Work Program for B2FMaths@Home Week 4 Year 1

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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 sharing fairly. This concept is strongly linked with the work on arrays and counting patterns that we did last week. In early primary, this means sharing amounts between people, making groups, or arranging objects into arrays. This week we will be playing with the idea of sharing items at a picnic.

Students need to work out:

- When sharing, it is important to ensure that each portion, group or row contains the same number of objects.
- You can find out the total number of objects by counting all of the objects in the portions, groups or rows.
- When given a small amount, work out how many people could share that amount fairly and how much each person would receive. NB. It is particularly helpful if students can work out how to share the amount in more than one way (e.g. 6 could be shared by 2 people or 3 people)

We are also hoping that students will learn the following aspects of number:

- Quantity: The idea of "how many" each number represents. This is very different to counting. We will be focusing on three different elements of quantity:
    - Collecting or making a quantity: Try asking your child to collect a certain number of objects (6 spoons, 8 pencils, 12 cards…). Do this as often as you can, in as many circumstances as you can (e.g. setting out the cups for dinner).
    - Drawing a quantity in a structured arrangement: try asking your child to draw a square made out of 4 smaller squares, or a rectangle with 6 squares in it. You might want to use cube-shaped blocks to model this first.
    - Conserving a quantity: try putting out 8 objects, then moving them around. Ask your child how many there are. Do they need to keep counting to work out that the amount stays the same?
- Partitioning: This is when we break a quantity into two or more smaller quantities. For example, we could break a group of 8 objects into a group with 3 and another group with 5. If we put those groups back together again, we would have 8.

You will need the following objects:

- Teddy bears etc to act as guests at a party. Each guest should have a plate to put food on, a spoon and a cup. Rather than setting these up, we will ask your child to get out the appropriate amounts and set it up to practise making quantities.
- Small food items or pretend food items to share out. Examples would include: sultanas, biscuits or crackers, pieces of apple, grapes. You could also draw some biscuits etc instead to act as pretend food.

Teacher Overview

Students will be thinking about sharing and its relationship to arrays to develop multiplicative thinking. This will be done using play-based contexts for young children so that parents have the opportunity to develop good habits when doing maths at home.

Students need experience in sharing objects in different ways. This includes both the partition model (how many in each group) and the quotition model (how many groups). For example, when given an amount a student could be asked how many people/teddy bears we could share that between (quotition), or how many items each person would receive (partition).

- Students need to develop an appropriate vocabulary to describe what they see. Use words such as: rows, lines, columns, 3 twos or 3 groups of two, lined up, arranged, shared and "fair share".
- Construction and deconstruction of models provides experiences that help young students to build perceptive understanding of multiplicative relationships.
- Drawing the models helps students develop a stronger understanding. Once they have shared out amounts, they should draw what they have made to reinforce the idea.
- Skip counting collections is faster than counting individually. Using an array allows us to see the relationship between addition and multiplication.
- Be aware that many children think only even numbers can make arrays. We will be including odd numbers that are easy to share out as well (e.g. 9 shared between 3).

What to emphasise

If you have time online with a webcam
Have the "picnic" as a small group. Ask the children to put out a plate for each person in your group chat including themselves. Share the objects out that way. They can hold the plate up for you to take your items to "eat". You can reinforce this by sharing out other objects too (cups, plates, spoons, different food, napkins…)

Check that the parents understand how the number games for the week work and make sure that you ask the student if they have played them yet.

If you have only email or phone contact
Check that parents have read the "What you need to know this week" section. Check that they understand the importance of using the number tasks and interleaving sheet so that students retain what they have learned and think regularly about number.

Tracking student achievement

While multiplicative thinking is not stressed in the achievement standard, we are focusing on:

- N1C: Describe number sequences resulting from skip counting by 2s, 5s and 10s

You will be helping students to make connections by developing structural thinking and mental objects (visual images that they can manipulate in their minds) of **quantities** up to 20 and **counting** them.

Monday: At-Home Investigation

You will need:

- 5 toys to come on a picnic
- More than 6 plates, spoons and cups so that your child has to collect the correct amount to set out the picnic
- 20 small items of food or pretend food (e.g. a drawing of a biscuit)

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. Ask your child to set up a picnic with 4 toys. Tell them that each toy needs a cup, a spoon and a plate. Ask them to collect the right number of plates etc. and set them out for the toys.
3. Read the sheet to your child. Ask for their ideas on how to solve the first problem. Encourage them to guess how many pieces of food each toy will receive first, then try out their ideas.
4. Make sure that your child draws the plates with the food items. Do not do the drawing for them as drawing is an important part of reinforcing ideas.
5. Repeat these steps with the 20 items of food.
6. The last question on the sheet is particularly difficult. We want children to redistribute the items rather than collecting more food. They will probably start by trying to collect more food. Let them try that incorrect idea first, then ask, "do you still have 20 pieces of food?" They may need to count to make sure. Ask them to place all the items of food on the one plate again. Ask them, "Is that 20? You make it 20." Try to have them adjust the amount they have by taking some away rather than by starting from scratch.
7. If the question is too easy, have another toy join the party so that there are 6 toys and remove 2 items of food, leaving 18. Remember to try guessing first, rather than simply sharing out one at a time. For an added extension, you could leave the number of pieces at 20 and have your child decide that there would be 2 pieces left over.
8. Have your child draw each plate with the items. Take a photo of what they have made as this will be useful later.
9. 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.

At-Home Investigation

The toys are having a picnic! Get 4 toys to have a picnic and set it up so that each toy has a plate, a spoon and a cup.

You have 12 pieces of food to share.
How could you share them out so that it was fair?
Draw the plates to show what you have made:

You have 20 pieces of food. How could you share them out so that it was fair?
Draw the plates to show what you have made:

Another toy joins the picnic! How can you share out your 20 pieces of food now so that it is fair?
Draw the plates to show what you have made:

Teacher Overview

This is a ***Problem Solving and Reasoning*** task.

The emphasis is on *modelling* sharing and discussing the *similarities*, *differences* and *patterns* or *characteristics*. We want students to explore sharing as both Quotition (how many shares) and Partition (how many in each share). There is also an emphasis on *generalising*.

Having a small group picnic is something that you can do via a webcam (see introduction for information). Children can also hold up their drawings of the sharing plates if they do them in pen. If needed, children can also cut out and glue the squares into an array before drawing.

Watch out for:

- Thinking an even number is required for sharing fairly
- Not having the same amount for each toy
- Having too many/few toys
- For the final question: getting more food items rather than redistributing the 20
- Adults drawing for the children
- Levels of structural thinking (See information provided in Week 3)

Good questions to prompt thinking:

- Is it fair? Does everyone have the same number of pieces?
- Do you have enough/too many?
- Do you still have 20 pieces?
- How could you make it fair? How could you make it the same?
- Do you need to take some away or put some more on the plate?

Students requiring support:

- Stick with 4 toys. Ask for a given number for each toy, then figure out the total afterwards (e.g. “Make sure each toy has 2 biscuits. Now, how many biscuits did you use?”)
- Build quantity instead using the same context. E.g. set out 5 toys. Ask child to collect a cup for each toy.

Extension:

- Add extra toys but not extra food items. Have the children work out how many pieces of food would be “left over”.

Tuesday: Connecting Lesson

Number game: *Target partitioning*
You will need: a small circle of string, and a larger circle of string to make a target on the ground (alternative: a wash cloth on top of a tea towel), 14 small blocks (or rubber bands, toothpicks, spoons) to throw at the target.

1. Show your child the items and ask them how many there are.
    a. If your child cannot work out that there are 14 objects, reduce the number to 8 and try again.
2. Ask your child to throw the objects at the target, repeating the throws for any that miss, until all 8 objects are either inside the small circle or larger circle.
3. Ask your child to count how many objects are in the inner circle and how many are in the outer circle. State this as a sentence and record the two numbers together on a piece of paper e.g. “6 and 8 is 14”.
4. Take it in turns throwing the objects at the target but have your child state how many are in each circle and how many there are altogether each time. You might need to prompt this with a question such as, “I’ll do the writing and you do the counting. How many are in the little circle? So how many would be in the big circle then? How many did we start with? Ok – so what do I need to write down? 3 and (pause for the child) is how many?”

Worksheet task: 15-20 minutes

You will need: 18 objects to act as seats on a bus for toys (e.g. pillows, wash cloths, Lego pieces, squares of paper)

This lesson is following on from what your child learned yesterday about **sharing**. The purpose of the lesson is to discuss **aligning** objects into rows, then **counting them in groups** (e.g. 2, 4, 6 for the seats on the bus). This context is strongly related to sharing, but also makes sure that students are linking what they learn with the arrays that we looked at last week. For this task, encourage your child to think about having an aisle down the middle of the bus and arranging the seats on either side so that they line up.

The second question is considerably more difficult. If your child cannot work with rows of 3, stick with the 18 seats but have your child arrange them so that there are 2 in each row instead.

Connecting Sharing

Seats on the bus

The toys are going on a bus ride! Arrange the 18 seats into rows for the bus. Make sure that there is an aisle to walk down the middle. Draw what you have made.

Rows of 3

The seating arrangement has changed! This time we have 2 seats on one side of the aisle and 1 seat on the other side of the aisle. How many rows of seats can we make? Draw it.

Teacher Overview

This is an ***Understanding and Reasoning*** task.

The purpose of this lesson is to *connect* the idea of sharing with arrays, by having the child share the seats into rows for a bus. The second question is quite complex and requires considerable reasoning. If needed, reduce the number of chairs to 12 but stick with rows of 3. Focus on the alignment of rows to connect the sharing with arrays. Make sure children try drawing their arrangements.

To help students retain the information, make sure that they have *explained their reasons* for drawing to their parents. If you have time online with students, emphasise counting in 2s, lining objects up, and positional language.

Wednesday: Number focus

This lesson allows your child to develop pictures in their mind for different amounts. This skill in the Early Years of schooling is strongly linked with understanding of maths in Year 4. Please make sure that you play the game with your child and also read the "follow up" information about how to build an understanding of ten without having to do very much.

Comparing amounts to 10 or 20

You will need: Up to 20 small items (e.g. spoons, toy cars, buttons, balls of paper, toothpicks) and a copy of the tens frame or 20 frames sheets to put the objects in.

You will need to choose from the following two games as appropriate for your child

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Make to 10: (see next instruction if your child already understands 10s facts)

1. Ask your child to collect 5 objects and place them in the tens frame. Ask them how many spaces are left. State this as a sentence to model the idea, "5 objects and 5 spaces makes our 10". Have your child colour in the squares on the tens frame and fill in the numbers.
2. Next, ask your child to place some objects in while you look away. Look back and state the amount of objects and spaces out of 10. Swap roles, so that you put the objects in and they state how many objects and spaces there are. Your child should still do the colouring and writing.
3. Ask your child what other numbers you could make that haven't been used yet. Continue until you have found them all.
4. Display your tens frames picture somewhere in the house so that your child regularly sees the pairs of numbers that make ten.

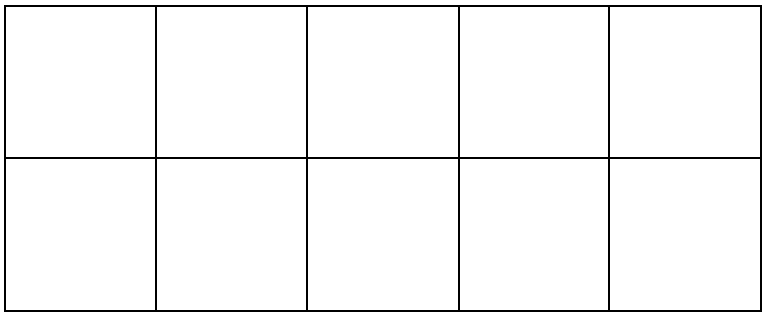
Make to 20:

If at all possible, use the same basic instructions but make to 20 instead using the second sheet. Teen numbers are particularly important for children to understand by the end of Year 1, so a heavy focus on them is appropriate.

Follow up:

If you use sticker charts or similar for chores, please consider using tens frames to arrange the stickers in as it will help your child to develop a stronger understanding of 10.

Number focus worksheet: making 10



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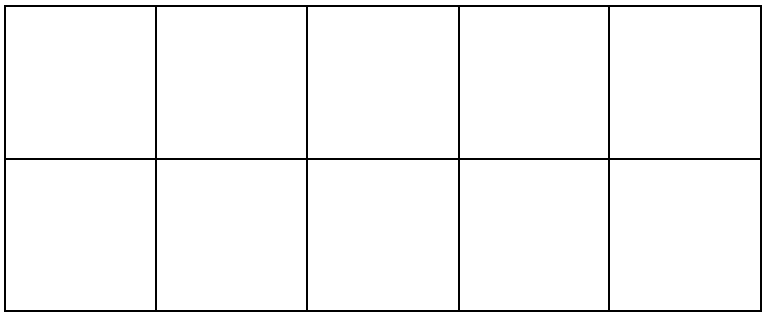

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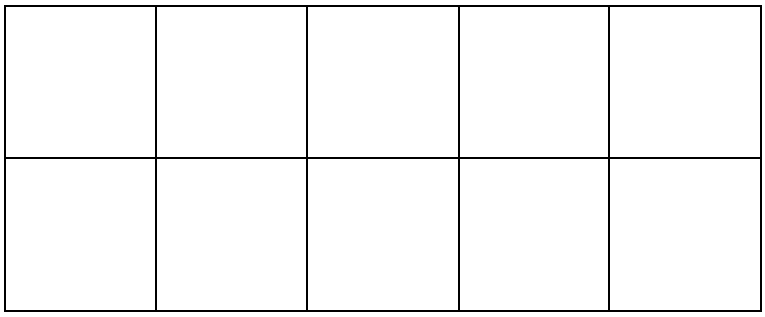

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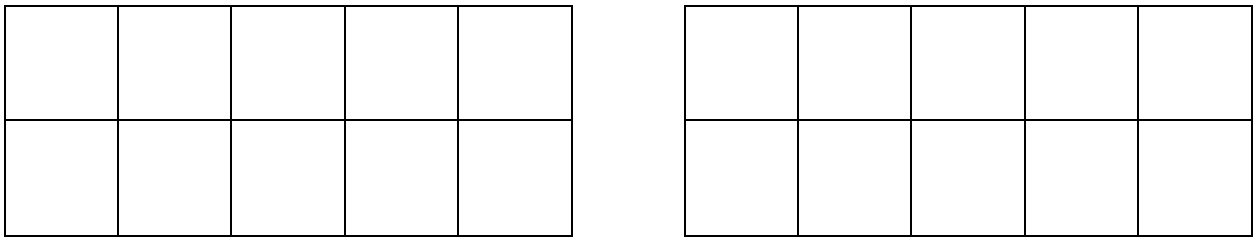
Number focus worksheet: making 20



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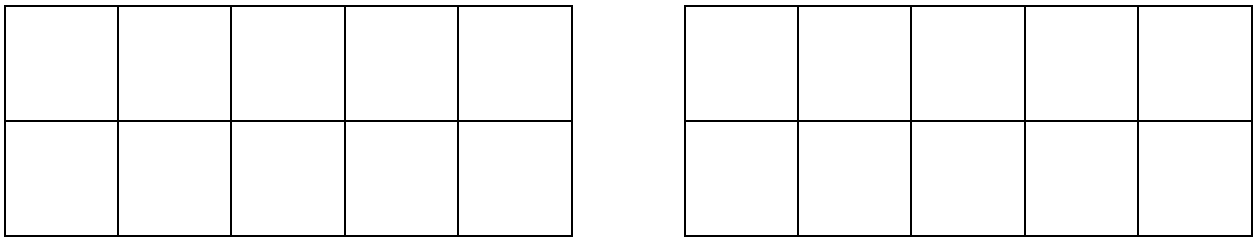

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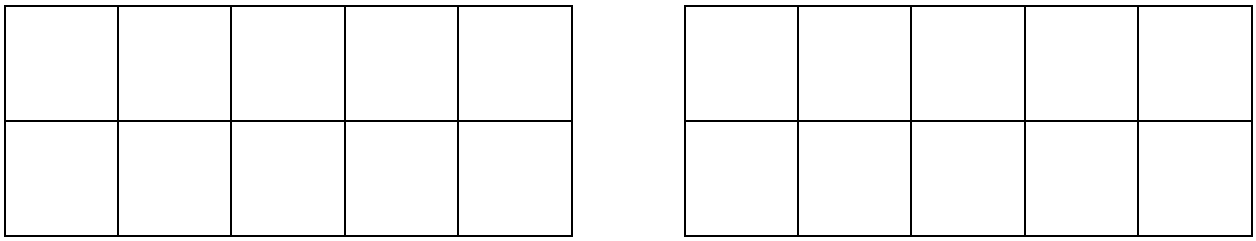

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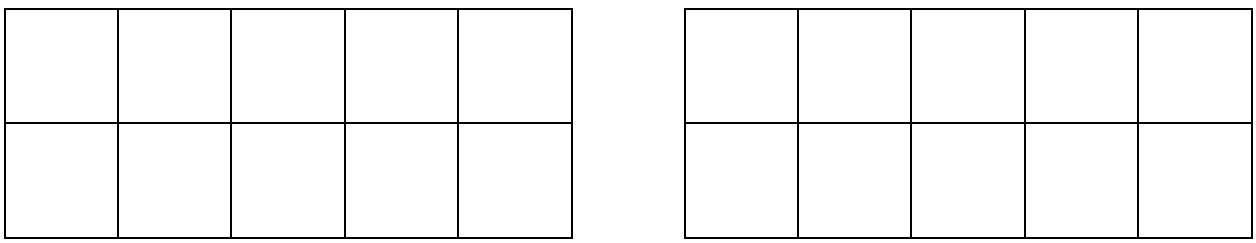

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Teacher Overview

This is a ***Quantity and Partitioning*** lesson. It gives students an opportunity to develop the concept of "how many" in relation to 10 or 20 and to focus on developing a strong understanding of teen numbers. Please read the important information for the week to understand why quantity is important. There is also a free webinar to watch on important number concepts in the article on the website called, "When kids get stuck and never catch up". It will take you through the first 3 number concepts that are most important for children to understand in early primary.

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 practice

Number:

1. Starting at 31, count back in 2s until you get to 25.

2. 15 - ____ = 7

3. What number is 10 less than 39?

4. Draw 12 counters in as many arrays as you can

5. Split 12 counters into 2 groups in as many ways as you can. You don't need the same number in each group.

Measurement/Geometry:

6. How many coffee cups of water does it take to fill a big bowl?

7. How many days are there in a week? What day will it be in 2 days time?

8. Describe how to get from your kitchen to your bathroom. How many steps are needed? How do you have to turn?

Chance/Data:

9. Roll a dice 12 times and record how many times each number comes up.

Teacher Overview

The questions on this worksheet are drawn from the “C standard” of the Achievement Standard. See your tracking sheet for more detail. Each week the interleaved questions will get a little harder, and more concepts will be reviewed throughout the program as we teach that concept. We have included answers to these questions on B2FMaths@Home so that parents can find them if needed.

Support for struggling students:
You might like to reduce the numbers in the questions. You might also give the student the answer then ask them to work out how the answer was obtained.

Friday: Extension and Generalising Lesson

12 toys wanted to make fair teams. How could they do it? Draw 3 different ways they could make fair teams.

Each toy needed 2 shoes. How many shoes is that? Draw how you worked it out.

Each team needed 5 pages to record their scores. How many pages is that? Work it out for each of your 3 drawings above. Show how you did it:

Teacher Overview

This is a ***Reasoning*** lesson. It is designed to extend student understanding further and promote generalising. In particular, this lesson asks students to share a given number of toys equally in more than one way. It also provides an opportunity to demonstrate counting by 2s and also by 5s to meet the Achievement Standard.

To extend student thinking further:

- Have some toys not show up, or additional toys arrive, then change the teams as needed
- Draw the teams on grid paper as arrays.