Your notes

Cambridge National IT: revision notes

Data manipulation using spreadsheets

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Planning a spreadsheet solution

- Start from the client's requirements: what the spreadsheet must do, who will use it, what data goes in and what information must come out.
- Plan before you build: sketch the layout, list the **formulas** you need, and write a test plan.

Formulas and functions

- Every **formula** starts with an equals sign. A **cell reference** such as B2 points to one cell; a **range** such as B2:B10 covers several cells.
- Common **functions**: =SUM(B2:B10), =AVERAGE(B2:B10), =MIN(B2:B10) and =MAX(B2:B10). =COUNT counts cells containing numbers; =COUNTA counts cells that aren't empty; =COUNTIF(C2:C20,"Yes") counts the cells that match.
- =IF(B2>=50,"Pass","Fail") shows Pass when B2 is 50 or more, and Fail otherwise.
- =VLOOKUP(A2,Prices!A2:C50,3,FALSE) looks for A2 in the first column of a table and returns the value from its 3rd column. FALSE means it must be an exact match. XLOOKUP is a newer alternative.

Relative and absolute references

- A **relative reference** (B2) changes when the **formula** is copied to another cell.
- An **absolute reference** (B1) stays the same when copied. Use it for a single value that every row needs, such as a VAT rate.
- A **named range** (such as naming cell B1 'VAT') makes **formulas** easier to read.

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Presenting and checking data

- Formatting: currency, percentages, dates, borders and colours. **Conditional formatting** changes a cell's look automatically, such as turning marks below 50 red.
- **Data validation** restricts what can be typed, such as a drop-down list or whole numbers between limits, and shows an error message.
- Sort and filter data to organise it. Charts show patterns: a line graph for trends over time, a bar chart to compare, and a pie chart for proportions.
- Protect cells and sheets so **formulas** can't be changed by accident. Test with normal, extreme and erroneous data, and check that **formulas** give the expected results.

Key terms

Formula	A calculation in a cell, starting with an equals sign.
Function	A built-in formula, such as SUM or AVERAGE.
Cell reference	The column letter and row number of a cell, such as B2.
Range	A group of cells, such as B2:B10.
Relative reference	A cell reference that changes when a formula is copied.
Absolute reference	A cell reference that stays the same when a formula is copied, such as B1.
Conditional formatting	Formatting that changes automatically when a condition is met.
Data validation	Rules that restrict what can be entered in a cell.
Named range	A name given to a cell or range, used in formulas instead of its reference.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What does every spreadsheet formula start with?
2. What does =SUM(B2:B5) do?
3. What does =AVERAGE(C2:C11) work out?
4. What does =IF(B2>=50,"Pass","Fail") show when B2 is 50?
5. What does =COUNTIF(D2:D20,"Yes") do?
6. What is an absolute reference?
7. Why use an absolute reference for a VAT rate?
8. What does conditional formatting do?

Answers

1. An equals sign (=)

Your notes

2. Adds up the values in cells B2 to B5
3. The mean of the values in C2 to C11
4. Pass
5. Counts the cells in D2 to D20 that contain Yes
6. A reference that stays the same when a formula is copied, such as B1
7. Every copied formula must use the same cell
8. Changes a cell's appearance automatically when a condition is met

What to do next

Practise 12 questions on this topic

Try 4 exam questions, with mark schemes

Read the lesson, one step at a time

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