Work Program for B2FMaths@Home Week 4 Year 5

Contents – click on the link below

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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.

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What you need to know this week

Week overview

This week we are teaching the concept of dividing (or sharing fairly). This concept is strongly linked with the work on arrays and counting patterns that we did last week. It also links strongly with the fractions work that we will be introducing in a few weeks' time.

Students need to work out:

- When dividing, it is important to ensure that each portion contains the same number of objects.
- When we divide collections of items, it is the same as making a fraction of that collection. For example, dividing 12 counters between 2 people is the same as finding half of the counters. Dividing 12 counters between 3 people is the same as finding one third of the counters.
- Arrays can show us the amount altogether (total number of items), the number of groups we are making (rows or columns) and the amount in each group (columns or rows) at the same time. For example, 15 soldiers lined up in 5 rows gives 3 in each row.
- Arrays show us the link between "counting in" and multiplication/division. For example, counting in 5s from 0 means that we can also make an array with 5 in each row for each of those numbers.
- Prime numbers, when formed into arrays, only make lines. Composite numbers make other arrays as well as lines.
- Sometimes when we are dividing objects into groups we end up with left overs, or we need to cut the objects into parts to share fairly. We can express remainders as whole numbers (e.g. if we were dividing 11 people into 5 teams and one person was left out), as fractions (e.g. if we were dividing 11 pieces of bread between people and we cut the left over piece in fifths), or as decimal numbers (e.g. if we were dividing $11 between 5 people, so everyone had $2.20). ***Please note: there is a video online to explain this concept.***
- Division is linked strongly with fractions.

For your own information:

When we are dividing, we can use two different models. Both ask "how many". Here is a simple example of dividing some objects between people.

Partition division: "how many" objects will each person receive? Children are determining the number in each share.

Quotition division: "how many" people can share the objects fairly? Children are determining the number of shares.

You will need the following objects:

- Copies of the coins and grid paper for Monday
- Small squares cut from the grid paper for Tuesday.

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Monday: At-Home Investigation

You will need:

- A copy of the coins and the grid paper.
  Please note, your child will only need the dollar coins to complete this activity. Providing the other coins will also encourage your child to think about dividing the amount into dollars and cents which shows a higher level of thinking.

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 first problem. Encourage them to think about splitting the remaining $4 into cents to distribute. Provide the coins on the paper if needed to help your child think about exchanging the gold coins for silver.
3. If your child gets stuck, reduce the amount of money to $21. This
4. The second question should be relatively easy after the first. It provides a second opportunity to work out how to divide the money.
5. 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.

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At-Home Investigation

You have $24 to share between 5 people. How could it be done?
Make sure that you show how much each person would receive. Show all your working.

What would happen if you had to share the $24 between 10 people?
Show how much money each person would receive and explain how you did it.

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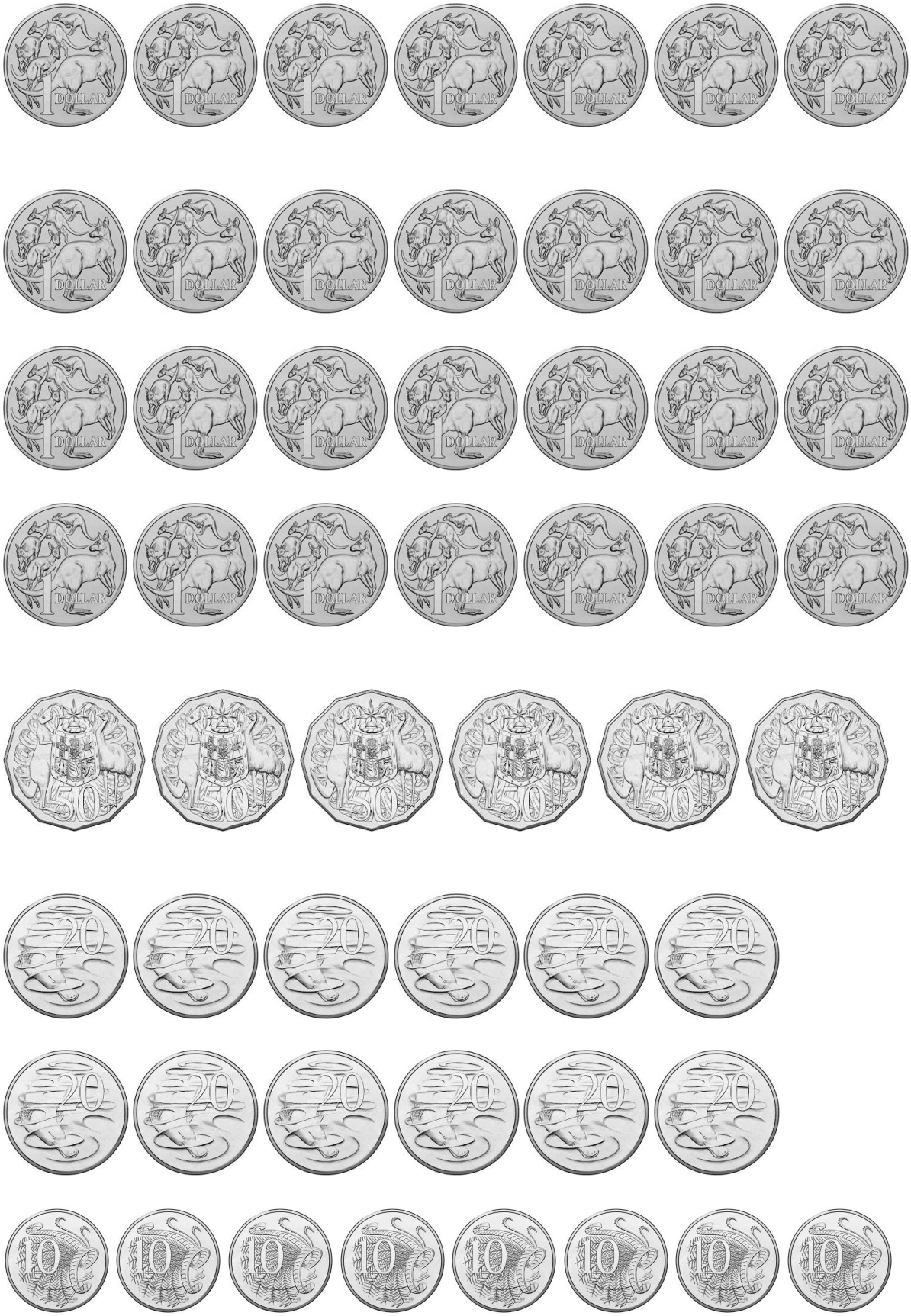

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Tuesday: Connecting Lesson

Multiplication practice: 10-20 mins
Have your child complete one of the multiplication practice grids provided on the following pages.

Worksheet task: 15-20 minutes
Please make sure that you have read through this worksheet yourself before trying it with your child. You may also wish to watch the video online, either by yourself before teaching the concept or with your child to help you both to understand what is happening.

Expressing remainders as fractions and decimals is a particularly tricky concept, but hopefully the lesson yesterday on dividing $24 will help. You may wish to use small squares of paper to help model what is happening. The diagram below will show you how to use the paper.

How the examples are related:
For example 1: when we try to divide 16 squares into 5 rows or groups, there will 3 in each group and 1 left over. This is called a remainder.

For example 2, we think about what we could do with the left over square

In this case, as we are trying to divide the square between 5 groups, we could cut the square into 5 pieces (fifths), and put one piece in each group.

For example 3, we think about cutting the left over square into 10 pieces instead of 5. This allows us to express the remainder as a decimal number. An easier idea might be to think about dividing $16 between 5 people. Each person would receive $3.20, which is the same as 3.2.

If you get stuck with this worksheet, contact your child's teacher. Hopefully they will be able to use any online time to model the process with your child. Remember to check the video provided as well.

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D10. Division remainders

TR p83

Sometimes when you divide a number it does not fit entirely into groups. For example, if you divided 16 by 5, you would have 3 groups of five, with 1 left over.

Example 1: Leaving remainders as whole numbers

$5\overline{)16}$ = 3 rem 1 $\quad 5\overline{)17}$ = 3 rem 2 $\quad 5\overline{)18}$ = 3 rem 3

What is the pattern?

Example 2: Expressing remainders as common fractions

$5\overline{)16}$ = $3\ {}^{1}/_{5}$ $\quad 5\overline{)17}$ = $3\ {}^{2}/_{5}$ $\quad 5\overline{)18}$ = $3\ {}^{3}/_{5}$

What is the pattern?

Example 3: Expressing remainders as decimal fractions

$5\overline{)16.{}^{1}0}$ = 3.2 $\quad 5\overline{)17.{}^{2}0}$ = 3.4 $\quad 5\overline{)18.{}^{3}0}$ = 3.6

What is the pattern?

BACKWARDS QUESTION:

Try to work out what the missing numbers are.
Explain how you did it:

$5\overline{)\ \ }$ = 3 rem 2

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Division remainders 2

Use what you learned in the previous activity to help you to solve the following problems. You will need to look for where the remainder (left overs) goes.

Example 1: Leaving remainders as whole numbers

$$5\overline{)16} = 3 \text{ rem } 1 \qquad 5\overline{)19} \qquad 5\overline{)21}$$

What is the pattern?

Example 2: Expressing remainders as common fractions

$$5\overline{)16} = 3\ {}^{1}/_{5} \qquad 5\overline{)19} \qquad 5\overline{)21}$$

What is the pattern?

Example 3: Expressing remainders as decimal fractions

$$5\overline{)16.{}^{1}0} = 3.2 \qquad 5\overline{)19.0} \qquad 5\overline{)21.0}$$

What is the pattern?

BACKWARDS QUESTION:

Try to work out what the missing numbers are.
Explain how you did it:

$$6\overline{)\ \ } = 3.2$$

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Multiplication practice grids:

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

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

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

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

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Wednesday: Connecting Lesson

This lesson allows your child to think through why different remainders are used. It also gives them further opportunity to explore similar questions to those you tried yesterday. If you don't feel that your child is ready to move on, simply use this time to practise more division questions where they have to express the left overs as remainders, fractions and decimals.

Please also complete one of the grids on multiplication/division facts from the previous lesson.

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D11. Expressing a remainder

TR p83

Sometimes different forms are more appropriate for expressing a remainder in division. Examine the following example and use it to help you answer the questions below.

Example: There are 31 children to be divided into 3 groups. How many in each group? Circle the most appropriate answer from those below.

$31 \div 3 =$ 10.33 $10\ ^{1}/_{3}$ (10 rem 1)

Answer: 10 remainder 1 is the most appropriate answer because you cannot divide a living child into fractions for different groups. They have to stay as a whole child, therefore as a remainder.

Questions:
For each of the following questions circle the most appropriate answer from the group and justify your choice on the lines below.

1. 3 chocolate bars were split between 2 people. How much chocolate did each one receive?

1.5 bars each 1 ½ bars each 1 bar each and 1 remainder

My Reason:

2. Gerard ran four 100m races in 54 seconds. How long did he take to run each one?

13.5 seconds each $13\ ^{2}/_{4}$ seconds each 13 seconds each, remainder 2

My Reason:

3. Four people had to divide 9 books between them. How many books did each person get?

2.25 books each 2 ¼ books each 2 books each and 1 remainder

My Reason:

Describe how you decided which form was appropriate for each question.

Backwards Question:
Danielle found that she could make 12 ¼ cookies from each batch of dough. How many batches do you think she cooked to work this out?

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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.

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Interleaved practice

Number:

1. Complete the following number sequence and describe it:

   $^{1}/_{7}$, $^{2}/_{7}$, _____, _____, _____, $^{6}/_{7}$, _____, _____, $1^{2}/_{7}$

2. Find the answer and show how you worked it out.

   ☐ + 134 = 3 x 76

3. Which number is bigger? Explain why.

   32.70 or 32.07

4. Draw what 6 x 7 looks like and show how you would work out the answer.

5. Year 5 is going to sell small cakes to raise money for camp. They estimate that for every batch of 12 cakes, they spend $3.20 on ingredients. Complete the table below to show how much profit they will make if they sell the cakes for $2 each.

Cakes	12	24	36				
Profit							

Measurement/Geometry:

6. Find a rectangular prism (box, like for cereal) and a cylinder. How many faces or curved surfaces do they each have? What do you notice about the faces, edges and vertices (corners)? How are they the same? How are they different?

7. How many hours and minutes are there between 10:45 and 14:15?

8. Use the back of this page to draw as many rectangles as you can with a perimeter of 24cm.

Chance/Data:

List all of the possible outcomes when two 6-sided dice are rolled.

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Friday: Connecting or Extending Lesson

For this lesson your child will need to focus strongly on the developing a visual model for division. Solving the problems may take a considerable amount of time, so feel free to stop if your child is getting tired and try to complete them at another time.

Please encourage your child to express any left overs as remainders, decimals or fractions as appropriate to the context. Most children tend to prefer remainders over fractions or decimals, but the other two are needed as well for achieving an A or B standard. They also form an important link for the fractions work we will be doing in a few weeks' time.

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D12. Modelling division

TR p84

Sometimes when we are using multiplication or division it can be difficult to work out what we are doing. In these circumstances it can be useful to model the situation first and then work out the mathematics.

Think of what the following situations look like. Draw a picture to represent each one. Explain what your picture represents, and solve the problem.

1. There were 29 students who were divided into groups. Each group contained seven students. How many groups were there?

2. A farmer was trying to find the side length of his field. It was a square. The square covered 9 square metres. How big was one side?

3. 45 soldiers were lined up at a parade. There were eight rows of soldiers. How many were there in each row?

4. Apples were sold by the bag in a shop. Each bag contained the same number of apples. A man bought six bags of apples. This was a total of 48 apples. How many apples were in each bag?

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5. Jemma sold 87 tickets. Each book of raffle tickets contained 10 tickets. How many books did she sell?

6. Nine people drank 4 and a half glasses of wine between them. How much wine was drunk by each person?

7. In a game of snakes and ladders the board contained 42 squares in rows. Each row contained six squares. How many rows were there altogether?

8. A group of people wanted to buy concert tickets. Each ticket cost $9. The total cost was $36. How many people were in the group?

9. I made $10 every week from odd jobs. I earned $75. How many weeks did I work?

What patterns have I found?

Now go back and use a calculator to get the answers. Comment on your findings:

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