

COMMERCE MENTORSHIP PROGRAM


EXCEL REVIEW SESSION


COMM 205



PREPARED BY
AC NAME



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TABLE OF CONTENTS



- Data types in Excel
- IF, Nested IF, AND, OR
- COUNTIFS / SUMIFS
- VLOOKUP
- INDEX & MATCH
- LEFT, RIGHT, MID, CONCATENATE
- LEN, TRIM, SUBSTITUTE, REPLACE
- FIND & SEARCH



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Data Types in Excel

Text/String: Used for storing text values, such as names, addresses, or any alphanumeric characters. Quotations to indicate(ex. “Hello”, “123”, “@”)

Number/Numeric: Used for storing numerical values, including integers or decimals. (ex. 0, 123, 2.2)

Boolean/Logical: Represents logical values, either TRUE or FALSE, used in logical operations and formulas.

Error: Indicates when a formula encounters an error, such as a #DIV/0! error for dividing by zero.



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Common Logical Operators

- = Equal to
- <> Not Equal to
- < Less than
- > Greater than
- <= Less than or equal to
- >= Greater than or equal to

Numerical Operators

- + addition
- subtract
- * multiplication
- / division

IF Function

Syntax: =IF(logical_test, value_if_true, value_if_false)

Used to test conditional statements (greater than / less than. Equal to, etc.)

MUST be a Boolean. Evaluate to TRUE or FALSE

[1 = TRUE, 0 = FALSE].

The value returned if the logical test is true

The value returned if the logical test is false

IF Function - Example

	A	B	C	D
1				
2		COMM205		
3				
4		=IF(B2="COMM205", "Yay!", "Nay!")		
5				
6				
7				

What is the value of B4?

Yay!

First, the logical test is evaluated, it compares the value in B2 with “COMM205” (brackets to indicate it is a TEXT type)

- If B2 contains exactly “COMM205”, B4 will fill with “Yay!”
- If B2 does not contain exactly “COMM205”, B4 will fill with “Nay!”



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NESTED IF FUNCTION

- Using a combination of IF within each other if there are *more than 2 results*
- Using a function *within another function* is valid, as long as the output of the *inner* function can be used as an *input for the outer function*



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NESTED IF FUNCTION - Practice Question

A store wants to label the quality of their shirts, but the label is dependent on the PRICE of the shirt.

If the shirt is **30 or more dollars**, they will label it a “High” quality shirt.

If the shirt is **15 or more dollars**, they will label it a “Medium” quality shirt.

If the shirt is **less than 15 dollars**, they will label it a “Low” quality shirt.

Use a NESTED IF from B2:B10 to fill in the correct values.



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NESTED IF FUNCTION - Practice Question (See Excel)

A store wants to label the quality of their shirts, but the label is dependent on the PRICE of the shirt.

If the shirt is **30 or more dollars**, they will label it a “High” quality shirt.

If the shirt is **15 or more dollars**, they will label it a “Medium” quality shirt.

If the shirt is **less than 15 dollars**, they will label it a “Low” quality shirt.

Use a NESTED IF from B2:B10 to fill in the correct values.

```
=IF(A2>=30, "High", IF(A2 >15, "Medium", "Low"))
```



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CELL REFERENCE

- By default, when you refer to a cell, the reference is relative
 - Ex. formula in C1 is A1+B1
 - Copy and paste the formula into C2 -> becomes A2+B2
- Want to keep original cell reference -> make it absolute by putting a dollar sign (\$) before the columns and rows - **this is absolute reference**

	A	B	C	D
1				
2		3	1	=B\$2 + C2
3		5	2	5
4		7	3	6
5		1	4	7
6		3	5	8

Mixed cell reference: putting the dollar sign either before the row (number) or column (letter) you want to lock -> ex. B\$2

AND Function

- Used to evaluate if ALL of the arguments/logicals are TRUE or FALSE
- Will return TRUE, if all arguments are true
- Will return false, if even one of the arguments is false

Syntax: = AND(logical_test1, [logical_test2], ...)

What does this evaluate to?

FALSE

Height	Bank Account	Student	
Tall	1500	FALSE	=AND(D4="Tall", E4>1000,F4)

OR Function

- Used to evaluate if at least one of the arguments/logicals are TRUE or FALSE
- Will return TRUE, **as long as at least one of the arguments is TRUE**
- Will return false, **if all arguments are false**

Syntax: = OR(logical_test1, [logical_test2], ...)

What does this evaluate to?

TRUE

Height	Bank Account	Student	
Tall	-1000	FALSE	=OR(D4="Tall", E4>1000,F4)

AND + OR - Practice Question (See Excel)

Your boss has asked you to evaluate the following AND/OR statements so he can accurately test his hypothesis. He generated the formula below, and it output **TRUE**. Which of the following AND/OR statements would definitely evaluate to **TRUE**?

=AND(OR(A1=10, B1=20), OR(C1=30, D1=40))

B & C

- | | |
|-----------|---|
| A. | AND(AND(A1=10, B1=20), AND(C1=30, D1=40)) |
| B. | OR(OR(A1=10, B1=20), OR(C1=30, D1=40)) |
| C. | OR(AND(A1=10, B1=20), OR(C1=30, D1=40)) |
| D. | AND(OR(A1=10, B1=20), AND(C1=30, D1=40)) |
| E. | OR(AND(A1=10, B1=20), AND(C1=30, D1=40)) |



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COUNTIFS Function

- Gives a set of criteria, then counts **HOW MANY CELLS** satisfy that criteria
- Asking excel a question -> how many cells follow this constraint?

Syntax: = COUNTIFS(criteria_range1, "criteria1", [criteria_range2], ["criteria2"], ...)

This can be a single cell or a range of cells.

The criteria can be a logical test for a numerical value, or checking to see if the criteria range has a certain string of characters. **MUST** be enclosed in quotations.

These are optional, but if you do more than 1 set of criteria, the criteria range **must be the same size**. COUNTIFS will say a cell fulfills the conditions only if it meets **BOTH** constraints.



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SUMIFS Function

- Adds values in a specific range or multiple ranges that meet a specified criteria.

Syntax: = SUMIFS(**sum_range**, **criteria_range1**, **criteria1**, ...)

Contains the numerical values you would be adding.

The range of cells that are being logically tested to see if they meet a certain criteria.

The criteria you are testing (logical test). MUST be enclosed in quotations.

COUNTIFS + SUMIFS Practice Question (See Excel)

Game	Genre	Release Year	Daily Players
Fortnite	Shooter	2017	629282
Roblox	Creative	2006	1279032
Minecraft	Creative	2011	957080
Counter Strike	Shooter	2012	711525
Valorant	Shooter	2020	662707
League of Legends	MOBA	2009	1138125
Apex Legends	Shooter	2019	240914
Rocket League	Sports	2015	286736
Dota 2	MOBA	2013	327475
GTA	Shooter	2013	454422
PUBG	Shooter	2018	236798
Palworld	Creative	2024	130201

You've been given a dataset that contains Video Games, genre, release date and daily players. Using the COUNTIFS and SUMIFS functions, answer the following questions!

a) Find the average amount of daily players for shooter games

```
=SUMIFS(D2:D13,B2:B13,"=Shooter")/COUNTIF(B2:B13,"Shooter")
```

b) Find the difference between the average daily players of games released <2015 and games released >=2015

```
=SUMIFS(D2:D13,C2:C13,"<2015")/COUNTIF(C2:C13,"<2015")-SUMIFS(D2:D13,C2:C13,">=2015")/COUNTIF(C2:C13,">=2015")
```



VLOOKUP

- To find a corresponding match of a certain value from a table. This can be either **approximate** or **exact**.

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

Cell reference that contains the value to look up.

Range of the lookup table.

The column number that has the return values in the lookup table.

Default = TRUE. This means it will look for an approximate match. If you want an exact match, set this to FALSE.

VLOOKUP - Example

F3 is the lookup value, we want to see what letter grade 85 converts to.

B3:B7 is the reference to your lookup table.

2 is the column you want to look at, TRUE means it is a ranged lookup.

Score	Grade		
0	F	Score	85
60	D	Grade	=VLOOKUP(F3,B3:C7,2,TRUE)
70	C		
80	B		
90	A		

VLOOKUP - Practice Question (See Excel)

You're given a table with a Product ID and its corresponding Product Description and Rating (assume this table goes on indefinitely). The numeric rating also has a corresponding purchase behavior (Buy?). Using only the Product ID (cell E11) as input, you want to output your corresponding purchase behavior for it.

[illegible]

INDEX FUNCTION

Returns the value of the cell in that specified location.

Syntax: = INDEX(array, row_num, column_num)

The range of cells to look for the value in. Does NOT just have to be 1 column or 1 row - can be a table.

The row number you are looking to get the value from.

The column number you are looking to get the value from.

If the array is 1 column -> you can omit the 3rd argument.
If the array is 1 row -> you can omit the 2nd argument.



MATCH FUNCTION

Returns a number that specifies the relative position of a value in a range of cells.

Syntax: = MATCH(lookup_value, lookup_array, [match_type])

The value you are looking to get its relative position for.

The range of cells to look for the look_up value. This **must** be one dimensional (either 1 column or 1 row).

Optional

1 means approximate match (the array **MUST** be in ascending order). This is the default.

0 means exact match.

You can also put TRUE for 1 and 0 for FALSE.



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INDEX + MATCH - Practice Question (See Excel)


You're taking a look at your grades, sorted from lowest to highest, and want to know which course you did particularly well in. Assuming the table goes on indefinitely, in one cell, you want to find the Course Code of the course where you got closest to, but not higher than 90.


=INDEX(A2:A12,MATCH(90,C2:C12,1))

Course Code	Name	Grade	
COMM 101	Introduction to Commerce	65	
COMM 190	Quantitative Decision Making	68	
COMM 196	Business Communications	71	
COMM 191	Introduction to Statistics	74	
MATH 100	Differential Calculus	75	
COMM 295	Managerial Economics	79	
COMM 204	Introduction to OpLog	86	
COMM 205	Introduction to MIS	87	
COMM 293	Financial Accounting	91	
COMM 294	Managerial Accounting	94	
COMM 298	Introduction to Finance	95	
Answer:			



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LEFT

Syntax: = LEFT(text, num_chars)

Can be a cell or actual quotations of text.

For example, this could be C2 or "Hello"

The first number of character(s) from the given text.

For example if this were 3, it would return the first 3 characters of the given text.

RIGHT

Syntax: = RIGHT(text, num_chars)

Can be a cell or actual quotations of text.

For example, this could be C2 or "Hello"

The last number of character(s) from the given text.

For example if this were 3, it would return the last 3 characters of the given text (in the order of the original text).

LEFT + RIGHT Example

Awesome!	=LEFT(C7,3)
Awesome!	=RIGHT(C7,4)

What are the outputs?

Awe

ome!



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MID FUNCTION

Syntax: = MID(text, start_num, num_chars)

Can be a cell or actual quotations of text.


For example, this could be C2 or "Hello"


Start at this character of the text (inclusive).

If the text were "Hello" and start_num = 2, you would start from the 'e'.

The number of characters to extract from the text.



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MID Example

What is the output?

Awesome!	
	=MID(C7,4,3)

som

CONCATENATE (CONCAT) FUNCTION

To combine multiple strings of text into a single string of text.


Syntax: = CONCAT(text1, [text2], ...)


First string of given text. This can be a cell (B2) that has a text value in it, or a text string (i.e. "Hello").

(Optional) second piece of text you would attach to the prior given text (text1).

You can join up to 255 strings of text using the CONCAT() function.



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AMPERSAND OPERATOR

Another way we could join 2+ strings of text into 1.

It is **not** a function, just an operator.

	A	B	C
1	COMM	205	=A1&" "&B1

C1 would give the output 'COMM 205'.

For the ampersand operator and concatenate function, you should consider the spaces. You can simply insert a space by inputting " ".

Or else, the output will be squished together.

=A1&B2 would give 'COMM205'



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LEFT + RIGHT + MID + CONCAT Practice Question (See Excel)

You want to plan your next semester and you're given an option of Course Codes (Name Number). You've decided that you'll only take either COMM courses (starts with "COMM") or 400-level courses (1st digit of Number is "4"). What can you put in cell B2 and drag down to produce the output as shown (e.g. "I'll take CO101" vs. "Don't Take")?

Course Code	Working Formula: Take?	Example Output
COMM 101		I'll take CO101
MATH 290		Don't Take
COMM 196		
COMM 391		
MATH 400		
CPSC 395		
DSCI 304		
COMM 405		
CPSC 393		
DSCI 294		
CPSC 498		



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LEN

Syntax: = LEN(text)

Can be a cell or actual quotations of text.

Returns the number of characters in a text string (including spaces).

The output is a number.

TRIM

Syntax: = TRIM(text)

Can be a cell or actual quotations of text.

Removes all spaces from text strings, except for **single** spaces between words.

This function trims:

- All spaces before the first word
- Trailing (end) spaces after last word
- Spaces in between words so there's 1 space between words.



LEN + TRIM (example)

length of string! =LEN(A2)

The output is 17, which is the length of the string (including spaces and characters)

Mr. Michael Jordan =TRIM(A8)

The output is Mr. Michael Jordan. The single spaces are kept, and the spaces before / after the string are trimmed.



SUBSTITUTE FUNCTION

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

Can be a cell or actual quotations of text.

For example, this could be C2 or "Hello".

In quotations, the subtext within the first argument that you want to change.

In quotations, the new text you are replacing the old_text with.

Optional - if the old_text occurred multiple times, this is the instance of it for which you wish to substitute.

Substitutes a string of old text for a string of new text.

This is **case sensitive**. **Capitalization matters** and will make a difference.



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Substitute (example)

Michael Jordan Jr. =SUBSTITUTE(A14, "Jr.", "The Goat")

The output is Michael Jordan The Goat, Jr. is replaced by The Goat

Michael Jr. Jordan Jr. =SUBSTITUTE(A14, "Jr.", "The Goat")

The output is Michael The Goat Jordan The Goat, All “Jr.”s are replaced by The Goat unless the specific instance is specified.



REPLACE FUNCTION

Syntax: = REPLACE(old_text, start_num, num_chars, new_text)

Can be a cell or actual quotations of text.

For example, this could be C2 or "Hello".

Start at this character of the text (inclusive).

If the text were "Hello" and start_num = 2, you would start from the 'e'.

The number of characters you want to replace (from that starting character).

The new text you want to replace the old text with.

Replaces a old text string with a new text string, **starting from a specific location of text string** and based on a specified number of characters.



REPLACE EXAMPLE


	A	B	C
1	Laptop	=REPLACE(A1, 3, 2, "123")	


What will be the output of cell B1?

***NOTE:** the number of characters in new_text (4th argument) does NOT need to be equal to the num_chars in the 3rd argument.

La123op



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LEN, TRIM, SUBSTITUTE, REPLACE Practice Question (See Excel)

Your boss has given you an outdated list of Student IDs. He wants you to update them by (1) removing unwanted spaces, (2) changing "H" to "U", and (3) changing the year (last 2 digits) to "35". What can you type in cell B2 and drag down to make these updates to the Student ID? Assume the table goes on indefinitely.

Student ID	Updated Student ID	Example
105H2020		105U2035
2H382020		2U382035
H7922020		
5H972020		
81H72020		
44H72020		
H9232020		
03H42020		
31H52020		
74H22020		
677H2020		
2H852020		

=REPLACE(SUBSTITUTE(TRIM(A2),"H","U"), 7, 2, "35")



FIND FUNCTION

Syntax: = FIND(find_text, within_text, [start_num])

The certain string of text you are looking for.

The full text string (either a cell reference or string in quotations).

Optional - the character number for which you start looking for the find_text value.

Looks for one text string (find_text) inside a second text_string (within_text), then returns the **character number** of the *starting position of the first text string that is in the second text string.*

Case sensitive. If the find_text is NOT in the within_text, it will return the error #VALUE!

FIND FUNCTION

Syntax: = FIND(find_text, within_text, [start_num])

The certain string of text you are looking for.

The full text string (either a cell reference or string in quotations).

Optional - the character number for which you start looking for the find_text value.

Looks for one text string (find_text) inside a second text_string (within_text), then returns the **character number** of the *starting position of the first text string that is in the second text string.*

Case sensitive. If the find_text is NOT in the within_text, it will return the error #VALUE!

FIND EXAMPLE

What will be the output of these functions?

	A
1	Messiness

=FIND("ss", A1)

=FIND("SS", A1)

=FIND("ss", A1, 5)

3
#VALUE!
8

SEARCH FUNCTION

Syntax: = SEARCH(find_text, within_text, [start_num])

The certain string of text you are looking for.

The full text string (either a cell reference or string in quotations).

Optional - the character number for which you start looking for the find_text value.

SEARCH CONT'D

It has the same syntax as FIND(). What are the differences?

SEARCH() is NOT case sensitive.

SEARCH() allows for wildcard characters:

- ? is used to find any single character. One ? = One character.
- * can be used to find any number of characters. One * = any amount of characters.
- Put ~ in front of these characters to look for actual ? or *
 - ~? looks for ?
 - ~* looks for *
 - ~~ looks for ~

BOTH FIND() and SEARCH() have numbers as outputs.



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SEARCH EXAMPLE

	A
1	Messiness

What will be the output of these functions?

=SEARCH("ss", A1)

3

=SEARCH("SS", A1, 5)

6

=SEARCH("n?s", A1)

8

=SEARCH("i*s", A1)

5



Find + Search Practice Question (See Excel)

You're looking at your contact list from your time at Sauder. You want to go job hunting, so you try to determine what company you have the most contacts in. What formula can you put in B2 and drag down to obtain only the company from the entire email? (e.g. "benjamin@google.com" would output "google")

Email	Company	Example Output
benjamin@google.com		google
is_enjoying@microsoft.ca		microsoft
teaching@sauder.ubc.ca		
comm_205@sap.io		
cmp_is@tesla.com		
an_awesome@sap.io		
cus_service@google.com		
this_is@microsoft.ca		
the_final@google.com		
practice_q@microsoft.ca		
hope_you@google.com		
enjoyed@sauder.ubc.ca		



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