purple mash

Computing Scheme of Work

CRASH COURSE

Year 3 Spreadsheets Catch-up

For children in year 3 who haven't used 2Calculate before.

Year Group: 3
Number of Lessons: 4

From 2simple

Contents

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 catch-up unit of work forming part of the Computing Scheme of Work for teaching the use of spreadsheets. It is aimed at classes in which the children have not used 2Calculate before. It is one lesson longer than the Year 3 scheme of Work Spreadsheet unit.

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 or 0208 203 1781.

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.

Year 3 – Medium Term Plan

Lesson	Aims	Success Criteria
1	Introduction to spreadsheets	• Children can navigate around a spreadsheet. • Children can explain what rows and columns are. • Children can save and open sheets. • Children can enter data into cells. • Children can open the Image toolbox and find and add clipart. • Children can use the 'move cell' tool so that images can be dragged around the spreadsheet.
2	Using a spreadsheet to total currency amounts.	• 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.
3	To use the 'more than', 'less than' and 'equals' tools.	• Children can use the 'more than', 'less than' and 'equals' tools to compare different numbers and help to work out solutions to calculations. • Children can use the 'spin' tool to count through times tables.
4	To introduce the Advanced Mode of 2Calculate and use coordinates.	• Children can describe a cell location in a spreadsheet using the notation of a letter for the column followed by a number for the row. • Children can find specified locations in a spreadsheet.

Lesson 1 – Introduction to spreadsheets

Aim

- To know what a spreadsheet looks like.
- To be able to navigate around a spreadsheet and enter data.
- To learn new vocabulary related to spreadsheets.
- To add clipart images to a spreadsheet.
- To use the 'move cell' and 'lock' tools.

Success criteria

- Children can navigate around a spreadsheet.
- Children can explain what rows and columns are.
- Children can save and open sheets.
- Children can open the Image toolbox and find and add clipart.
- Children can use the 'move cell' tool so that images can be dragged around the spreadsheet.
- Children can use the 'lock' tool to prevent changes to cells.
- Children can enter data into cells.

Resources

Unless otherwise stated, all resources can be found on the main unit 3.2 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.

- 2Calculate prompt sheet to display on the whiteboard.

Note for teacher: In this lesson, children are introduced to a variety of tools and time is given to allowing them to try out each in turn. Determine the time spent dependent upon the time that you have available. Alternatively, demonstrate the functions and then display the prompt sheet to help children then explore on their own.

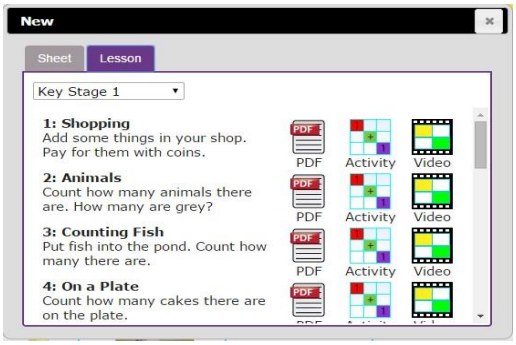
Activities

1. Explain to the children that we are looking at a type of computer program called a spreadsheet today. Spreadsheets are used for organising information. For example, if you were planning a tea party you could input to the spreadsheet all the things you will need to get for the party and who you were going to invite. Can they think of any other things that could be stored in a spreadsheet for organising a party? (menus, gift list, entertainments).

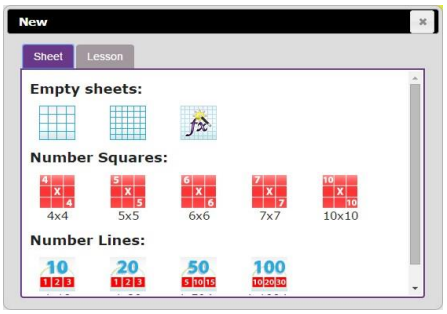
2. Many people make lists on paper but the advantage of using a spreadsheet is that it can also do calculations for you. Explain what this means e.g. you could enter the cost of the different things that you will need for your party into the spreadsheet and then easily calculate how much money you will need to buy them all.

3. The aim today is to open a spreadsheet program in Purple Mash called 2Calculate and to learn how to enter information and do some simple calculations.

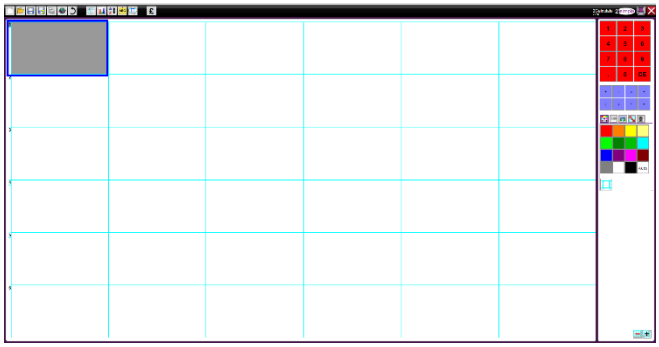
4. Open 2Calculate on the whiteboard. Show that when it starts, there is a smaller screen in the middle with different choices. The labels at the top ('Sheet' and 'Lesson') are called tabs. For today we are going to click on the 'Sheet' tab.



5. Click on the tab. This also gives a few choices but for today click on the first one: an empty sheet with big 'rectangles'.



6. Spend some time showing children the following things, emphasising the new vocabulary in bold:



- The **rows**; these are numbered 1 to 6
- The **columns**; how many are shown?
- The word '**cells'** is used to describe each box in a spreadsheet.
- Each cell can contain words, numbers, colours, symbols (such as + - =)
- How to move from cell to cell; this can be done by clicking or tapping in the cell and by using the **arrow keys** on the keyboard. If you press the enter key when in a cell you will move down 1 row.
- How to type into cells; in 2calculate the writing will get smaller automatically to fit in the words that you type.
- How to **delete** the contents of a cell; either by using the **backspace key** or the **Delete key**.

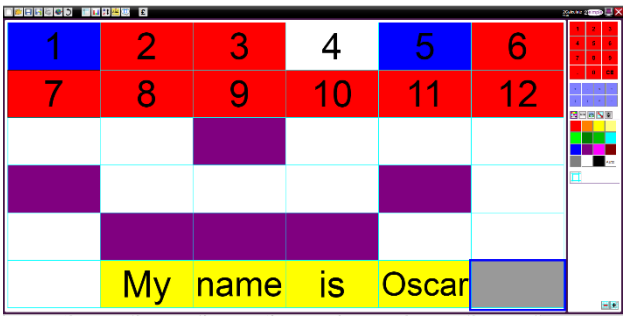
7. Children should now spend some time opening 2Calculate on their computers and try moving and typing. Can they enter their name into a cell?

8. Once they have all managed to do this, show the children how to save a file. They will need to give their file a sensible name that they haven't used before, why?

9. Now see if children can close 2Calculate then open it again and open their file. Let them spend some time experimenting with typing and colouring cells.

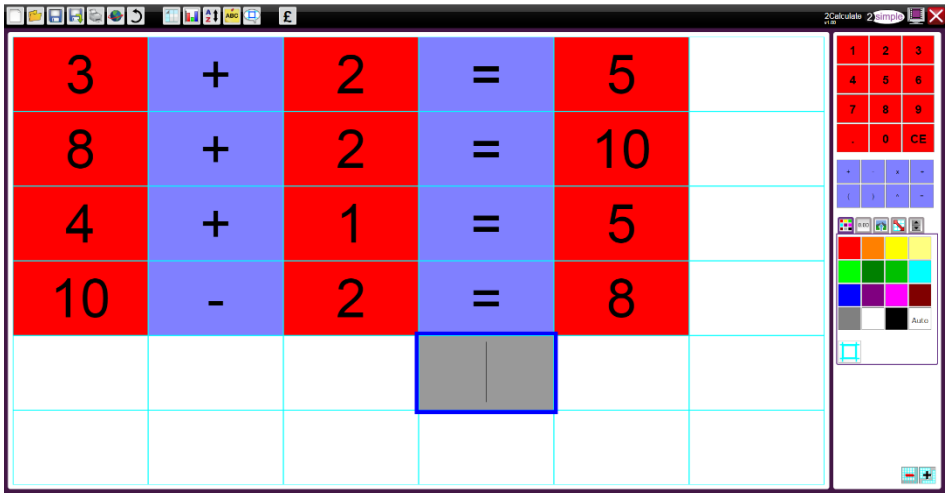
   To colour cells, they first click on the cell, then click on the colour they want in the toolbox on the right-hand side.

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



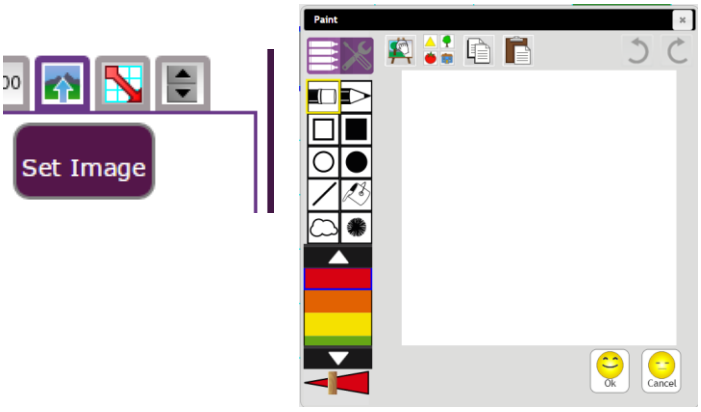
10. If the children are getting on well with this, show them how to put a simple sum into the cells and let 2Calculate work out the answer. First enter a number then go into the next cell to the right and click the '+' sign button on the right-hand side (you can also use the keyboard +, - and / signs), then move to the next cell and enter another number. Now put the '=' sign in the next cell and see how 2Calculate works out the answer.

    Children can spend time experimenting with this and performing calculations.



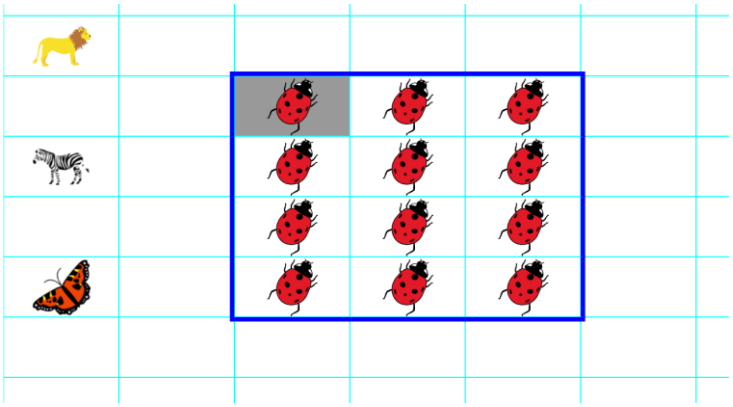
11. Next, show children where the Image toolbox is. They need to click on the images tab on the right-hand side:

12. 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.



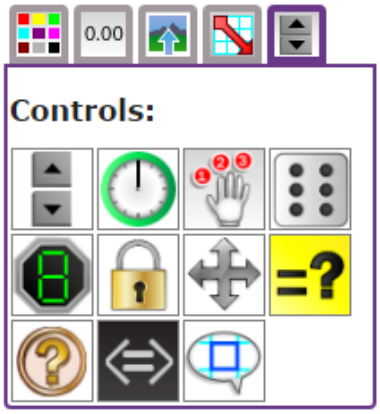
13. Click on the clipart button  to open the clipart picker. Show the children the different choices of topics and go to the Animals option (children could choose other items if they wish).

14. Select an animal and click on the OK button to add it to the spreadsheet. Add 2 further animals in the same way in different cells. You could show children that if they select more than one cell when adding images then they will get multiple copies of the same image.



15. Show the children that you can't drag the animals around into different cells.

16. Click on one of the animals then click on the Controls toolbox



17. Now click on the 'move cell' tool  . A little symbol will appear in the top right-hand corner of the image to show that it is now moveable. Try dragging it into a different cell.

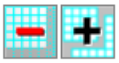
18. This can also be done with several images selected at once to save doing it many times.

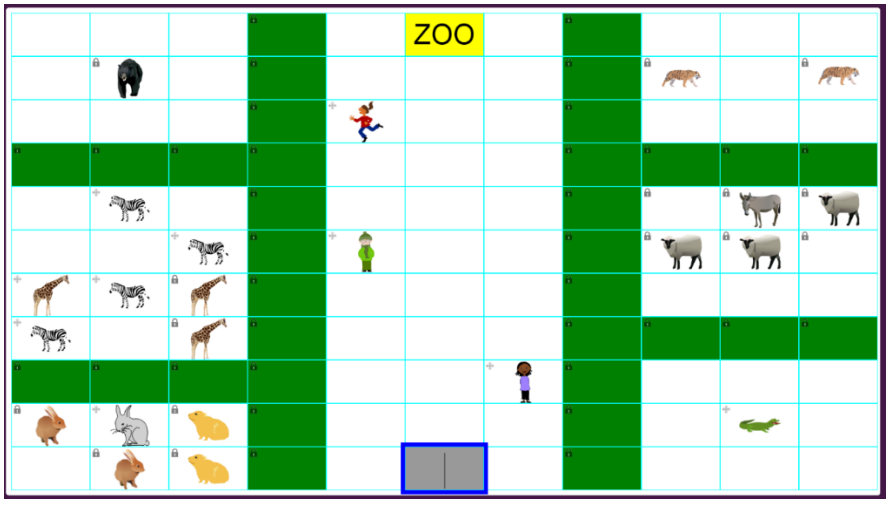
19. Unfortunately, all of the animals being able to move around the spreadsheet is quite dangerous for the smaller animals; show the children what happens to the ladybirds when the lion is dragged onto them! So, we are going to lock the ladybird cells so they can't be eaten.

20. To do this click on the cell that you want to lock, then click on the lock cell tool 

21. Explain to children that this tool can be useful for other things too; such as when you have numbers or cells that you don't want to be accidently changed.

Give children the opportunity to experiment with the lock and move tools. They could try making a 'zoo' by colouring cells to make walls and locking them so they can't be changed and then locking or unlocking and moving animals into their cages/cells.

NB If children find that their spreadsheets are too small and need more cells click on the + in the button on the bottom right of the screen to add more cells. 



Lesson 2 – Using a spreadsheet to total currency 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

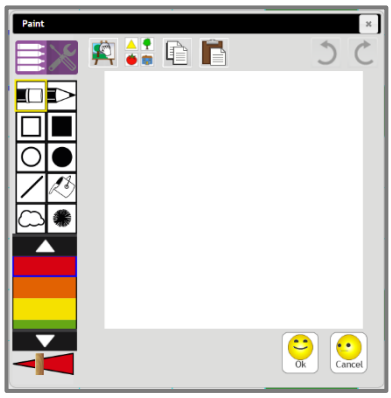
- Examples of coins. It would be useful if the children are familiar with how pence and pounds are written e.g. 17p is the same as £0.17 as the spreadsheet will automatically display as £s.

Activities

1. 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.

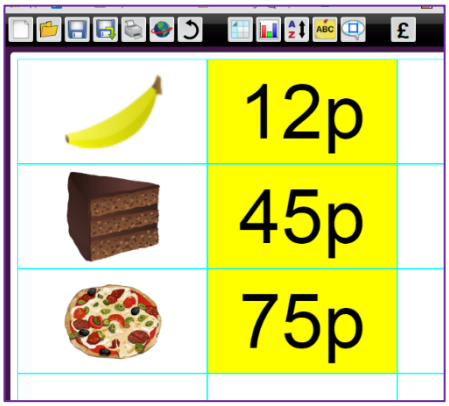
2. Remind the children how to add images of items to the spreadsheet. Make sure that you are in the top left cell then go to the toolbar on the right-hand side and click on the images tab

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.



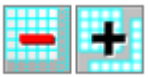
4. Today we are going to be using clipart. Click on the clipart button  to open the clipart picker. Remind the children of the different choices of topics and go to the food option (children could choose other items to price if you wish).

5. 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.

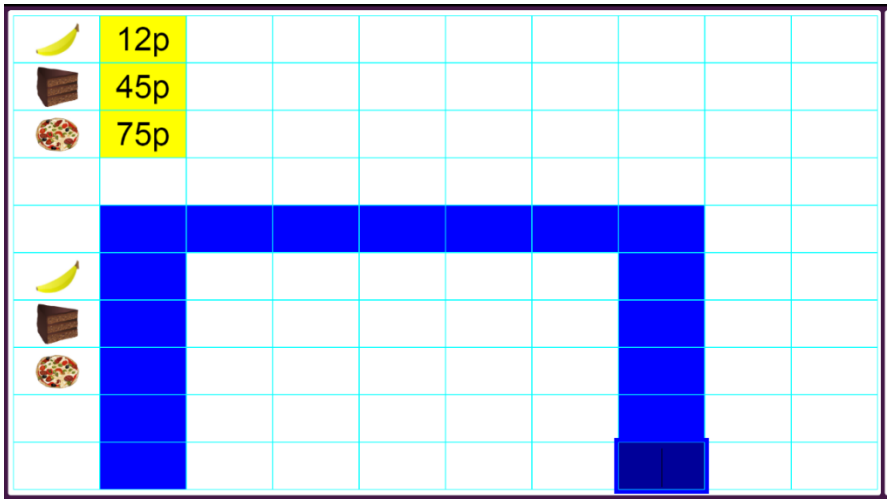


6. Now we are going to use an area of the spreadsheet to be the 'shop'. At this stage you might need to add some more rows to the spreadsheet so show the children how to do this:

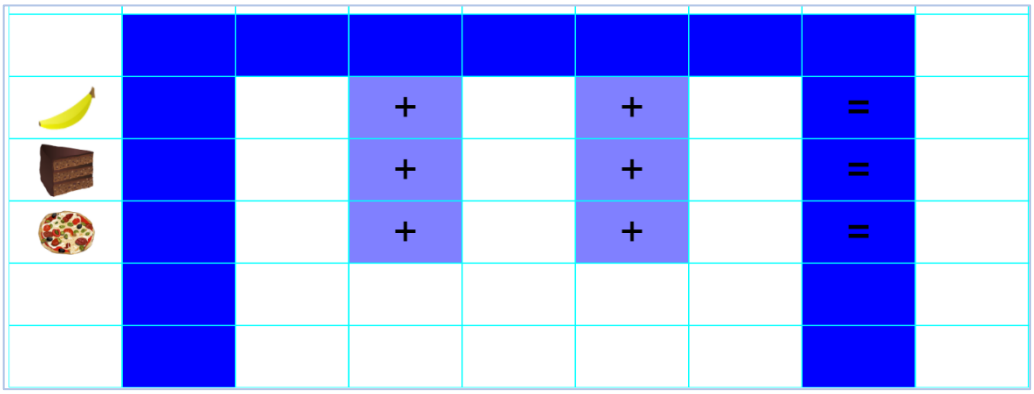
- Look at the bottom right of the screen and find the 'add and delete cells' icons. Click the add cells icon until the sheet is the size you want it to be.



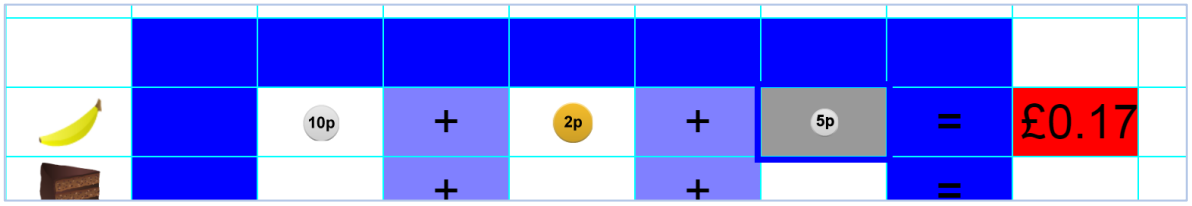
7. Colour in the cells as shown below (to make the shop front). Remind the children how to select more than 1 adjacent cell at a time to colour them. Then add the same images as before to the shop like the image below.



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.



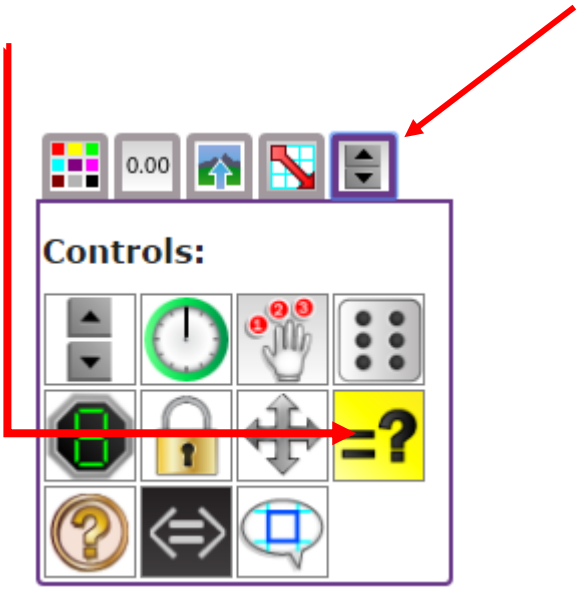
You may need to spend some time discussing the relationship between prices in pence and pounds.

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

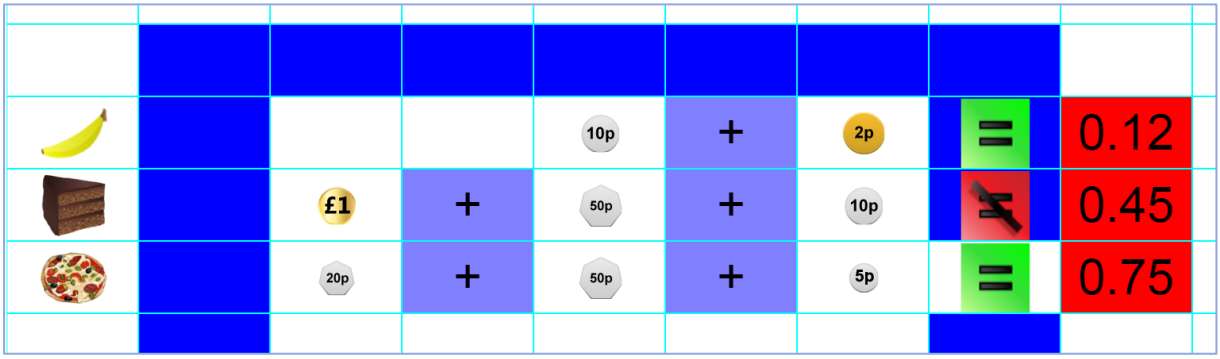
NB if less than 3 coins are enough then you can delete the first plus sign (click on it and press the 'Delete' button on the keyboard) leaving only 2 coins to add together. If more coins are required, then you will need to resize the 'shop' to make space for another coin. Alternatively, the price of 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 or save the shop in a shared class folder for children to open and then save to their work folder.

12. 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'



13. 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.



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

Lesson 3 – Using the ⇔ and Spin Button Tools

Aim

- To introduce the 'more than', 'less than' and 'equals' tools.
- To introduce the 'spin' tool and show how it can be used to count through times tables.

Success criteria

- Children can use the 'more than', 'less than' and 'equals' tools to compare different numbers and help to work out solutions to calculations.
- Children can use the 'spin' tool to count through times tables.

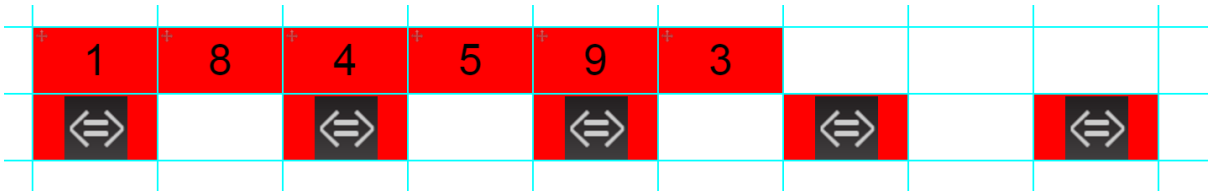
Resources

Unless otherwise stated, all resources can be found on the main unit 3.2 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.

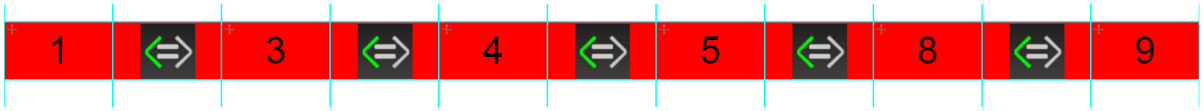
- 2Calculate Copying and Pasting
- Tool Example 1
- Tool Example 2

Activities

1. Open the Example 1 file and show children the first number line. Ask them if they recognise any of the symbols below the number line and discuss the meaning of <, > and =.



2. Show how dragging the red numbers affects the display of the tool. Put the numbers in ascending order and see how the tool makes it clear that they are correctly located. What about descending order?

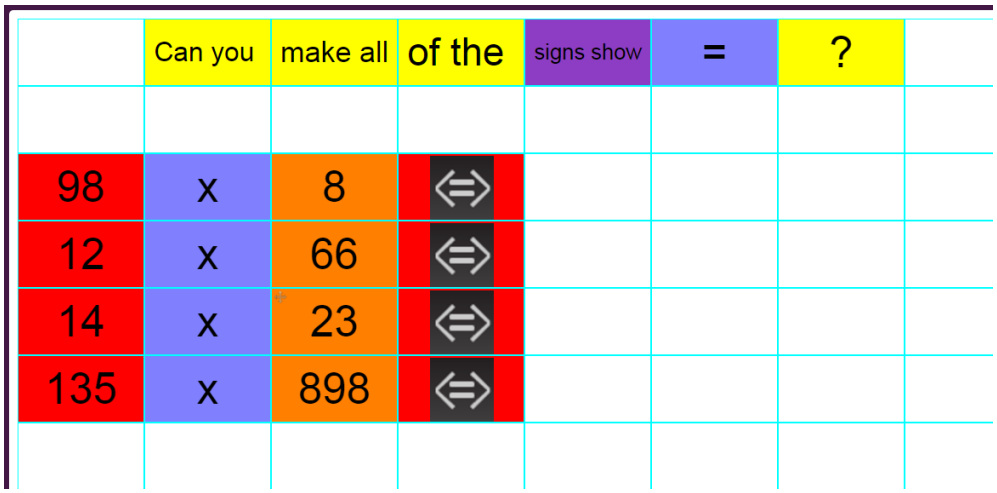


3. Show children how to insert the 'more than', 'less than' and 'equal' tools into a cell by clicking on one of the empty blue cells and then clicking the tool in the controls toolbox.

4. Also, remind children how to make the numbers movable (by highlighting the blue numbers and then clicking on the 'move cell' tool).

5. Can children recreate a number line in their own spreadsheet? Children should be encouraged to create number lines that stretch their ability, using, for example, decimals to provide an extra challenge. You could create spreadsheets with appropriate numbers for the groups within your class and set these as 2dos, children could then add the spin tool cells and drag the numbers to the correct places.

6. Once children have had time to try this out, bring them back together and open the second example file.



7. The challenge here is to use estimation and the indications from the tool to work out the correct answers. Feel free to alter the numbers if they are too hard/easy for your class.

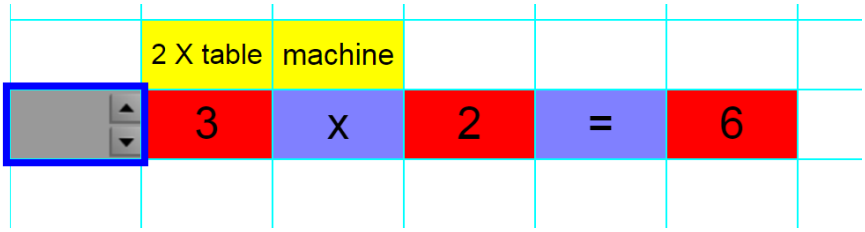
   For example, children could suggest that, as 98 is nearly 100, then the answer to the first question should be a bit less than 800. Try entering 750 and the  will indicate that the answer is higher than the entered answer, so try a number between 750 and 800 and continue to use the tool until the equals sign is highlighted, meaning the answer is correct.

8. The rest of this activity could be completed as a class or by children copying the calculations and using the tool to work out the answer. Emphasise that children should make educated estimations, in the first instance. You could create spreadsheets with appropriate numbers for the groups within your class and set these as 2dos for the children.

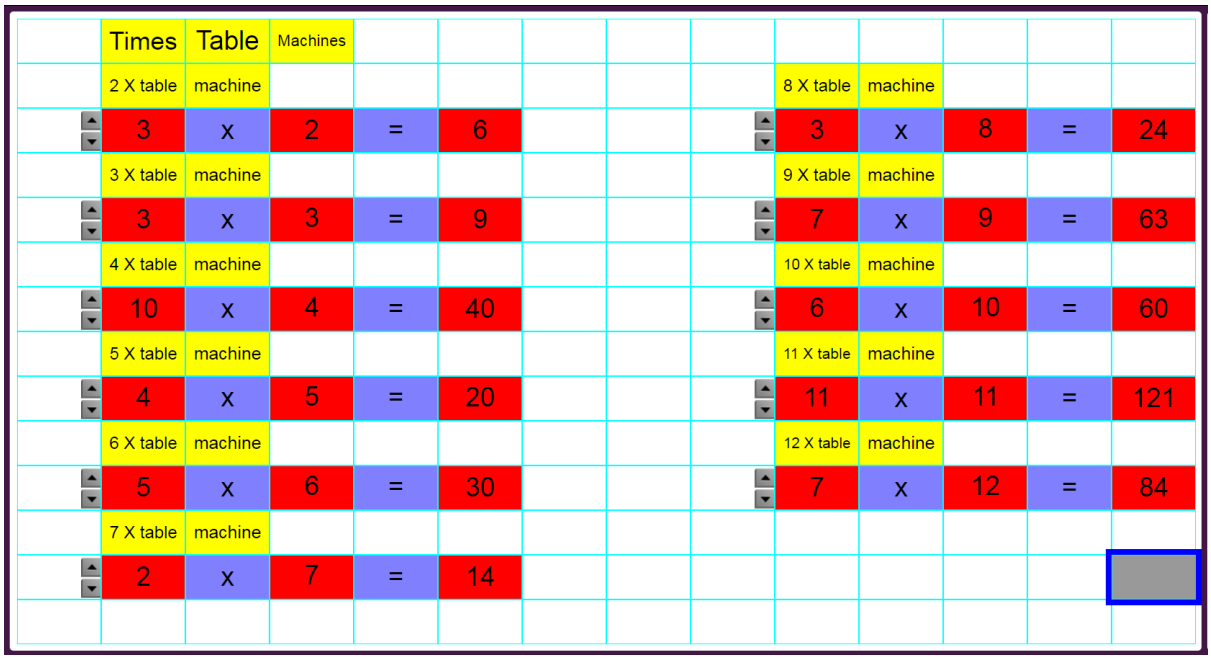
9. Once children have had time to explore this tool, bring them back together to introduce the 'spin' tool. Click on a free cell on the left-hand side of the spreadsheet, then click on the 'spin' tool from the Controls toolbox on the right-hand side  . Enter the number 1 in the cell to the immediate right of it. Show how clicking on the up and down arrows increases or decreases the number by 1.

10. Can children think of a way to use the spin button to display the numbers in the 2 X table?

Here is a suggestion:



11. See if children can use the 'spin' tool to create table machines for the other times tables. If there is time, talk the class through copying and pasting using the prompt sheet. How quickly can they work out answers to questions using their tables tools?



Lesson 4 – Advanced Mode and Coordinates

Aim

- To introduce the Advanced mode of 2Calculate.
- To learn about describing cells using their coordinates.

Success criteria

- Children can describe a cell location in a spreadsheet using the notation of a letter for the column followed by a number for the row.
- Children can find specified locations in a spreadsheet.

Resources

Unless otherwise stated, all resources can be found on the main unit 3.2 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.

- Advanced Mode, example 1.
- Advanced Mode, example 2.; you will need to save this and set as a 2Do for your class.
- Advanced Mode, example 3. Set this as a 2Do for the class.

Activities

1. Show children how to switch to the Advanced mode of 2Calculate by clicking on the mode switch button at the top of the screen:

2. Notice that in Advanced mode, the rows are numbered, and the columns have letters to label them.

3. Spend a few minutes asking children to tell you which cell you have clicked on, clicking on a different cell each time.

4. Open the first example spreadsheet. On this sheet, the key to the right-hand side shows which cells should be which colour. As a class, colour the cells; you should end up with a picture of a tree.

5. Children can now open Example 2; make sure that they are in Advanced mode and try to work out what the image is.

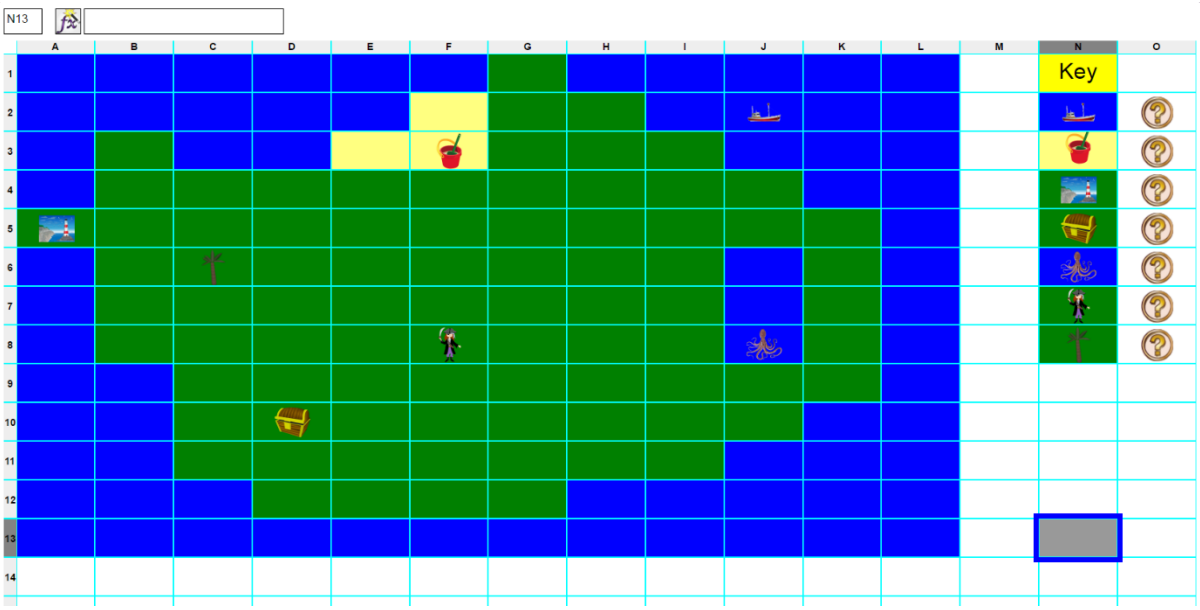
6. Any children who finish quickly could try making their own key to an image and seeing if a friend can solve it.

7. When children have had time to finish, bring the class back together and open the Treasure Map example file. Children must click on the Quiz tool cells and enter the coordinates of the item. If they enter correctly, their answer will replace the Quiz tool.

8. Children can complete the activity at their computers and then create their own treasure maps to swap with a partner using the Quiz tool to hide the locations.

9. Alternatively, they could fill in the map key with the objects and locations and their partner should put the correct items in the correct locations. They can use copy and paste to do this (Ctrl + C to copy, Ctrl + V to paste).

Treasure Map example file



Assessment Guidance

The unit overview for year 3 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	With support, children can save and open sheets (Lesson 1), enter simple data into cells (Lesson 1. Point 7), manipulate data using the 'move cell' tool (Lesson 1. Point 17) and use the image toolbox to add clipart (Lesson 1. Point 14). Children can use a spreadsheet to add up currency amounts and assist them in working out simple money problems (Lesson 2). They are beginning to understand the use of symbols to represent more than, less than and equals to and use the spreadsheet tools to explore the outcome of comparing numbers and calculations (lesson 3). Children can find specific cell locations within a spreadsheet (lesson 4).
Expected	Using the 2Calculate spreadsheet, children can save and open sheets (all lessons). Most children will be able to save their 2Calculate files, using a memorable file name, to their own personal space on Purple Mash and understand that this can be retrieved later. They can enter data into cells (Lesson 1), manipulate data using the 'move cell' tool (Lesson 1) and use the image toolbox to add clipart (Lesson 1). 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 (Lesson 2). Children can create their own number lines within 2Calculate including 'more than', 'less than' and 'equal' tools (Unit 3.3. Lesson 2 Points 3 and 5). Children can locate cells using their cell reference in advanced mode (lesson 4)
Exceeding	Children demonstrating greater depth will explore more complex functioning of the 2Calculate tools to create their own spreadsheets to explore number and interpret their own data. Children will demonstrate greater depth by explaining the data and summarising this into simple 'more than and less than' statements (suggested extension).