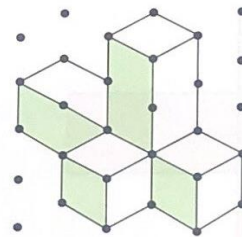
10 Sketch a cuboid a cm by b cm by c cm.
    (a) Write an expression for the volume of the cuboid.
    (b) Write an expression for the total surface area of the cuboid.

1.   What is the volume of this cuboid?

5cm

4cm

8cm

2. Find the volume of this cuboid.

6cm

4cm

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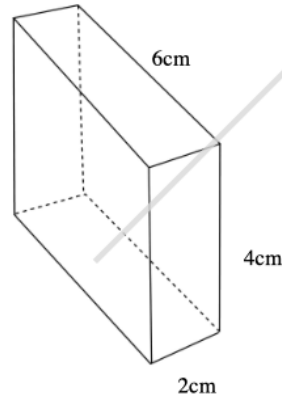
3. The length, width and height of a cuboid are: 5cm, 2cm and 3cm. What is its volume?

4.   Find the missing measurements in this table:

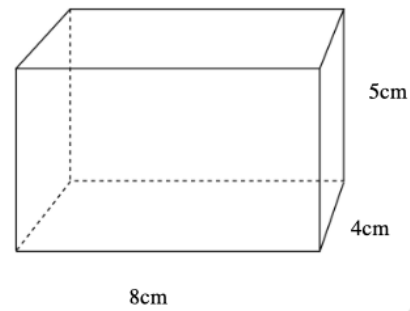| Length	Width	Height	Volume
10cm	4cm	3cm	
	6cm	2cm	$60cm^3$
8cm	2cm		$48cm^3$
10m		6m	$180m^3$
9mm	2mm		$72mm^3$

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

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

6. What is the volume of a cube which has an edge measuring 2cm?

7. One face of a cube has an area of 25cm^2. What is its volume?

8. The surface area of a cube is 96cm^2. What is the length of one side? What is its volume?

9. A cube has a volume of 216cm^3. What is the length of one side?

10. Kloggs Cereal Company is wanting to sell its new breakfast cereal—Choco Crispy Poppers. A 500g portion will take up 700cm^3. The box manufacturer makes 3 sizes of cardboard boxes:

Box	Length (cm)	Width (cm)	Height (cm)	
A	40	4	4	
B	25	5	6	
C	30	6	4	

Which box would be most suitable for a 500g portion of Choco Crispy Poppers?

11. A cuboid has 3 different sized faces. The areas of 2 of the faces are 84cm^2 and 56cm^2. The volume of the cuboid is 672cm^3. Find

a) the length, width and height of the cuboid.

b) the area of the third face.

1) $x + 3 = 11$	4) $x + 7 = 13$	7) $x + 3 = 9$	10) $x + 5 = 36$
2) $x + 2 = 8$	5) $x + 4 = 14$	8) $x + 12 = 17$	11) $x + 8 = 43$
3) $x + 5 = 7$	6) $x + 7 = 9$	9) $x + 6 = 24$	12) $x + 9 = 61$

Section B

1) $4 + x = 6$	4) $5 + x = 9$	7) $14 + x = 23$	10) $8 + x = 72$
2) $2 + x = 7$	5) $7 + x = 12$	8) $19 + x = 32$	11) $11 + x = 64$
3) $8 + x = 11$	6) $12 + x = 18$	9) $7 + x = 40$	12) $28 + x = 90$

Section C

1) $x - 4 = 7$	4) $x - 7 = 13$	7) $x - 11 = 8$	10) $x - 12 = 31$
2) $x - 6 = 4$	5) $x - 10 = 2$	8) $x - 5 = 16$	11) $x - 16 = 29$
3) $x - 1 = 6$	6) $x - 7 = 18$	9) $x - 9 = 25$	12) $x - 28 = 78$

Section D

1) $2x = 6$	4) $10x = 90$	7) $7x = 35$	10) $20x = 40$
2) $5x = 10$	5) $3x = 15$	8) $12x = 36$	11) $40x = 120$
3) $4x = 12$	6) $6x = 24$	9) $15x = 30$	12) $50x = 200$

Section E

1) $\dfrac{x}{3} = 4$	4) $\dfrac{x}{8} = 4$	7) $\dfrac{x}{2} = 9$	10) $\dfrac{x}{12} = 6$
2) $\dfrac{x}{2} = 8$	5) $\dfrac{x}{7} = 3$	8) $\dfrac{x}{9} = 5$	11) $\dfrac{x}{14} = 2$
3) $\dfrac{x}{5} = 7$	6) $\dfrac{x}{5} = 4$	9) $\dfrac{x}{7} = 8$	12) $\dfrac{x}{30} = 5$

Section F

1) $4x = 48$	7) $x - 19 = 30$	13) $7x = 56$	17) $5x = 100$
2) $x + 13 = 22$	8) $10x = 160$		18) $\dfrac{x}{3} = 300$
3) $9x = 63$	9) $13 + x = 27$	14) $18 + x = 24$	
4) $11x = 132$	10) $6x = 42$	15) $\dfrac{x}{4} = 12$	19) $x + 49 = 110$
5) $12 + x = 26$	11) $x + 17 = 42$		
6) $\dfrac{x}{8} = 12$	12) $\dfrac{x}{11} = 11$	16) $25 + x = 39$	20) $100x = 6500$

Section A

1) $7x + 9 = 23$
2) $5x + 7 = 42$
3) $4x + 3 = 51$

4) $9x + 5 = 41$
5) $4x + 2 = 34$
6) $11x + 3 = 36$

7) $10x + 2 = 72$
8) $7x + 3 = 52$
9) $6x + 5 = 17$

10) $4x + 7 = 9$
11) $8x + 11 = 15$
12) $4x + 17 = 18$

Section B

1) $1 + 6x = 19$
2) $9 + 7x = 30$
3) $3 + 2x = 17$

4) $11 + 5x = 71$
5) $5 + 3x = 32$
6) $4 + 5x = 44$

7) $23 = x + 8$
8) $28 = 3x + 1$
9) $53 = 8x + 5$

10) $13 = 11 + 4x$
11) $7 = 8x + 3$
12) $12 = 7 + 15x$

Section C

1) $4x - 1 = 31$
2) $3x - 4 = 29$
3) $6x - 5 = 31$

4) $8x - 2 = 46$
5) $2x - 7 = 21$
6) $7x - 3 = 18$

7) $9x - 4 = 32$
8) $5x - 1 = 64$
9) $12x - 9 = 39$

10) $2x - 1 = 2$
11) $4x - 8 = 10$
12) $15x - 2 = 3$

Section D

1) $x - 3 = -2$
2) $x - 5 = -1$
3) $x - 6 = -4$

4) $x + 3 = 2$
5) $x + 9 = 4$
6) $x + 10 = -5$

7) $2x - 3 = -9$
8) $2x - 10 = -2$
9) $2x - 18 = -20$

10) $2x + 5 = 1$
11) $2x + 14 = 4$
12) $2x + 11 = -5$

Section E

1) $5 - x = 2$
2) $9 - x = 5$
3) $6 - x = 3$

4) $8 - x = 14$
5) $2 - x = 15$
6) $7 - x = 21$

7) $3 - 2x = 5$
8) $5 - 2x = 15$
9) $8 - 2x = 12$

10) $2 - 3x = 14$
11) $6 - 3x = 27$
12) $16 - 5x = 61$

Section F

1) $3x - 1 = 14$
2) $x - 4 = -3$
3) $3 + 2x = 17$
4) $7x - 6 = 50$

5) $1 - x = 6$
6) $8 + 5x = 63$
7) $16 - 2x = 40$
8) $34 = 6 - 4x$

9) $34 = -6 + 5x$
10) $6 + 11x = -5$
11) $-29 = 3 + 4x$
12) $6x + 13 = 25$

13) $3 - 2x = 5$
14) $8x + 42 = -54$
15) $6x - 16 = -70$
16) $-9 - 4x = -53$

1 a. $5 = \dfrac{c+1}{1}$

1 b. $2 = \dfrac{5-s}{9}$

2 a. $7w - 2 = 3$

2 b. $2 = 7 - 8s$

3 a. $7 = 3p - 8$

3 b. $\dfrac{v+1}{6} = 7$