Excel Tests in Interviews: INDIRECT, MATCH, SUMIFS, and More

How to Search and Match Like a Pro
“Help! I just received an Excel test in a real estate private equity interview.”

“They wanted me to summarize quarterly data in an annual format, use only one single function to retrieve the data, and not modify anything else in the file. How can I do that?”
What to Expect in **Excel Tests** in Interviews

- **Common In:** Real estate private equity, other real estate, and non-generalist IB/PE roles

- **Why:** Often, they have doubts about your Excel skills if you haven’t completed a traditional investment banking role before

- **Common Topics:** Lookup functions, INDEX/MATCH to find data, SUM and SUMIF functions, and INDIRECT to create flexible functions; often a “Can you write a *single formula* to do X?” question

- **Not as Common:** Formatting (more in IB) or calculations – if they want that, they’ll give you a modeling test, not an Excel test
This Test: Understanding the Problem

• **Easiest:** We could just write separate SUM functions to get this data for each line item for each year

• **BUT:** Not very flexible – we have to modify the formula in each row/column to make it work

• **BETTER:** Use the SUMIFS function to make the date part flexible

• =SUMIFS(Quarters!$E$9:$T$9,Quarters!$E$2:$T$2,"<="&Summary!E$2, Quarters!$E$2:$T$2,">"&Summary!D$2)

• **First Part:** Summation Range; **Second/Third:** Criteria Ranges
Using **INDIRECT** and **MATCH** to Add Flexibility

**BUT:** This is better, but when we copy this formula down, we must modify the summation range part: Quarters!$E$9:$T$9

**QUESTION:** Can we make that part *flexible*, so that it finds the text on the left we’re seeking and then goes down that # of rows?

**ANSWER:** Yes, but we need to make the function more complex and use the MATCH function to find the row #:

\[=\text{MATCH}(B4,\text{Quarters!B1:B51},0)\]

• This will get us the row # for the data we’re seeking – 9 here
Using **INDIRECT** and **MATCH** to Add Flexibility

• **BUT:** To use this in the SUMIFS function, it’s not as simple as inserting a “MATCH” function with the right parameters

• **Why:** Excel only allows us to reference *fixed ranges* of rows and columns in spreadsheets... such as B10:E19 or E9:T9

• **Unless:** We use the **INDIRECT** function to *create a variable reference* to another spreadsheet

• **Formation:** We use double quotes (" ") to join text together with functions like MATCH *inside* the INDIRECT function, and the & symbol *joins* text with functions
Using **INDIRECT** and **MATCH** to Add Flexibility

- \( \text{=SUMIFS(Quarters!E9:T9,Quarters!E2:T2,"<="&Summary!E2, Quarters!E2:T2,">"&Summary!D2)} \)

- **Replace This Part:** Quarters!E9:T9 with:

  - \( \text{INDIRECT("Quarters!E"&MATCH($B4,Quarters!B1:B51,0)&"$:T" &MATCH($B4,Quarters!B1:B51,0))} \)

- **First Part:** Starts building the Quarters!E9:T9 text

  - \( \text{"Quarters!E"&MATCH($B4,Quarters!B1:B51,0) \rightarrow Quarters!E9} \)
Using **INDIRECT** and **MATCH** to Add Flexibility

- **INDIRECT("Quarters!$E$"&MATCH($B4,Quarters!$B$1:$B$51,0)&":$T$"&MATCH($B4,Quarters!$B$1:$B$51,0))**

- **Next Part:** Finishes building the Quarters!$E$9:$T$9 text

- &":$T$"&MATCH($B4,Quarters!$B$1:$B$51,0)) → :$T$9

- **So, putting it altogether:**

- **INDIRECT("Quarters!$E$"&MATCH($B4,Quarters!$B$1:$B$51,0)&":$T$"&MATCH($B4,Quarters!$B$1:$B$51,0)) → Quarters!$E$9:$T$9**
Testing Out the Function

• **Step 1:** Copy and paste the function around, and sum up everything

• **Step 2:** Compare the output to *manual* sums for each year – the manual sum of 4 quarters should match the annual figure!

• **Step 3:** Compare the *totals* across *all years* to the *totals* across *all months* – they should match!
Recap and Summary

• **Most Common “Excel Test” Topics:** Lookups, INDEX/MATCH, summation and summary functions, INDIRECT

• **SUMIFS:** Useful for summing cells based on *multiple* criteria

• **MATCH:** Lets you find the row # or column # of a specific number or text in another area or spreadsheet

• **INDIRECT:** Lets you create *your own* custom references to ranges and cells in spreadsheet – very powerful when combined with SUMIFS, MATCH, and INDEX