purple mash

Computing Scheme of Work

Unit 6.3 – Spreadsheets with 2Calculate

Contents

Introduction

These spreadsheet lessons have been designed to be used on a range of devices including tablets. We advise when you are dealing with larger spreadsheet data sets then laptops or desktops are the preferred devices.

2Calculate is a simple to use spreadsheet (and more!) for beginners and beyond.
A user guide can be found at 2Calculate User Guide.
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 from using the crash course instead of this unit. 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 or 0208 203 1781.

Differentiation

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 formulae are used, some children might need more practical experience of what the formulae are calculating before moving onto using more complex formulae calculations.
Where appropriate, guidance has been given on how to simplify tasks within lessons or challenge those who are ready for more stretching tasks. The lesson plans are progressive so if a child has not completed plans from a previous year, there might be tools that they are unfamiliar with and will need extra guidance.

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

If children have followed the lessons plans for 2Calculate through the previous years, they will have a good grounding in the functions of the program. Several of the lessons this year aim to put 2Calculate to practical use as a tool for computational modelling and problem solving in the 'real world'.
Lessons 2, 3 and 4 could easily be extended over more than 1 session to explore the practical application of a spreadsheet in more detail. The themes explored in these models can also be easily applied to actual scenarios that your year 6 children might be encountering this year and can therefore be used as part of the work they do for these situations e.g. organising an event for the end of the year, planning a school trip or planning their summer holiday/activities.

Lesson	Title	Success Criteria
1	Exploring Probability	• Children can create a spreadsheet to answer a mathematical question relating to probability. • Children can take copy and paste shortcuts. • Children can problem solve using the count tool.
2	Creating a Computational Model	• Children can create a machine to help work out the price of different items in a sale. • Children can use the formula wizard to create formulae. • Children can use a spreadsheet to solve a problem.
3	Use a Spreadsheet to Plan Pocket Money Spending	• Children can use a spreadsheet to model a real-life situation and come up with solutions. • Children can make practical use of a spreadsheet to help plan actions.
4 & 5	Planning a School Event	• Children can use a spreadsheet to model a real-life situation and come up with solutions that can be applied to real life.

Lesson 1 – Exploring Probability

Aim

- To use a spreadsheet to investigate the probability of the results of throwing many dice.

Success Criteria

- Children can create a spreadsheet to answer a mathematical question relating to probability.
- Children can take copy and paste shortcuts.
- Children can problem solve using the count tool.

Resources

Unless otherwise stated, all resources can be found on the main unit 6.3 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.

- 2Calculate tool in Purple Mash
- Dice Example 25.
- Dice Example 50.
- Dice accumulator example file.

Activities

Introduction	Display **slide 2** and outline the lesson aim. Display **slide 3** and outline the success criteria.
Introduction: Exploring Probability	Display **slide 4** and explain that we will be using the 'Dice Tool' in 2Calculate to work out probability of throwing certain numbers. Discuss with children if they think it will be an even chance of numbers thrown. Go through key tools and vocabulary for today.
Activity 1: Adding Dice Tool to a Spreadsheet	Use **slide 5.** Children to open 'Advanced' Mode sheet on their devices. Explain that we will create a sheet with 50 dice on using copy and paste shortcuts. You could use the 50 dice example to help model the steps. ***If using an iPad, begin in cell A1 and drag across to cell E1 to create 5 dice. Tap in a cell and drag the blue border to highlight cells A1 – I1, then drag down a further 9 rows to A10 – E10. This will create a 50 dice spreadsheet.**
	Use **slide 6** to help children to complete creating a sheet with 50 dice. Ask children to test highlighting all 50 dice and clicking one. This should make all the dice roll at the same time.

Activity 2: Counting The Dice	Display **slide 7**. Explain that we can create a table that counts all the 1s, 2s, 3s, 4s, 5s, and 6s thrown. Go through the steps to support children with adding a table on the sheet and including the count tool. Once table is made, children to select 50 dice and click one. They are to observe what happens in the counting table. All numbers counted should add up to 50 as there are 50 dice.
Activity 3: Exploring The Results	Display **slide 8.** Ask the children to explore rolling the dice. Children to see if they can answer the questions displayed on the slide.
Activity 4: Creating a Running Total	Display **slide 9**. Ask children to save their sheet and open a new tab with advanced mode sheet. Go through the steps of creating a running total (Use Accumulator Example). Children to enter results up to 450 throws (9 roles of the sheet of 50 dice).
Activity 5: Creating a Graph	Use **slide 10** to support children in creating graphs from the accumulator totals. Children to create a table similar to that shown on slide on the same sheet as the accumulator, then use graphing tool to create appropriate graph. Children discuss what the graph shows.
Review Success Criteria	Display **slide 11.** Review the success criteria from **slide 3.** Children could rate how well they achieved this using a show of hands.

Lesson 2 – Creating a Computational Model

Aim

- To use a spreadsheet to calculate the discount and final prices in a sale. Create a formula to help work out the prices of items in the sale.

Success Criteria

- Children can create a machine to help work out the price of different items in a sale.
- Children can use the formula wizard to create formulae.
- Children can use a spreadsheet to solve a problem.

Resources

- 2Calculate tool in Purple Mash.
- The challenges in this lesson get gradually harder. You might decide to only go to a certain point with your class, dependent upon their ability, or to set some of the harder questions as extension work for some children.

Activities

Introduction	Display **slide 2** and outline the lesson aims. Display **slide 3** and outline the success criteria.
Introduction: Computational Model	Use **slide 4** to introduce the task of making a model to decide on the best value tickets to buy. Pose 'what is modelling?' to the class. Reveal definition and then reveal key tools and vocabulary.
Activity 1: Creating a Ticket Spreadsheet	Display **slide 5**. Children to open 'Advanced Mode' 2Calculate file and create the sheet shown on slide. Children then format the cells accordingly as shown on slide.
Activity 2: Filling in the Price & Quantity of Tickets	Use **slide 6** to help children add the data about ticket prices and quantity required.
Activity 3: Working Out the Totals using a Formula	Display **slide 7**. Reveal the steps for adding a formula to calculate total price of tickets without discount or booking fees. Remind children using step 3 about dragging formula in order to copy formula quickly to other cells.
Activity 4: Recording Costing Order	Display **slide 8**. Explain we will need to create a chart in order to record price change. Reveal the 2 steps required and then ask the children to

	move the order of the ticket sellers around to reflect the Most Expensive and Cheapest.
Activity 5: Price Reductions	Use **slide 9** to share the price reductions that have just happened. Reveal the steps for adding formulae to calculate the new total price with reductions. ***Note percentages should be entered as decimal equivalents in the percentage formatted cells.**
Reviewing the Spreadsheet So Far	Display **slide 10** as a reference for the children to ensure that their spreadsheet looks like the one shown on the slide. If it doesn't, they may need to check their formula and also check for data entry errors.
Activity 6: Booking Fees	Display **slide 11**. Explain there has been some new updates and booking fees are now present. Reveal the steps of including and calculating booking fees.
	Display **slide 12**. Support the children in calculating the rest of the information from the other ticket suppliers about booking fees.
Activity 7: Extension	Use **slide 13** to share the extension. Children to create a spreadsheet to calculate sale prices. **(40% of £1400 = £560 discount, making the sofa £840 in the sale. An additional 5% off £840 would be £43, making the double discount price £797. Some children might work out 45% of £1400 - by adding both discounts together - and arrive at the incorrect answer of £770) The wording "an additional 5% *off sale prices*" is important to understand here.**
Review Success Criteria	Display **slide 14.** Review the success criteria from **slide 3.** Children could rate how well they achieved this using a show of hands.

Lesson 3 - Use a Spreadsheet to Plan Pocket Money Spending

Aim

- To use a spreadsheet to plan how to spend pocket money and the effect of saving money.

Success Criteria

- Children can use a spreadsheet to model a real-life situation and come up with solutions.
- Children can make practical use of a spreadsheet to help plan actions.

Resources

- Children will need to use the Internet to research prices of items that they want to buy and find pictures to use.
- Yr 6 Lesson3 Challenge Example.

Activities

Introduction	Display **slide 2** and outline the lesson aims. Display **slide 3** and outline the success criteria.
Introduction: Real-life Model	Use **slide 4** to share with the children that they will be creating a spreadsheet which helps them keep track of pocket money and planning spending. Introduce key tools for today.
Activity 1: Creating a Pocket Money Spreadsheet	Display **slide 5.** Ask the children to open an Advanced Mode 2Calculate file and create a spreadsheet with heading to that shown on the slide. Children can choose their own subheading under each of the headings e.g. washing the car, money from Grandad. Explain the purpose of *Weekly money in*, *Savings* and *Money Out*.
Activity 2: Completing the Details	Display **slide 6.** Ask the children to spend some time completing the details on the sheet, adding images of things they want to save up for, formatting cells correctly and researching the cost of items. ***Researching costs of items and pictures could be done on the internet contingent on safeguarding systems and school policy. You may wish to store images and costs on a separate document if you children are not to explore the internet for cost of items and pictures of them.**

Activity 3: Working Out the Totals using a Formula	Use **slide 7** to share with the children the use of formulae to calculate totals of money in, savings and things to save for. Contingent on children knowledge from previous years, they may which to extend the use of formulae e.g to calculate averages of weekly money in over a year etc.
Activity 4: Extension	Use **slide 8** to share the extension. Children are to add to their existing sheet or create a new sheet and work out how long it will take to save for the items they want. They could extend this further and add another table that works out the amount needed to save each week per an item.
Review Success Criteria	Display **slide 9.** Review the success criteria from **slide 3.** Children could rate how well they achieved this using a show of hands.

Lesson 4 & 5 – Planning a School Event

Aim

- To use a spreadsheet to plan a school charity day to maximise the money donated to charity.

Success Criteria

- Children can use a spreadsheet to model a real-life situation and come up with solutions that can be applied to real life.

Resources

Unless otherwise stated, all resources can be found on the main unit 6.3 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.

- Purple House Charity Day Plan sheet

Year 4, lesson 4 and Year 5, lesson 5 are very useful preparation for this activity. Children might want to use the ideas from these lessons to enable them to complete the task. If they have not done these lessons, they could do them instead of this one as they provide the same practice but with more guidance.

Activities

Introduction	Display **slide 2** and outline the lesson aims. Display **slide 3** and outline the success criteria.
Introduction: Purple House Primary School	Display **slide 4**. Explain that the children will be creating a spreadsheet, ideally in small groups over several sessions, which will help Purple House Primary plan their charity day. The children will be using their knowledge of 2Calculate to help them.
Activity 1: Activity Ideas	Display **slide 5**. Look at the activity ideas that the children at Purple House Primary came up with and the questions they have considered. Discuss with the children the considerations they need to think about when creating the spreadsheet. **This slide shows the same content on the example file which you should have set as a 2Do for the children to reference when they create their spreadsheets.**
Activity 2: Creating a Spreadsheet	Display **slide 6.** Children to create a spreadsheet showing the different activities and their costs. You might wish to open the Cupcake sale budget planner from year 5 lesson 5 to share example of planning costs. Go

	through the 'Top Tips' with the children. Ensure the children reference the Purple House Primary School file when creating the spreadsheet. Children will need to research prices of prizes and materials for required for some activities.
Review Success Criteria	Display **slide 7.** Review the success criteria from **slide 3.** Children could rate how well they achieved this using a show of hands.

Assessment Guidance

The unit overview for year 6 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 throughout, children can create a simple spreadsheet and collect a limited set of data using 2Calculate that answers a mathematical problem relating to probability (Unit 6.3 Lesson 1). Children can use a spreadsheet to model a real-life situation (Unit 6.3 Lesson 3). Children can represent data in a given format (Unit 6.3 Lesson 1) and turn this data into a graph (Unit 6.3 Lesson 1).
Expected	Children can create a spreadsheet and collect data using 2Calculate that answers a mathematical problem relating to probability (Unit 6.3 Lesson 1). Children can use a spreadsheet to model a real-life situation (Unit 6.3 Lesson 3). Most children will be able to create spreadsheets which contain visual elements such as suitable graphs which represent their data (Unit 6.3. Lesson 1). They will select an appropriate graphical representation of their data from the available choice. They can create a computational model which successfully solves a given problem (Unit 6.3. Lesson 2). Their use of tools and features to maximise spreadsheet content is secure such as: 'How many', 'function', 'format' and 'image toolbar' (Unit 6.3). They interrogate and refine data with increasing efficiency. For example, children create a spreadsheet to answer a mathematical question, creating a computational model or to support with planning a school event. They utilise advanced features such as the 'formula wizard' for efficiency and know the best layouts to use to support easier interrogations of data (Unit 6.3).
Exceeding	Children demonstrating greater depth can create a spreadsheet using 2Calculate that demonstrates a systematic and logical approach. They can then use this to successfully collate, select and manipulate this data, allowing them to answer a mathematical problem relating to probability (Unit 6.3 Lesson 1). Children understand the importance of data in real-life situations and can use spreadsheets to successfully model this (Unit 6.3 Lesson 3). Furthermore, they choose the most appropriate way to convert and represent their data and can give their reasons behind this choice (Unit 6.3 Lesson 1).