Pioneer Federation
Medium term plan
Cycle B, Term 3
ICT

Subject: Purple Mash unit 6.3 Spreadsheets

Key Concept/ Theme: 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.

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.

Prior Learning links:

	Cycle A	Cycle B
Year 1/2	Unit 1.8 Spreadsheets • Introduce 2Calculate • Spreadsheet navigation • Adding images • Vocab: cell, column, row	Unit 1.3 Pictograms • Asking questions to collect data in picture format Unit 2.4 Questioning • Enquiry into different data handling tools • Use of questioning to separate and group data Unit 2.3 Spreadsheets • Copying and pasting • Totalling tools • Addition • Table layout • Block graph
Year 3/4	Unit 3.3 Spreadsheets • Pie charts and Bar graphs • Boolean comparison tools (<=>) • Spin tool • Advanced mode • Cell references Unit 3.8 Graphing • Data representation in 2Graph • Use software to investigate data	Unit 4.3 Spreadsheets • Formula wizard • Cell formatting • Timer, random number and spin buttons • Budget planner sheet • Line graphs
Year 5/6	Unit 5.3 Spreadsheets • Converting measures • Count tool • Formulae • Variables in formulae • Event planning Unit 5.4 Databases	

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	• Creating and searching a database for information • Wording of questions to be effectively answered by searching a database	

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Vocabulary:

Key Vocabulary

Rows
Boxes running horizontally in a spreadsheet.

Data
A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision-making.

Key Vocabulary

Spreadsheet
A computer program that represents data in **cells** in a grid of **rows** and **columns**. Any cell in the grid may contain either **data** or a **formula** that describes the value to be inserted based on the values in other cells.

Columns
Boxes running vertically in a spreadsheet.

Formula
A group of letters, numbers, or other symbols which represents a scientific or mathematical rule. The plural of formula is formulae.

Key Vocabulary

Advance mode
A mode of 2Calculate in which the cells have references and can include formulae.

Count (How Many) Tool
Counts how many of a variable there are in a spreadsheet.

Format Cell
The way that text looks. Formatting cells is helpful for interpreting a cell's contents for example you might want to format a cell to show a fraction e.g. 4 ½ or include units such as £ or $.

Move cell tool
Allows selected cells to be draggable.

Key Vocabulary

Budget
The amount of money available to spend on a project.

Dice Tool
Simulates the roll of a die to a random number between 1 and 6 when you click on it.

Formula Bar
An area of the spreadsheet into which formulae can be entered using the '=' sign to open the fomula.

Probability
The extent to which an event is likely to occur, measured by the ratio of the favourable cases to the whole number of cases possible.

Chart
A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts.

Expense
A cost associated with a project.

Formula Wizard
Helps a user create formulas which perform calculations on selected cells. For example, adding, multiplying, average, total.

Profit
Money that is earned in trade or business after paying the costs of producing and selling goods and services.

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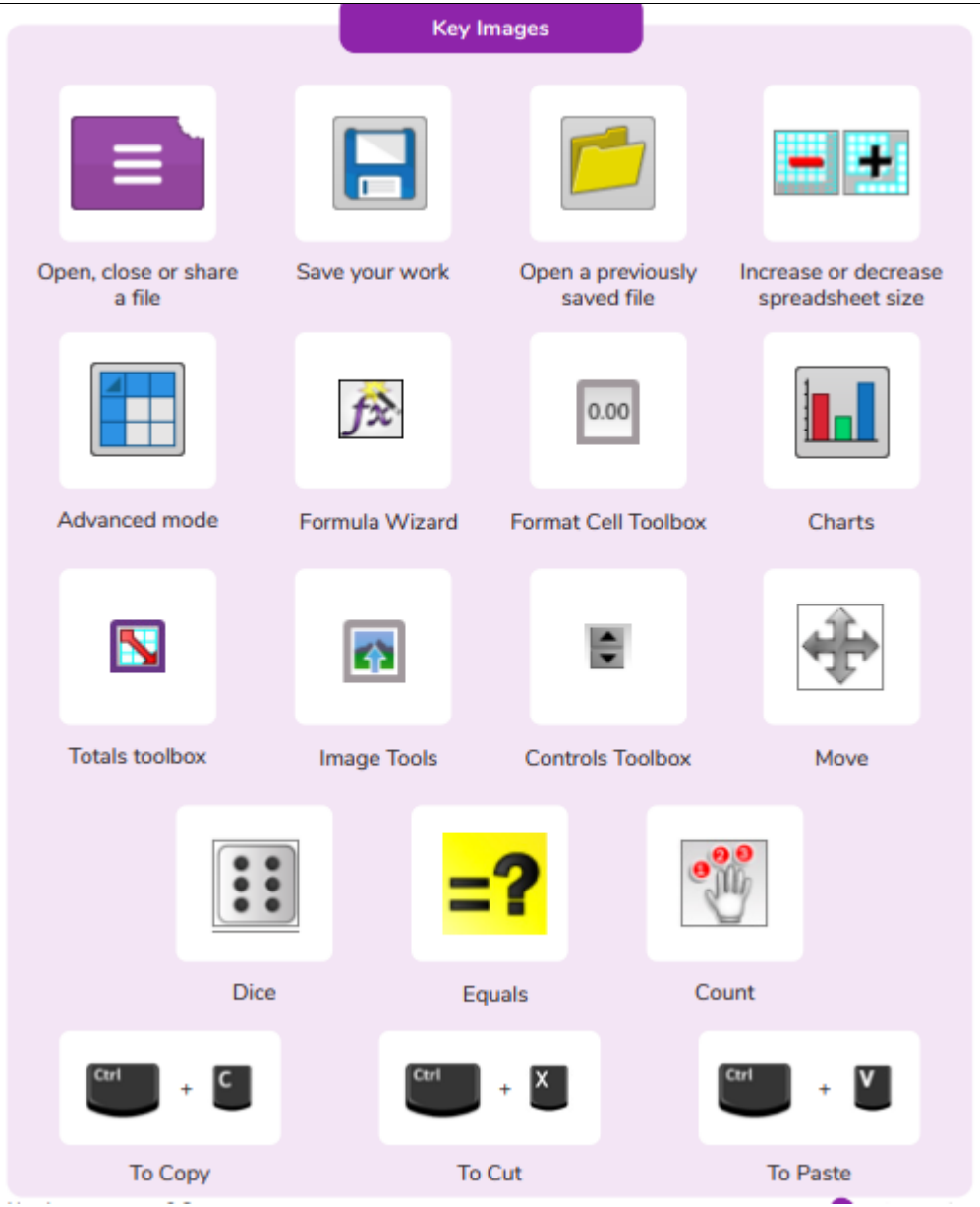
Key Images:



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Resources needed for each lesson – 2dos to set.

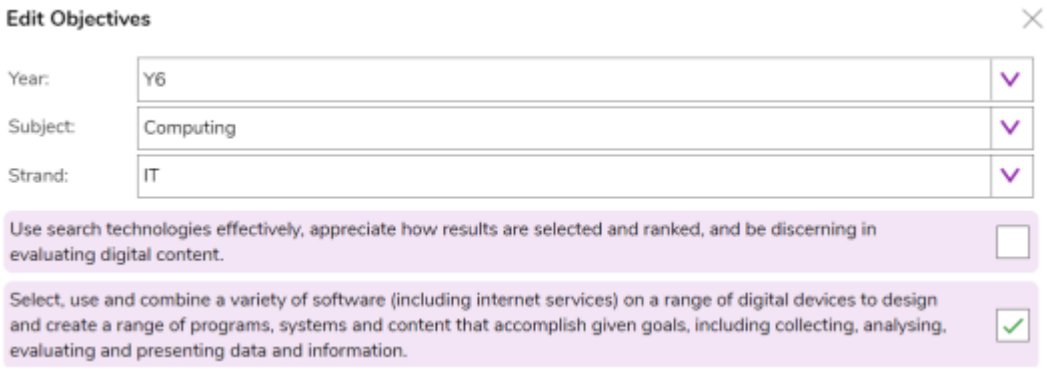
Lesson 1:

2Calculate tool in Purple Mash

• Dice Example 25. • Dice Example 50.

• Dice accumulator example file.

You can select the following ticked objective when setting the 2Do to make future assessment easier:



Lesson 2

• 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.

You can select the following ticked objective when setting the 2Do to make future assessment easier:

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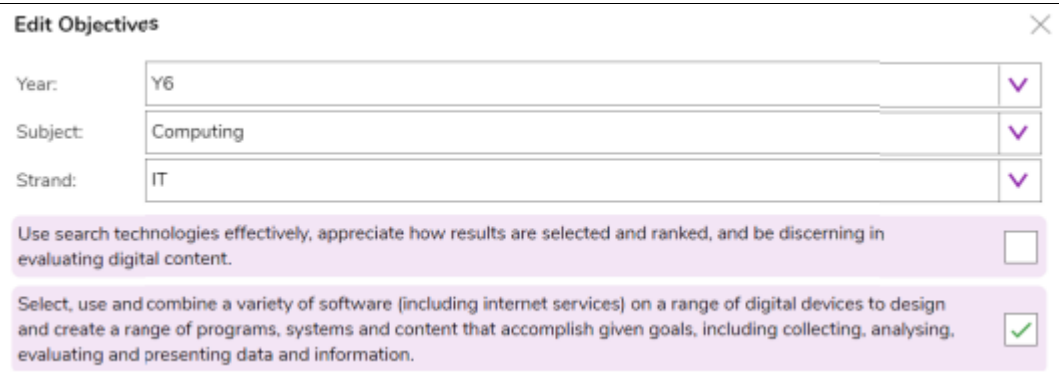
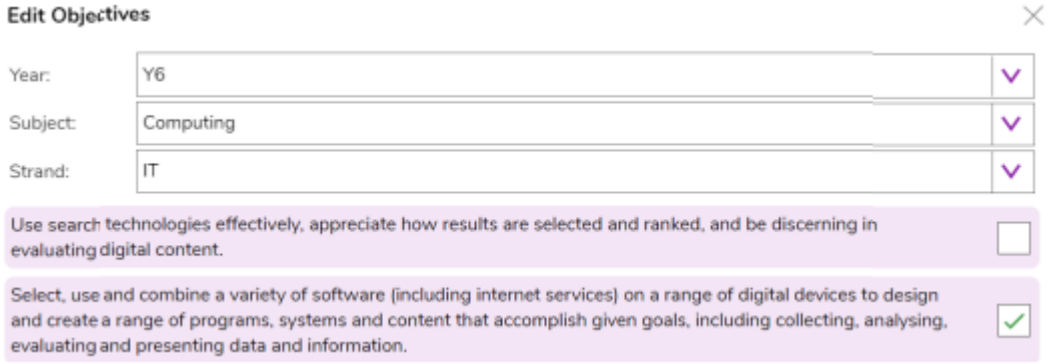


Lesson 3

- 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.
- You can select the following ticked objective when setting the 2Do to make future assessment easier:



Lesson 4 & 5

Purple House Charity Day Plan sheet

- You can select the following ticked objective when setting the 2Do to make future assessment easier:

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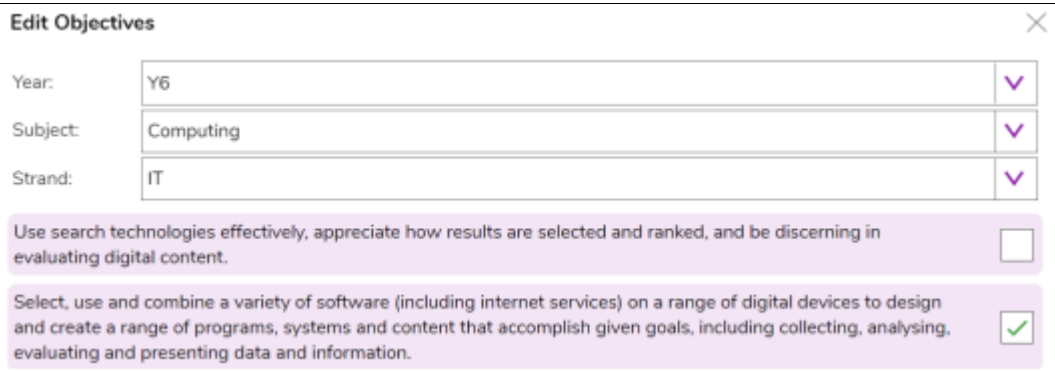

Year 4, lesson 4 and Year 5, lesson 5 are very useful preparation for this activity. Children might want to use the ideas from these lessons to enable them to complete the task. If they have not done these lessons, they could do them instead of this one as they provide the same practice but with more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

1. Unit 6.3 Lesson 1	**Deeper learning questions: Is any number more likely than others to be rolled? How likely is it we roll a 4? Are we more likely to roll and odd or an even number? If you roll the sheet of dice 10 times, does 6 always land? Have you noticed any patterns so far?** **Reconnection:** Remind children of online safety rules. Go over previous words encountered in previous units. **LO: To use a spreadsheet to investigate the probability of the results of throwing many dice** **Activity:** 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. 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. 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. 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.

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	Ask the children to explore rolling the dice. Children to see if they can answer the questions displayed on the slide. 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). Go over vocab and success criteria. **Extension: 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.**
2. Unit 6.3 Lesson 2	**Deeper learning question**: What do we mean by modelling? Can you spot any errors? What errors might occur? **Reconnection:** Remind children of online safety rules. Go over previous words encountered last lesson. **LO**: 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. **Activity**: 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. Children to open 'Advanced Mode' 2Calculate file and create the sheet shown on slide. Children then format the cells accordingly as shown on slide. Help children add the data about ticket prices and quantity required. 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. 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. 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.**

	Display slide 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. Explain there has been some new updates and booking fees are now present. Reveal the steps of including and calculating booking fees. Support the children in calculating the rest of the information from the other ticket suppliers about booking fees. Go over vocab in the lesson. **Extension: 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.**
3. Unit 6.3 Lesson 3	**Deeper learning question: Do you think pocket money is a good or bad idea? Why would it be useful to track it?** **Reconnection:** Remind children of online safety rules. Go over previous words encountered last lesson. **LO:** To use a spreadsheet to plan how to spend pocket money and the effect of saving money **Activity:** Go over new vocab for lesson 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. 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*. 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.

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	***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.** Use slide 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. Go over vocab in lesson. **Extension: Use slide 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.**
4. Unit 6.3 Lesson 4&5	**Deeper learning question:** **Reconnection:** Remind children of online safety rules. Go over previous words encountered last lesson. **LO:** To use a spreadsheet to plan a school charity day to maximise the money donated to charity **Activity:** Go over new vocab for the lesson. 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. 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.** 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. Go over vocab in lesson **Extension:** Evaluate your spreadsheet

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	End of unit quiz & reflect on gaps from the unit: Unit 6.3 Quiz – found on unit page on PM Questions: Which of these icons would generate a random value between 0 and 9? Which of these icons would generate a random value between 1 and 6? In this spreadsheet, what would happen if you clicked in cell A2 and dragged the mouse across to cell D2? In this spreadsheet, how could you find the total of the Dice1 values to display in one of the red cells? What does the count tool in column H do in this spreadsheet? How could you calculate the discounted sale price for both of these items? This spreadsheet has recorded the price of an item being sold on an internet auction website. How could the formula wizard be used to complete cells B6, D6 and F6? Sophie built a small spreadsheet to work out how long it would take her to save for a new sports kit for her football training. How long will it be before she is able to buy the new kit? Match the words learnt in this unit with their definition.

End Points:

How would you add a formula so that the cell shows the total of a column of cells? Use the formula wizard advanced total tool or type a formula into the cell by using the '=' symbol, mathematical operators and cell references.

What is a computational model and what it can be used for? Modelling in Computing means creating or using a simulation (a model) of a real-life situation, on a computer. It represents the data of a situation. For example; budgeting for a party; working out how big a field needs to be for a certain number of animals; working out the best price for an item or using the existing data to predict what time your shadow will be a certain length.

If you were going to use a spreadsheet to plan your dream holiday, what data would you collect to cost the trip? Ideas could include: Travel; comparing the cost of different methods, airports, airlines, different companies and discounts such as rail cards. Cost of accommodation of different types, trips out, food, passports, immunisations.

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Evaluation: What have the end of unit quizzes, pupil self-reflections and termly work told you about what the children can remember and recall? What are the gaps? Ensure that the areas that need further reinforcement are documented in the next subject unit MTP. **Plan in time to revisit gaps within units, determined by the quizzes.**

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