

[Contents – click on the link below](#)

[How to use this work program](#)

Accessing the online resources

Running the program each week

Getting help

[What you need to know this week](#)

Week overview

Students at this age need to work out:

You will need the following objects:

Monday: At-Home Investigation

Tuesday: Connecting lesson

Wednesday: Connecting lesson

Thursday: Interleaved Practice Questions

Friday: Connecting and Generalising Lesson

## 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 fractions (especially:  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$ ,  $\frac{1}{5}$ ,  $\frac{1}{8}$  and multiples of any of these such as  $\frac{2}{3}$ ,  $\frac{4}{5}$ ,  $\frac{3}{8}$ ...). 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:  $3 \div 4 = \frac{3}{4}$
- 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,  $\frac{1}{2} = 50\%$ . If we write the amount in dollars, we are converting it to a decimal,  $\frac{1}{2} = 0.50$  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).
- Fractions can be compared to each other to work out which is bigger and to order them.
- 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...)
- When using a fraction symbol, e.g.  $\frac{1}{2}$ , the bottom number refers to how many parts there are in the whole (2 parts), and the top tells us how many we are talking about right now (1 out of the 2 parts is  $\frac{1}{2}$ ). When they return to school, children will refer to the bottom number as the denominator and the top number as the numerator. You don’t need to use or remember those terms right now though.

### You will need the following objects:

- Lots of scrap paper for Monday (at least 12 pieces)

## Monday: At-Home Investigation

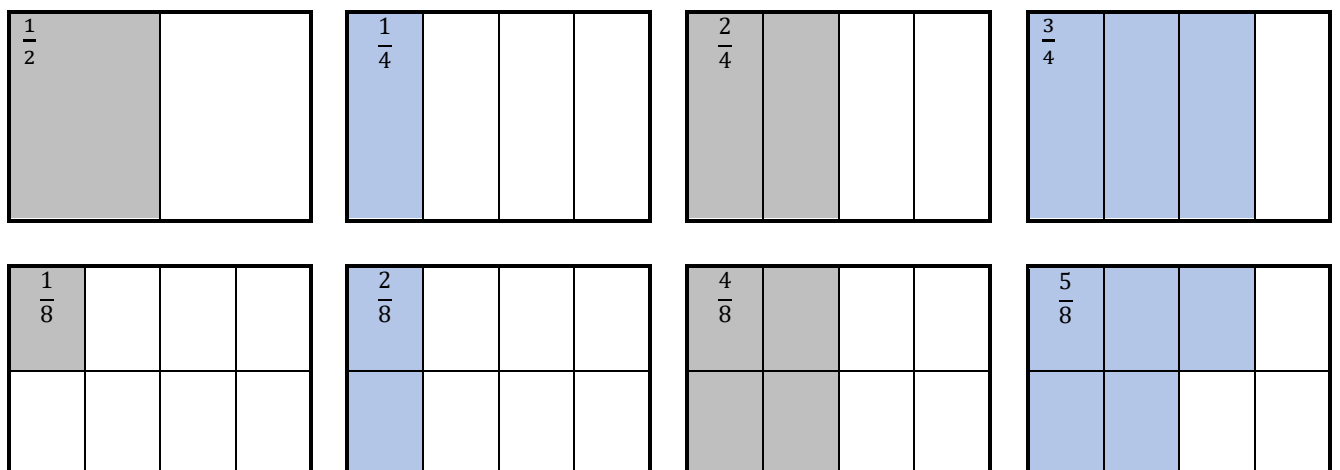
Today we are revising what we know about halves, quarters and eighths, and using this knowledge to help introduce thirds and fifths. Your child will be folding paper to make and colour each fraction, then comparing the size of some of the fractions.

**You will need:**

- At least 12 pieces of paper. Please note: you can use scrap paper as long as each piece is the same size. If you don't have enough paper, cut 3 pieces of A4 paper into four and use those instead.

**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 fold each fraction. Focus on using the terms "fair", "the same amount", or "the same size". One example of answers is shown below.
3. For the questions on comparison and on making thirds and fifths, 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. For example, thirds should all be the same as each other. One half and two quarters is not thirds.
5. Encourage your child to draw or write answers to the questions on the page. It is important to make a record of this page, whether as a photograph showing their folded fractions or by keeping the page with the drawings.
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. Fractions can be hard to understand for children, so please contact your teacher for help as needed.

**Example answers:**

## At-Home Investigation

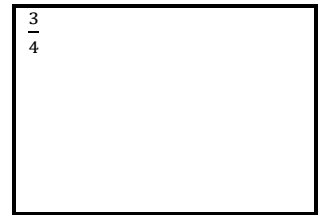
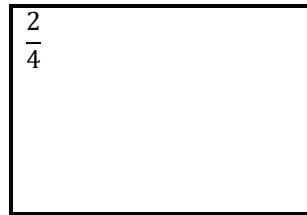
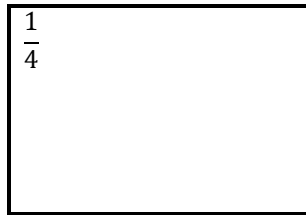
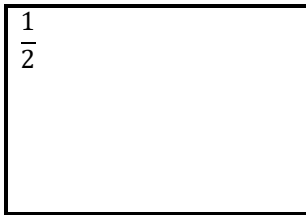
**Revising fractions:**

Last year you will have learned about halves, quarters and eighths. Today we are going to fold paper to make each of these fractions. Use rectangular paper and fold, then colour the following fractions.

Draw the lines in with a pen, then take a photo of what you have made to send to your teacher.

If you can't send in a photo, you could use the boxes beneath to draw the fractions and label what you have made.

- One half  $\frac{1}{2}$
- One quarter, two quarters, three quarters  $\frac{1}{4}$   $\frac{2}{4}$   $\frac{3}{4}$
- One eighth, two eighths, four eighths, five eighths  $\frac{1}{8}$   $\frac{2}{8}$   $\frac{4}{8}$   $\frac{5}{8}$

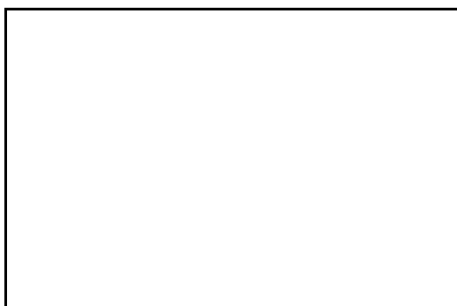
**Compare the size:**

Now that you have made each fraction, answer the following questions.

1. Which is the largest?
2. Which is the smallest?
3. Which fractions are the same size as each other?

**Introducing thirds and fifths:**

**Think it through:** When you folded eighths, how many pieces did you have to fold it into? Use this information to try and work out how you would fold thirds and fifths. Draw what you did below as accurately as you can. **Is three fifths bigger than three quarters?**



## Tuesday: Connecting lesson

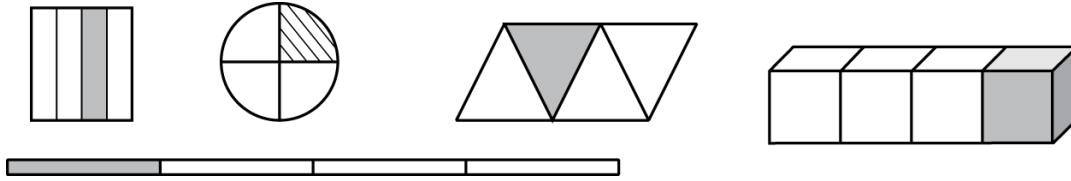
### **Worksheet task:**

The two worksheets for today show pictures that are one quarter and that are not one quarter and also use the symbol for one quarter. This should be an easier task than yesterday, but please make sure to talk to your child to reinforce the idea of fractions being equal in size. 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.

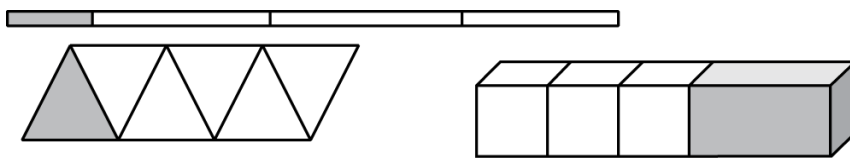
### One quarter of shapes and collections

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 do not show one quarter:

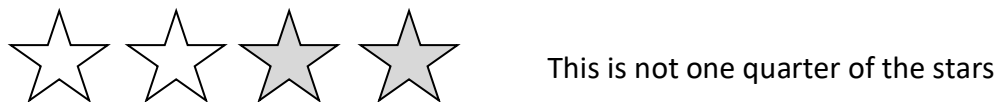


What is the difference between the pictures that show one quarter and those that do not show one quarter?

This collection shows one quarter:



The collections do not show one quarter:



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

### Symbol for one quarter

In this lesson you will learn about the symbol for one quarter. It is shown below next to the picture of one quarter.

Use the picture below to work out what the one means and what the four means for the symbol of one quarter. Fill in the boxes.

$\frac{1}{4}$

The 1 means:

The 4 means:

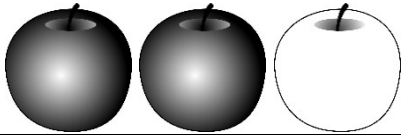
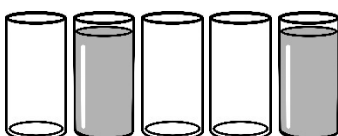
How is the symbol for one quarter similar to the symbol for one half? Why do you think it is similar?

How is the symbol for one quarter different from the symbol for one half? Why is it different?

Use what you have learned to join up the following statements:

The top number	says how many equal pieces there are altogether.
The bottom number	says how many pieces are shaded or indicated.

**Generalising Question:** Fill in the blanks for the following fractions, words and symbols

Picture	Words	Symbols
	<i>One third</i> of the apples are peeled	$\frac{1}{3}$
	<i>Two thirds</i> of the stickers are stars	
		$\frac{1}{5}$
		



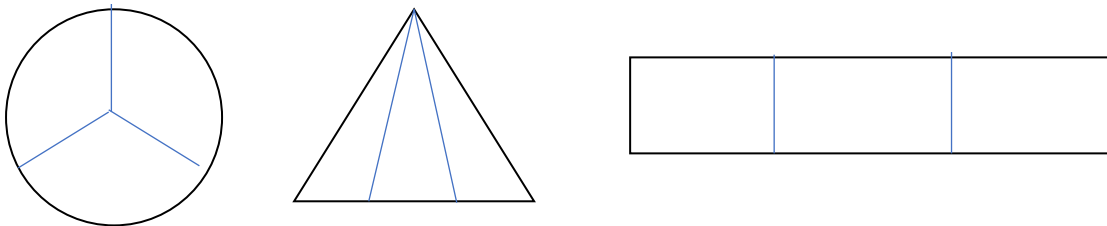
## Wednesday: Connecting lesson

In this lesson we will introduce the concept naming fractions and link it with positions in a race (ordinal numbers). After first and second places, fractions follow the same naming patterns as ordinal numbers: third, fourth, fifth... This simple connection should help your child to understand the number of parts needed for each fraction. The tricky part will be understanding that each part needs to be “fair” – just like it isn’t fair to have a bigger half, it also isn’t fair to have a bigger third or a bigger fifth.

When children are working on the second page they may have trouble dividing the shapes fairly. Just do what you can. If you get stuck, examine the table on the second worksheet from yesterday and let your child’s teacher know that you have had trouble. They can review this concept once we return to school.

### Here is an example

Draw thirds:



**For the triangle:** splitting the base into equal lengths will really make that fraction. An explanation is provided below, however as this involves year 8 level algebra and measurement formulas you really don’t need to show it to your children 😊

*For those of you who are interested:*

*The area of a triangle is  $\frac{1}{2} \times \text{base} \times \text{height}$ . As each smaller triangle has the same height, as long as you divide the base to make 3 equal lengths then you are keeping that dimension the same as well.*

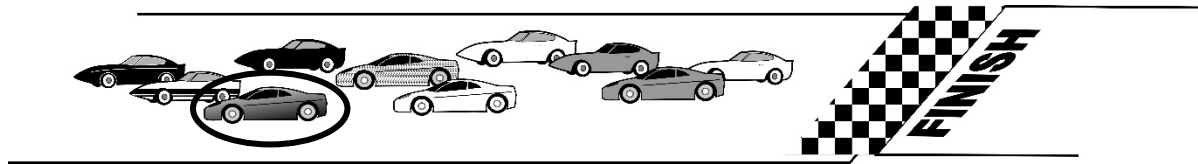
**Fraction names are like racing**

Fractions are named similarly to places in a race. Use this information to help you answer the questions below:

The cars below are having a race. Car number one crossed the finish line in first place.

Car number two came in second place.

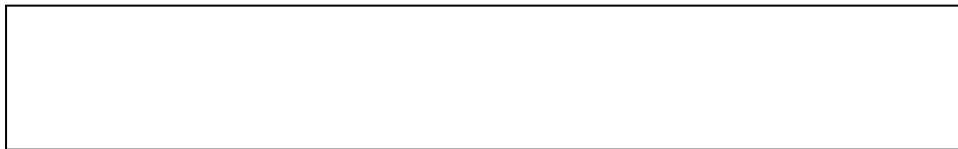
What place did car number three come in? \_\_\_\_\_



This is the **same word** as that used for when one whole is broken into three fair parts.

What would one of these parts be called? \_\_\_\_\_

Divide the whole rectangle below into three fair parts. Write the name of each part on your picture.



What place would car number five come in? \_\_\_\_\_

This is the same word as that used for when one whole is broken into five fair parts.

What would one of these parts be called? \_\_\_\_\_

Divide the rectangle below into five fair parts. Write the name of each part on the picture

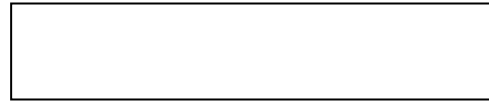
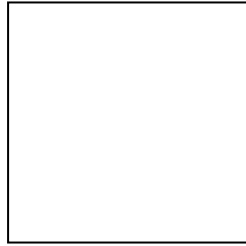
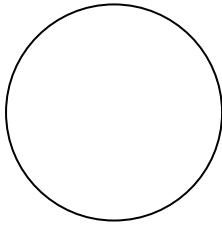


If a shape was broken into 7 pieces, what do you think each would be called? \_\_\_\_\_

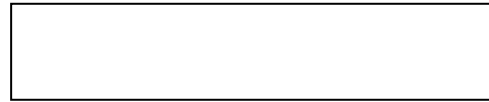
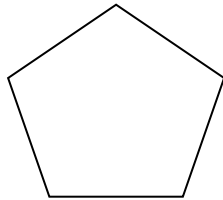
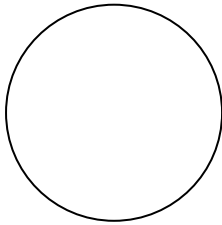
Explain why and draw a picture to show what it would look like:

**Draw the following fractions onto the shapes below:**

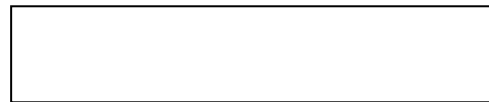
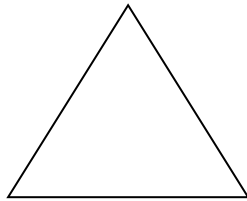
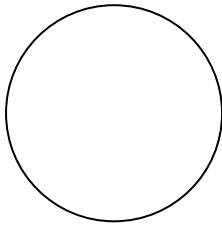
Draw halves:



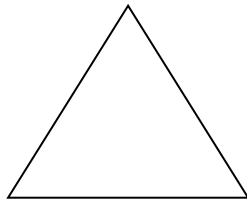
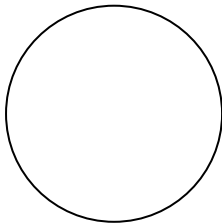
Draw fifths:



Draw thirds:



Draw fourths:



Why are the fifths smaller than the thirds?

**Extension:**

Colour in two parts out of each shape. Guess what the name and symbol for each of your fractions is and write it in the space below:

## 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

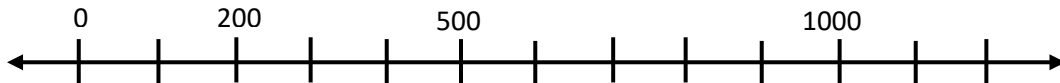
Number:

1.  $5 \times \underline{\quad} = 30$  Show how you worked it out.

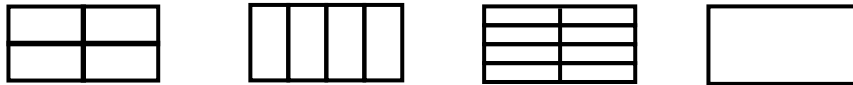
2. Circle the numbers that are even and explain why they are even?

25   62   80   31   44   92   87

3. Show where these numbers would go on the number line: **250**   **675**   **920**



4. Colour in 3 quarters of each of these rectangles.

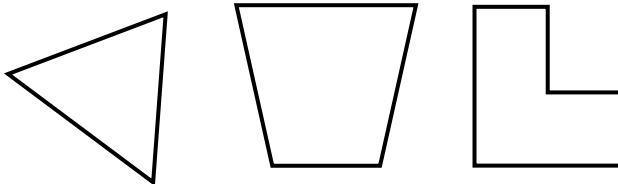


5. What change would I get from \$20.00 if I spent \$14.30.

Work out the answer and then draw the money.

Measurement/Geometry:

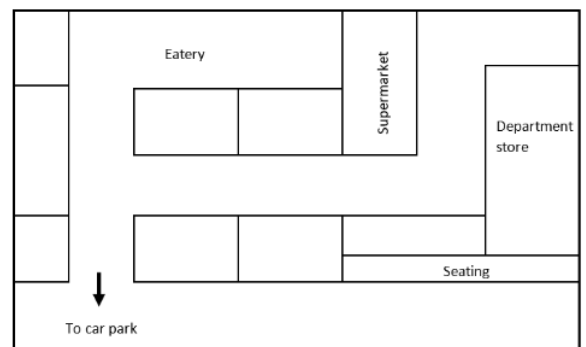
6. Are these shapes symmetrical? Explain your answers.



7. Add the following to the shopping centre plan and label them:

- A bus stop in front of the seating
- A post office close to the exit
- A sandwich bar in a suitable position
- A butcher opposite the supermarket

8. What time is it? Draw the clock to show.



Chance/Data:

I am going to use this spinner to play a colour game.

List all of the possible results of my spins.

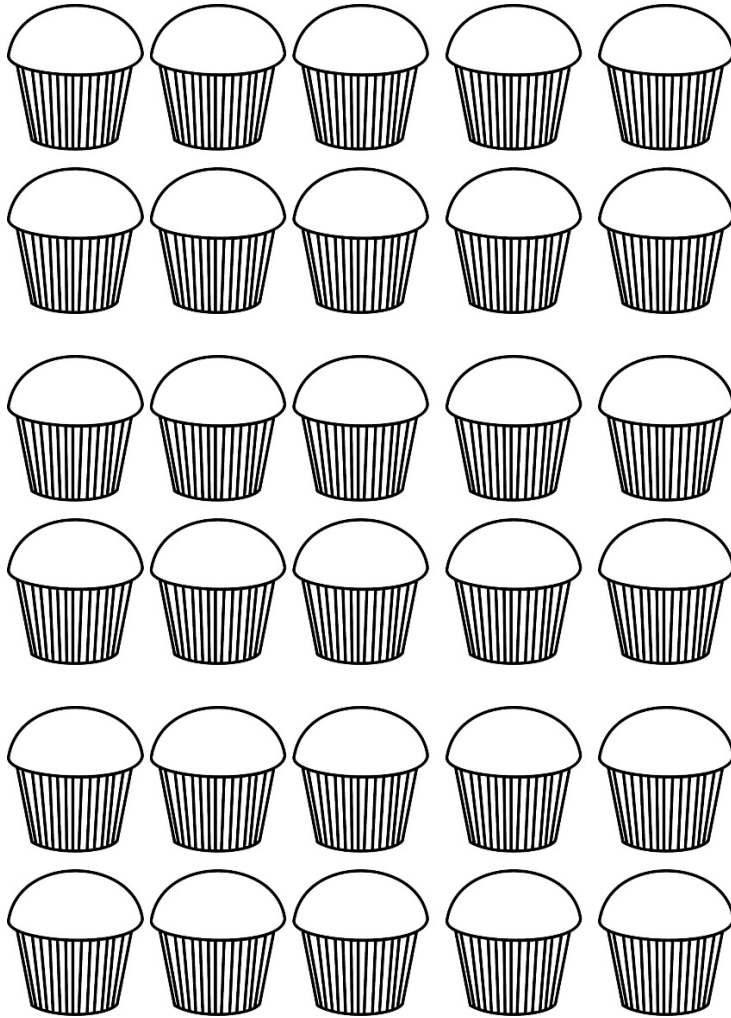
Which colour am I least likely to spin?



## Friday: Connecting and Generalising Lesson

**Fractions are not just shapes**

The following picture shows 30 cupcakes. Your job is to work out what fractions you could make with the cupcakes without having to cut any of them into pieces. Making thirtieths doesn't count for this question. Use the following page to circle each different fraction that you find and explain what it is. You need to find at least 4 fractions, but there are 6 possible ones to find without cutting the cakes.



Circle the fractions you find and write the fractions in symbols or numbers (e.g.  $\frac{1}{2}$ )

