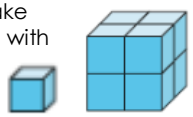
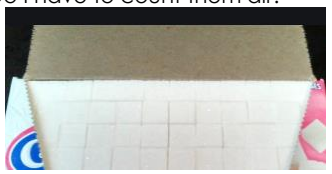
Year 5 maths – Summer 2 Week beginning: 15.6.20

Theme	Lesson 6 of 7 Area and Perimeter Measuring area	Lesson 7 of 7 Area and Perimeter Measuring area	Lesson 1 of 8 Volume Finding the volume of solids	Lesson 2 of 8 Volume Finding the volume of solids	Lesson 3 of 8 Volume Finding the capacity of a cuboid
Factual fluency (to aid fluency)	**Practise your multiplication facts activity**	**Practise your multiplication activity**	**Practise converting units of volume activity**	**Practise converting units of volume activity**	**Practise volume activity**
Problem/ activity of the day **Remember, just like in class, you can still show the depth of your knowledge** **LINK**	**(Lesson 1 resources below)** **MAKING LINKS:** Last week we found the area of different shapes (and in year 4). Today we will be measuring area. **THINK: (support below)** Can you help me with this problem? Using 6 squares of paper how many different rectangles can you make? If the length of the sides of each square were 1 meter long, what is the area of each of your rectangles? What would the area be if you cut some of your squares in half before you made the shapes? Our problem is in the textbook on page 223. Look at it now. **SEE: (model below)** Check the solution on pages 223-224 of your textbook. **DO:** Use what you have learnt today to solve: PART 1: Do questions 1 and 2 on page 224 and 225 of the textbook Check your answers below before moving on to: PART 2: Complete workbook, Chapter 12, worksheet 9, page 146 of your workbook. Don't forget to include the unit of measurement in your answers!	**(Lesson 2 resources below)** **MAKING LINKS:** Yesterday we measured area. Today we will be measuring area again. **THINK: (support below)** Can you help me with this problem? My friend says to measure the area of the figures on page 226 I should cut them up to make one rectangle and then find the area of the rectangle I have made. But I think I could find the area of the different rectangles in each shape and add them together to find the area of the whole shape? What do you think? Our problem is in the textbook on page 226. Look at it now. **SEE: (model below)** Check the solutions for both methods on pages 227-228 of your textbook. Watch the video here. **DO:** PART 1: Do questions 1 and 2 from page 229 of the textbook. Check your answers below before moving on to: PART 2: Complete workbook, Chapter 12, worksheet 10, page 147 and 148 of the workbook. Don't forget to include the unit of measurement in your answers!	**(Lesson 3 resources below)** **MAKING LINKS:** In year 2, 3 and 4 we looked at volume. Today we will be finding the volume of solids. **THINK: (support below)** Can you help me with this problem? My friend says that the volume of a shape will always be the same if you use the same number of cubes to make it. Is she correct?  Our problem is in the textbook on page 236. Look at it now. **SEE: (model below)** Look at the different solutions on pages 236-237 of your textbook. Watch the video here. **DO:** PART 1: Do the questions on page 238 and 241-242 of the textbook. Check your answers below before moving on to: PART 2: Complete workbook, Chapter 13, Worksheets 1 and 2, on pages 155 to 157. Don't forget to include the unit of measurement in your answers!	**(Lesson 4 resources below)** **MAKING LINKS:** Yesterday we found the volume of solids. Today we will continue with that. **THINK: (support below)** Can you help me with this problem? How much space does the large cube figure take up compared with the single cube?  My friend says it occupies 8 times the space of the single cube. Do you agree? How much space does the cuboid take up compared with the single cube?  Our problem is in the textbook on page 243. Look at it now. Watch the video here. **SEE: (model below)** Look at the figures made on pages 243-244 of your textbook. **DO:** PART 1: Do **question 1** on page 245 of the textbook. Check your answers below before moving on to: PART 2: Complete workbook, Chapter 13, Worksheets 3 on pages 158-159	**(Lesson 5 resources below)** **MAKING LINKS:** Yesterday we found the volume of solids. Today we will find the capacity of cuboids. **THINK: (support below)** Can you help me with this problem? How many sugar cubes can I fit into the container if I know 40 cubes would fill the bottom of the box and I can fit 5 layers high? Do I have to count them all?  Our problem is in the textbook on page 246. Look at it now. **SEE: (model below)** Check the solution on page 246-247of your textbook. **DO:** PART 1: Do questions 1 and 2 on page 247-248 of the textbook. Check your answers below before moving on to: PART 2: Complete workbook, Chapter 13, Worksheets 4 on pages 160 and 161.
Methods, tips, clues & checks	**Day 1 resources and answers (below)**	**Day 2 resources and answers (below)**	**Day 3 resources and answers (below)**	**Day 4 resources and answers (below)**	**Day 5 resources and answers (below)**

See below for resources to support you to THINK-SEE-DO

DAY 1 RESOURCES:

THINK: Our problem is on textbook page 223.
Using 6 squares of paper how many different rectangles can you make?

If the length of the sides of each square were 1 metre long, what would be the area of each of your shapes?

What would the area be if you cut some of your squares in half before you made the shapes, such as this? What calculation would you do to find the area?

DO: Use what you have learnt today to solve:

PART 1: Do questions 1 and 2 on page 224 and 225 of the textbook

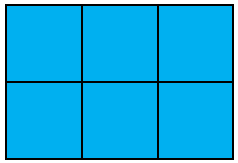
Check your answers below before moving on to:
PART 2: Complete worksheet 9, page 146 of your workbook.
Don't forget to include the unit of measurement in your answers!

DEEPENING:
Complete the area problem on:
https://nrich.maths.org/7280

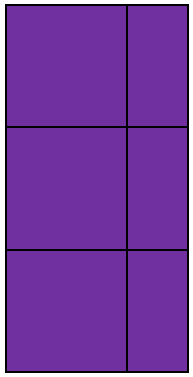
SEE: Look at the different ways to solve the problem on pages 223-224 of your textbook.

To measure the area of rectangles (including squares) we should multiply the sides.

Area = 2 x 3m = 6m²
2 rows of 3



Area = 3 x 1.5m = 4.5m²
3 rows of 1.5



Remember: the area of a rectangle is the product of the length of its sides (area = length x height).

DAY 2 RESOURCES:

THINK: Our problem is in the textbook on page 226.

My friend says to measure the area of the figures on page 226 I should cut them up and move the pieces around to make one rectangle and then find the area of the rectangle I have made.

I think I could find the area of the different rectangles in each shape and then add them together to find the area of the whole shape?

What do you think?

DO: Use what you have learnt today to solve:

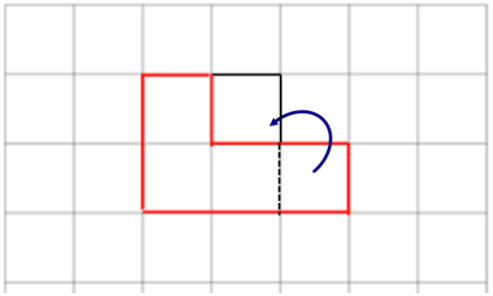
PART 1: Do questions 1 and 2 from page 229 of the textbook.

Check your answers below before moving on to:
PART 2: Complete worksheet 10, questions of page 147 and 148 of the workbook.

Don't forget to include the unit of measurement in your answers!

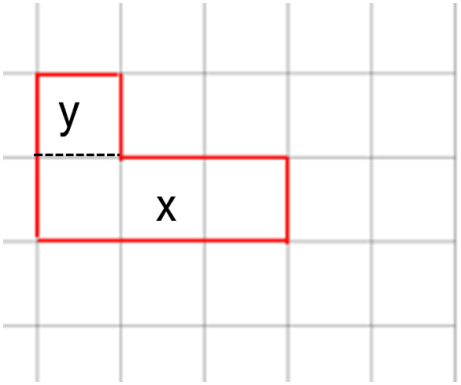
DEEPENING:
Estimating area: Turn to page 232 of your textbook. My friend estimates the area of the circle is 38cm². Explain how he reached this answer.

SEE: Check the solution on pages 227-228 of your textbook. Watch the video here.



Method 1:
A shape might have the correct sized piece that can be moved to make a rectangle or square.

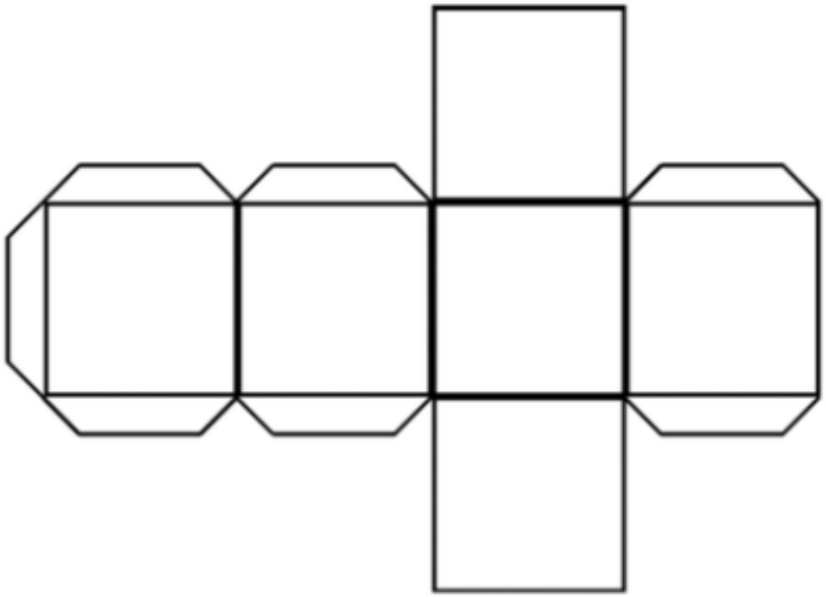
2 x 2 = 4m²

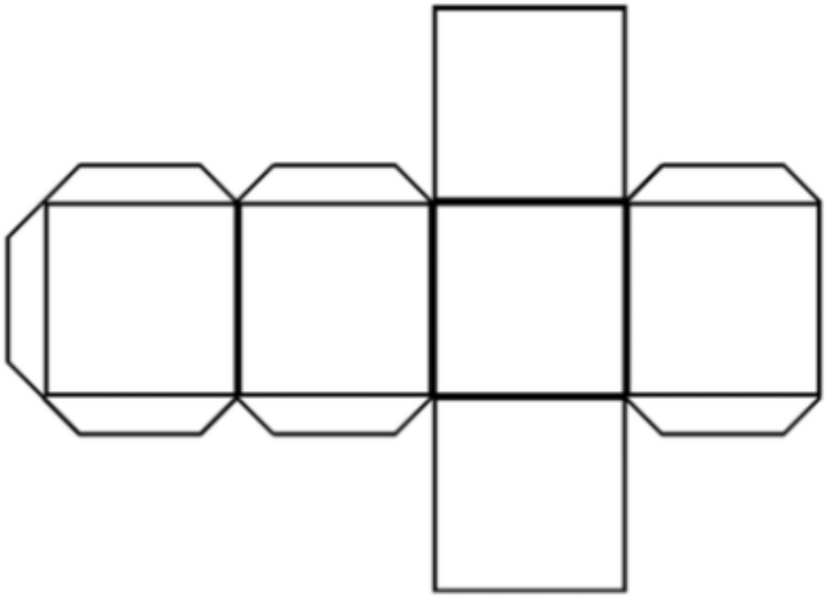


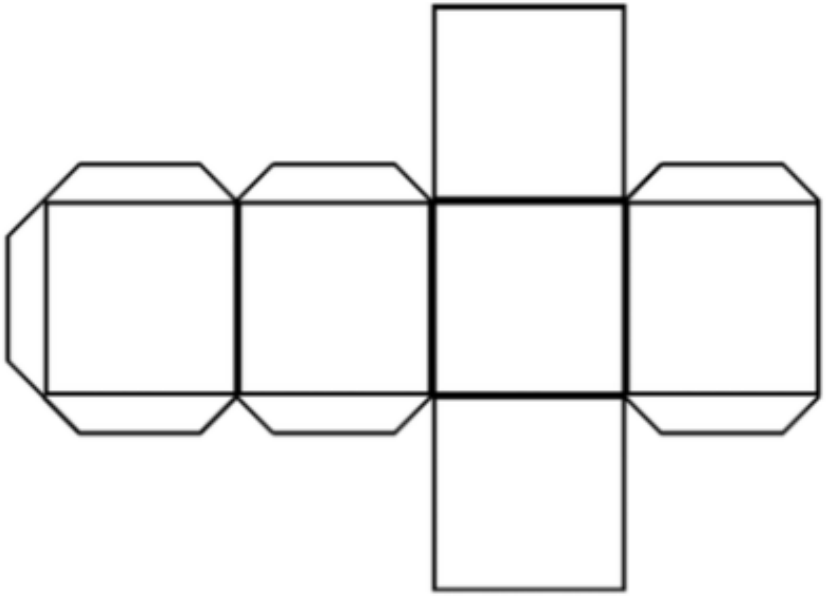
Method 2:
A shape might be made up of rectangles or squares that you could find the area of and add them up.

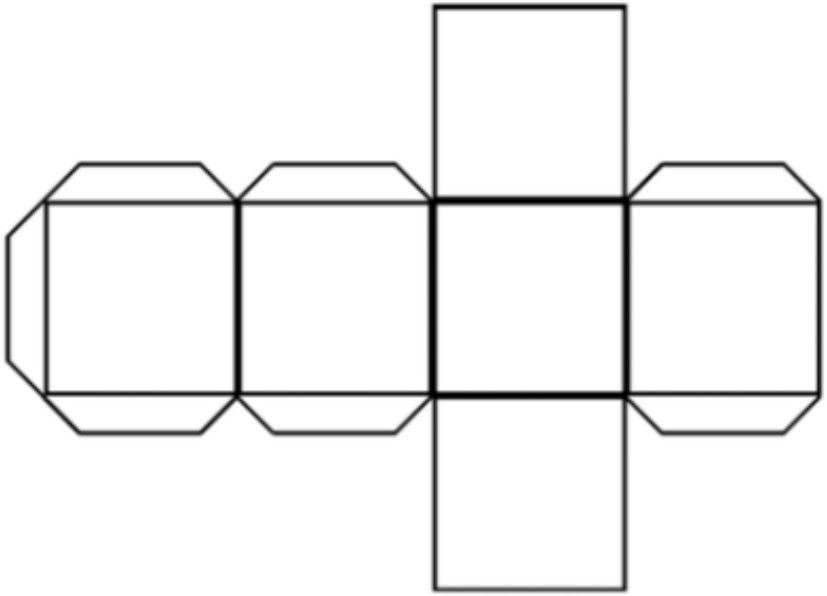
Area of the shape = area of x + area of y
x = 3 x 1 = 3m²
y = 1 x 1 = 1m²
3 + 1 = 4m²

The use of cubes is referenced in a number of volume lessons. Stock cubes, sugar cubes, liquorice allsorts or toy bricks could be used or use the nets below to make your own cubes. The use of 'real' cubes is useful but not essential as the textbook material uses clear images.









DAY 3 RESOURCES:

THINK: Our problem is in the textbook on page 236.

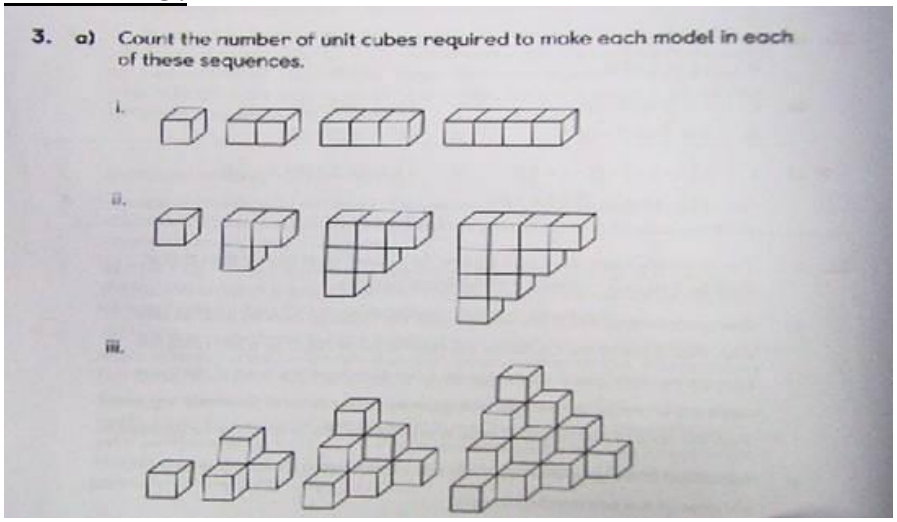
My friend says that the volume of a shape will always be the same if you use the same number of cubes to make it. Is she correct?

DO: Use what you have learnt today to solve:

PART 1: Do the questions on page 238 and 241-242 of the textbook.

Check your answers below before moving on to:
PART 2: Complete workbook, Chapter 13, Worksheets 1 and 2, on pages 155 to 157.

DEEPENING:


3. a) Count the number of unit cubes required to make each model in each of these sequences.

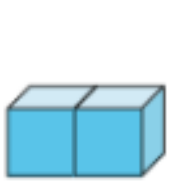
i.

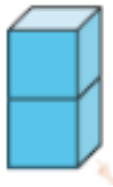
ii.

iii.

SEE: Check the solution on pages 236-237 of your textbook.
Watch the video here.

I made two shapes with two cubes.
They look similar.
Do they both take up the same amount of space?





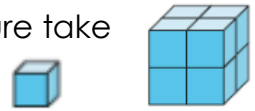
I made two shapes with three cubes.
They look different.
Do they both take up the same amount of space?

Both these shapes take up three times as much space as one single cube.

DAY 4 RESOURCES:

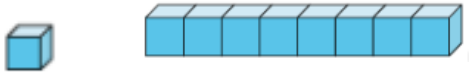
THINK: Our problem is in the textbook on page 243.

How much space does the large cube figure take up compared with the single cube (a unit cube)?



My friend says it occupies 8 times the space of the single cube. Do you agree?

How much space does the cuboid take up compared with the single cube
(a unit cube)?



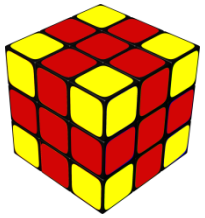
DO: Use what you have learnt today to solve:

PART 1: Do **question 1** on page 245 of the textbook.

Check your answers below before moving on to:
PART 2: Complete workbook, Chapter 13, Worksheet 3 on pages 158-159

DEEPENING:

This cube is made up from 3×3×3 little cubes whose faces are either all red or all yellow.

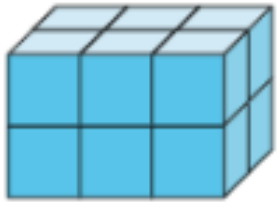


The views from all sides of the cube look like this, and the little cube in the centre is red.
How many little red cubes are used in total?
How many little yellow cubes are used?

SEE: Look at the figures made on pages 243-244 of your textbook.
Watch the video here.

A cube is a special type of cuboid.

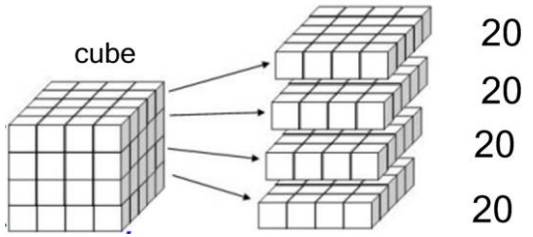
This cuboid is made of two layers.



Each layer is made of 6 unit cubes.
To find the volume of the whole shape we need to find how much space is taken up by all the unit cubes.

6 unit cubes + 6 unit cubes = 12 unit cubes

6 cm^3 + 6 cm^3 = 12 cm^3



Each layer is made of 20 cubes so we can calculate the volume of the cube by:
20 + 20 + 20 + 20 = 80 cubes

DAY 5 RESOURCES:

THINK: Our problem is in the textbook on page 246.
How many sugar cubes can I fit into the container if I know 40 cubes would fill the bottom of the box and I can fit 5 layers high?

Do I have to count them all?

DO: Use what you have learnt today to solve:

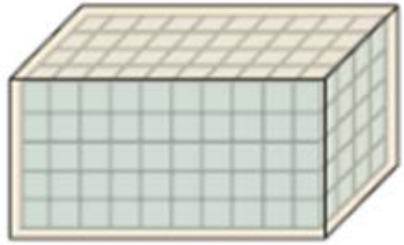
PART 1: Do questions 1 and 2 on page 247-248 of the textbook.
Read question 2 carefully. The cube size is different to question 1.

Check your answers below before moving on to:
PART 2: Complete workbook, Chapter 13, Worksheet 4 on pages 160 and 161.

DEEPENING:
Complete the activity on page 177 of your workbook.

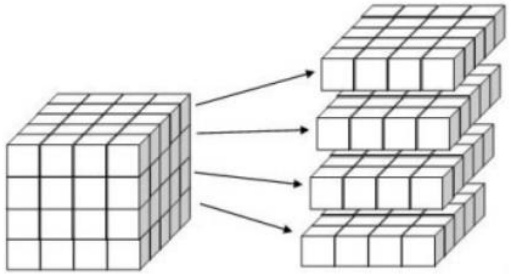
SEE: Check the solution on page 246-247of your textbook.

Each layer has 40 cubes.
10 cubes in the length and 4 cubes in the width



There are 5 layers of cubes.

We have 5 layers of 40 cubes.
To find the volume of the box we can calculate 5 x 40 = 200 cm^3



Each layer has 20 cubes.
20 + 20 + 20 + 20 = 80
There are 4 layers.
4 x 20 = 80 cm^3

ANSWERS – part 1:

Day 1	Day 2	Day 3	Day 4	Day 5
Part 1: Q.1: a) 25m², 9m² Q.2: a) 15m², b) 7.5m²	Part 1: Q.1: a) 5m², b) 8.25m², Q.2: blue = 1m², purple = 2.75m² peach = 1.25m²	Part 1: Page 238. Q.1: a) A, C and D have a volume of 4 cubes. B and E have a volume of 5 cubes. b) Answers may vary. A and B have different volumes. A has a volume of 4 cubes and B has a volume of 5 cubes. B has a greater volume than A. Q.2: 8 times as much space as a single cube. Page 241. Q.1: 5 cm³and 5 times Q.2: a) 6 cm³, b) 6 cm³, c) 10 cm³	Part 1: Q.1: a) 27 cm³, b) 24 cm³, c) 90 cm³	Part 1: Q.1: a) 150cm³, b) 720 cm³ Q.2: a) 480 cubes b) 6 x 4 x 2 =48 cubes c) 4 x 2 = 8 cubes

ANSWERS – part 2 and deepening:

Day 1	Day 2	Day 3	Day 4	Day 5
Part 2: Workbook, Q.1: a) 16m² , b) 12m², c) 28m² **DEEPENING:** Solution on: https://nrich.maths.org/7280/solution	Part 2: Workbook, Q.1: a) 23m², b) 18m², c) 26m² Q.2: a) 16m², b) 16m², c) 26m², d) 38m² **DEEPENING:** 38cm² x 1cm² = 38cm² Explanations should suggest the strategy for moving 'pieces' from around the outer area of the circle to form complete squares and including those in calculating the area.	Part 2: Workbook, worksheet 1 Q.1: a) E, b) B, c) A and C, d) D Workbook, worksheet 2. Q.1: a) 4 times and 4 cm³ b) 6 times and 6 cm³ c) 6 times and 6 cm³ Q.2: a) 5 cm³, b) 8 cm³, c) 6 cm³, d) 11 cm³ **DEEPENING:** Q.1a: i) 1, 2, 3, 4. ii) 1, 3, 6, 10 iii) 1, 4, 10, 20	Part 2: Workbook, Q.1: a) 9 +9 + 9 = 27 cm³ b) 25 + 25 + 25 + 25 + 25 = 125 cm³ Q.2: a) 16 + 16 = 32 cm³ b) 6 + 6 + 6 + 6 = 24 cm³ c) 15 + 15 + 15 + 15 = 60 cm³ **DEEPENING:** If all the sides look the same and the centre cube is red, then the corner cubes are the only yellow ones. Since a cube has 8 corners, there are 8 yellow little cubes. Also, the drawn square has $3^3=27$ little squares and they can only be yellow or red, so there are $27-8=19$ red little squares.	Part 2: Workbook, Q.1: a) 32 cm³, b) 240 cm³ c)600 cm³ Q.2: a) 27 cubes, b) 72 cubes, c) 180 cubes, d) 396 cubes **Deepening:** 2 x 6 x 5 = 60 units³