

Computing Medium Term Planning

Term: Spring 1	Year: 5/6	Topic/Unit: 5.3 Spreadsheets
<u>Key Vocabulary</u>		
Lesson 1- Spreadsheet, Cell, Row, Column, Cell address, Formula bar, Data table, Converting values, Imperial measures, Metric measures		
Lesson 2- Formula bar, Formula, Area, Perimeter, Computational Model		
Lesson 3- Formula, Range, Count tool, Dice tool		
Lesson 4 & Lesson 5- Formula bar, Formula, Computational Model, Budget, Profit, Expenses		
Lesson 6- Formula, Count tool, Variable, Hypothesis		
Please upload Computing evidence for each lesson onto Onedrive for Mrs Weston to monitor. (Curriculum > Computing > Computing Evidence.)		
Teacher Videos are located for each lesson on Purple Mash to support you with each lesson.		

National Curriculum	Week	NC Coverage	Skills taught	Knowledge	Activity Outline
<ul style="list-style-type: none"> Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. 	1 Unit 5.3 Lesson 1 Conversions of Measurements	<ul style="list-style-type: none"> To use formulae within a spreadsheet to convert measurements of length and distance. (Optional) To explore the use of the display of decimal places 	<ul style="list-style-type: none"> Children can create a formula in a spreadsheet to convert metric measurements of length and distance. Children can apply this to creating a spreadsheet that 	<ul style="list-style-type: none"> Children can create a formula in a spreadsheet to convert metric measurements of length and distance. They will apply their knowledge of this by creating a spreadsheet that converts between metric and imperial measures. 	<p><u>Preparation:</u> Set Converting Measures as a 2Do for the class. Select the following objectives:</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Year: <input type="text" value="Y5"/> <input type="button" value="v"/></p> <p>Subject: <input type="text" value="Computing"/> <input type="button" value="v"/></p> <p>Strand: <input type="text" value="IT"/> <input type="button" value="v"/></p> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. <input type="checkbox"/></p> <p>Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. <input checked="" type="checkbox"/></p> </div> <p>Lesson:</p>

converts between metric and imperial measures.

- (Optional)
Children can use a spreadsheet to set the number of decimal places displayed.

Display and outline the lesson aims and success criteria. Discuss vocabulary that has been used previously and introduce the new vocabulary. (Highlighted in yellow.)

Discuss with the children what spreadsheets are. *Spreadsheets are used for organising information.* Show the examples on the slide. Can they think of any more examples?

Explain that previously we have used 2Calculate which is a spreadsheet program in Purple Mash. Point out the areas of the spreadsheet and associated vocabulary. Recap how to enter formulae in a spreadsheet when converting measurements.

Activity 1: Converting between m and cm.

Instruct children to open the file from their 2Dos and complete the formula.

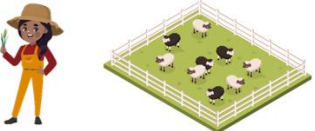
Converting Measures			
m	cm	cm	m
1			100
25			50
32.5			600
14.73			457
0.62			221.3
0.315			66.66


Activity 2: Converting between km and miles

Support children in converting between a metric and imperial measure of distance. An alternative if this task is too difficult for some children is to convert between metres and kilometres; adapt the slide as desired

km	miles	miles	km
1	0.63	1	1.6

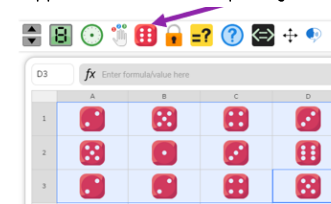
$\times 0.63$ $\times 1.6$

	<p>2</p> <p>Unit 5.3</p> <p>Lesson 2</p> <p>Using formulae</p>	<ul style="list-style-type: none"> To use a spreadsheet to model a real-life problem. To use formulae to calculate area and perimeter of shapes 	<ul style="list-style-type: none"> Children can use a spreadsheet to work out the area and perimeter of rectangles. Children can use these calculations to solve a real-life problem. 	<ul style="list-style-type: none"> Children can use a spreadsheet to work out the area and perimeter of rectangles and can use these calculations to solve a real-life problem. 	<p>Review the vocabulary at the end of the lesson. Can the children define the vocabulary used in today's lesson?</p> <p><u>Preparation:</u></p> <p>Set 2Calculate as a 2Do for the class. Select the following objectives:</p> <div data-bbox="1464 331 2033 411"> <p>Year: <input type="text" value="Y5"/></p> <p>Subject: <input type="text" value="Computing"/></p> <p>Strand: <input type="text" value="IT"/></p> </div> <div data-bbox="1464 421 2033 453"> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. <input type="checkbox"/></p> </div> <div data-bbox="1464 462 2033 507"> <p>Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. <input checked="" type="checkbox"/></p> </div> <p>Lesson:</p> <p>Display and outline the lesson aims and success criteria. Discuss vocabulary that has been used previously and introduce the new vocabulary. (Highlighted in yellow.)</p> <p>Look at the following situation and give children time to discuss the question.</p> <div data-bbox="1464 858 1684 954"> <p>Farmer McFlock keeps sheep. Each sheep needs at least 1m² of space in the field. She wants to know the maximum number of sheep that can be kept with 12m of fence.</p> </div>  <p>Click to reveal the answer.</p> <p><u>Activity 1: Creating the model</u></p> <p>Children should open 2Calculate from their 2Dos selecting Advanced Mode and create and save the spreadsheet. The details for filling in the data are on the next slide. (Slide 7)</p> <div data-bbox="1464 1209 1639 1404"> <table border="1"> <thead> <tr> <th>Field length (m)</th> <th>Field width (m)</th> <th>Perimeter (m)</th> <th>Area (m²)</th> </tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> </tbody> </table> </div>	Field length (m)	Field width (m)	Perimeter (m)	Area (m ²)																																								
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					<p><u>Activity 2: More Fencing</u></p> <p>Support the children in extending their model.</p> <p>Review the vocabulary at the end of the lesson. Can the children define the vocabulary used in today's lesson? Click the vocabulary to reveal the definitions.</p>
	<p>3</p> <p>Unit 5.3</p> <p>Lesson 3</p> <p>Exploring Probability</p>	<ul style="list-style-type: none"> To use a spreadsheet to investigate the probability of the results of throwing many dice 	<ul style="list-style-type: none"> Children can create a spreadsheet to answer a mathematical question relating to probability. Children can problem solve using the count tool 	<ul style="list-style-type: none"> Children will use their knowledge of spreadsheets to investigate mathematical questions relating to probability. 	<p><u>Preparation</u></p> <p>Set 2Calculate as a 2Do for the class. Select the following objectives:</p> <p>Year: <input type="text" value="Y5"/></p> <p>Subject: <input type="text" value="Computing"/></p> <p>Strand: <input type="text" value="IT"/></p> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. <input type="checkbox"/></p> <p>Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. <input checked="" type="checkbox"/></p> <p>Lesson:</p> <p>Display and outline the lesson aims and success criteria. Discuss vocabulary that has been used previously and introduce the new vocabulary. (Highlighted in yellow.)</p> <p>Explain to the children that they will be using the 'Dice Tool' in 2Calculate to try and work out the probability of throwing certain numbers. Ask <i>'Do you think it is more likely that certain numbers will be thrown than others?'</i> Allow children to discuss.</p>  <p>Demonstrate throwing a die. Make sure that you are using the advanced mode of 2Calculate. Demonstrate throwing multiple dice.</p>

Activity 1: 100 Dice

Support children in completing the activity.



Activity 2: Generate Data

Explain that to explore probability with dice, we need to keep a record of what numbers are thrown. A spreadsheet can help with this. To do this, you will need to use the count tool. Demonstrate how to use the count tool.



Activity 3: Keeping a Running Total

Support children in completing this activity. They will need to manually type in the results in each column. The formulae needed for totalling are shown on slide 13.

Activity 4: Exploring the Results

Support children in completing the activity and encourage them to interrogate the data to answer the questions. Dependent upon mathematical ability you could discuss how closely the data matches the mathematical expectation that each number will be thrown an equal number of times.

Extension – Create a graph

					Review the vocabulary at the end of the lesson. Can the children define the vocabulary used in today's lesson? Click the vocabulary to reveal the definitions.
	4 Unit 5.3 Lesson 4 & 5 Computational Modelling	<ul style="list-style-type: none"> To use spreadsheets to model real-life situations. To use the created spreadsheet to make decisions about these situations 	<ul style="list-style-type: none"> Children can use spreadsheets to model real-life situations and produce solutions that can be practically applied 	<ul style="list-style-type: none"> Children will be able to create spreadsheets based on real-life situation and be able to make decisions about them. 	<p><u>Preparation:</u></p> <p>IMPORTANT NOTE: The next two lessons focus on using spreadsheets to create computational models. It is expected that children will complete no more than two of the activities. Decide in advance which models to use and delete the slides that are not required, set only the required resources for the models that you have chosen as 2Dos, as advised in the sections below. The first two models provide more guidance than the last two, the final model being more open ended and less directed. Make choices dependent upon the interests, expertise and experience of children.</p> <p>Ensure that your chosen models are set as 2Dos for children. Read below for example models:</p> <p><u>Cupcake Sale Model</u></p> <ul style="list-style-type: none"> Example recipe for cupcakes: this is linked to on slide 6. You could add variety by using additional recipes for children to work in small groups to plan e.g. some children could work with an egg or milk free recipe to cater for those with allergies, some could plan chocolate cupcakes or different decorations such as fruit. They could even design their cupcakes beforehand and research their own recipes to make the lesson more relevant to real life and combine with design and technology learning objectives.

- Set Cupcake Model as a 2Do. This uses example prices, but you might want to show children how to look up real prices for their local supermarket.

Concert tickets Model

- Set Concert tickets starter as a 2Do. Pocket

Money Planning

- Children will need to use the Internet to research prices of items that they want to buy and find pictures to use.
- Yr6Lesson3ChallengeExample

School event

- Purple House Charity Day Plan sheet.

Choose the following objective:

Year:	Y5	▼
Subject:	Computing	▼
Strand:	IT	▼

Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Model 1: Planning a cake sale (Slides 6 – 13)

Explain the model that children will be creating using the details on slide 6. Point out how many cupcakes the recipe makes. Guide children in deciding how many cupcakes to make given the points on the previous slide. It would be helpful to have data available about how many children and staff are in your school.

Activity 1: Creating the model

Take a look at the two sheets with the children including reading the notes on the post-its. The method that will be used to calculate the cost is more simplistic than you might use ordinarily when catering but is done like this to make the maths thinking easier for children: They will calculate a per cake cost and then multiply by the required number of cakes. The Prices sheet does not contain current prices; you might wish to use more realistic pricing with children or use the example prices. Alternatively, children could create the models and then update the pricing to see the effect of this. The activity continues on the next slide. You will want to display the recipe on the whiteboard whilst children are completing this step.

Talk through the formulae that children will need. In cell C4, this is '=B4/24'. In cell D4 this is '=C4*G3'. Remind children to save.

Activity 2: Calculate Ingredient Costs

If referencing is too complex for children, then they can type in the quantities instead. Remind children to save frequently. Support children in completing the data table using formulae. Ensure that children format prices as currency and format the number of decimal places displayed.

Activity 3: Total Cost

Support children in completing the data table using a formula. The formula using the example above would be =SUM(F2:F17).

Model 2: Buying concert tickets (Slides 14 – 20)

Explain the model that children will be creating using the details on slide 14. 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, work as a whole class or to set some of the harder questions as extension work for some pupils.

Activity 1: Creating the Model

Support children with formatting the cells as shown on slide 15.

Activity 2: Original Pricing

The formula required is multiplying the price by the number of tickets for each provider. Ensure that children use cell addresses in the formulae not typing in the price or quantity.

Activity 3: Percentage Price Reductions

Depending upon children's mathematical understanding of percentages, explain why 10% is represented as 0.1. The formula for cell C9 will be =C7*C8. The formula for cell C10 will be C7-C9.

Activity 4: Booking Fees

The new formula for cell F10 will be =(F7-F9)+F6 Click to reveal this to the children.

Model 3: Pocket Money Spending (Slides 21 – 25)

Explain the model that children will be creating using the details on this slide. Be aware of children who do not receive pocket money or savings. Decide in advance what these children should do e.g. imaginary data or possibly planning school spending or spending money made by the PTA. They could be given data on

paper to create a similar school budget plan with the aim of a new playground for the school or other resources.

Activity 1: Creating the Model

Be aware of children who do not receive pocket money or savings. Decide in advance what these children should do e.g. imaginary data or possibly planning school spending or spending money made by the PTA. They could be given data on paper to create a similar school budget plan with the aim of a new playground for the school or other resources

Activity 2: Completing the Details

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 your children will not be able to explore the internet for cost of items and pictures of them. Encourage children to use formulae wherever a number is reused to work something out. Emphasise how this means that any changes e.g. a raise in the pocket money, will automatically update the whole sheet.

Activity 3: Saving Up

Encourage children to use formulae wherever a number is reused, including linking values between sheets, to work something out. Emphasise how this means that any changes e.g. a raise in the pocket money, will automatically update the whole sheet.

					<p><u>Model 4: Planning a School Event</u></p> <p>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.</p> <p><u>Creating the Spreadsheet:</u></p> <p>Children should create a spreadsheet showing the different activities and their costs. You might wish to open the Cupcake sale budget planner (model 1) to share example of planning costs. Go through above guidance 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.</p> <p>Review the vocabulary at the end of the lesson. Can the children define the vocabulary used in today's lesson? Click the vocabulary to reveal the definitions.</p>
	<p>5</p> <p>Unit 5.3</p> <p>Lesson 6</p> <p>Testing a hypothesis</p>	<ul style="list-style-type: none"> To use the count tool to answer hypotheses about common letters in use. 	<ul style="list-style-type: none"> Children can use a spreadsheet to work out which letters appear most often. Children can use the count tool. 	<ul style="list-style-type: none"> Children have used the count tool to answer hypotheses about common letters in use. They can use a spreadsheet to work out which letters appear most often. 	<p><u>Preparation:</u></p> <p>Set Vowel Counter starter as a 2Do for the class. Select the following objective:</p> <p>Year: <input type="text" value="Y5"/> <input type="button" value="v"/></p> <p>Subject: <input type="text" value="Computing"/> <input type="button" value="v"/></p> <p>Strand: <input type="text" value="IT"/> <input type="button" value="v"/></p> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. <input type="checkbox"/></p> <p>Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. <input checked="" type="checkbox"/></p>

Lesson:

Display and outline the lesson aims and success criteria. Discuss vocabulary that has been used previously and introduce the new vocabulary. (Highlighted in yellow.)

Discuss the definition of the word 'hypothesis'. Share the hypothesis you want the children to test: Is 'e' the most popular vowel in English? You may wish children to list all the vowels and discuss why someone would think they are likely letters to appear in English texts.

Can children answer the question posed? Colour was used for the dice because otherwise, an error occurs if one of the values being counted also appears as the result of the count tool's use. In today's lesson, children will be counting letters so the count tool would also count any other cells in the whole spreadsheet with text present. So it would include any letters in the spreadsheet title or table headers as well if colour is not used to designate the cells to include in the count.

Activity 1: Creating a Vowel Counter

Use the link to open the file and demonstrate. The finished example can be seen on the next slide.

Activity 2: Testing the Vowel Counter

It is useful to do the first steps of this activity as a class as an error handling step is revealed as children investigate (click to reveal the steps). The initial error to be spotted is that the capital letter 'I' is not counted. You might need to explain what 'case-sensitive' means if children are not familiar with this term; the tool is case sensitive. A completed example is available for

					<p>teachers that shows how the sheet referencing is completed. Remind children to save their work.</p> <p><u>Activity 3: Further Analysis</u></p> <p>Support children in reflecting upon the hypothesis. Is there a class consensus?</p> <p>Review the vocabulary at the end of the lesson. Can the children define the vocabulary used in today's lesson? Click the vocabulary to reveal the definitions.</p>
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