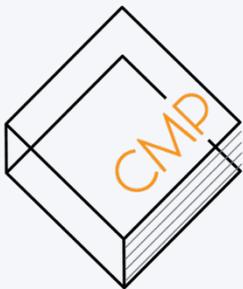




commerce
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COMM 205

**FINAL REVIEW
SESSION**

Prepared by Rebecca Chen

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CPA

CHARTERED
PROFESSIONAL
ACCOUNTANTS
BRITISH COLUMBIA

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INTRODUCTION

WHO AM I?

- ⇒ Rebecca Chen (<https://www.linkedin.com/in/reychen/>)
- ⇒ 5th year BUCS
- ⇒ Internships in product management and consulting
- ⇒ 5x TA for COMM 205
- ⇒ Other classes TA'd: COMM 491, COMM 335, COMM 437

GOALS

- ⇒ This package is a quick overview for the Excel portion (Part B) of COMM 205. We will be going over R content with a .rmd file in RStudio after.
- ⇒ The review session is INTERACTIVE. The best way to learn Excel/R is by doing it yourself!
- ⇒ At the bottom of this package is a practice problem that covers most of the main topics of Excel.

THIS SHOULD NOT BE YOUR ONLY STUDY RESOURCE BUT IS A GOOD STARTING POINT FOR UNDERSTANDING THE KEY CONCEPTS

FUNCTIONS COVERED

- ⇒ IF, AND, OR
- ⇒ COUNTIFS, SUMIFS
- ⇒ VLOOKUP
- ⇒ CONCATENATE, LEN, TRIM
- ⇒ SUBSTITUTE, REPLACE
- ⇒ FIND, SEARCH

NOTES

- ⇒ If you have a question, please raise your hand or type in the chat.
- ⇒ This session will be recorded for those who could not make the time slot.



IF and NESTED IFS

SYNTAX

=IF(logical_test, [value_if_true], [value_if_false])

LOGICAL TEST OPERATORS

- ⇒ "=" (equals to)
- ⇒ "<>" (not equals to)
- ⇒ "<" (less than), "<=" (less than or equal to)
- ⇒ ">" (greater than), ">=" (greater than or equal to)

FUNCTION DYNAMICS

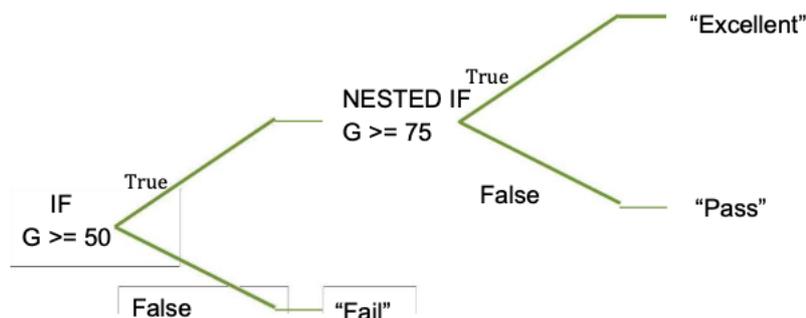
⇒ The IF statement is used to test for specific conditions, constraints, etc. and will return either a true value, or false value (two results).

Example: IF(G >= 50, "Pass", "Fail")

NESTED IFS

Nested IF statements are used when you have **more than two** possible results. Use a TREE DIAGRAM to understand the logic of a Nested If.

Example: IF(G >= 50, IF (G >= 75, "Excellent", "Pass"), "Fail")



DRAW A TREE DIAGRAM IF YOU ARE CONFUSED



AND, OR

SYNTAX

=AND(logical1, [logical2], ...)

=OR(logical1, [logical2],...)

AND and OR are **logical operators** (returns true or false)

AND

If ALL logical tests are true, then AND returns TRUE, otherwise FALSE

OR

If ANY of the logical tests are true (at least 1), then OR returns TRUE, otherwise

FALSE USAGE WITH IF STATEMENTS

AND/OR can be used with IF and Nested IF statements as their logical expression.

Given the above output:

	A	B	C	D	E
1	GPA	Specialization	AND	OR	NESTED IF-AND
2	50	BTM	FALSE	TRUE	You didn't meet the criteria
3	67	Finance	FALSE	FALSE	You didn't meet the criteria
4	53	Accounting	FALSE	FALSE	You didn't meet the criteria
5	84	BTM	TRUE	TRUE	You are a deans list BTM student
6	92	Marketing	FALSE	TRUE	You didn't meet the criteria

Q1. Write the formula in C2, drag down to C6

Q2. Write the formula in D2, drag down to D6

Q3. Write the formula in E2, drag down to E6



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COUNTIFS AND SUMIFS

SYNTAX

=COUNTIFS(criteria_range1, criteria1, criteria_range2, criteria2 ...)

=SUMIFS(sum_range, criteria_range1, criteria1, ...)

COUNTIFS

Counts the number of cells in [criteria_range] that are TRUE based on [criteria]

⇒ up to 127 criterions can be tested

⇒ numbers must have quotation marks "" i.e. ">5", "<=4", ">=36"

⇒ each criteria_range must be the SAME size, otherwise returns #VALUE error

SUMIFS

Returns the sum of all numbers in [sum_range] where the corresponding [criteria_range] meets [criteria]

⇒ like COUNTIFS, you must enclose numbers with quotation marks

NOTES

- The sum range MUST be a numerical range. You cannot sum strings.
- COUNTIFS can have multiple criteria ranges but MUST be the same size.
- Quotation marks MUST be used for all criteria constraints, even numerical operators.
- Criteria format does not need a logical operator if you are checking if it is equals to. I.e. COUNTIFS year = 2. You can just enter in the value 2, otherwise, you have to use quotation marks "=2".
- If you need to use multiple criteria on the same range you need to use multiple COUNTIFS. (ICE 1 Q7)

	A	B	C	D	E
1	GPA	Year			COUNTIFS
2	50	1		# of year 1	2
3	67	2		# of year 2	3
4	53	2			SUMIFS
5	84	1		above 80	176
6	92	2		below 80	170

Q4. Write the COUNTIFS formula to count the # of students in Year 1.

Q5. Write the SUMIFS formula to sum the total grade of students above 80.

VLOOKUP

SYNTAX

=VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

VLOOKUP

Looks in the first column of the table_array for the lookup_value, then returns the corresponding value found within the col_index_num column. Can be used to find EXACT (range_lookup = FALSE) or APPROXIMATE (range_lookup = TRUE) matches. The default for range_lookup, if not specified is TRUE.

NOTES

- ⇒ If using approximate match, the first column of the table_array must be sorted in ascending order.
- ⇒ Each value in the 1st column must be unique, else the first match will always be returned.
- ⇒ If the VLOOKUP table represents ranges, the values in the first column of table_array must only be the LOWER bound of the range (e.g. if you want one row in your to represent a range of grades 90-100 to have Grade = A+, then Col1: 90, Grade: A+)
- ⇒ Not case sensitive
- ⇒ Remember to absolute reference the VLOOKUP table, otherwise, dragging your VLOOKUP formula will cause the VLOOKUP table to go out of range.

	A	B	C	D	E	F
1	Name	Mark On Test	Letter Grade		RUBRIC	
2	Stan	3.1	C		Mark	Grade
3	Natalie	4.6	C		1	D
4	Arnold	1.3	D		3	C
5	Katherine	4.1	C		5	B
6	Evan	5	B		7	A
7	Stanley	7	A			

Q6. Write the VLOOKUP formula that can be entered into C2 and dragged down to C7.

Q7. What would happen if the marks were listed in descending order.



INDEX, MATCH

SYNTAX:

=INDEX(array, row_num)

=INDEX(array, row_num, column_num)

← if more than one column

=MATCH(lookup_value, lookup_array, [match_type])

INDEX

Returns the **value** based on its relative position to an array

MATCH

Returns the **relative position** of a value within an array.

USING INDEX AND MATCH TOGETHER

INDEX and MATCH are used together when VLOOKUP can't do the job (because with VLOOKUP your lookup value MUST be the leftmost column). If you want to look up a matrix (row and column) you can use INDEX with two MATCH functions for the row and column.

	A	B	C
1	Student ID	Name	Year
2	18097155	Jason	3
3	25963435	Michael	2
4	74833468	Darren	1
5	19394443	Sylvia	5
6	30555332	Ashley	3

Q8. Write a formula to return the value "Darren"

Q9. Write a formula to return position of the ID 19394443 in Student ID

Q10. Write a formula to return the position of the Name for a student in Year 5.

Q11. Write a formula to return the Student ID of Jason

Q12. Write a formula to return the name of a student in Year 2



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LEFT, RIGHT, MID, CONCATENATE

SYNTAX

=LEFT(text,num_chars)

=RIGHT(text,num_chars)

=MID(text,start_num,num_chars) ← start_num is INCLUSIVE

=CONCATENATE(text1,[text2],...)

=text1&[text2]...

LEFT, RIGHT, MID

Used to manipulate text, and return substrings (text within text)

Q13. Cell A1 contains the string “JC19971228”, where the first 2 characters are your initial, and the following characters is your birthdate in YYYY/MM/DD notation.

What will the following functions return?

a. =LEFT(A1,50)

b. =RIGHT(A1,50)

c. =LEFT(A1,2)

d. =RIGHT(A1,8)

e. =LEFT(RIGHT(A1,4),2)

f. =MID(A1,1,6)

g. =MID(A1,3,50)

CONCATENATE

Allows you to join strings together. It can be used interchangeably with ampersand (&).

Example: Add dashes to the string “JC19971228” to transform it into “JC-1997-12-28”. How do you approach this? Get each appropriate substring and concatenate together with a dash!

Answer: =CONCATENATE(LEFT(A1,2),“-”,MID(A1,3,4),“-”,LEFT(RIGHT(A1,4),2),“-”,RIGHT(A1,2))
=LEFT(A1,2) & “-” & MID(A1,3,4) & “-” & MID(A1,7,2) & “-” & RIGHT(A1,2)



LEN, TRIM, SUBSTITUTE, REPLACE

SYNTAX:

=LEN(TEXT)

=TRIM(TEXT)

=SUBSTITUTE(text,old_text,new_text,[instance_num])

=REPLACE(old_text,start_num,num_chars,new_text)

LEN returns the number of characters in a string, inclusive of spaces.

TRIM removes *repeated* spaces. Great for cleaning data.

	A	B
1		
2	JASON	5
3	JASON	9
4		=LEN(TRIM(A3))

Q14. Why did LEN produce different outputs?

SUBSTITUTE is used when you know the specific string you are trying to swap out.

	A	B	C
1	StudentID(old)	StudentID(new)	
2	M Jason	Male Jason	
3	M Michael	Male Maleichael	
4			

Example: substitute the letter "M" with "Male"

=SUBSTITUTE(A2,"M","Male")

Q15. What is the correct formula for B9?

IMPORTANT: You have to specify the INSTANCE NUMBER.

REPLACE is used to insert strings into other strings based on character position.

Unlike SUBSTITUTE, it relies on WHERE (the character position) vs WHAT (the character to replace).

	A	B	C	D
1	Fragment	Noun	Sentence	
2	I am a	human	I am a human	
3	Here is my	dog	Here is my dog	

=REPLACE(A2, 8, 1, "" & B2) or

=REPLACE(A2, LEN(A2)+1, 1, "" & B2)

WHICH FORMULA IS BETTER?

Trick: a generalizable way to insert a word at the end of a string can be combining LEN and REPLACE by making the start point LEN(text) + 1.

Remember: In SUBSTITUTE, you need to provide the [instance_num] if there are multiple instances of the string you're looking at. In REPLACE, you need to know your start point and the number of characters you wish to replace.

FIND, SEARCH

SYNTAX

=FIND(find_text,within_text,[start_num])

=SEARCH(find_text,within_text,[start_num])

FIND and **SEARCH** both allow you to find the position of a specified string. They are similar, but also have a few key differences.

SIMILARITIES:

- Returns position of [find_text] based on [start_num]. If start_num > find_text, returns #VALUE!
- If start_num is negative, returns #VALUE!
- If find_text is not found, returns #VALUE!
- Start_num, if not specified, is 1.

SEARCH	FIND
NOT Case Sensitive Allows Wildcards	Case Sensitive DOES NOT allow Wildcards

WILDCARDS:

- **?** : can be used to replace a single character, Example: p?t will match with any three letter string beginning with a p and ending in a t (pet, pat, pot, pit, etc.)
- ***** : can be used to replace any (including 0) number of characters, Example: p*t will match with (pt, part, pet, port, parrot, etc.)
- **~** : Used to identify wildcard characters in a string. Example: find “why?”. In your [find_text] for FIND or SEARCH, you must denote it as “why~?” otherwise it will treat it as a wildcard character.

Q16. Use FIND/REPLACE or MID/REPLACE to replace “man” with “woman”.

Q17. Use FIND/REPLACE or MID/REPLACE to replace “walked” with “ran”.



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PRACTICE PROBLEMS

Sarah is a hiring manager for Google. She is currently undergoing her university hiring pipeline for next year's intern class. The past year, she has been visiting universities in BC and building a database of candidates who have applied for an intern position. The actual spreadsheet has over 1500 candidates.

Use the following candidate information for the next few questions.

	A	B	C	D	E	F	G
1	Name	University	Year	GPA	Resume Score /10	Referral?	Short-List
2	Jason	UBC		4	95%	10 Y	
3	Nick	UBC		3	77%	9 N	
4	Galen	SFU		2	75%	9 N	
5	Raymond	UVIC		4	80%	7 Y	
6	Samantha	CAP		1	83%	4 N	
7	Kelly	SFU		2	88%	6 Y	
8	Derek	UVIC		3	79%	7 Y	
9	Ashley	SFU		3	92%	8 Y	
10	Kylie	UBC		2	85%	8 N	
11	Linda	UBC		3	81%	6 N	

Sarah wants to create a formula that can automatically Short -List candidates (typed in G2, dragged down). Her current criterion are that they must have a 80% average and have a resume score of at least 7. If they are Short-listed, they will be labeled with a Yes, otherwise No.

1. Write a formula to Short-List candidates
2. Write a formula to count the number of candidates who are successfully shortlisted

Sarah wants to revise her current formula such that anyone who has a Referral, regardless of the current criteria, will be short-listed. If they are not referred, criteria stands.

3. What is the revised formula?

At a networking event, Sarah met Ashley who she really liked, but couldn't remember what year she was in. She wants to write a formula to find out.

4. Write a formula to extract Ashley's Year.

Sarah is running a new campaign where the 1000th candidate who applied gets Google swag regardless of his/her success in being Short-listed. She wants to find the candidates name and university. She will have this information in two cells.

5. Write the formula to get the 1000th candidates name
6. Which of these formulas will get the 1000th candidates university?
 - a. =INDEX(B1:B1501, 1000)
 - b.=INDEX(A1:B1501,1000)
 - c. =INDEX(A2:B1051, 1000, 2)
 - d.=INDEX(A1:B1051, 1000, 2)