At-Home Investigation

Brainstorm: what different prisms could you build with 60 cubes?

Use the space below to sketch any unique prisms (including single layer prisms) that you could build using 60 MAB cubes. How many can you find altogether? Isometric dot paper is included for you if that makes it easier.

Beware: if one of your prisms can be rotated to make another one, that only counts as a single prism. Think about whether you already have each prism before you draw them.

Apply your learning:

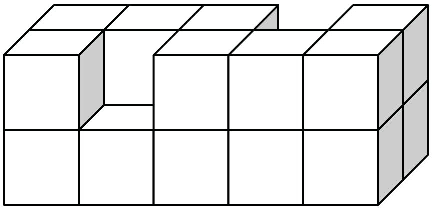
Look at the factors on the sides of each of your prisms. Multiply the length, width and height for each prism. What do you find? Explain any patterns.

E8. Measuring volume in cubic centimetres

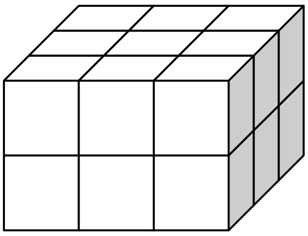
TR p108

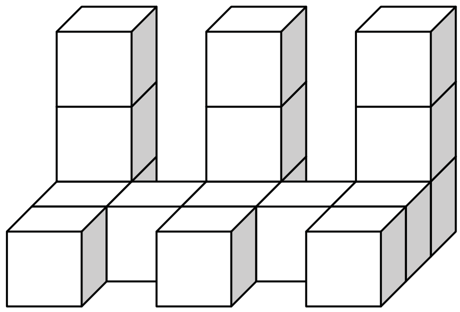
Using the shape diagrams below:

1. Estimate the number of cubes in each shape. Write the estimate beside the shape.
2. Make each shape from MAB or multilinks cubes. Count the number of cubes in each shape and write the number beside the shape.

A  Estimate = Actual number =

B Estimate = Actual number =





C Estimate = Actual number =

1. Which shapes above have the largest volume?
2. Which shape above has the smallest volume?
3. Which shapes above have the same volume? Write the letters of the shape and the volume in cubic centimetres.
4. If I made a cube with dimensions of 2cm x 2cm x 2cm what would the volume be in cubic centimetres? Draw it in the space below.

How did you work out the volume?

Backwards Question:

If you doubled the size of your cube sides, would the volume double? Explain:

Multiplication and division practice grids:

x	2	6	4	3	9	7	8	5	10
2									
3									
4									
5									
6									
7									
8									
9									
10									

x	4	8	7	2	3	9	10	6	5
9									
3									
6									
5									
2									
7									
4									
8									
10									

÷									
		16					6		
			21		15				
						8		40	
	20			30					
			42						54
					35		21		
		64		48					
	36								81
						20		100	

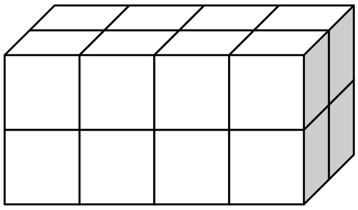
÷									
		27							30
			6				4		
	40							25	
				24		36			
	56			28					
					63			45	
						60			100
		36					8		
			48		56				

E9. Volume of a rectangular prism

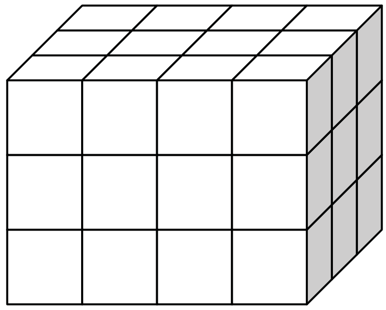
TR p109

Build the following shapes out of cubic centimetre blocks (eg MAB units) and count the blocks to calculate the volume. Use the table below to help you find a pattern between the number of blocks in each layer, the number of layers and the volume.

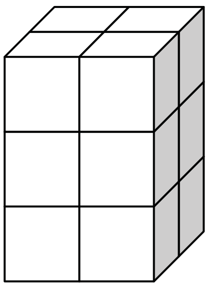
A



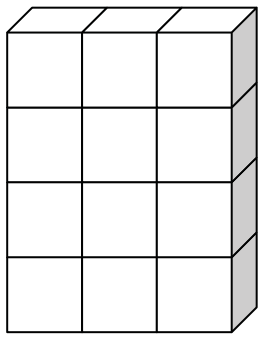
B



C



D



Rectangular prism	No. blocks in the bottom layer	No. layers in the shape	Volume (cu cm)	Is there a pattern?
A				
B				
C				
D				

What is the rule for finding the volume of a rectangular prism?

Backwards Question:

If the volume of a rectangular prism was $100cm^3$, what could its sides be?

Interleaved practise

Year 7, week 6

Number:

1. Write the number that these represent:

   2×10^2 ☐ 14×10^3 ☐ 7×10^4 ☐

2. Jordan owes the bank $475. Each week he is able to save $80 to pay off his debt. How long will it take until he has a positive bank balance? Show how you worked it out.

3. Draw an array for 8 x 8. Show how you would write this using index notation.

4. The new phone I want to buy is currently on sale. Which of the following options would give me the best sale price? How much would I save?

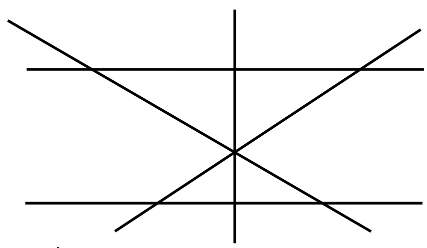
   A. Usual price: $749
   Sale price: 25% off

   B. Usual price: $929
   Sale price: ½ price

   C. Usual price: $760
   Sale price: 40% off

5. $^2/_5 + ^1/_4 =$ ☐

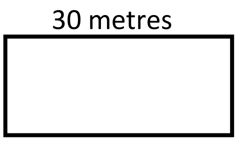
Measurement/Geometry:



6. Label the angles in the diagram with the following letters:
   A: acute angles
   O: obtuse angles
   R: right angles

7. Mark one set of three angles in the diagram that add to 180^0 with an *
   Colour two angles that add together to create a reflex angle.

8. This rectangle has a perimeter of 86 metres and a length of 30 metres. What is its area?

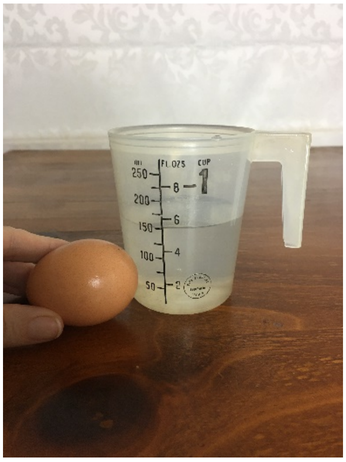


Chance/Data:

9. The following t-shirt sizes were ordered for the school uniform shop:
   8 , 8 , 8 , 10 , 10 , 10 , 10 , 10 , 10 , 10 , 10 , 10 , 10 , 10 , 10 , 10 , 12 , 12 , 12 , 12 , 12 , 12 , 12 , 12 , 12 , 12 , 14 , 14 , 14 , 14
   What is the average shirt size required? Calculate the mean, median and mode.

Connecting Volume and Capacity

This week we have been working on calculating the volume of rectangular prisms. This is fairly easy, as you have already worked out. Some objects are much more difficult to calculate by length, width or height, so we need to think about connections between volume (solids) and capacity (liquids) to determine how to measure them. The image below shows an egg. How could we use the cup with water in to determine the volume of the egg? Come up with a plan, carry out your plan, and explain what you found.



My Plan:

What happened:

Carry out your plan. Draw and describe what happened.

My Findings:

What did you find, and how can you use that to determine the volume of the item in cubic centimetres?