



# Computing

## Scheme of Work



### Unit 2.3 – Spreadsheets



Year Group: 2  
Number of  
Lessons: 4

From 2simple



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# Introduction

2Calculate is a simple to use spreadsheet (and more!) for beginners and beyond.

A user guide can be found at [2Calculate User Guide](#).

The following guide contains a Scheme of Work for teaching the use of spreadsheets as part of the Computing curriculum. It uses some content from the lessons within 2Calculate and some new content.

The lessons show a progression of knowledge and skills from lesson to lesson and year to year. Children who have not used 2Calculate before will benefit by doing with the crash course unit instead. Teachers who are not familiar with the tools in 2Calculate might find reviewing the lessons for younger children helpful to build up their own knowledge.

The lessons assume that children are logged onto Purple Mash with their own individual usernames and passwords so their work will be saved in their own folders automatically and can be easily reviewed and assessed by the class teacher.

If you are currently using a single login per class or group and would like to set up individual logins yourself, then please see our guide to doing so at [Create and Mange Users](#). Alternatively, please contact support at [support@2simple.com](mailto:support@2simple.com) or 0208 203 1781.

If children have not used and logged onto Purple Mash before then they will need to spend some time before starting these lessons, learning how to do this. Young children can be supported by having their printed logon cards (produced using [Create and Manage Users](#)) to hand.

**Note:** To force links within this document to open in a new tab, right-click on the link then select 'Open link in new tab'.



## Medium-term Plan

Lesson	Aims	Success Criteria
<a href="#">1</a>	Reviewing prior use of spreadsheets	<ul style="list-style-type: none"> <li>Children can explain what rows and columns are in a spreadsheet.</li> <li>Children can open, save and edit a spreadsheet.</li> <li>Children can add images from the image toolbox and allocate them a value.</li> <li>Children can add the count tool to count items.</li> </ul>
<a href="#">2</a>	Copying and Pasting Totalling tools	<ul style="list-style-type: none"> <li>Children can use copying a pasting to help make spreadsheets.</li> <li>Children can use tools in a spreadsheet to automatically total rows and columns.</li> <li>Children can use a spreadsheet to solve a mathematical puzzle.</li> </ul>
<a href="#">3</a>	Using a spreadsheet to add amounts	<ul style="list-style-type: none"> <li>Children can use images in a spreadsheet.</li> <li>Children can work out how much they need to pay using coins by using a spreadsheet to help calculate.</li> </ul>
<a href="#">4</a>	Creating a table and block graph	<ul style="list-style-type: none"> <li>Children can create a table of data on a spreadsheet.</li> <li>Children can use the data to create a block graph manually.</li> </ul>

### Differentiation

If children are not familiar with computer keyboards and mice and are going to be using 2Calculate on computers rather than tablets, then they would benefit from doing some work to familiarise themselves with the keys such as the arrow keys, enter and space.

The use of spreadsheets has a strong link to mathematics. Some children might have difficulty with the mathematical concepts in some lessons and might need guidance with this aspect. For example, in lessons where spreadsheets are being used to add up prices; children who are not familiar with converting pence (45p) to pounds (£0.45) might need this aspect explained in more details; in lessons dealing with percentages and fractions some children might need extra support for the mathematical concepts.

Where appropriate, guidance has been given on how to simplify tasks within lessons or challenge those who are ready for more stretching tasks.



# Lesson 1 – Reviewing the use of spreadsheets

## Aim

- To review the work done in 2Calculate in year 1.
- To revise spreadsheet related vocabulary.
- To use some 2Calculate tools that were introduced in year 1

## Success criteria

- Children can explain what rows and columns are in a spreadsheet.
- Children can open, save and edit a spreadsheet.
- Children can add images from the image toolbox and allocate them a value.
- Children can add the count tool to count items.

## Resources

Unless otherwise stated, all resources can be found on the [main unit 2.3 page](#). From here, click on the icon to set a resource as a 2do for your class. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you don't lose this page.

- [Finished counting machine spreadsheet](#) that the children made in year 1; this is just to remind them what they have done before in 2Calculate.

## Activities

1. On the whiteboard, show the children how to open 2Calculate from the Tools area. Can the children remember any of the spreadsheets that they made in Year1? (They made the counting machine).
2. Remind children how to open a blank spreadsheet.
3. Open the counting machine. Discuss the following aspects of a spreadsheets  
The terms 'rows' and 'columns' and 'cells'
4. Ask a child to show how they colour a cell a colour, then a row, then a column.

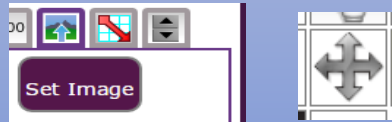
To colour cells they first click on the cell, then click on the colour they want in the toolbox on the right-hand side.

If they select more than 1 cell by dragging the mouse over a few cells, then they can colour all



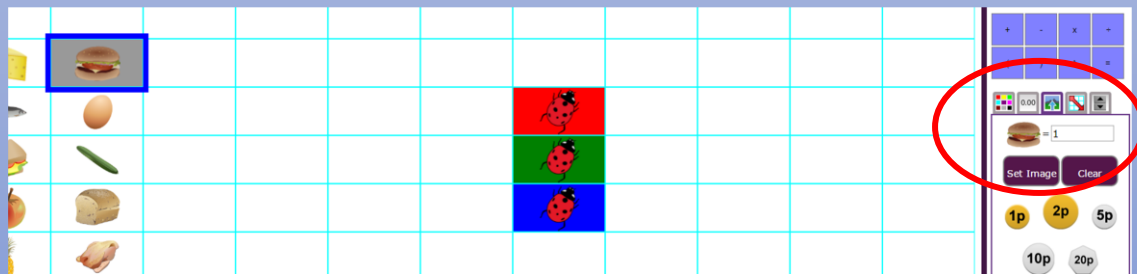
5. Ask a child to add a picture, then how to make it draggable.

They will need to click on the cell, then select the image toolbox from the right-hand side and 'Set image'. To make picture draggable use the drag tool in the Controls toolbox also on the bottom right-hand side. For further details see the plans for Y1, Lesson 2.



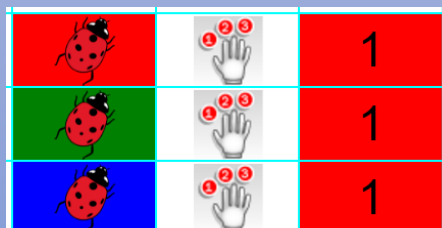
6. Ask a child how to make an image have a value of 1?

To do this, click on an image. In the image toolbox you will see a picture of the item followed by and = sign. Type '1' in the box next to the = sign for each image. For further details see the plans for Y1, Lesson 3.



7. Can any children remember how the counting machine works?

The ladybirds (they can be any picture not just ladybirds as long as they also have a value of 1 allocated to them) can count the pictures placed on the colour background that is the same as their colour background. This is because of the count tool next to them. Try dragging the food pictures into the coloured blocks at the top; the ladybirds will keep a count of them. For further details see the plans for Y1, Lesson 3.



You can make the computer count out loud when an item is added or taken away. To do this, select the

cells where the answers for the count are and click on the 'speak cell' control.

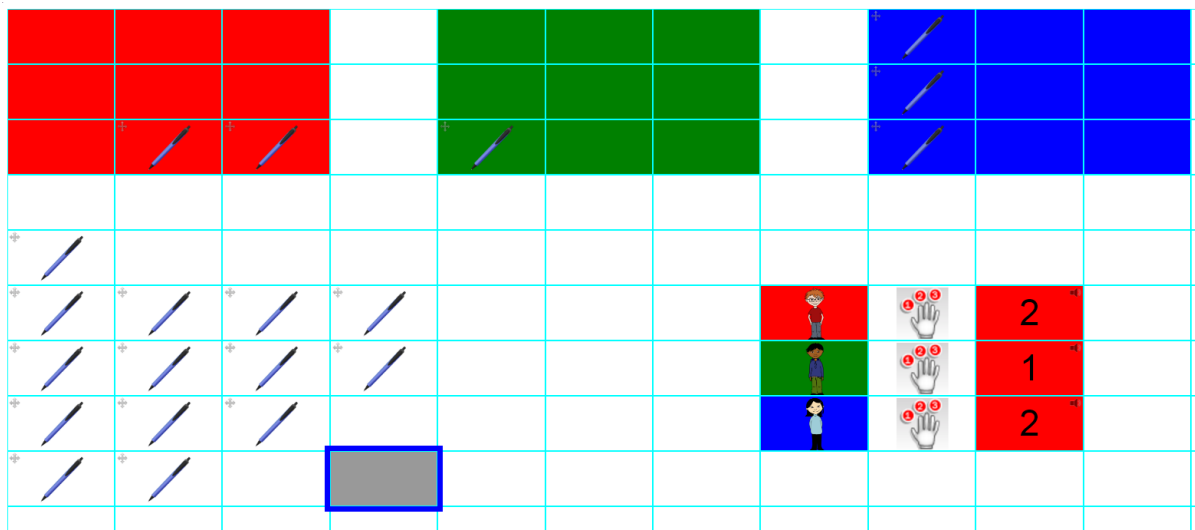




Purple Mash Computing Scheme of Work – Unit 2.3 – Spreadsheets – Lesson 1

- Children should then be given a chance to familiarize themselves with 2Calculate by making a counting machine. They do not have to use food pictures and ladybirds.

The example below shows children sharing out pencils:





## Lesson 2 – Copying, Pasting and totals

### Aim

- To use copying and pasting shortcuts in 2Calculate.
- To use 2Calculate totalling tools.
- To use 2Calculate to solve a simple puzzle.

### Success criteria

- Children can use copying a pasting to help make spreadsheets.
- Children can use tools in a spreadsheet to automatically total rows and columns.
- Children can use a spreadsheet to solve a mathematical puzzle.

### Resources

Unless otherwise stated, all resources can be found on the [main unit 2.3 page](#). From here, click on the icon to set a resource as a 2do for your class. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you don't lose this page.

- [Examples of completed magic square puzzles.](#)

### Activities

1. Review how to open a blank spreadsheet.
2. Discuss what a Magic Square is. Children will probably not know. Can they think of a way that a spreadsheet could help them fill in a magic square? Some children might remember that the spreadsheet can add up numbers for you.
3. Create the following pattern on a spreadsheet. The actual colours do not matter; it is just somewhere for the numbers to go.

				1
				2
				3
				4
				5
				6
				7
				8
				9

4. Make the numbers 1 to 9 moveable by selecting them and clicking on the 'move' object in the








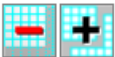
objects toolbox. Children did this in y1 but will need reminding.











- The numbers are deliberately too near the magic square to have space to add the numbers up; this is so you can demonstrate cutting and pasting. ‘Pretend’ to realise this fact and show the children

how you can select the numbers, then hold down the control key  and press . It won't look like anything has happened but move across a couple of columns then press  +  and the numbers will move.

- We want to add totals that will add up the numbers in the rows and columns for us so we can see if we have made a magic square. Click on the square to the right of the first row of the magic square.
- The totalling tools can be found in the Copy and Total toolbox. Click on the correct tab. Now click on the button that will add up the row . At the moment the total will be zero but drag in some numbers and it should change. Ask the children to check that it is working correctly.
- Ask the children to create their own copy of this spreadsheet and add similar totals for the rest of the rows and for the columns. They could also investigate the diagonal totalling tool as well.
- Once they have done this, they should save the file and then try to see if they can ‘solve’ the magic square.
- Once they have solved the 3 by 3 square and saved the file. Show the children how to make their spreadsheet bigger by clicking on the + in the button on the bottom right of the screen to add more cells. 

**NB** Children will probably need to be reminded how to save their file and of the importance of a sensible filename such as ‘magic square 3 by 3’.

- Then challenge them to use cutting and pasting and copying and pasting to enlarge the magic square to a 4 by 4 square to solve. Save this file with a different name.

Copying	Cutting	Pasting
 + 	 + 	 + 

In 2Calculate you can copy 1 cell and then paste it into several cells at once by selecting multiple cells as the target. This is useful when wanting multiple copies of an image or number.



## Lesson 3 – Using a spreadsheet to add amounts

### Aim

- To explore the capabilities of a spreadsheet in adding up coins to match the prices of objects.

### Success criteria

- Children can use images in a spreadsheet.
- Children can work out how much they need to pay using coins by using a spreadsheet to help calculate.

### Resources

- Examples of coins. It would be useful if the children are familiar with how pence and pounds are written e.g. 17p is the same as £0.17 as the spreadsheet will automatically display as £s.

### Activities

- Open a blank spreadsheet. Explain that today we are going to add some images of things you can buy in a shop into the spreadsheet and their prices and then we are going to use the spreadsheet to work out which coins we need to pay for them.
- Remind the children how to add images of items to the spreadsheet. Make sure that you are in the top left cell then go to the toolbar on the right hand side and click on the images tab




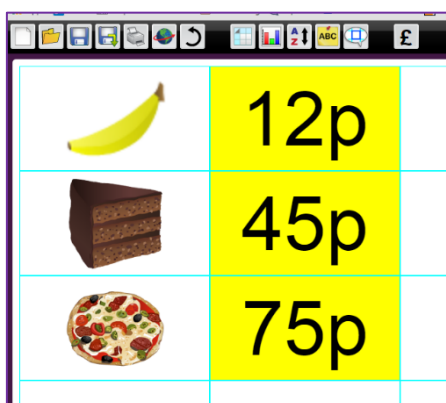



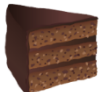

Purple Mash Computing Scheme of Work – Unit 2.3 – Spreadsheets – Lesson 3

- You will see a selection of coin images which will be useful later but for now, click on the 'Set Image' button to open the following screen.



- Today we are going to be using clipart. Click on the clipart button  to open the clipart picker. Remind the children of the different choices of topics and go to the food option (children could choose other items to price if you wish).
- Select an item and click on the OK button to add it to the spreadsheet. Add 2 further items on the rows under the first item and type in some made up prices for the items in the cell next to them.



	12p
	45p
	75p

- Now we are going to use an area of the spreadsheet to be the 'shop'. At this stage you might need to add some more rows to the spreadsheet so show the children how to do this:

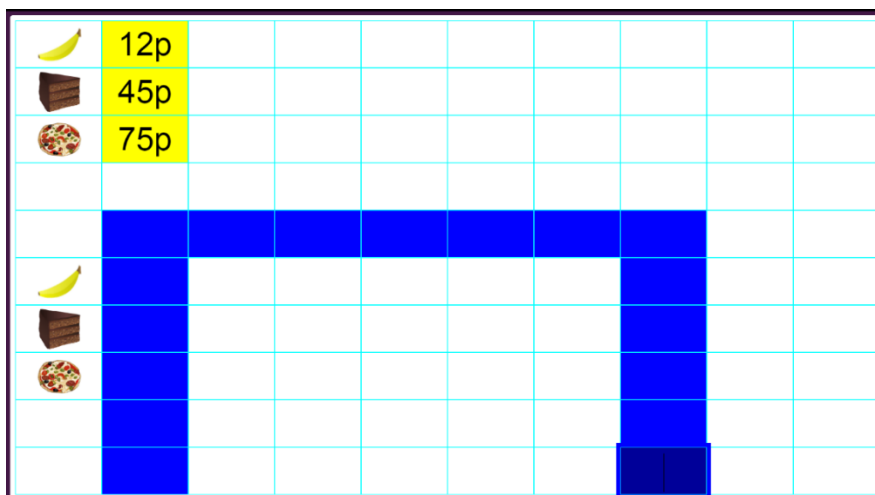
Look at the bottom right of the screen and find the 'add and delete cells' icons. Click the add cells icon until the sheet is the size you want it to be.



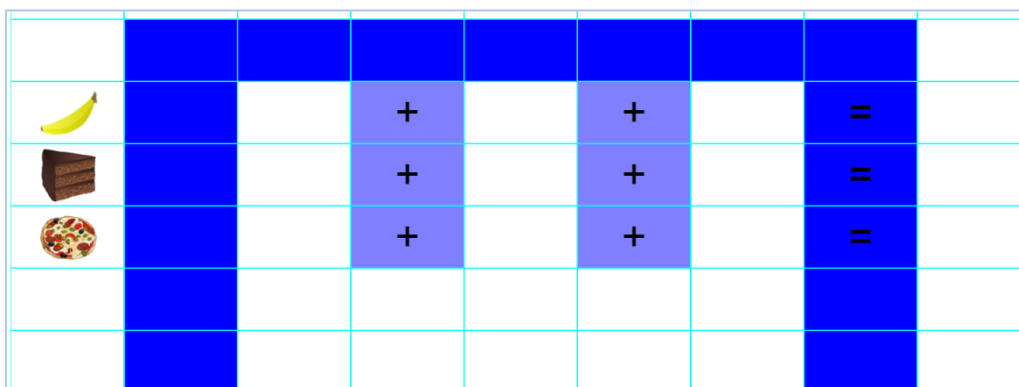


Purple Mash Computing Scheme of Work – Unit 2.3 – Spreadsheets – Lesson 3

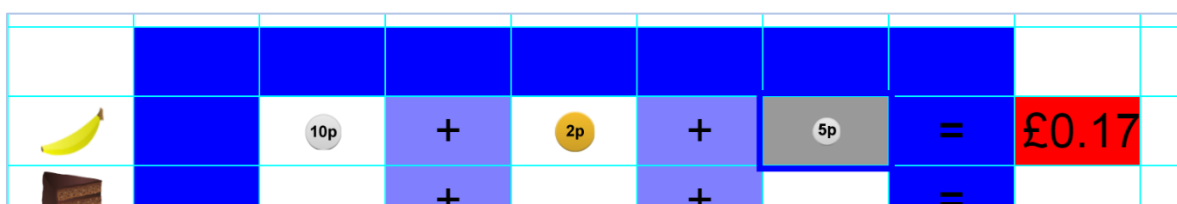
7. Colour in the cells as shown below (to make the shop front). Remind the children how to select more than 1 adjacent cell at a time to colour them. Then add the same images as before to the shop like the image below.



8. Now add  $+$  and  $=$  signs that will add up the coins:



9. Click on the first cell of the sum for the first item and in the toolbar on the right hand side go back to the images of the coins and click on a coin. It should appear in the cell. Do this for 2 more coins to fill in the whole and see how the spreadsheet has added up the coins.



You may need to spend some time discussing the relationship between prices in pence and pounds.

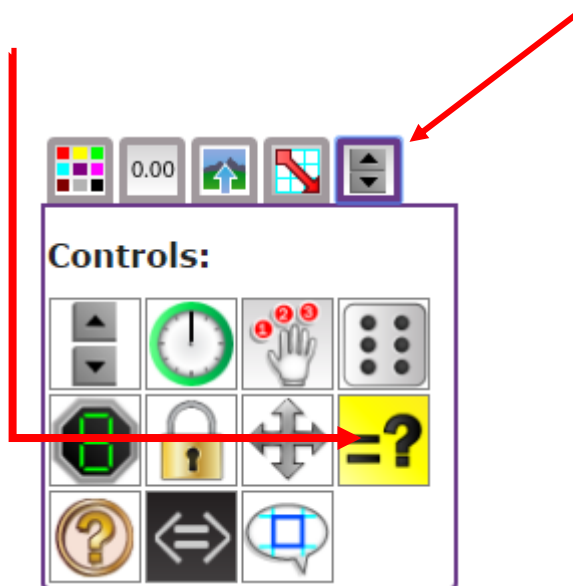
10. Can children pick the right coins to add up to the cost of the first item?

**NB** if less than 3 coins are enough then you can delete the first plus sign (click on it and press the 'Delete' button on the keyboard) leaving only 2 coins to add together. If more coins are required, then you will need to resize the 'shop' to make space for another coin. Alternatively, the price of the item could be changed to make it easier for the children.

11. See if the children can create their own shops on their computers.



- Once they have had time to create their shops you could introduce the 'equals' tool. Click on one of the cells with an '=' sign in and delete the '=' sign, then click on the 'Controls' tab in the toolbox and click on the 'equals tool'



- The equals tool symbol will appear in the cell. If you enter the price of the item in the cell next to it (as a decimal), the tool will indicate whether the coins add up to the correct amount. Try doing this for the other items as well.

				10p	+	2p	=	0.12
		£1	+	50p	+	10p	≠	0.45
		20p	+	50p	+	5p	=	0.75

- Let children try out this tool on their own machines, remembering to save their work.



# Lesson 4 – Creating a table and block graph

## Aim

- To add and edit data in a table layout.
- To use the data to manually create a block graph.



## Success criteria

- Children can create a table of data on a spreadsheet.
- Children can use the data to create a block graph manually.

## Resources

none

## Activities

1. Create a blank spreadsheet. Explain that in this lesson we will be collecting information (data) from the class to put into a spreadsheet.
2. We are going to start with favourite ice cream flavours (you might prefer a different topic for your class related to topics that you are studying; this is just an example).
3. Put a title on the spreadsheet. The size of the text will automatically resize to fit in the cell so experiment to find the best layout for your title.
4. You will probably have to resize the spreadsheet using the   buttons in order to fit in the data. These buttons can be pressed at any time if you are running out of space and then the data can be copied and pasted into different cells if necessary. It is useful for the children to have a few reminders about how to do this so that they can do it on their own spreadsheets.
5. Label one column; 'Name' and then choose which flavours of ice cream you will be using; a limited choice is better for the purposes of the graph. Input each into a separate cell at the top of your spreadsheet as a reminder.
6. Then get each child to enter their name (or you could copy and paste from a class list to save time) and their favourite flavour; they could click on the flavour then copy and paste it into the cell next to their name. You should end up with a table similar to the one below:

Favourite	ice cream	flavours in	class 2	Vanilla	Chocolate	Strawberry	Mint	Pistachio
Name	Favourite flavour							
Jon	Chocolate							
Sam	Strawberry							
Miriam	Mint							
Yuki	Strawberry							
Ahmed	Pistachio							
Amelie	Vanilla							

**NB** If you have a class of 30, you may want to split the table into 2 tables next to each other otherwise the cells become so small they are unreadable.



Purple Mash Computing Scheme of Work – Unit 2.3 – Spreadsheets – Lesson 4

- Rather than the children entering the data all over again in their own spreadsheets, you could have it displayed on the whiteboard for them to use to make a graph.
- To make the graph, choose an image for each flavour and put these across the bottom of the graph. (The images in the example have been made by selecting an ice-cream in the clipart picker and then colouring the top part appropriately; see Y1, lesson 1 for a reminder of how to do this). Making extra space on the spreadsheet if necessary. Then copy and paste names to the correct columns of the graph.
- Children should make the graphs on their spreadsheets being sure to include a title and labels for the axes. They could colour the blocks on the graphs appropriately to make the graphs easier to read.

Favourite	ice cream	flavours in	class 2	Vanilla	Chocolate	Strawberry	Mint	Pistachio
Name	Favourite flavour							
Jon	Chocolate							
Sam	Strawberry							
Miriam	Mint							
Yuki	Strawberry							
Ahmed	Pistachio					Max		
Amelie	Vanilla					Giorgio	Miriam	
Casey	Vanilla			Amelie		Yuki	Laila	
Laila	Mint			Casey	Jon	Sam	Dylan	Ahmed
Dylan	Mint							
Max	Strawberry				Favourite	Flavour		
Giorgio	Strawberry							

- Once the graphs are made and saved, see if children are able to use their graphs to answer questions such as finding the most and least popular flavours?



# Assessment Guidance

The unit overview for year 2 contains details of national curricula mapped to the Purple Mash Units. The following information is an exemplar of what a child at an expected level would be able to demonstrate when completing this unit with additional exemplars to demonstrate how this would vary for a child with emerging or exceeding achievements.

Assessment Guidance	
Emerging	<p>With support, children can open, edit and save sheets in 2Calculate (Throughout Unit 2.3). Children can enter a small set of data into cells (Throughout Unit 2.3). With support, they can allocate a value to an image (Unit 2.3 Lesson 1. Point 3) and manipulate data using copying and pasting allowing them to solve puzzles (Unit 2.3 Lesson 2. Point 11) - support in the form of a visual prompt may be given here to aid children in using keyboard short cuts). Children use images and can present data in a variety of ways (Unit 2.3 Lesson 4. Point 9).</p>
Expected	<p>Using the 2Calculate spreadsheet, children can open, edit and save sheets (Throughout Unit 2.3). Children can enter data into cells (Throughout Unit 2.3), allocate a value to an image (Unit 2.3 Lesson 1. Point 3) and manipulate data using copying and pasting allowing them to solve puzzles (Unit 2.3 Lesson 2. Point 11). Children use images and can present data in a variety of ways (Unit 2.3 Lesson 4. Point 9).</p> <p>Most children will be able to create a spreadsheet which includes a graph based on simple data collected. Their planned spreadsheet and graph are likely to contain pre-compiled shared data. They can add colour and appropriate labels to their spreadsheet and graph respectively (Unit 2.3. Lesson 4).</p> <p>Most children will be able to produce a spreadsheet which can help them solve simple mathematical puzzles, calculate how many coins are required to pay for an amount and present data graphically. Using spreadsheets, the children can model an idea through them (Unit 2.1.).</p> <p>Children can utilise spreadsheets both own and pre-made to manipulate data e.g. generate a graph from a table, produce desired calculations on numerical data e.g. simple addition calculations (Unit 2.3. Lesson 3). Children can answer questions on data e.g. the most and least popular flavours. (Unit 2.3. Lesson 4 Point 10).</p> <p>Most children will be able to use 2Calculate to record collected data into a table and use this data to create a block graph manually (Unit 2.3. Lesson 4 Points 8, 9 &amp; 10).</p>
Exceeding	<p>Using the 2Calculate spreadsheet, children can independently open, edit and save sheets and support others in doing this (Throughout Unit 2.3). Children can enter a wider amount data into cells (Throughout Unit 2.3), allocate a value to an image (Unit 2.3 Lesson 1. Point 3) and manipulate data seamlessly using keyboard short cuts for copying and pasting, allowing them to solve puzzles (Unit 2.3 Lesson 2. Point 11). Children use images and can present data in a variety of ways (Unit 2.3 Lesson 4. Point 9). Children will demonstrate greater depth by explaining the data and summarising this into simple statements (Unit 2.3 Lesson 4. Point 10).</p>