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 one half, one quarter and one eighth. We will be linking to what we learned last week about capacity to think about "half a glass". We will also look at fractions of shapes (2D), fractions of lengths, fractions of a window being covered, and fractions of a collection or group.

For your information: When students are learning about fractions in later years, they need to understand that:

- Fractions and division are different expressions of the same concept: 3 ÷ 4 = ¾
- Fractions, decimals and percentages are all different ways of expressing the same amount. We can use the context "of a dollar" to help with conversions. For example, what is half of a dollar? 50c. The number of cents is the same as that fraction converted to a percent, ½ = 50%. If we write the amount in dollars, we are converting it to a decimal, ½ = 0.50 or 0.5
- In real life, we use fractions as numbers far more often than fractions of pizzas and cakes. For example, we express probability as a fraction, decimal or percentage (e.g. a 5% chance of rain), we use fractions in equations for measurement, we use fractions in budgeting. We will be using probability next week as a natural extension of what we learn about fractions this week.

Students at this age need to work out:

- Fractions need to be "fair". If the pieces are to be given the same name, then the **size** of each piece needs to be the same. That includes fractions of a group of objects (e.g. half of 6 shells is 3 shells).
- We can have fractions of different types of wholes. We can have "half full" glasses, halves of string or ribbon, halves of amounts (e.g. half of $4 is $2) and also halves of shapes (e.g. rectangles, circles).
- Fraction names are related to the **size** of the pieces compared to the whole, not about how many pieces there are. If we cut a cake into 4 different sized pieces, they would not be quarters. Likewise, we could cut the cake into 1 half and 2 quarters, making 3 pieces altogether. They would not be called thirds.
- We can have different sized pieces in the same whole as long as we name them according to their size (e.g. one half, one quarter and two eighths cut into the same circle).
- The "whole" needs to be the same when comparing fractions. You can't compare fractions if one is from a small pizza and one is from a family-sized pizza!
- Fraction names are related to ordinal numbers (e.g. position in a race: third, fourth, fifth…)

You will need the following objects:

- String or wool, glass with water, a window with a curtain/blind that can be drawn up/across
- Copies of the **Make 10** cards supplied for the game (you will use this next week too)

Monday: At-Home Investigation

Today we are revising what we know about halves and introducing quarters. If you are doing this lesson close to lunch time, consider making sandwiches for lunch and asking your child to cut them into quarters (4 pieces that are equally sized).

You will need:
- A glass that you can half fill with water
- String or wool and scissors to cut it
- Optional: a sandwich that you can cut in quarters

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 you would know which glass shows half. They should talk about the juice being "half way" up the side of the glass or having the "same amount" of air and juice in the glass. Ask which glass shows "more than half" and which shows "less than half". If needed, point out which one is half and explain why. Focus on using the terms "fair", "the same amount", or "the same size".
3. Repeat this process for "half the lollies". Use blocks or counters to be the lollies if you need to.
4. For the questions on the second page, make sure that you try out their ideas first for making quarters of the string and sandwich 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.
5. Help your child think about what worked and what didn't, then come up with a new plan if needed.
6. Encourage your child to draw or write answers to the questions on the page. Scribe for them if you need to and feel free to take a photograph rather than drawing.
7. 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.
8. At the end: consider writing a comment on the page to say what went well or what you are concerned about. Later this week we will be introducing eighths as well.

At-Home Investigation

Sharing and Half:

Some of the pictures below show half and some don't show half.

Tick the pictures that show half and **cross** the ones that don't show half.

Half a glass of juice:

Explain your thinking:

_____

Half of the 8 lollies are in the bag:
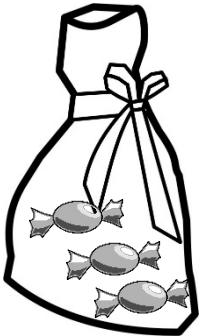
Explain your thinking:

_____

Quarters are half of a half

Draw a quarter of the 8 lollies in this bag. Explain your thinking.

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Make or show quarters:

Quarters are half of a half. Four quarters make one whole.

Quarters of string:

Collect some string. Cut it in quarters. Tape your quarters here. How did you make sure they were quarters?

My string:

Quarters of a sandwich:

Draw a sandwich. What would it look like to cut it into quarters? Draw it below and explain how you did it.

My sandwich:

Tuesday: Connecting lesson

Number focus game for 15 minutes: *making ten go-fish cards game*

You will need: the cards provided. You may want twice as many cards, so feel free to print them out two times. If needed, remove the cards that show more than 10 so that you can focus on adding smaller amounts.

This is a cooperative game, not a competitive game. You need 2 or more players. You all "win" by using up all the cards. The aim is to make a set of cards that add or take away to give an answer of 10. A set can have as many cards as you want, as long as you can describe how to use the numbers to make 10. E.g. a set could have a 4, 8 and 2 because 4 + 8 − 2 makes 10

How to play:
1. Deal out 3 cards to each player. Show them face up so that everyone can see them.
2. One player starts by asking another player for a particular card so that they can make a set that adds or takes away to give ten. E.g. if they have a 4, they could ask for a 6.
3. When the second player is asked to give a card, they respond by asking, "How will you make 10?" The first player explains how they will use the card in combination with their own to make 10 (e.g. If I add your 2 to my 8 that makes 10).
   Please note: a set can have as many cards as you like (e.g. 10 + 10 − 8 − 3 + 1 = 10).
   This means that older players can make the game trickier by using all their cards in one go.
4. The set that makes 10 is added to a discard pile. Each player draws extra cards as needed so that they have 3 again.
5. If the first player cannot see how to make a set of 10, another player can help by saying, "you could use my 8 to make 10". The first player can then try and work out how, and ask for the card indicated.
6. If there is no way to make 10 using the cards in play, the first player draws a card from the deck. They can either try again, or play passes to the second person. Each successive set of 10 is added to the discard pile – you don't score how many sets you make.
7. The game ends when all the cards are used up. A "perfect game" uses up all the cards exactly.

Worksheet task:
The two worksheets for today shows pictures that are one quarter and that are not one quarter. Please make sure to talk about quarters and halves as sharing fairly or being equal. For your reference: quarters are fourths not other fractions. They need to be a fair amount, so each quarter needs to be the same size. You can have quarters of groups (e.g. one quarter of 8 is 2), shapes, lines and objects as well as quarters of masses, time, money etc.

Making ten card game

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One quarter of shapes

Today you will learn about the fraction 'one quarter'. You will learn why some pictures show one quarter and others don't, and what the symbol is for one quarter.

These pictures all show one quarter:
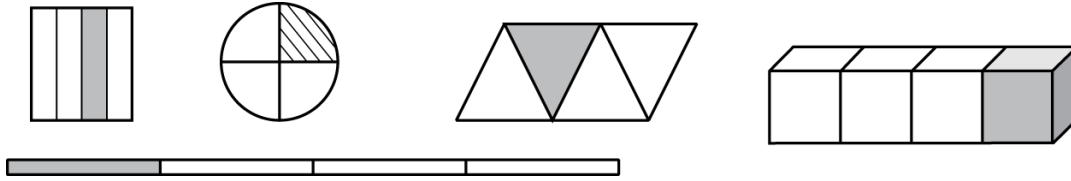
These pictures <u>do not</u> show one quarter:
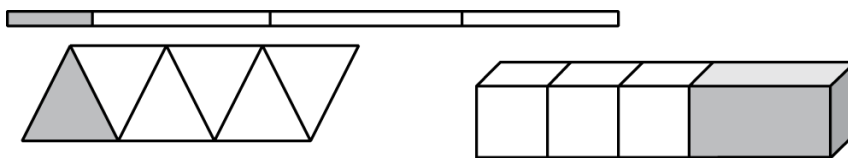
What is the difference between the pictures that show one quarter and those that do not show one quarter?

Divide the following shapes into quarters.
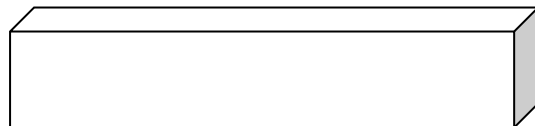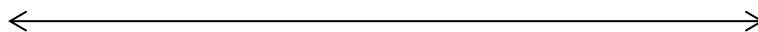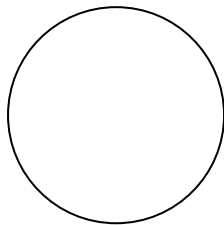
How did you know what to draw?

One quarter of a group

These collections show one quarter:
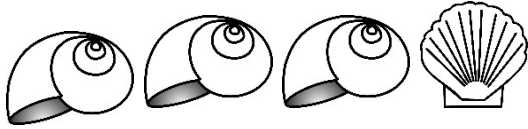
One quarter of the shells are fan-shaped

One quarter of the shoes are boots

These collections do not show one quarter:
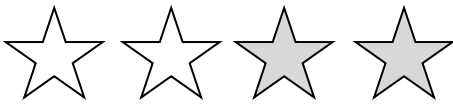
This is not one quarter of the stars

This is not one quarter of the clocks

What is the difference between the collections that show one quarter and the collections that don't?

Colour one quarter of these collections if you can. Put a cross through the ones that you can't.
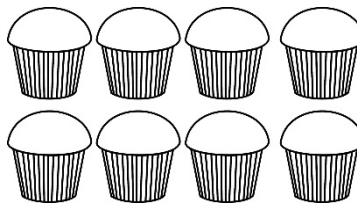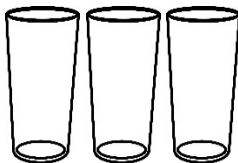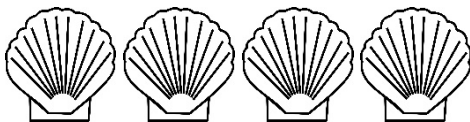
Explain how you did it:

Wednesday: Connecting lesson

In this lesson we will introduce the concept of eighths. Your child will need to apply what they have been learning about halves and quarters to think about what eighths would look like.

If you get stuck, play the **Make Ten game** from yesterday again and let your child's teacher know that you have had trouble. They can review this concept once we return to school.

Wednesday: Connecting lesson

Introducing Eighths:

Think it through:
Quarters are also called fourths. Why do you think they might be called fourths? Draw a picture and explain your thinking

Today we are going to make eighths. Brainstorm what you think eighths might be:

The next page has some pictures to show what eighths are. What do you notice about them? What do they have in common?

Use what you have learned to draw eighths below:

Pizza: draw eights
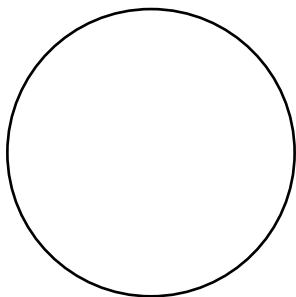
Rectangle: draw eighths
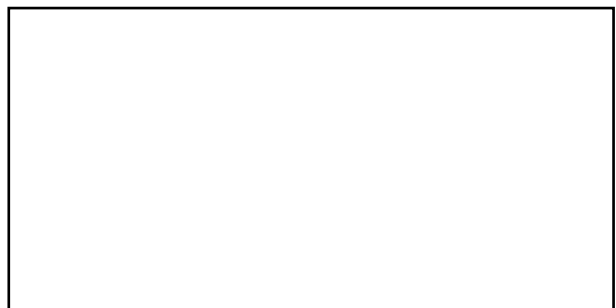
Lollies: how many in one eighth? Feel free to rearrange them to make it easier.

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Eighths examples:

Each of the pictures below shows eighths. Look at them to work out what they have in common.
What do you think eighths are?

Shapes:

This shows 1 eighth of the rectangle:

This shows 3 eighths of the rectangle:

Groups:

This shows 1 eighth of the 8 cupcakes:

This shows 6 eighths of the 8 cupcakes:

This shows 1 eighth of the 16 cupcakes:
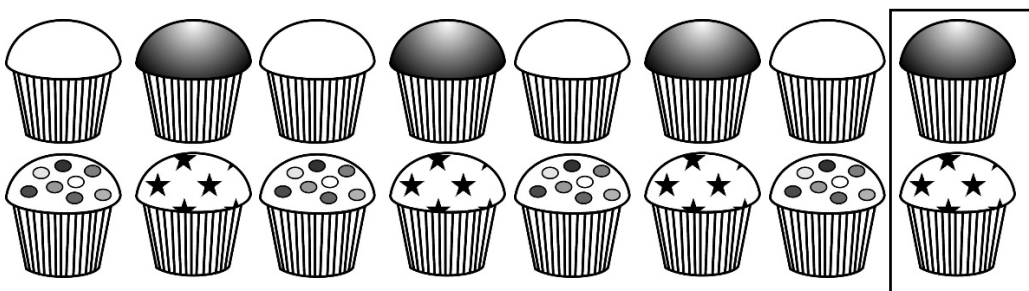
Thursday: Interleaved Practice Questions

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* abo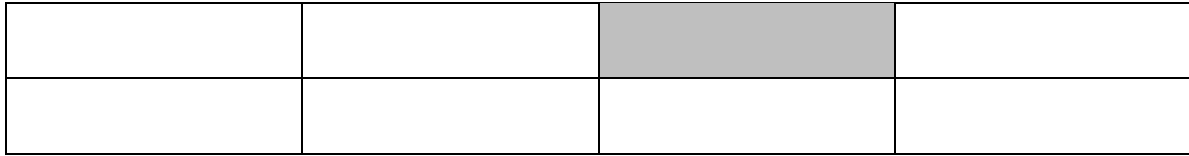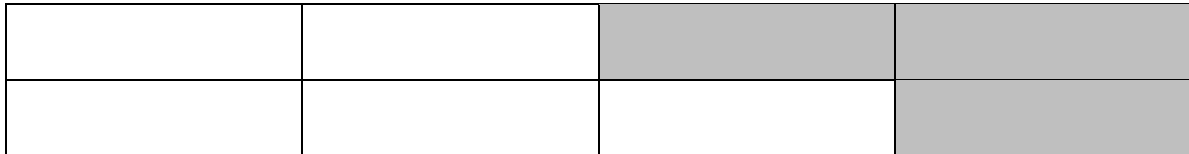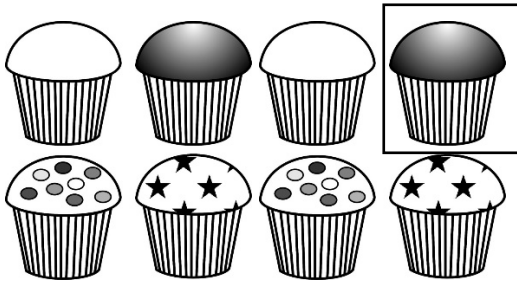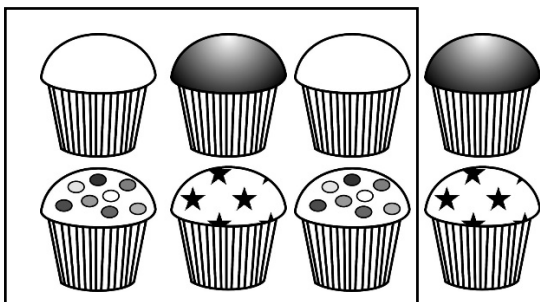ut what to do. Mixing up questions like this, rather than just practising related questions, has been shown in research to improve student retention of concepts by 60% over a 4 month period.

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. Draw 15 counters arranged as a triangle.

2. Two flowers were growing. Each had 17 petals. How many petals altogether? Show how you did it.

3. What number comes before 267?

Measurement/Geometry:

4. Draw a picture of a clock face. Show the time as half-past three.

5. What day was it before yesterday?

6. Use triangles, rectangles and circles to draw a building.

Chance/Data:

7. Use tally marks to show how many days we have had so far this month, and how many days are yet to come.

Friday: Connecting and Generalising Lesson

Are different shaped halves the same size or not?

Your little brother is trying to decide how to cut his sandwiches. He decides that he wants to cut his sandwich diagonally so that the pieces are bigger and he can have more food. What do you think? Are the pieces bigger or not? Prove that your idea is right.

Halves of the sandwich:

Use a rectangular piece of paper to represent the sandwiches – that way you can fold it and cut it to make each of the halves shown. **Are the halves the same size or different sizes?**
Draw pictures and write sentences to explain your thinking.

What ways could you cut the sandwiches to show quarters? Draw 3 ways here: