Work Program for B2FMaths@Home Week 6 Year 5

Contents – click on the link below

How to use this work program

Accessing the online resources

To access the online resources, please go to: https://www.backtofrontmaths.com.au/b2fmathshome

Running the program each week

Each week is designed with five maths lessons so that you can do it each day. Different days have different types of lessons to make sure that students experience the kind of thinking that they need to continue growing in maths. The types of lessons include:

- **At-home investigation:** This is a hands-on task where students explore a new idea before they are taught that skill. They need to come up with an idea to try to solve the problem, try out their idea, decide if it worked or not, try again if needed, and explain what they did. If your child has time with your teacher with a webcam, the teacher will generally be doing this lesson with your child. This is the lesson that will require the heaviest input from you to help your child think through an idea and generally requires the use of some hands-on materials that are listed in the information page.
- **Connecting lesson:** This type of lesson has questions that lead students to develop their ideas and learn a new skill. It should be fairly easy for a student to do, but you will need to be available to read the question to your child as needed, encourage them to think further, and make sure that they complete the work. Most of these lessons will include 10 minutes of practising number operations or concepts through activities or games.
- **Interleaved practise lesson:** This type of lesson provides 8-10 questions from different areas of maths so that students practise remembering what they have previously been taught. Some of the questions may not be easy for your child, so feel free to help whenever you see them struggling.
- **Number practice:** This lesson contains games and number tasks to do regularly with your child. Number is the most important concept to establish in Foundation, so we will be using similar activities each week to help your child develop a very firm understanding of "how many", to be able to picture that amount in their head, and to be able to add and subtract small amounts very flexibly. **These sessions will not focus heavily on counting, as counting is far less important than making amounts, drawing those amounts and recognising that the amount is still the same when the objects move.**

Getting help

The website above will have answers to frequently asked questions as well as videos to help you successfully teach your child at home. If you have further questions or need support, please contact your child's teacher directly using the contact details that they have provided to you. If they can't answer your questions, they will contact the B2FMaths@Home team directly to get an answer within 3 days.

What you need to know this week

Week overview

This week we are teaching the concept of capacity. Capacity is used to measure how much a container holds (for example, how much water there is in a jug). We use millilitres and litres to measure capacity, including making use of measuring instruments that you would commonly have in your home.

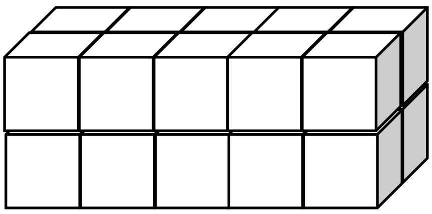
For your information: we often use the words capacity and volume interchangeably. Technically, volume is referring to the amount of 3D space an object takes up (it is used for solids). Capacity refers to how much a container will hold and is generally used for measuring liquids and gases. At this stage it really doesn't matter which term you use, so don't be concerned about getting it wrong.

Students need to work out:

- 1 millilitre is the same size as 1 cubic centimetre. 1000mL = 1L. To help children retain this idea, it may help to point out that 1MAB cube is the same as 1 cubic centimetre. So a 1000 block is 1L.
- The measuring instruments should be used accurately so that the measurement is fair for comparison (e.g. if you used partial cups then you can't count them in the same way as full cups)
- In the same way, you should completely fill the container that you are measuring.
- When measuring small amounts, we use smaller measuring instruments to get a more accurate measurement (e.g. using syringes or small measuring cylinders for medication).

Please note:

- 1 cup = 250mL. That means 4 of them are the same as 1L. Half a cup is 125mL.
- 1 teaspoon = 5mL.
- 1 tablespoon (Australian) = 20mL. That means you will need 50 of them to fill 1L. American tablespoons are often 15mL.
- $1cm^3$ or 1 cubic centimetre is the same amount of space as 1mL. Children use MAB blocks in most schools which are $1cm^3$, so most are able to visualise this relatively easily.
- As 1 tbs = 20mL, this means that 20 MAB blocks, or 2 tens blocks, takes up the same amount of space. It is easier to visualise as this shape:



You will need the following objects:

- Any large and small containers that you can fill with water (bucket, ice-cream container, sauce pan, mixing bowl, mug, glass, cereal bowl…)
- Any measuring instruments that you have to measure volume/capacity. This could include a measuring cup or jug, teaspoon (5mL), tablespoon (20mL), litre jug or marking on a casserole dish, medicine cylinder or medicine syringe.

Monday: At-Home Investigation

Today could be quite messy. You might want to do the investigation in the bathroom or laundry and record what happens. A sandpit would work very well too.

You will need:

- Any 3 large containers that you can fill with water or sand (bucket, ice-cream or yoghurt container, sauce pan, mixing bowl, plastic jug, drink bottle…)
- Any measuring instruments that you have access to that measure in millilitres or cups.

Please note:

- 1 cup = 250mL. That means 4 of them are the same as 1L. Half a cup is 125mL.
- 1L is 1000mL.
- 1 teaspoon = 5mL.
- 1 tablespoon (Australian) = 20mL. That means you will need 50 of them to fill 1L. American tablespoons are often 15mL.

Steps:

1. Make sure you have read "What you need to know this week" so that you know what to emphasise with your child.
2. Read the sheet to your child. Ask for their ideas on how to solve the problem. Don't give your opinion just yet on their ideas, even if they are clearly wrong. Make sure that you do point out that they are not allowed to simply pour from one large container into another or judge by sight. That is the challenging part of the question – they need to work out to use smaller measuring objects to fill up a larger one and keep count.
3. Make sure that you try out their ideas first before you try to help them come up with a better plan. This is important because then they will know *why* their idea didn't work.
4. Help your child think about what worked and what didn't, then come up with a new plan if needed.
5. Encourage your child to draw or write answers to the questions on the page. Scribe for them if you need to.
6. Discuss what your child found out with them. Keep in mind the ideas from the "What you need to know this week" section so that you can ask questions that are appropriate to the issues identified.
7. At the end: consider writing a comment on the page to say what went well or what you are concerned about.
8. We will be checking capacity again later this year, so don't worry too much if today didn't quite work.

At-Home Investigation

Find 3 large containers. *How could you find the capacity of each container?*

Make your plan:

What instruments could I use to measure with?

Find any that you have at home and draw the one you are choosing to use for measurement.

Explain why you chose that one.

How will I make sure that I am measuring accurately?

Carry out your plan:

Measure your three containers. **How much does each one hold?** Write the measurements in both millilitres and in litres. Show your calculations.

Apply your learning:

Compare the containers. Put them in order by how much they hold. Explain how you did it.

Tuesday: Connecting lesson

Measurement worksheet:

The worksheet provided should be fairly self-explanatory. Feel free to substitute any of the implements on the sheet for objects that you have at home. A glass, a bucket and an eye dropper or medication measuring cylinder should be viable.

As noted previously:

- 1 cup = 250mL. That means 4 of them are the same as 1L. Half a cup is 125mL. 1000mL = 1L.
- 1 teaspoon = 5mL.
- 1 tablespoon (Australian) = 20mL. That means you will need 50 of them to fill 1L. American tablespoons are often 15mL.

Please also complete one of the multiplication and division grids provided.

E6. Measure and estimate volumes

TR p101

Sometimes we need to guess the volume of a container so that we know if our measurement is about right. Answer these questions using L and mL.

For measuring the volume of a glass of milk:
1. What instruments could you use to measure it?
2. Would you measure it in litres or millilitres or both? Why?
3. Have a guess: what do you think the volume will be? Why?
4. Choose an instrument and measure it. What did you get?
5. How good was your guess?

For measuring the volume of water needed to fill up a bucket:

1. What instruments could you use to measure it?
2. Would you measure it in millilitres or litres or both? Why?
3. Have a guess: what do you think the volume will be? Why?
4. Choose an instrument and measure it. What did you get?
5. How good was your guess?

For measuring the volume medicine in a dropper:
1. How could you use instruments to measure it?
2. What units would you use to measure it? Why?
3. Have a guess: what do you think the volume will be? Why?
4. Choose an instrument and measure it. What did you get?
5. How good was your guess?

How did you decide whether to use litres or millilitres or both?

How did you measure things that would not fit into cup measures?

BACKWARDS QUESTION:

Your soccer team had a drinks cooler for the team to use. How could you work out if the cooler holds enough water for everyone to have 2 cups full?

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									
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÷									
		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				

Wednesday: Application and Connection lesson

This lesson will help your child to connect the learning that they have done over the past 3 weeks on arrays with volume. In this lesson, children work out how many blocks would be in each of the prisms pictured. If you have blocks, it would be great to use them. Hopefully though children will be able to visualise the layers that are not shown without the use of blocks. To help your child, ask them to think about the top layer (visible), then imagine the layer that sits just beneath it. The blocks will be in the exact same arrangement. Repeat with each layer, then ask how they would work out the total number of blocks. If this proves too difficult, just skip the lesson.

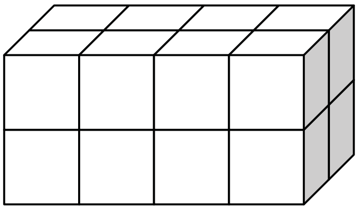
Please complete one of the multiplication/division grids from Tuesday.

E9. Volume of a rectangular prism

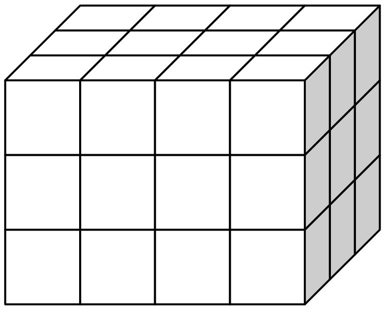
TR p109

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.

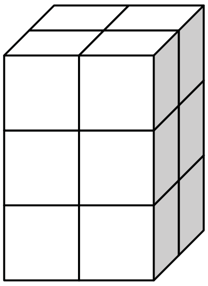
A



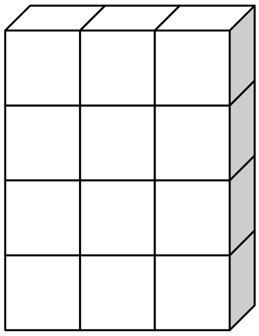
B



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?

Thursday: Interleaved Practice Questions

Why we are using mixed up questions:
In this lesson your child will be reviewing a range of skills that they have learned previously. Each question is unrelated to the previous question, because we want your child to have to *think hard* about what to do. Mixing up questions like this, rather than just practising related questions, has been shown in research to improve student retention of concepts by 60% over a 4 month period.

What to expect:
Your child will probably have forgotten how to complete quite a few of the questions. If needed, change the numbers in each question to make them easier because this will still require your child to think hard and remember a process. If they still can't work it out, feel free to show them, but try using different numbers rather than the exact same question. There are answers to each question on the website in case you get stuck.

Interleaved practise

Year 5, week 6

Number:

1. Write the pattern that matches this description: start with **Seven million, two hundred and 6 thousand, four hundred and thirty-two**. Take away twenty thousand for each new number until you have eight numbers in the pattern.

2. I have 2½ thousand cans of soft drink to sell at a festival. I sold 639 on the first day, 806 on the second day and 742 on the third day. Use rounding to work out approximately how many cans I have left.

3. Circle the numbers that are factors of 72

   2 3 4 5 6 7 8 9 10 11 12

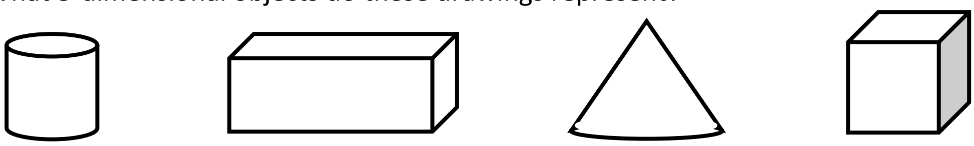
4. Write either the **>** or **<** sign in the boxes to show which fraction is bigger.

   $\frac{4}{8}$ ☐ $\frac{3}{8}$ $\frac{1}{7}$ ☐ $\frac{1}{5}$ $\frac{1}{2}$ ☐ $\frac{3}{4}$ $\frac{2}{3}$ ☐ $\frac{1}{2}$

5. How many pizzas will I need to buy if my three friends and I each eat $\frac{2}{3}$ of a pizza? Will I have any left over?

Measurement/Geometry:

6. What 3-dimensional objects do these drawings represent?

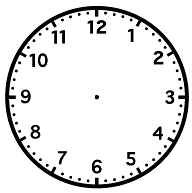


7. What is the area of this rectangle? Show how you worked it out.

45 metres

9 metres

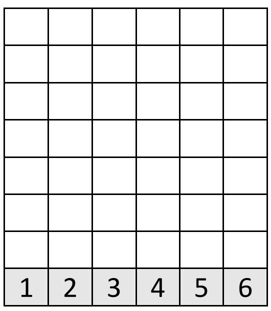
8. Show what time it will be on this clock at 15:35.



Chance/Data:

9. I rolled a 6-sided dice 40 times and these are the numbers that I rolled:
   1 , 3 , 2 , 5 , 6 , 3 , 5 , 3 , 4 , 1 , 2 , 1 , 2 , 3 , 6 , 4 , 1 , 6 , 3 , 5 ,
   5 , 1 , 2 , 4 , 4 , 4 , 3 , 3 , 4 , 2 , 6 , 3 , 4 , 3 , 2 , 3 , 3 , 3 , 1 , 2

   Use the blank graph to show the results of my experiment. Each square represents 2 rolls of the dice.



Friday: Extending Lesson

In this lesson your child will extend what they know about capacity to understanding the metric units that we use for measurement. We want students to realise that the base unit for capacity is called "litre", and that other units for capacity are based on this. Milli means "one thousandth", so 1000mL = 1L. Kilo means "one thousand", so a kL is the same as 1000L.

Please note: the video on converting units of measurement from week 1 Length will also help your child to convert units of measurement for capacity.

For the last question, give your child a container to measure the capacity of (e.g. a drink bottle, an empty bottle of pasta sauce). If you would prefer something a little more difficult, give your child a solid object to measure. They can do this by pushing it under water in a measuring cup, then measuring how much the capacity measurement increases by. The increase in capacity when the object is submerged is the same as the volume of the object.

E8. What is a standard unit for volume?

TR p100

We use standard units for measuring capacity/volume. This activity teaches you what they are and how to change between them.

Standard units:

1. What units have you used for measuring volume or do you know of for measuring capacity? Write them down from the smallest unit to the biggest unit.

2. Look at the words that you have listed. Can you find a 'base word' that is in all of them. What is it?

3. This is the standard unit for measuring volume. All the other units are fractions of this unit or multiples of this unit.

Parts of a standard unit:

1. 1000 of these make up one litre. What are they called?

2. One of these is made up of 1000 litres. What is it called?

3. Look at the words that you have listed. Can you find a 'base word' that is in all of them. What is it?

4. This is the standard unit for measuring capacity. All the other units are fractions of this unit or multiples of this unit.

What is the pattern between your measurements? How did you know what each unit was called?

Backwards Question:

Your teacher will now place an object out the front for you to measure. You need to record the capacity of the container in millilitres and litres. Do you need to measure it twice? Explain how you could work it out: