

Component 2: Collecting, presenting and interpreting data

Delivery of this component

Teachers might also want to combine some of the theory content in Learning aim A with the more practical content in Learning aim B as students may find some of the theory content a little dry. There are plenty of opportunities for students to carry out practical tasks using spreadsheets to complete many different kinds of activities and teachers might look for ways students can use spreadsheets and dashboards in other subjects that they are studying.

There is very little content overlap with the other components; however, students may be able to apply some of the things they learn in Component 1 about user interface design in B2 when they come to create their dashboard.

Students will be taught all the skills first before they will have a set amount of time to complete the official assignment that will be marked and go towards their final grade. Students will also get a chance to resubmit assignments but they will only be given 1 week to complete the improvements.

Component title	Component 2: Collecting, presenting and interpreting data
Guided learning hours	36
Number of lessons	36
Duration of lessons	1 hour

Lesson	Topic from specification	Suggested activities	Classroom resources
Learning aim A: Investigate the role and impact of using data on individuals and organisations			
1	Data and information [Component 2, A1, Characteristics of data; Characteristics of information]	<p>Introductory activities</p> <ul style="list-style-type: none"> Students consider what kind of data they come across daily, the type of data they use, where it comes from and how they use it. In pairs, students play a guessing game where one of them provides some data (e.g. 060318) and the other must guess what it might be (a date?). Alternatively, run as a fast-paced Kahoot! quiz. <p>Main session activities</p> <ul style="list-style-type: none"> Students list the data they regularly use, and identify how it is structured and used both by themselves and others (e.g. school, mobile phone, banking, social media and internet data). Students could look at how useful the data is and how it could be made more useful. (Links to later lessons but get students to focus on how they use or could use the data rather than what organisations use it for.) <p>Plenary activity</p> <ul style="list-style-type: none"> Students give the four main characteristics of data and the four main characteristics of information. Students give two examples of how a hospital might take data and turn it into information. 	<p>Access to the internet.</p> <p>www.kahoot.it</p> <p>BBC Bitesize has several pages of content about data and information.</p>

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2	<p>How to present information</p> <p>[Component 2, A2, Representing information]</p> <p>Could be combined with teaching C2, LA C2, How presentation affects understanding.</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students work in pairs and discuss how easy they find it to absorb information and how they like to view information, such as in text or through visual techniques. <p>Main session activity</p> <ul style="list-style-type: none"> Students are presented with the following data about a boy in Year 10. <ul style="list-style-type: none"> Sanjay has been at Greenwood Academy since he was 11 years old. He has been studying maths, English and IT since Year 7 but he only started taking German in Year 9. On average, he has missed four school days a year through sickness. There are progress assessments in every subject twice a term. Students consider the best way to represent data about Sanjay's absences, and about his progress in maths since Year 7 and in German over the past three months. Students explain their chosen method of representation. Optional activity – students make an infographic on a topic of their choice, or perhaps a revision infographic for a particular subject. <p>Plenary activity</p> <ul style="list-style-type: none"> Students give the benefits and drawbacks of presenting data in a variety of different ways, including text, tables, graphs and infographics. 	<p>Access to the internet.</p> <p>BBC Bitesize has several pages of content about representing information.</p> <p>There are a range of websites that allow you to create infographics, including https://infoqram.com/.</p>
3	<p>Making data suitable for processing</p> <p>[Component 2, A3, Ensuring data is suitable for processing]</p> <p>Include reference to content from other</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students consider their experience of registering on websites and password requirements. <p>Main session activities</p> <ul style="list-style-type: none"> Students imagine they are creating a web page that would help users register for an online shop. Students consider the information that would need to be entered to register for the shop, and validation and verification methods that could be used to make sure the data entered is as accurate as possible. 	<p>BBC Bitesize has a couple of pages on validation and verification.</p> <p>Resources for students to sketch a data input form.</p>

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	components that might be relevant here.	<ul style="list-style-type: none"> ● Students sketch out a data input form for shop registration and list each of the validation methods, along with meaningful error messages for each field that is validated. <p>Plenary activities</p> <ul style="list-style-type: none"> ● Students describe the difference between validation and verification, and how each can be used. ● Students give two situations where validation can be applied to input data, but the data could still be wrong. 	
4	<p>Collecting data</p> <p>[Component 2, A4, Data collection]</p> <p>Also relates to A7 – threats to data.</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> ● Students consider how they would collect information to help decide where to go on holiday or which university to go to. <p>Main session activities</p> <ul style="list-style-type: none"> ● Students work in groups and discuss the data that is collected about individuals by social media sites such as Facebook® or Twitter® and devices such as a mobile phone, fitness tracker and voice assistants. ● Students work in small groups and consider how they might collect data in various scenarios. For example, how they might run a survey to find students' opinions about various aspects of the school. ● Working in pairs, give students an example of an organisation or industry that collects data (e.g. mobile phone companies, banks, Wi-Fi hotspots, the police, etc.). Get learners to list what data they collect, how they collect it and what they might use the data for. ● Some of this may have been covered in Lesson 1, but get students to focus on how the company uses the data. <p>Plenary activities</p> <ul style="list-style-type: none"> ● Students give three ways that primary data can be collected, with benefits and drawbacks for each. ● Students give ways to try to ensure the results of data collection represent the views of the public. 	List of organisations or industries that collect data.

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5	<p>Why quality is important</p> <p>[Component 2, A5. Quality of information and its impact on decision-making]</p> <p>Include reference to content from other components that might be relevant here.</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students work in small groups and discuss what might happen if inaccurate information was used to make decisions. For example, an inaccurate report came out that suggested that cycling was damaging to health. What kind of decisions might be made by governments, local councils and individuals based on that inaccurate information? <p>Main session activities</p> <ul style="list-style-type: none"> Students research election polls to try to understand why they have sometimes been wrong. Students create their own poll to try to find out how people would vote on a subject (such as should the legal age of driving be increased, should the age of voting be decreased, etc.). Students hold a secret ballot about their choice and collate the results. Did they match their poll? <p>Plenary activities</p> <ul style="list-style-type: none"> Students think about data that they and their family regularly encounter, such as bank statements, mobile phone bills, gas and electricity bills, Facebook posts, mapping and navigation records, etc. Students make a list of how the data could be used to make decisions and how the quality of the data might affect those decisions. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Why political opinion polls are sometimes wrong is explained on websites such as BBC News.</p>
6	<p>Who uses data modelling?</p> <p>[Component 2, A6, Sectors that use data modelling]</p> <p>Include reference to</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students work in small groups and discuss how to create a simple data model that would help them decide how to purchase an expensive item like a new smartphone or a bicycle. <p>Main session activities</p> <ul style="list-style-type: none"> Students imagine that a sector, such as transport, education, retail, entertainment, etc., needs to make a decision of some kind. Students list the types of data the sector might want to collect to help 	<p>How weather forecasts are done is explained on the Met Office website: www.metoffice.gov.uk</p>

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	content from other components that might be relevant here.	<p>them make a decision. For each item of information, students explain where it will be collected from and the relevant data collection methods and features.</p> <p>Plenary activity</p> <ul style="list-style-type: none"> Students explain data models. 	
7	<p>Data security for individuals</p> <p>[Component 2, A7, Threats to individuals]</p> <p>Some content for Component 3 B1 and B2 extends the topics covered here.</p>	<p>Introductory activities</p> <ul style="list-style-type: none"> Students think about how much data is collected about them. Students work in pairs and list all the different ways that data is collected about them daily and how they think this data is used. <p>Main session activities</p> <ul style="list-style-type: none"> Students consider what ID theft is and how it happens. Students research this topic and produce a poster or infographic reminding people of the dangers of ID theft and the precautions they need to take. Students work in small groups and research the requirements of the current data protection laws to create a poster reminding individuals and organisations about its main requirements. <p>Plenary activity</p> <ul style="list-style-type: none"> Students work in pairs and take turns to think of data that is collected about them and their family. Then their partner thinks of a way in which that data could be misused. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Search for 'Facebook privacy settings FAQ'.</p> <p>Information on ID theft: https://www.actionfraud.police.uk/ID</p> <p>Information about GDPR: https://ico.org.uk/for-organisations/guide-to-the-general-data-protection-regulation-gdpr/</p>
8	Preparation for assessment: recap of Learning aim A	<p>Introductory activity</p> <ul style="list-style-type: none"> Teacher recaps topics covered in Learning aim A. <p>Main session activity</p> <ul style="list-style-type: none"> Students practise for assessment, using suggested activities below. Suggested activity 1: evaluate the data collection methods and features used in two different sectors. For each chosen sector, students assess the use of primary and secondary data collection methods and data 	

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		<p>collection features, including:</p> <ul style="list-style-type: none"> ○ size of sample ○ who was in the sample ○ where and when the data was collected ○ the methods used. <ul style="list-style-type: none"> ● In small groups, students make a list of the data that is likely to be collected in the two sectors. For each data item or group of items, students should say how the data is collected and list the features of the data; they should also think of at least one way the data could be used to help the organisation make decisions. ● Suggested activity 2: discuss how data is used in decision-making in two different sectors. Students use the same two sectors as in activity 1. Students discuss how the data the two sectors collect can be used to help them make decisions. Students discuss how the choice of data collection method can have an impact on the accuracy of the data and how this can have an impact on the decision-making process. <p>Plenary activities</p> <ul style="list-style-type: none"> ● Students reflect on how they approached the practice activities, including areas they enjoyed and areas they found more difficult. 	
9	End of Learning aim A: formal assignment	<p>Introductory activity</p> <ul style="list-style-type: none"> ● Teacher introduces assignment brief for Learning aim A and discusses the criteria, explaining the command words used. ● Teacher leads a check on understanding of key terminology. ● Teacher reminds students that the assignment is formal and must be their own work. Once it has been submitted it cannot be revised or modified. The teacher suggests students make notes to plan their response. <p>Main session activity</p> <ul style="list-style-type: none"> ● Students complete an assignment in class or for homework. 	Pearson authorised assignment brief or brief produced and verified by school.

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Learning aim B: Create a dashboard using data manipulation tools			
10	<p>What is a dashboard?</p> <p>[Component 2, B1, Data processing methods]</p> <p>Links to: C1, A4 C3, A2</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students search online for examples of data dashboards. They identify their main features and the types of applications they are used for. <p>Main session activities</p> <ul style="list-style-type: none"> Discuss the essential features of a dashboard and what benefits they have over other methods of presenting data. Why do people use dashboards? What makes a good dashboard? Students work in small groups and develop an outline design for a dashboard of their own, displaying data on a subject of their choice. As well as the design and layout of the dashboard, students research where their dashboard could source its data. <p>Plenary activity</p> <ul style="list-style-type: none"> Students refer to one of the dashboards they found at the start of the lesson and consider where the data for the dashboard comes from and how it is collected. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p>
11	<p>Importing data</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students think about the differences between a text file, a word-processing file and a spreadsheet file. <p>Main session activity</p> <ul style="list-style-type: none"> Students select data sources from a selection of sources and try to download files using different formats, open the files using different programs and consider how these files look when opened. Could link with the dashboard design activity in lesson 10. Students discuss how the downloaded data might need to be processed in order to use it in a dashboard. What spreadsheet features might they need to use? Do they already know how to use those features or will they need to learn? 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Sources of data: www.kaggle.com https://data.world/ http://www.worldbank.org/ https://data.gov.uk/</p>

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		<p>Plenary activity</p> <ul style="list-style-type: none"> Students write a step-by-step list on how to import a text file into spreadsheet software. 	
12	<p>Spreadsheet formulae</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students make a list of the spreadsheet formulae and functions they are already familiar with. Students grade their level of understanding of each feature. <p>Main session activity</p> <ul style="list-style-type: none"> Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Students then follow these instructions. <ol style="list-style-type: none"> Write a formula in cell B1 that adds together the values in A1, A2 and A3. Write a formula in cell B2 that subtracts the value in A1 from the value in A3. Write a formula in cell B3 that multiplies the value in A2 by 2.5. Write a formula in cell B4 that divides the value in A3 by 3. Write a formula in cell C1 that subtracts 5 from the value in A2 then multiplies it by 4. (Make sure it is done in this order with the subtraction first.) Write a formula in D1 that adds A1 and A2 then multiplies the result by A3. What result do you get? Work out the result using a calculator, does it agree with the one in the spreadsheet? If not, why not? Students discuss common problems or difficulties they have with basic spreadsheet use. Students create an FAQ document for these issues. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p> <p>Microsoft Office Support and Training centre provides lots of training resources, including videos here: https://support.office.com/.</p> <p>www.learnexcelnow.com/</p> <p>www.gcfilearnfree.org</p> <p>Google Suite learning centre: https://gsuite.google.com/learning-center – search for 'Sheets' under Learn by product.</p>

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		<p>Plenary activity</p> <ul style="list-style-type: none"> Students consider what result the formula =5*4*(3+8) would display. Students consider what has happened if they enter a formula into a cell, but it displays the result: #VALUE. 	
13	<p>Cell referencing</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students list examples of the ways office applications copy, cut and paste information. Working in a small group, students discuss the different ways they can copy, cut and paste information, and which is the easiest and why. <p>Main session activity</p> <ul style="list-style-type: none"> Teacher demonstrates the differences between relative and absolute addressing. Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Students then follow these instructions. <ol style="list-style-type: none"> Create a formula in B6 which will multiply the hours worked by the rate of pay (in C2) and which can copy across the other columns in row 6. Copy the formula and check it correctly calculates everyone's wages. Each employee makes a £5 contribution every week for health insurance, which will pay them if they are off sick. Add a title for this in E2, such as 'Insurance' and enter the amount in F2. Add a formula in B7 that will subtract the insurance payment (in F2 – remember to use absolute addressing) from Wendy's week 1 hours (in B6). Copy this formula across to G7 and check that the calculations are done correctly. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>www.kahoot.it</p> <p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p> <p>Search www.gcflernfree.org for 'cell references'.</p>

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		<ul style="list-style-type: none"> Students give two other examples where relative and absolute addressing are required. Kahoot quiz on relative and absolute addressing. <p>Plenary activity</p> <ul style="list-style-type: none"> Students explain the difference between relative and absolute cell addressing and explain the difference between formulas such as =E8+\$B2 and =E8+B\$2 	
14	Decision-making functions [Component 2, B1, Data processing methods]	<p>Introductory activity</p> <ul style="list-style-type: none"> Students think of three choices that a shopkeeper might make about the stock and prices in their shop. For example, how low should the stock level drop before ordering more? How close to the sell by date should items be discounted? <p>Main session activity</p> <ul style="list-style-type: none"> Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Students enter an IF formula in E3, which will display the word 'Yes' if the student has achieved the pass mark (in F1) or higher, and 'No' if they have not. Students copy the formula down the column. Students create or use another spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Students enter a formula in C9 that adds up the values in C3:C8 only if they have not been paid. Some of the invoices need to have VAT added to them. If the invoice has 'Yes' in column E, then use an IF function to calculate the VAT amount in 	Access to school PCs. Devices. Access to the internet. Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials Training video at Microsoft Office support: https://support.office.com/en-us/excel

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		<p>column F (VAT is the value*20%); otherwise just place a zero in that column.</p> <p>Plenary activities</p> <ul style="list-style-type: none"> Students make a list of the comparison operator symbols and explain what each one does. Students write a brief guide to the IF and SUMIF function explaining how they work and how they can be used. 	
15	<p>Lookup functions</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Working in small groups students discuss what sort of data they commonly deal with in school or at home that they might want to search for specific values in. <p>Main session activity</p> <ul style="list-style-type: none"> Teacher demonstrates the difference between VLOOKUP and HLOOKUP functions. Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Students create a VLOOKUP formula in E2 of the spreadsheet that will show the quantity in stock of the item code entered in B2. Students look at HLOOKUP formula, =HLOOKUP("Tuesday",B2:F6,2,FALSE), and label what each part does. Students find the result of the HLOOKUP formula with the table given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Discussion about how VLOOKUP and HLOOKUP functions could be used in dashboards (possible link to Lesson 11). 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>www.kahoot.it</p> <p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p> <p>Training video at Microsoft Office support: https://support.office.com/en-us/excel</p>

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		<ul style="list-style-type: none"> Kahoot quiz on VLOOKUP and HLOOKUP functions. <p>Plenary activities</p> <ul style="list-style-type: none"> Students give the four pieces of information needed in a VLOOKUP function. Students write a step-by-step guide showing how to use both VLOOKUP and HLOOKUP functions, using examples. 	
16	Count functions [Component 2, B1, Data processing methods]	<p>Introductory activities</p> <ul style="list-style-type: none"> Students make a list of all the functions they have previously learned about and what they do. Students research three new functions they are unfamiliar with and find out what they do and how to use them. <p>Main session activity</p> <ul style="list-style-type: none"> Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Students then follow these instructions. <ol style="list-style-type: none"> Enter a formula in B13 using the COUNT function to count the number of students on the register. Enter a formula in C11 to count the number of students attending on Monday. Copy it across D11:G11. Enter a formula in C12 using the COUNTBLANK function to count the number of absences. Copy it across D12:G12. Enter a formula using the COUNT function in H3 to work out how many days the student was absent. Copy the formula down through H4:H10. If students are absent for more than two days in a week a letter is sent to their parents/guardians. Enter formula using the IF function 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p>

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		<p>in I3 to display the word 'Letter' in the cell if a letter is required or leave it blank if one is not required. Copy the formula down through I4:I10.</p> <p>6. How many letters are needed? Enter a formula using the COUNTIF function in I11 showing how many are required.</p> <p>Plenary activities</p> <ul style="list-style-type: none"> Students write a brief description explaining how the COUNT, COUNTIF and COUNTBLANKS functions work. 	
17	<p>Logical operators</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students work in pairs and discuss a situation where they might need to apply more than one test or criteria in a particular situation. <p>Main session activity</p> <ul style="list-style-type: none"> Students use the spreadsheets created in lesson 14 'Decision-making functions'. In the grade record spreadsheet, students add marks for Paper 2 in D3:D8. Modify the formula in E3 so it only displays 'Yes' if they have achieved the pass mark or above in BOTH papers. For the other spreadsheet, students enter the information shown in E2:E8 indicating if the invoices are overdue for payment. Add a formula using the IF function in F3 that will display the words 'Send letter' only if the invoice is not paid AND it is overdue. Copy the formula down the column. Kahoot quiz on logical operators. <p>Plenary activities</p> <ul style="list-style-type: none"> Students work with a partner and swap the work they have done on the two spreadsheets in the activity to check that they have both got the formulas correct. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>www.kahoot.it</p> <p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p>
18	Sorting	<p>Introductory activity</p> <ul style="list-style-type: none"> Students consider if there is a better way to organise the books in their 	Access to school PCs.

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	[Component 2, B1, Data processing methods]	<p>classroom.</p> <p>Main session activity</p> <ul style="list-style-type: none"> Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Students then follow these instructions. <ol style="list-style-type: none"> Try sorting the data by any column and see what happens. Use the undo button to return the data to its original order. Create a filter to show only Jack Russell dogs. Remove the filter when you are finished. Sort the list by age, weight and breed. <p>Plenary activities</p> <ul style="list-style-type: none"> Students work in pairs and create a step-by-step guide for sorting data in a spreadsheet to help them remember how to do it. 	<p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p> <p>Search www.gcflearnfree.org for 'sorting data'.</p>
19	Filtering data [Component 2, B1, Data processing methods]	<p>Introductory activity</p> <ul style="list-style-type: none"> Working in small groups, students discuss how they might create a dashboard that displays the units, assignments and grades they have to achieve on this qualification and what kind of data they might want to filter and extract to create the dashboard. <p>Main session activity</p> <ul style="list-style-type: none"> Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Students then follow these instructions. <ol style="list-style-type: none"> Create a filter for the data so only petrol cars are shown. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p>

Lesson	Topic from specification	Suggested activities	Classroom resources
		<ol style="list-style-type: none"> 2. Remove the petrol filter. Imagine someone wants to buy a Ford car with three doors. Apply filters to find which cars match the requirements. 3. Remove the filters previously applied to the spreadsheet. You are looking for a car that has done less than 40,000 miles, uses diesel fuel and has five doors. Use filters to find which car matches your requirements. <p>Plenary activities</p> <ul style="list-style-type: none"> • Students create a simple guide for using filters in the spreadsheet software they use. 	<p>Search www.gcflearnfree.org for 'filtering data'.</p>
20	<p>Editing text and using outlines</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> • Students look at identification codes that contain a combination of data. <p>Main session activity</p> <ul style="list-style-type: none"> • Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. • Students then follow these instructions. <ol style="list-style-type: none"> 1. Enter a formula in B4 (using the LEN function) that will show the length of the string in A4. 2. Copy it down through B5:B8 to show the length of all the strings. 3. Enter a formula in C4 that will trim the number of characters specified in G1 from the left of the string in A4. Copy the formula down through C5:C8. 4. Enter a formula in D4 that will trim the number of characters specified in G2 from the right of the string in A4. Copy the formula down through D5:D8. • Kahoot quiz on text manipulation functions. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>www.kahoot.it</p> <p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p> <p>Search http://www.gcflearnfree.org for 'groups and subtotals'.</p>

Lesson	Topic from specification	Suggested activities	Classroom resources
		<p>Plenary activities</p> <ul style="list-style-type: none"> Students think about what the following commands do: =Right("check my learning", 6) and =Left("Information Technology", 9). 	
21	<p>Macros</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Working in small groups, students discuss the kind of repetitive spreadsheet features they have worked with that they might want to automate using a macro. <p>Main session activity</p> <ul style="list-style-type: none"> Students create a spreadsheet with four worksheets. The first will be the menu sheet. Students record or create three macros, which will swap from the menu sheet to Sheet 2, 3 and 4. Students create three buttons on the menu sheet labelled 'Go to Sheet 2', 'Go to Sheet 3' and 'Go to Sheet 4', and assign the correct macro to each. Students test the menu works correctly by clicking each button in turn and check that it takes them to the correct sheet. Add a button to each of Sheets 2, 3 and 4 which will return the student to the menu sheet (Sheet 1). <p>Plenary activity</p> <ul style="list-style-type: none"> Students discuss how macros can be used to make a spreadsheet or dashboard more efficient to use. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet software.</p> <p>To create a macro in Google Sheets, search https://developers.google.com for 'Google sheets macros'.</p> <p>To create a macro in Excel, search https://support.office.com/en-us/ for 'Quick start: Create a macro'.</p>
22	<p>Data validation</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Working in small groups, students discuss why data validation is important and how it can make a spreadsheet more efficient. <p>Main session activity</p> <ul style="list-style-type: none"> Demonstrate how data validation can be used. Students create a spreadsheet that enables a user to enter specific 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p>

Lesson	Topic from specification	Suggested activities	Classroom resources
		<p>personal information, which should then be validated. For example adding a title (list from: Mr, Mrs, Ms, Dr, Rev), first name and surname (text, minimum of 2 characters, maximum of 15), gender (list from: male, female, other), date of birth (valid date).</p> <p>Plenary activity</p> <ul style="list-style-type: none"> Students explain what the term 'validation' means and give three examples of how input data can be validated. 	<p>Spreadsheet software.</p> <p>Search https://support.office.com/en-us/ for 'Apply data validation to cells'.</p>
23	<p>Linking spreadsheets and views</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Working in small groups, students discuss what the benefits and drawbacks might be of splitting data into different worksheets rather than having it all on one large worksheet. <p>Main session activity</p> <ul style="list-style-type: none"> Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. From this spreadsheet students create a grading dashboard that will display the overall grade for the Tech Award in Digital Information Technology. <p>Plenary activity</p> <ul style="list-style-type: none"> Students consider how a dashboard created in the activity might be used to be able to select a particular student's results and how this might be achieved. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p> <p>Search www.gcflearnfree.org for 'working with multiple worksheets' and 'freeze panes'.</p>
24	<p>Conditional formatting</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Working in small groups, students discuss what type of spreadsheet dashboard or what type of information in a spreadsheet might benefit from being highlighted when the values change beyond certain limits. <p>Main session activity</p>	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p>

Lesson	Topic from specification	Suggested activities	Classroom resources
		<ul style="list-style-type: none"> Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Students then follow these instructions. <ol style="list-style-type: none"> Enter a formula in D3 that will calculate the wages due using the hourly rate in F1. Add conditional formatting to the cell so the hours worked in cells C3:C7 are shown with a green background if the worker has worked 37 hours or less and with an orange background if they worked over 37 hours. Copy the formula down from cell D4 to D7. Enter a formula in D8 that will add up all the workers' wages. Apply conditional formatting to D8 that will show a yellow background if the wages bill is below £1,800 and changes to red if the wages bill is £1,800 or higher. Increase the pay rate in F1 and see at what point it changes the background in D8 to red. <p>Plenary activity</p> <ul style="list-style-type: none"> Students explain why it would not be a good idea to apply conditional formatting to a cell that just contained a number rather than a formula. 	<p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p> <p>Search www.gcflearnfree.org for 'conditional formatting'.</p>
25	<p>Showing data summaries</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students consider what a summary is, its essential features, why they are useful and those they use on a regular basis. <p>Main session activity</p> <ul style="list-style-type: none"> Students carry out a simple survey amongst a small group of their peers. Once they have collected the responses, they use a spreadsheet to summarise the data. The spreadsheet should use SUM functions to add up the scores and 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet software.</p>

Lesson	Topic from specification	Suggested activities	Classroom resources
		<p>use COUNTIF functions. Percentages should then be calculated for each response.</p> <p>Plenary activities</p> <ul style="list-style-type: none"> Students explain how percentages are calculated and describe how they can summarise data using percentages and other measures. Students explain the difference between a total, an average and a percentage. 	
26	<p>Showing information summaries</p> <p>[Component 2, B1, Data processing methods]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students consider what data they deal with that is either broken down into different categories or would benefit from being summarised in this way. <p>Main session activities</p> <ul style="list-style-type: none"> Students create a project plan spreadsheet for completing one of their assignments. They break the project down into as many tasks they can think of and give each a start and end date. Students use spreadsheet date functions, such as NOW, in combination with decision-making IF functions to identify which tasks should have been completed by the current date. They can add conditional formatting to colour code tasks that should have been completed by now and those which are not yet due. <p>Plenary activity</p> <ul style="list-style-type: none"> Students make a list of the different ways in which a dashboard could be used to summarise different kinds of information. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet software.</p>
27	<p>Presentation methods 1</p> <p>[Component 2, B2, Produce a dashboard]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students consider the work they did in Component 1 on user interfaces and make a list of key points to remember when creating an effective user interface like a dashboard. <p>Main session activities</p>	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p>

Lesson	Topic from specification	Suggested activities	Classroom resources
	Link to Component 1, LA A3 and A4	<ul style="list-style-type: none"> Students create a dashboard with a data sheet and add features such as: data validation, bar graphs, line graphs, etc. Students use the spreadsheet they created in Lesson 25 'Showing data summaries' to add bar charts showing how many responses of each type there were to each question. <p>Plenary activity</p> <ul style="list-style-type: none"> Students explain what is meant by 'form controls' and give the different types of form controls and examples of how they could be used in a dashboard. 	Survey spreadsheet (Lesson 25).
28	Presentation methods 2 [Component 2, B2, Produce a dashboard]	<p>Introductory activity</p> <ul style="list-style-type: none"> Students research on the internet what a pivot table is and how it can be used, and where a pivot table might be useful. <p>Main session activities</p> <ul style="list-style-type: none"> Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Students use a pivot table to adjust the data that is displayed in the spreadsheet, to find answers to the following questions. <ol style="list-style-type: none"> How many passengers travelled to each different destination? Which destination had the most passengers fly there? How many passengers travelled with each airline? Which airline flew the most passengers? How many passengers flew on each day? Which day was most popular? Use conditional formatting to change the background colours in the cells that display the number of passengers (E3:E14). For example, up to 90 passengers, colour blue, 91 to 120, green and over 120, 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet file: Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p> <p>Search https://support.office.com/en-us/excel for 'pivot table'.</p>

Lesson	Topic from specification	Suggested activities	Classroom resources
		<p>red.</p> <ul style="list-style-type: none"> Discussion about how a pivot table might be used to create a dashboard. <p>Plenary activity</p> <ul style="list-style-type: none"> Students explain what a pivot table does and describe what kind of data it works best with, and what sort of data it doesn't work with. 	
29	<p>Presentation features</p> <p>[Component 2, B2, Produce a dashboard]</p> <p>Links to Component LA A2, 3, 4</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students look at some of the dashboards they have created and compare them with professional ones in terms of look and style to try and identify what makes a dashboard look good. <p>Main session activities</p> <ul style="list-style-type: none"> Students use the spreadsheet created in the previous lesson. Students collapse the pivot table so just the days and total passengers are displayed and create a pie chart with this data, with a suitable title for the pie chart. Students expand the pivot table and create a bar chart showing how many passengers travelled to each destination on each day. The chart will need clear and meaningful axis labels and a title. Students improve the appearance of the spreadsheet by applying appropriate font, colour shading and border formatting. Students should also add an appropriate graph or image to the spreadsheet. Students extend the airport spreadsheet by adding departure times to the data and gate numbers, then create a dashboard sheet that displays departures for a given day (which the user can select) or for a particular airline. <p>Plenary activity</p> <ul style="list-style-type: none"> Students explain how to modify the fonts, colours, borders and shading in the spreadsheet software they use. Working in small groups, students discuss how to make spreadsheets and dashboards both user-friendly and effective in communicating their 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology/coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p>

Lesson	Topic from specification	Suggested activities	Classroom resources
		meaning.	
30	Preparation for assessment: recap of Learning aim B	<p>Introductory activity</p> <ul style="list-style-type: none"> Teacher recaps topics covered in Learning aim B. <p>Main session activity</p> <ul style="list-style-type: none"> Students practise for assessment, using suggested activities below. Suggested activity 1: teacher to give students a data set or students to use data from Department of Transport in the 'Travel to school factsheet: 2014' found here: https://www.gov.uk/government/publications/nts-factsheets. The school would like to encourage its pupils to use healthy and pollution-reducing methods to get to school (such as walking and cycling) rather than travelling by car or bus (although taking the bus is preferable to using a car). In order to support this, the school has asked students to create a 'Travel to school' dashboard showing details of the different methods students use to travel to school. Students use a variety of methods to manipulate the data identified. The following are some suggestions for the collection and manipulation of the data. <ul style="list-style-type: none"> The travel to school factsheet produced by the Department of Transport summarises the data collected in the transport survey. Students can use this to get some ideas for the type of charts and graphs that they might use on their dashboard. Hyperlinks within the factsheet allow students to download an Excel spreadsheet with all of the data from the survey in it. Look for the links with the title 'NTS0613'. Students can use functions such as VLOOKUP to extract specific data, such as the results for a particular year. Suggested activity 2: produce a dashboard for the data students have identified in Activity 1. The dashboard should have the following features. <ul style="list-style-type: none"> Display overall data about the proportion of people using different 	https://www.gov.uk/government/publications/nts-factsheets

Lesson	Topic from specification	Suggested activities	Classroom resources
		<p>methods.</p> <ul style="list-style-type: none"> ○ Use relevant presentation methods to display the data, including tables, graphs, conditional formatting and pivot tables. ○ Use titles, labels, graphics and a range of formatting features. ○ Enable the user to select the display of data about specific methods of transport; for example, using a validation drop-down box to allow selection of the transport method to be displayed. ● The following are some examples for creating the dashboard. <ul style="list-style-type: none"> ○ Divide the dashboard into two main areas; the top part could display static data summarising the data across all the transport types. For example, students could include a pie chart showing the proportion of people using each method plus the average distances, time taken and costs across all the methods. ○ Add a pivot table to the top part of the dashboard. If students use the methods of transport as the row labels for the pivot table and then add the data about distance, time taken and cost to the values to be summed up it will provide a useful summary. ○ The lower half of the dashboard could display data relating to a particular type of transport. ○ Students can use a validation list box on the dashboard to allow the user to select the transport method data to display in the lower half of the dashboard. ○ The selection the user makes in the list box can be used to pick up the data from a table in the data sheet using a VLOOKUP function. ○ Students can use formatting tools (fonts, colours, shading and borders) to provide a consistent and professional-looking user interface for the dashboard. ○ Students should make sure the charts and graphs included in the dashboard have titles and axis labels. ○ Students should bear in mind that in Learning aim C they will be 	

Lesson	Topic from specification	Suggested activities	Classroom resources
		<p>asked to outline the trends, draw conclusions and make recommendations from their dashboards.</p> <p>Plenary activity</p> <ul style="list-style-type: none"> Students reflect on how they approached the practice activities, including areas they enjoyed and areas they found more difficult. 	
31	End of Learning aim B: formal assignment	<p>Introductory activity</p> <ul style="list-style-type: none"> Teacher introduces assignment brief for Learning aim B and discusses the criteria, explaining the command words used. Teacher leads a check on understanding of key terminology. Teacher reminds students that the assignment is formal and must be their own work. Once it has been submitted it cannot be revised or modified. Teacher suggests students make notes to plan their response. <p>Main session activity</p> <ul style="list-style-type: none"> Students complete an assignment in class or for homework. 	Pearson authorised assignment brief or brief produced and verified by school.
Learning aim C: Draw conclusions and review data presentation methods			
32	<p>Drawing conclusions</p> <p>[Component 2, C1 Drawing conclusions based upon the data]</p> <p>Links to Component 2 LA A5 and A7</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students think about the factors they consider when making decisions. <p>Main session activity</p> <ul style="list-style-type: none"> Students create or use the spreadsheet given at https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials. Students identify any trends or patterns in the sales for each product and identify any errors or anomalies. Research various types of data found on the internet and discuss what it shows and what trends can be identified (e.g. data about global warming, crime statistics etc.) 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet file: https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials</p>

Lesson	Topic from specification	Suggested activities	Classroom resources
		<p>Plenary activity</p> <ul style="list-style-type: none"> Students explain the difference between a trend and a pattern, and between an anomaly and an error, and give examples of each. 	<p>Many different datasets can be found here: https://www.kaggle.com/datasets.</p>
33	<p>Make recommendations</p> <p>[Component 2, C1, Drawing conclusions based upon the data]</p> <p>Links to Component 2 A6</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students consider the sort of information that would be useful to gather about their future education choices. <p>Main session activity</p> <ul style="list-style-type: none"> Students create or view a spreadsheet of data collected by a bus company on the number of passengers who travel on different routes at different times. Students use a variety of data processing methods on the data to identify any trends or patterns. Students make recommendations about the number of buses they should run at different times on each route based on the data. <p>Plenary activity</p> <ul style="list-style-type: none"> Students give some of the ways that dashboards can be used to help make recommendations. 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet.</p> <p>Spreadsheet software.</p> <p>Data on bus passenger journeys can be found here: https://www.gov.uk/government/statistical-data-sets/bus01-local-bus-passenger-journeys.</p>
34	<p>How presentation affects understanding</p> <p>[Component 2, C2, How presentation affects understanding]</p>	<p>Introductory activity</p> <ul style="list-style-type: none"> Students work in small groups and look at some of the dashboards they have created. They discuss if the way they present data is clear enough for accurate conclusions to be drawn. <p>Main session activities</p> <ul style="list-style-type: none"> Students find examples of misleading charts; an internet search for 'misleading charts' will produce plenty of examples. Students discuss why they are misleading; for example, how the presentation of the chart makes interpreting it difficult. <p>Plenary activity</p> <ul style="list-style-type: none"> Students give ways that information on a dashboard might be open to 	<p>Access to school PCs.</p> <p>Devices.</p> <p>Access to the internet to search for misleading charts.</p>

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Lesson	Topic from specification	Suggested activities	Classroom resources
		misinterpretation.	
35	Preparation for assessment: recap of Learning aim C	<p>Introductory activity</p> <ul style="list-style-type: none"> Teacher recaps topics covered in Learning aim C. <p>Main session activity</p> <ul style="list-style-type: none"> Students practise for assessment, using suggested activities below. Suggested activity 1: explain the conclusions drawn and give recommendations from the dashboard created in Learning aim B. Students explain the trends that exist within the data in the dashboard and draw conclusions from it. Students give recommendations based on the conclusions drawn from the dashboard. Students explain the methods they used to present the data and how those methods make it easy to understand. Suggested activity 2: assess how effective the presentation of data is in their dashboard. Students write an assessment of how effective the dashboard is at presenting information. Students assess how the presentation of the data affects the conclusions they have drawn from it and the recommendations they have made. <p>Plenary activity</p> <ul style="list-style-type: none"> Students reflect on how they approached the practice activities, including areas they enjoyed and areas they found more difficult. 	
36	End of Learning aim C: formal assignment	<p>Introductory activity</p> <ul style="list-style-type: none"> Teacher introduces assignment brief for Learning aim C and discusses the criteria, explaining the command words used. Teacher leads a check on understanding of key terminology. Teacher reminds students that the assignment is formal and must be their own work. Once it has been submitted it cannot be revised or modified. They suggest students make notes to plan their response. <p>Main session activity</p> <ul style="list-style-type: none"> Students complete an assignment in class or for homework. 	Pearson authorised assignment brief or brief produced and verified by school.

Resources

In addition to the resources listed below, publishers are likely to produce Pearson-endorsed textbooks that support this qualification. Check the Pearson website (<http://qualifications.pearson.com/endorsed-resources>) for more information as titles achieve endorsement.

Websites

<https://www.actionfraud.police.uk/ID> – National Fraud and Cyber Crime Reporting Centre. This website provides information on ID theft.

<https://www.bbc.com/education> – BBC Bitesize provides lots of useful lessons.

<https://www.data.gov.uk/> – this website provides lots of useful open data that is published by the government, local authorities and public bodies.

<https://www.gcflearnfree.org/> – this website can be used to search for lots of useful videos on how to use Microsoft Excel and Google Sheets.

<https://gsuite.google.com/learning-center> – G Suite Learning Centre – search for 'Sheets' under Learn by product. This website will teach you how to use Google Sheets.

<https://ico.org.uk/for-organisations/guide-to-the-general-data-protection-regulation-gdpr/> – this website contains a guide to the GDPR and how organisations should comply with its requirements.

<https://infogram.com/> – this website enables users to create their own infographics.

<https://kahoot.it/> – this website creates online quizzes that can be completed in class.

<https://www.learnexcelnow.com/> – this website contains lots of training and resources for using Excel.

<https://support.office.com/en-us/excel> – this website provides help and support for Excel.

Textbooks

Alexander, M., *Excel Dashboard and Reports for Dummies*, For Dummies, 2016, 9781119076766 – this is a useful book for teachers, learners and beginners, with lots of examples of dashboards.

Wexler, S., *The Big Book of Dashboards: Visualizing Your Data Using Real-World Business Scenarios*, John Wiley & Sons, 2017, 9781119282716 – this is a useful book for teachers, with lots of business examples of dashboards.