Microsoft Excel

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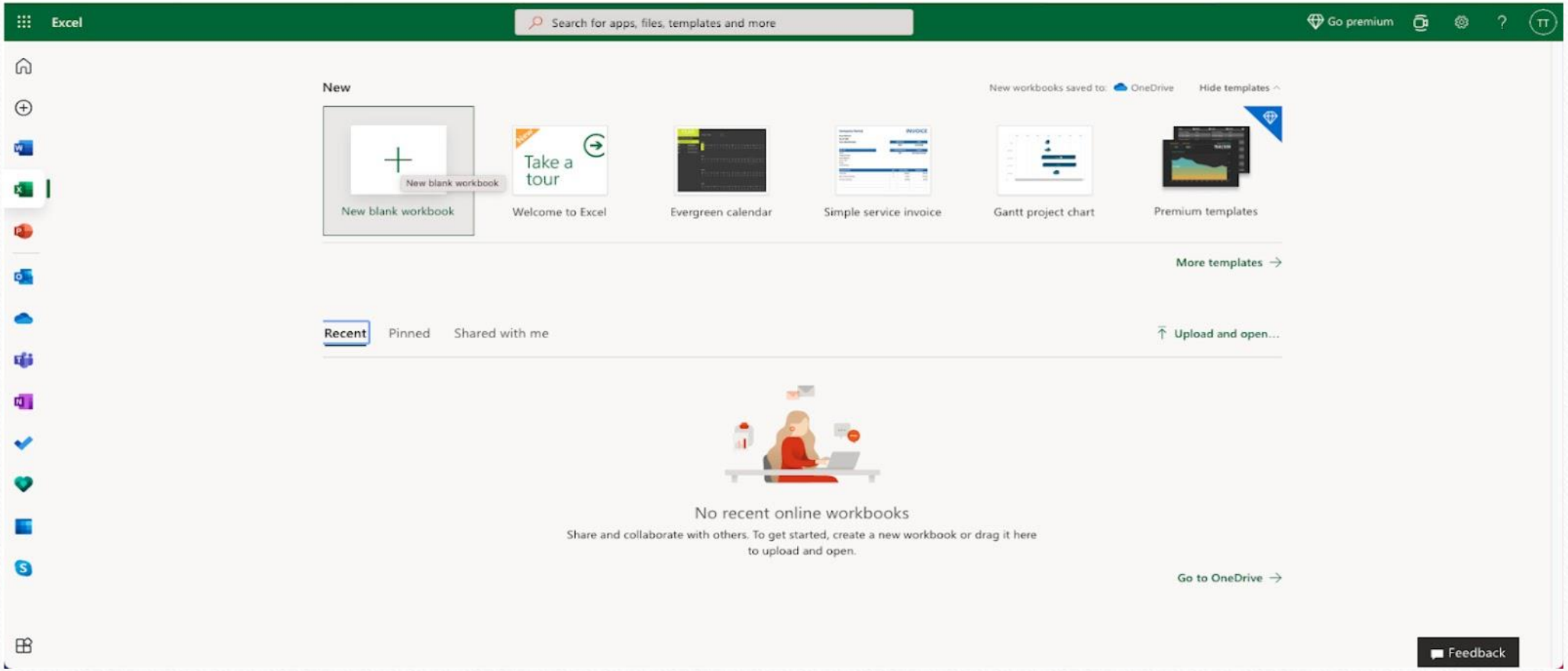
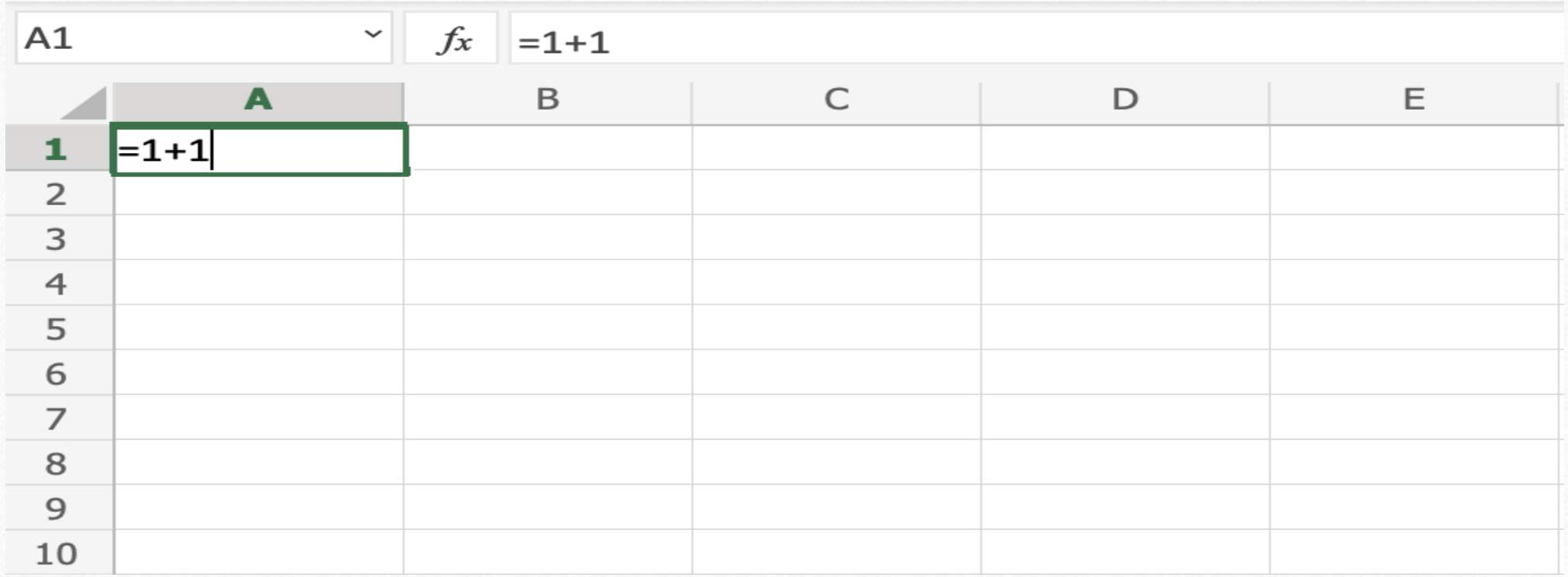
Why Study Excel?

- Excel is the world's most used spreadsheet program.
- Example use areas:
  1. Data analytics
  2. Project management
  3. Finance and accounting

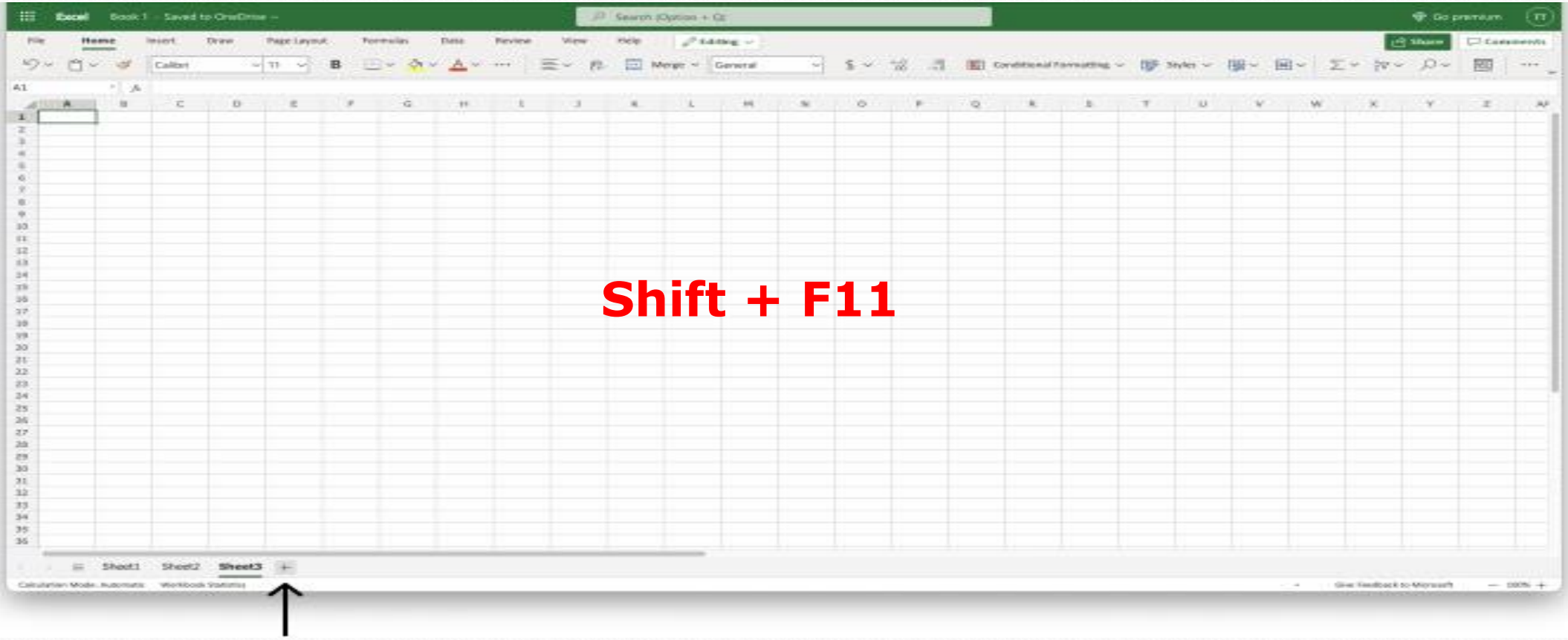
Start new workbook



First function



Multiple Sheets

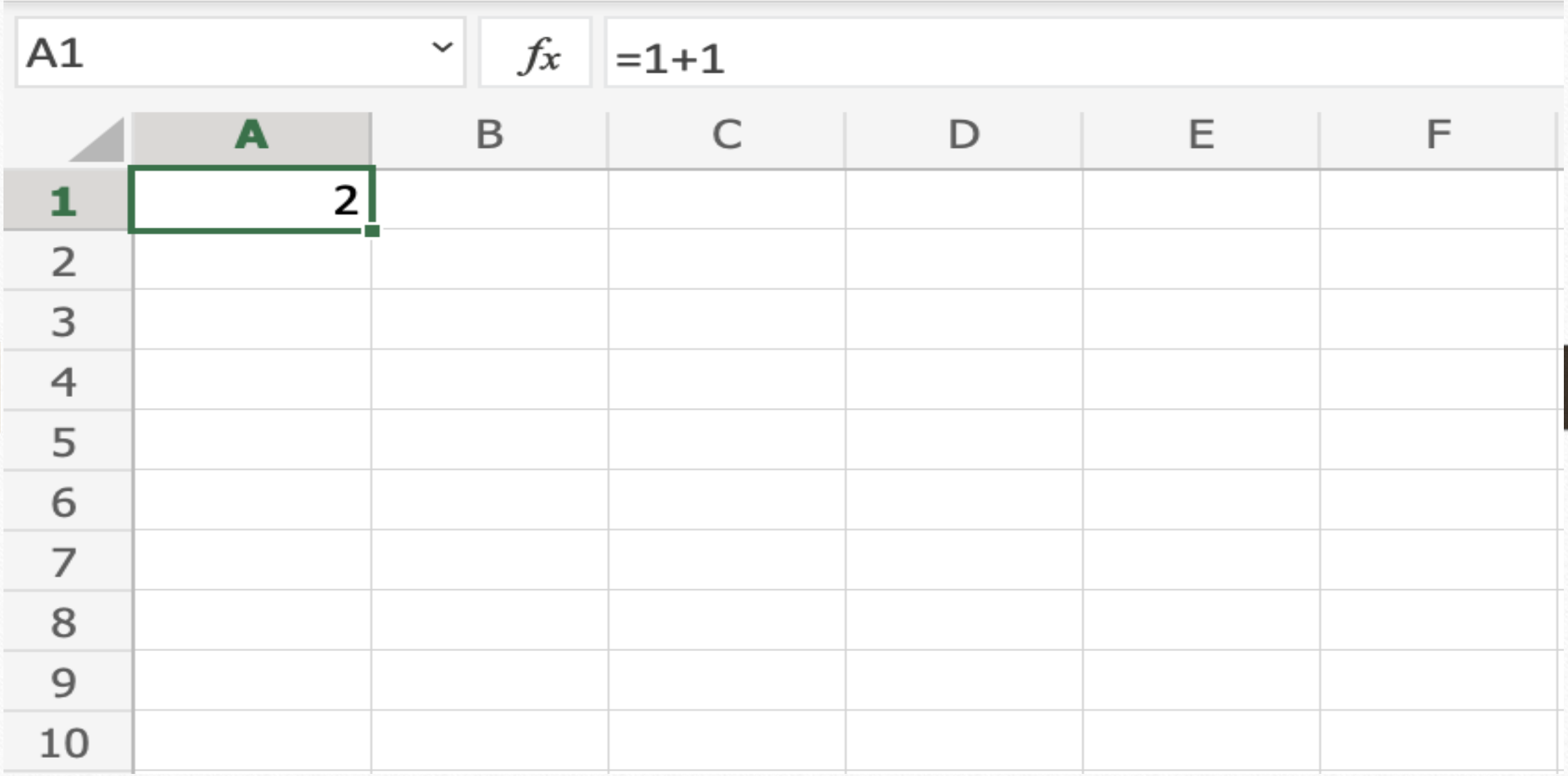


Creating formulas

- Select a cell
- Type the equal sign (=)
- Select a cell or type value
- Enter an arithmetic operator
- Select another cell or type value
- Press enter

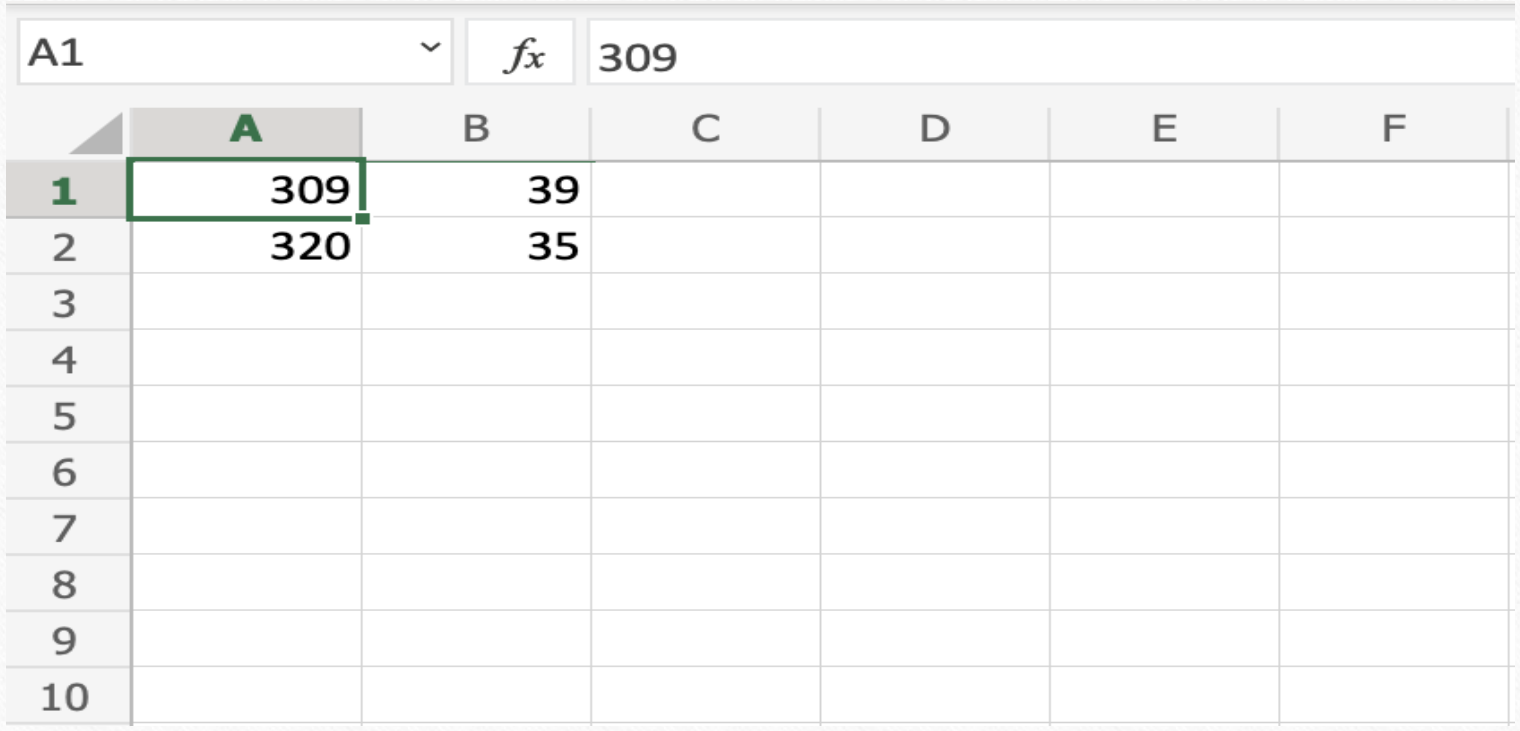
To add text to a shape

- For example =1+1 is the formula to calculate 1+1=2
- reference(value) for example A1(2)


A1
fx
=1+1
A
B
C
D
E
F
1
2
2
3
4
5
6
7
8
9
10

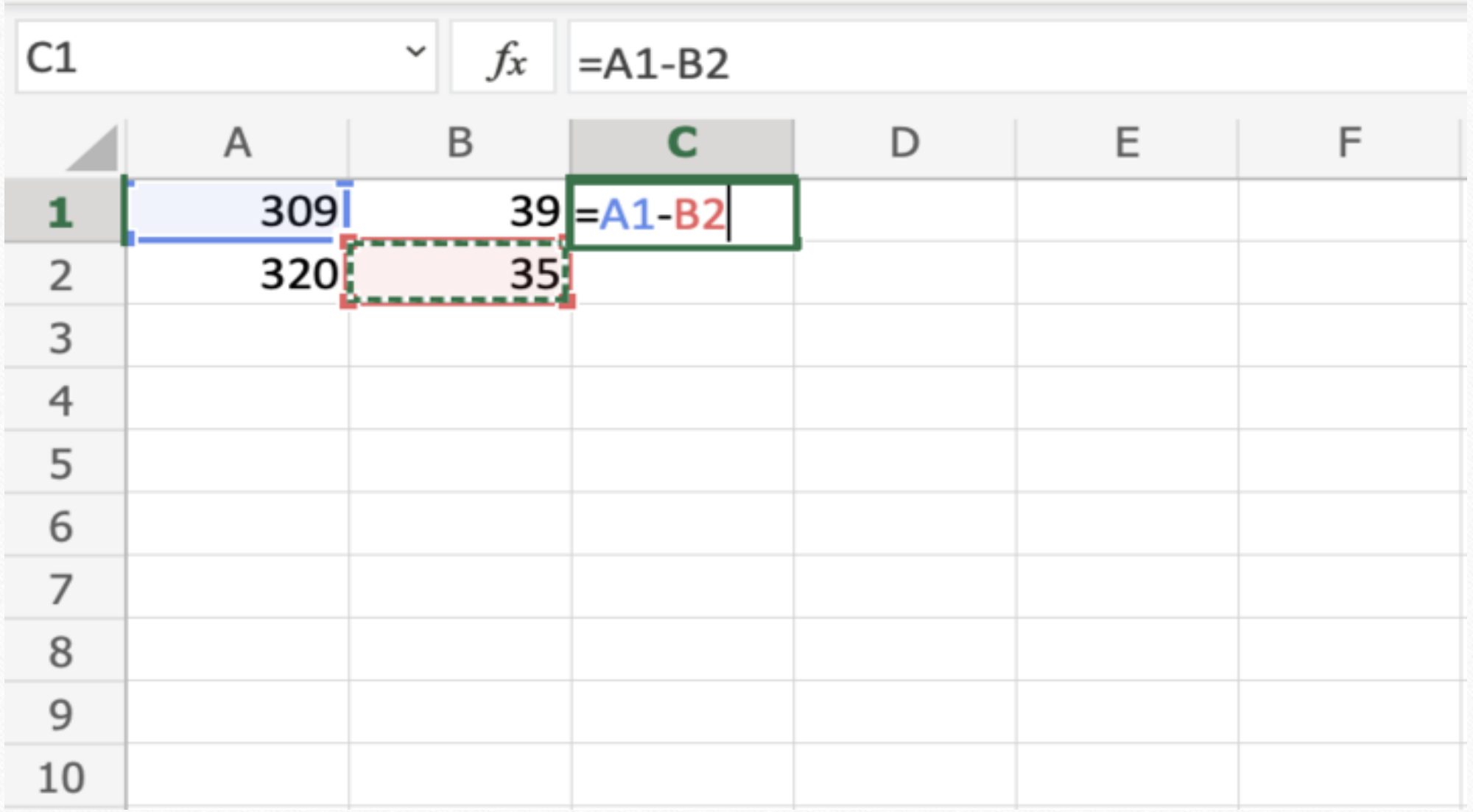
Using Formulas with Cells

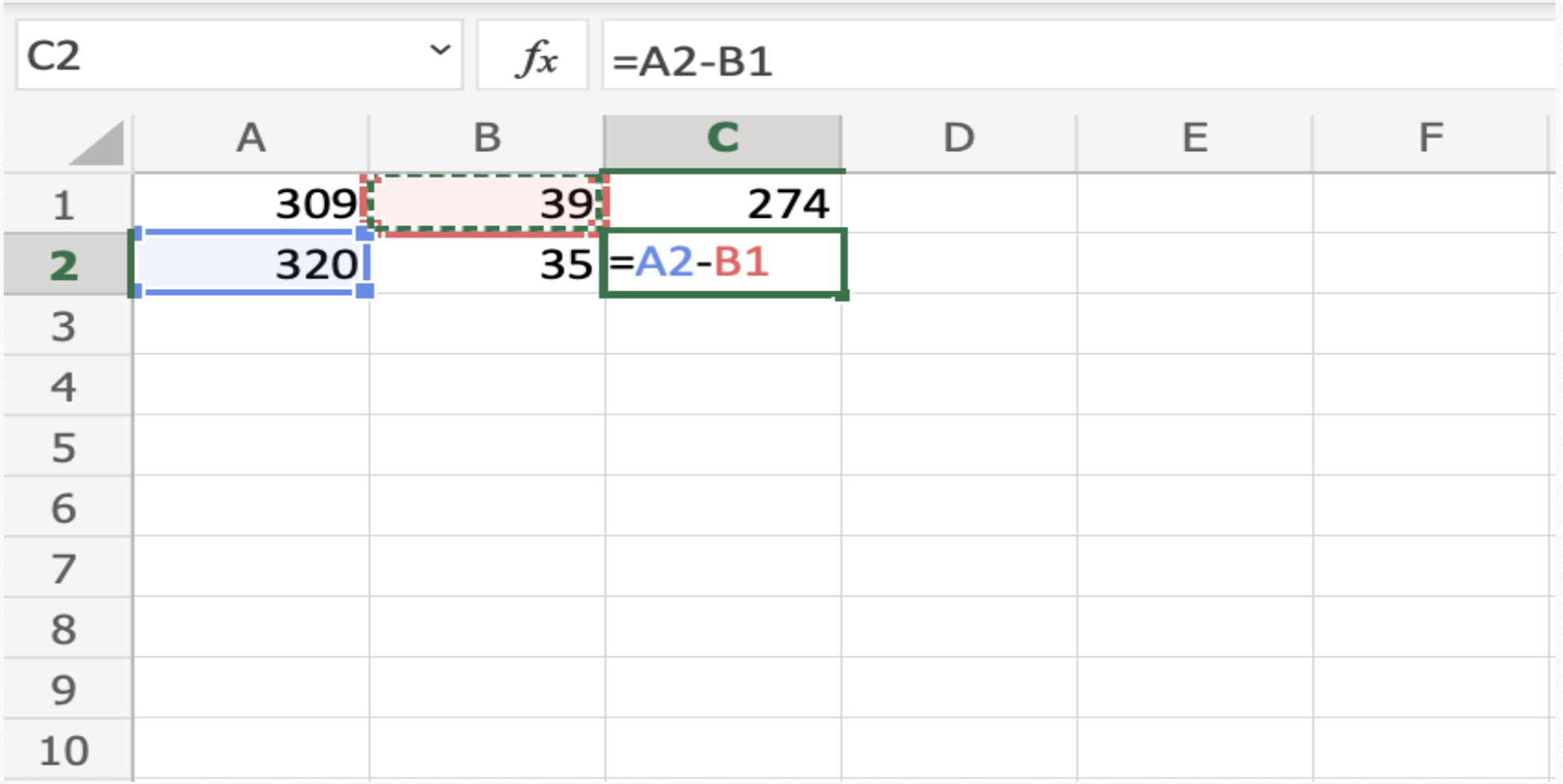
- A1(309)
- A2(320)
- B1(39)
- B2(35)



Using Formulas with Cells

- we can use them to create formulas
  1. **Select the cell C1**
  2. **Type the equal sign (=)**
  3. **Left click on A1, the cell that has the (309) value**
  4. **Type the minus sign (-)**
  5. **Left click on B2, the cell that has the (35) value**

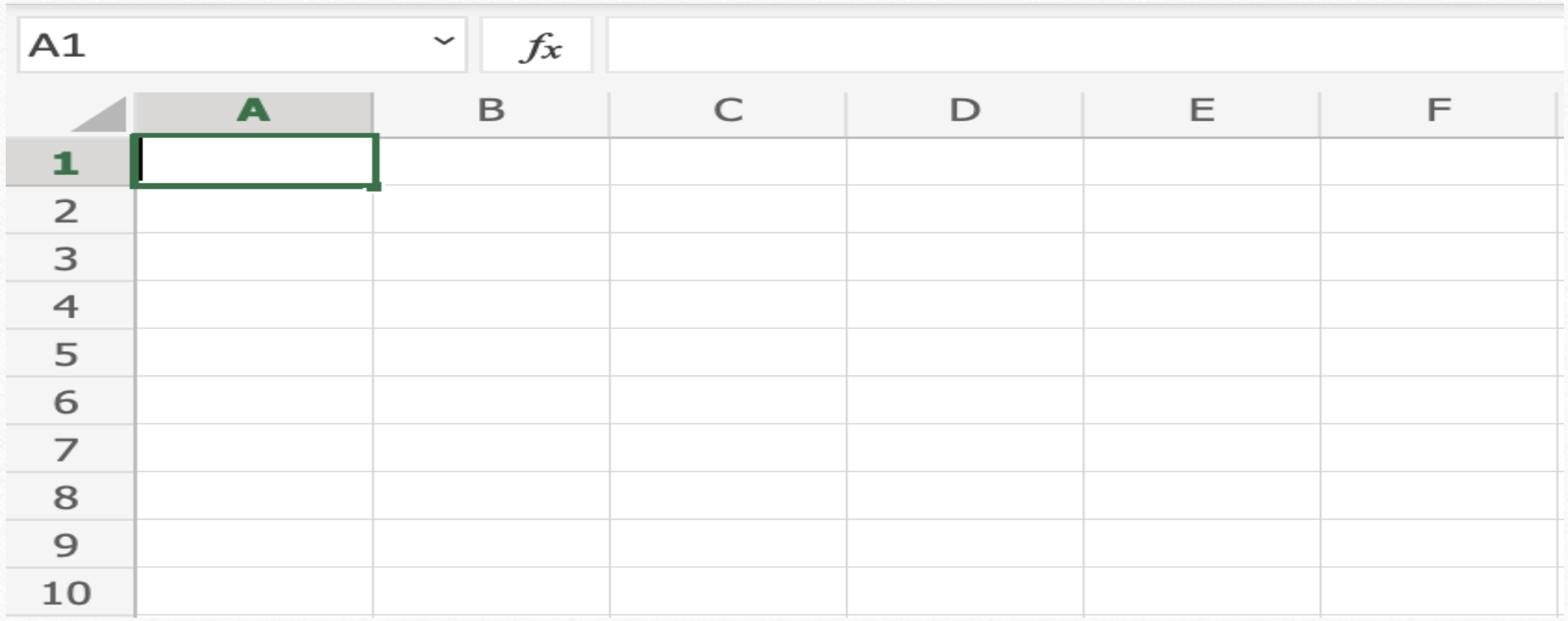

C1
fx
=A1-B2
A
B
C
D
E
F
1
309
39
=A1-B2
2
320
35
3
4
5
6
7
8
9
10


C2
fx
=A2-B1
A
B
C
D
E
F
1
309
39
274
2
320
35
=A2-B1
3
4
5
6
7
8
9
10

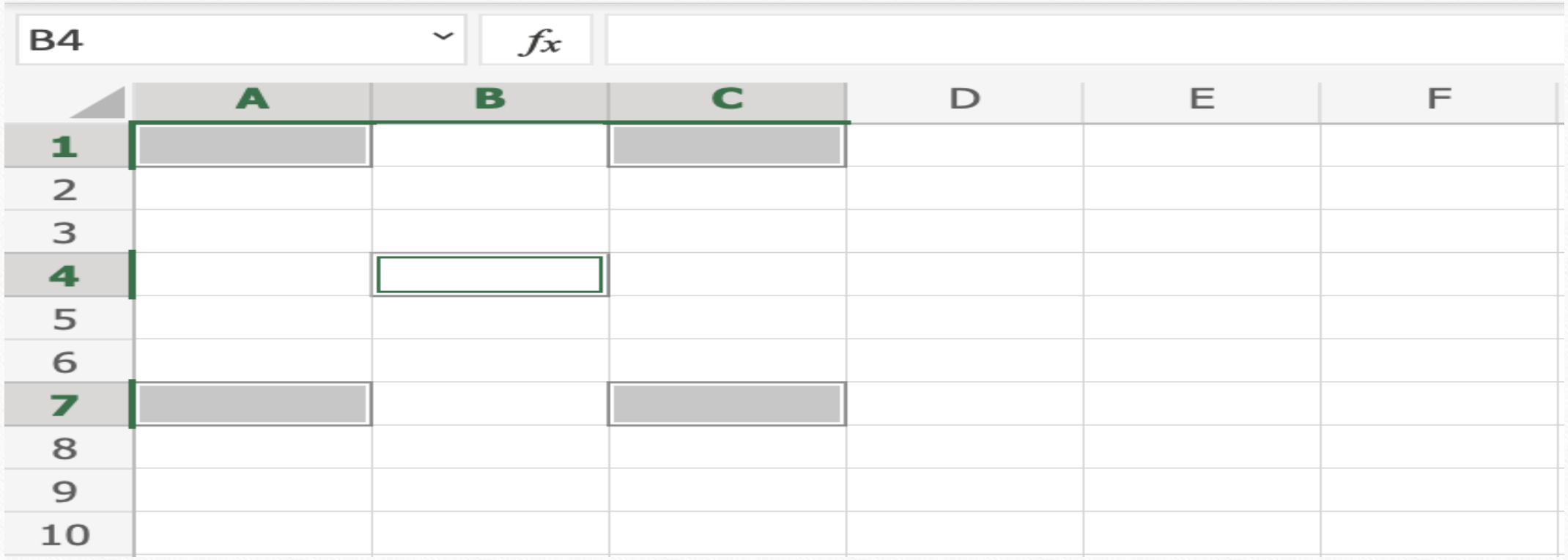
Task

- **2+4 gives you 6**
- **4-2 gives you 2**
- **2*4 gives you 8**
- **2/4 gives you 0.5**

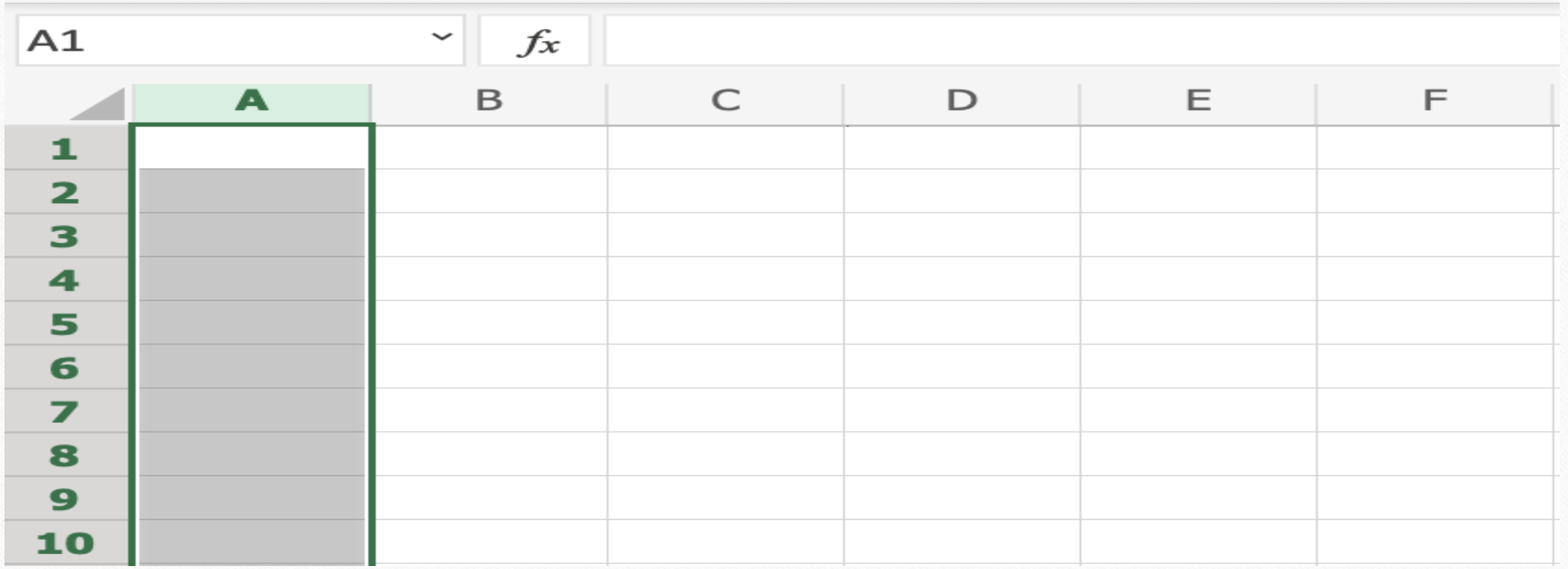
Selecting a Cell



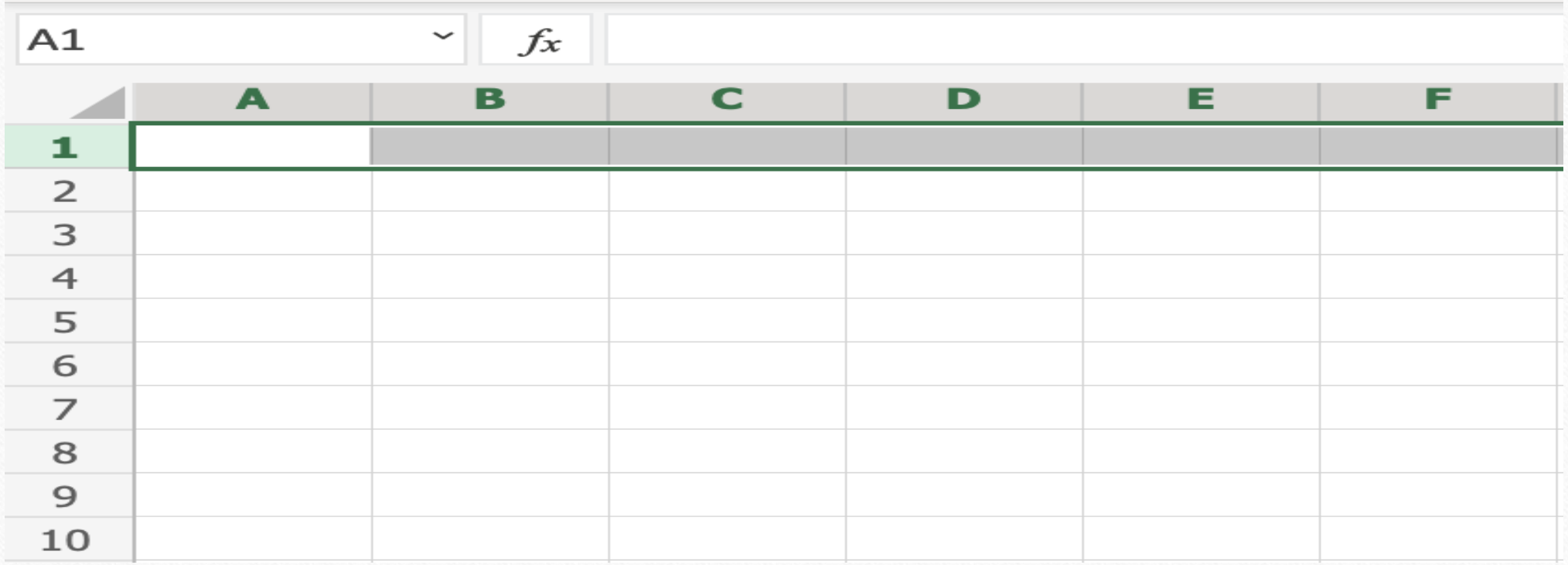
Selecting Multiple Cells



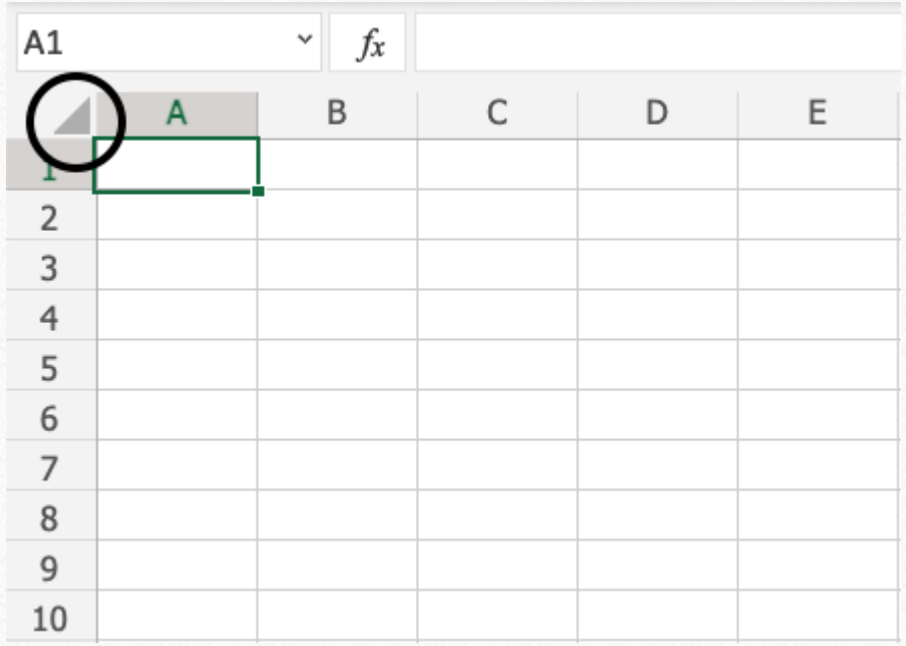
Selecting a Column

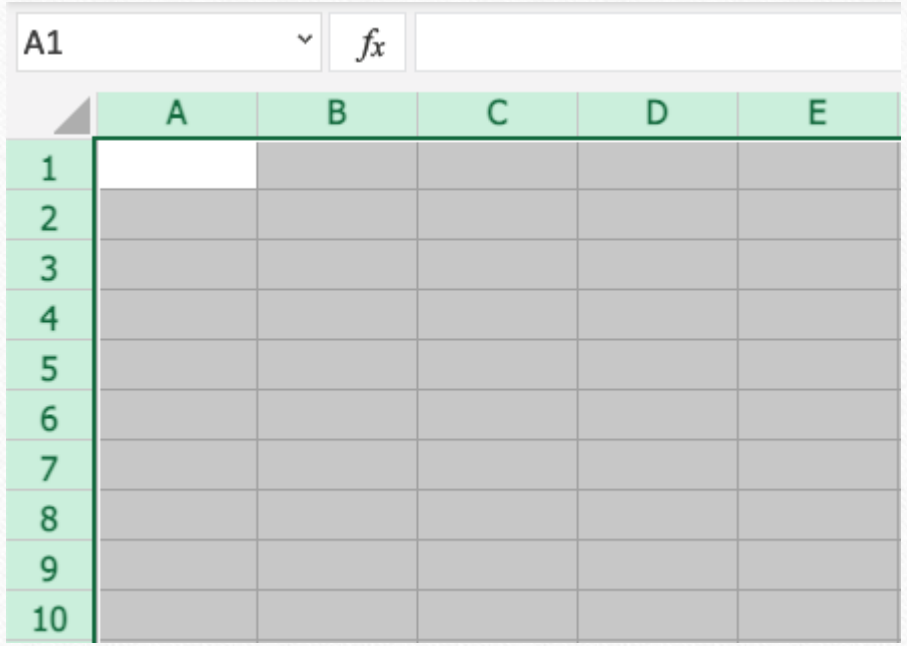


Selecting a Row



Selecting the Entire Sheet

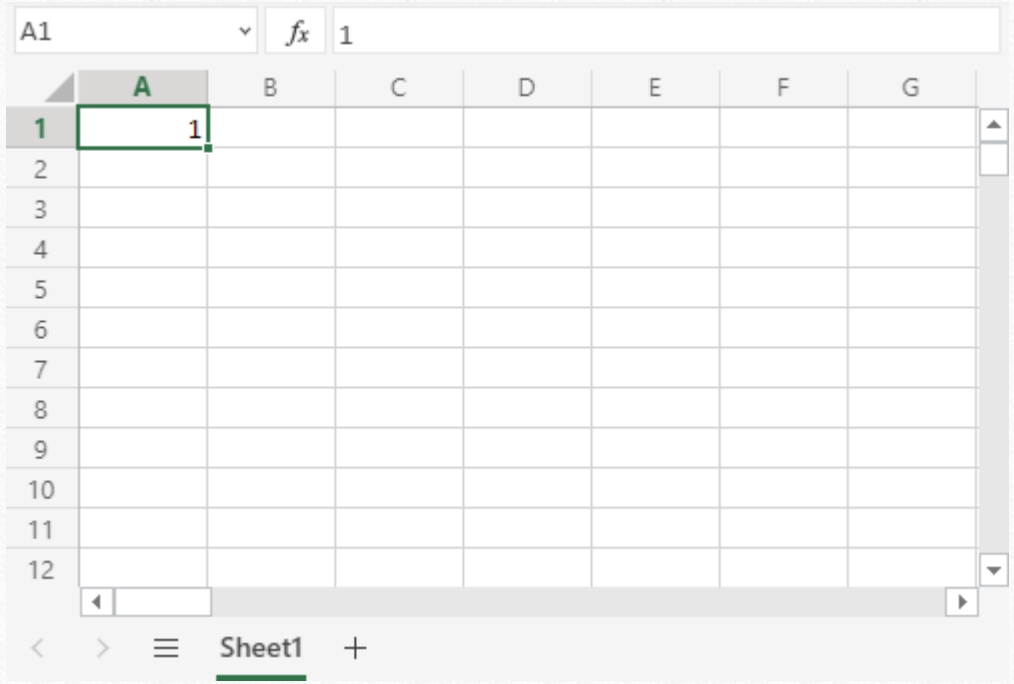


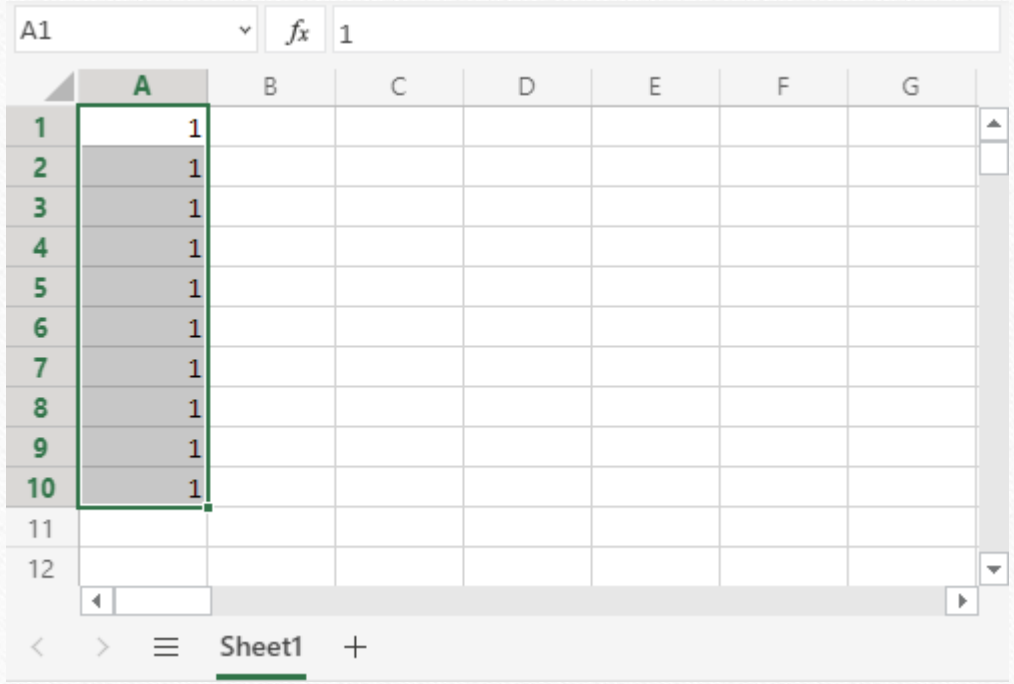


Filling

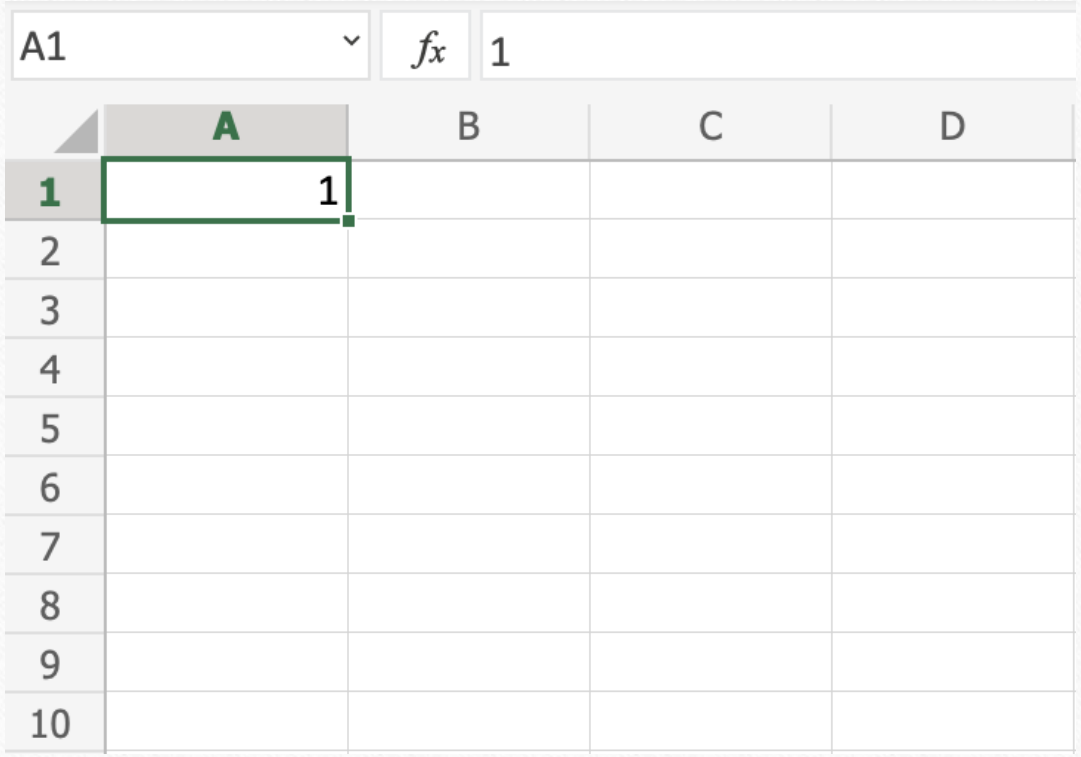
- **Filling can be used for:**
  - **Copying**
  - **Sequences**
  - **Dates**
  - **Functions (*)**

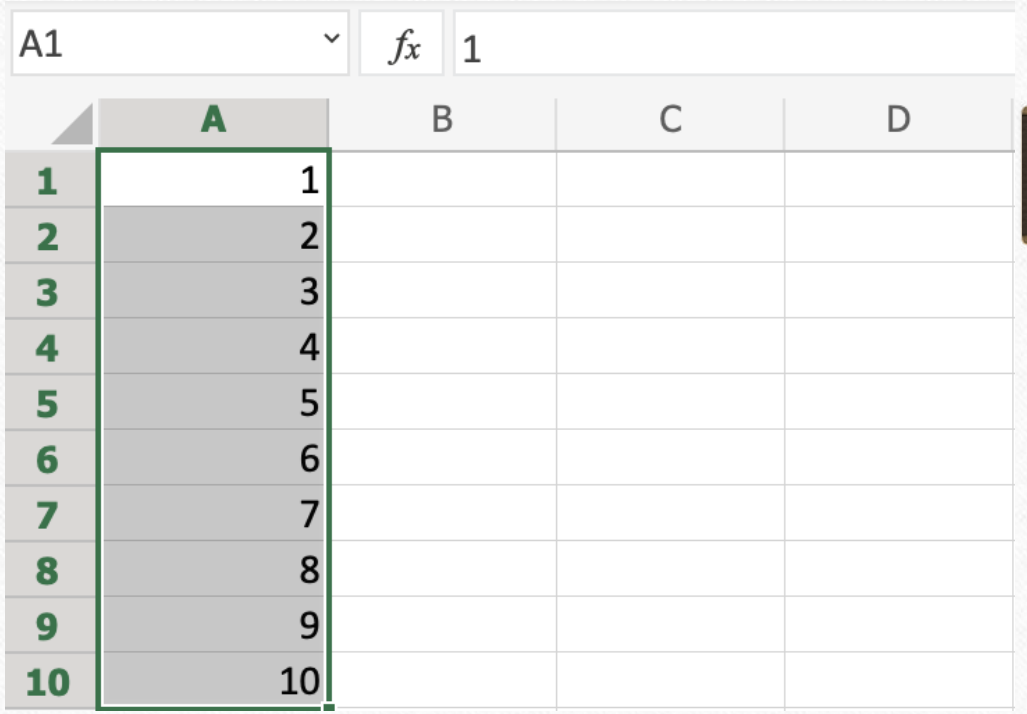
Fill Copies


A1
1
A B C D E F G
1 1
2
3
4
5
6
7
8
9
10
11
12
Sheet1

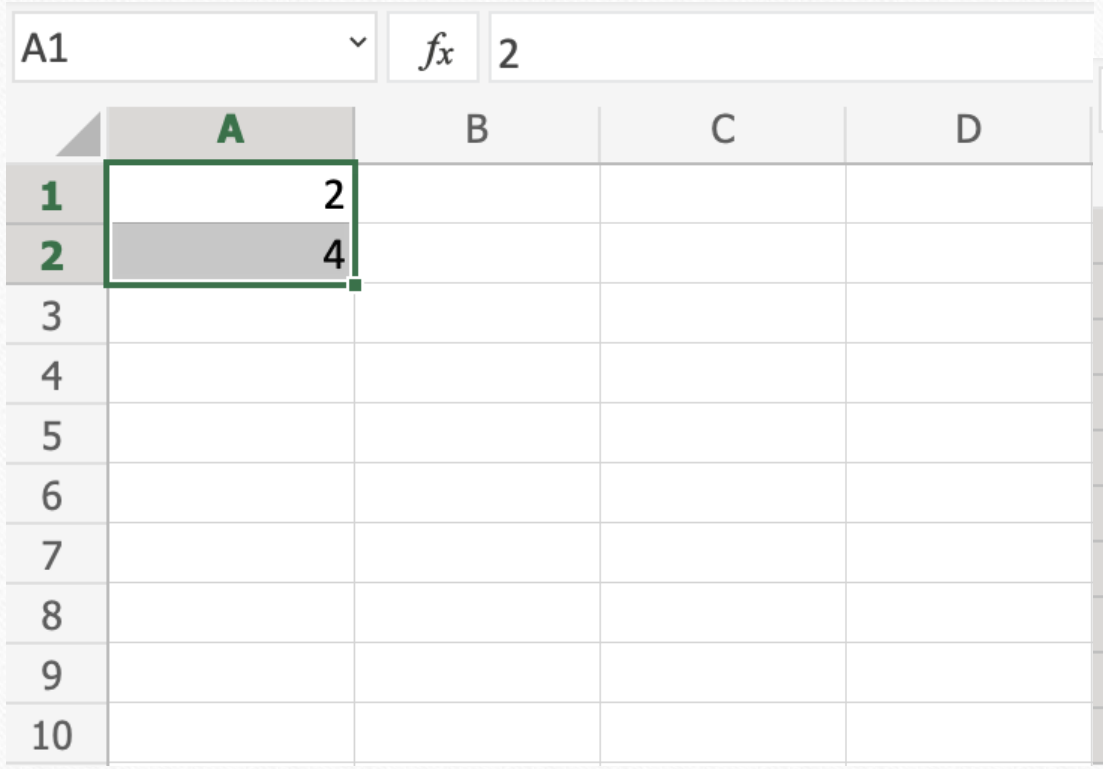

A1
1
A B C D E F G
1 1
2 1
3 1
4 1
5 1
6 1
7 1
8 1
9 1
10 1
11
12
Sheet1

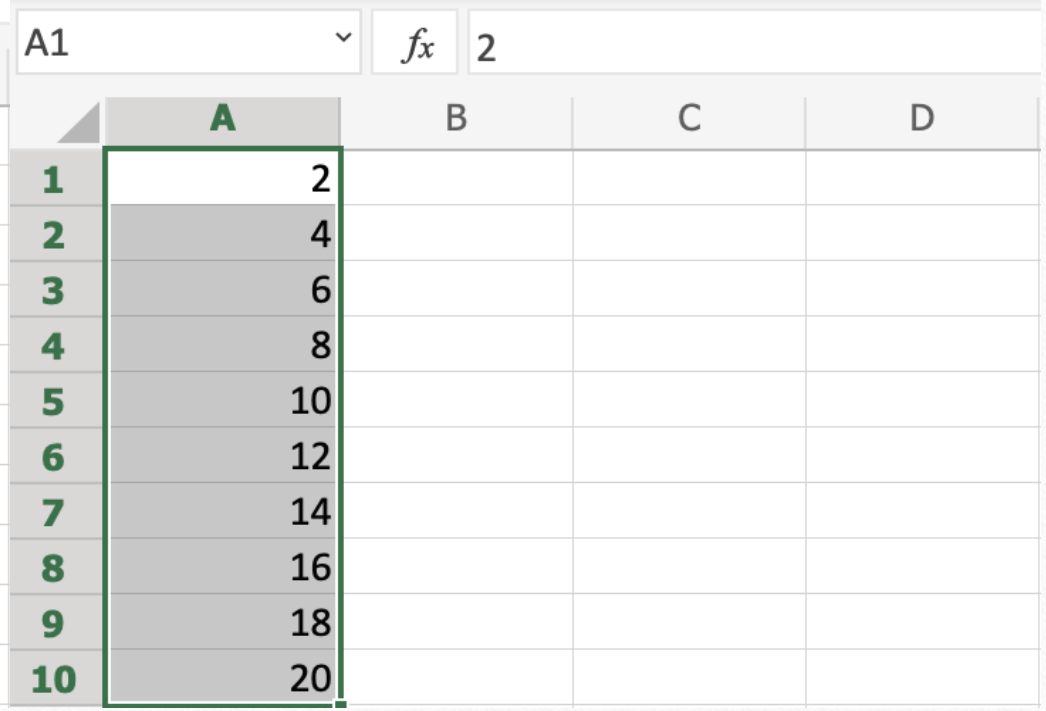
Fill Sequences



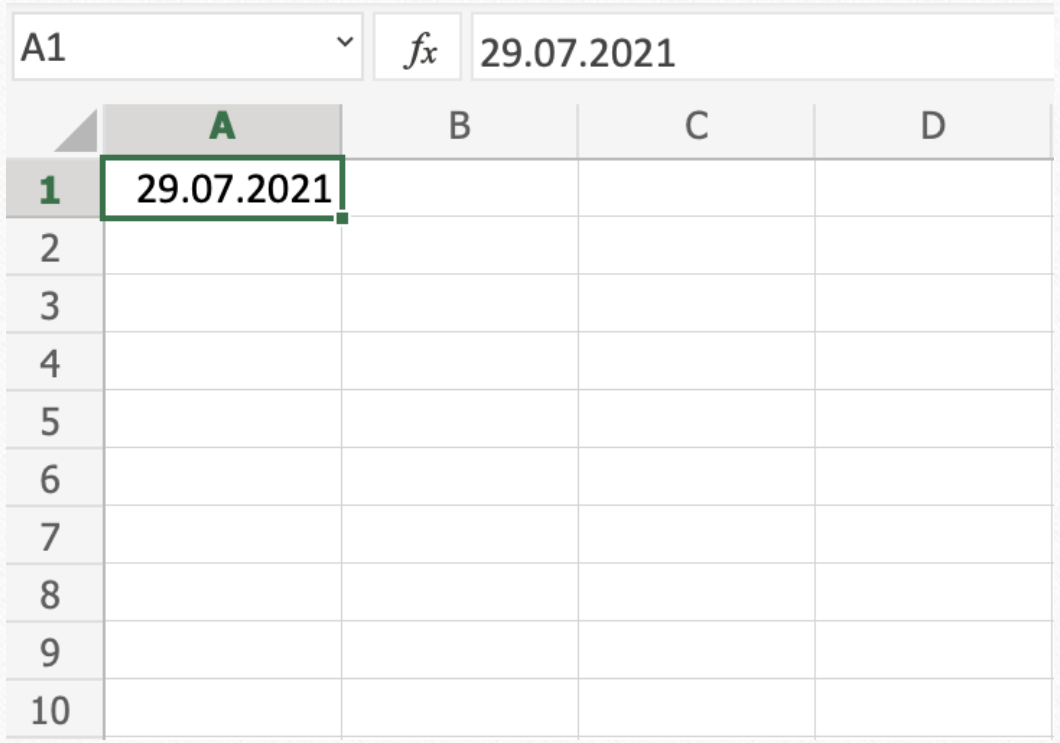


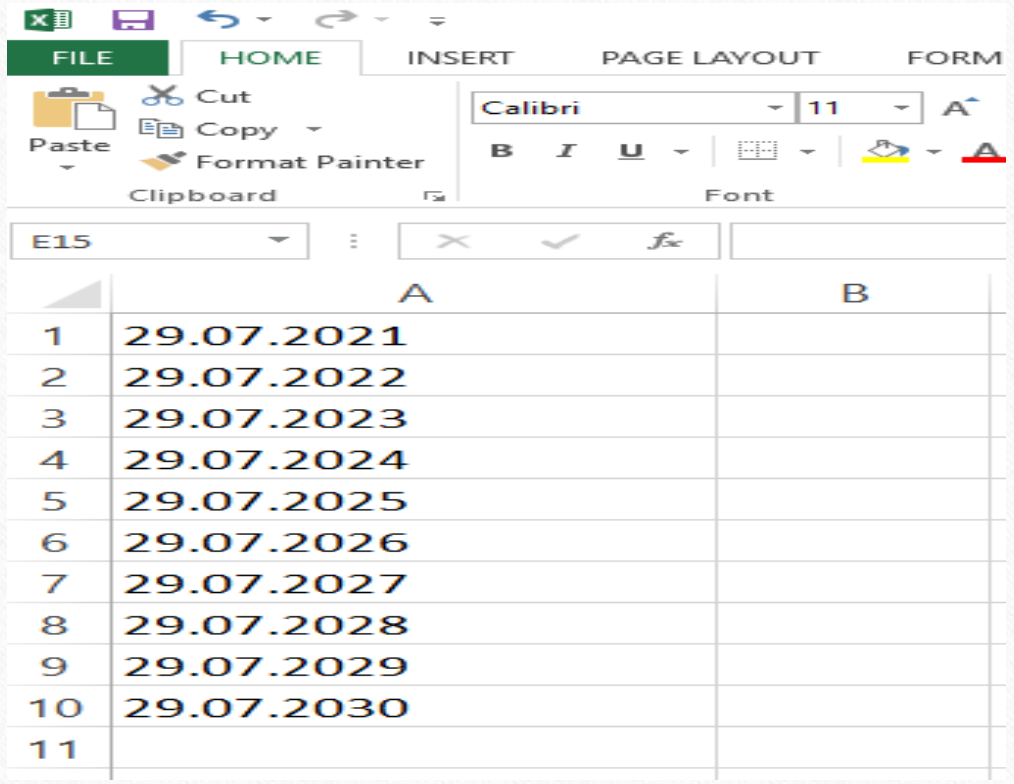
Fill Sequences



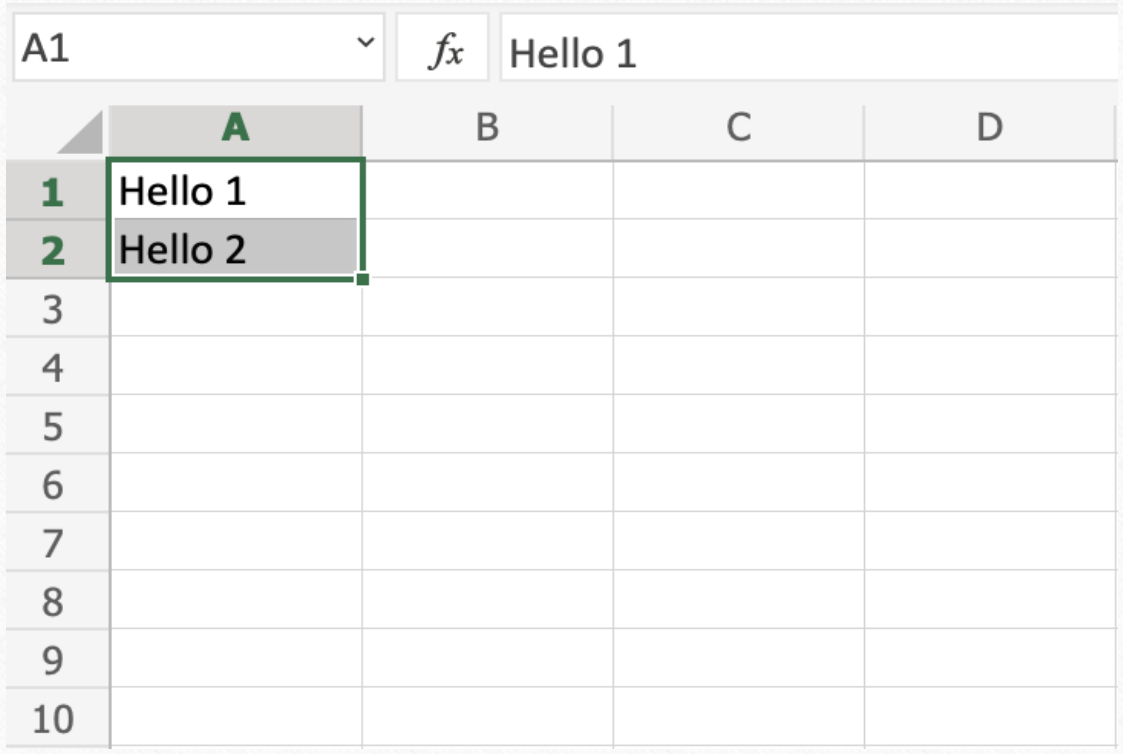


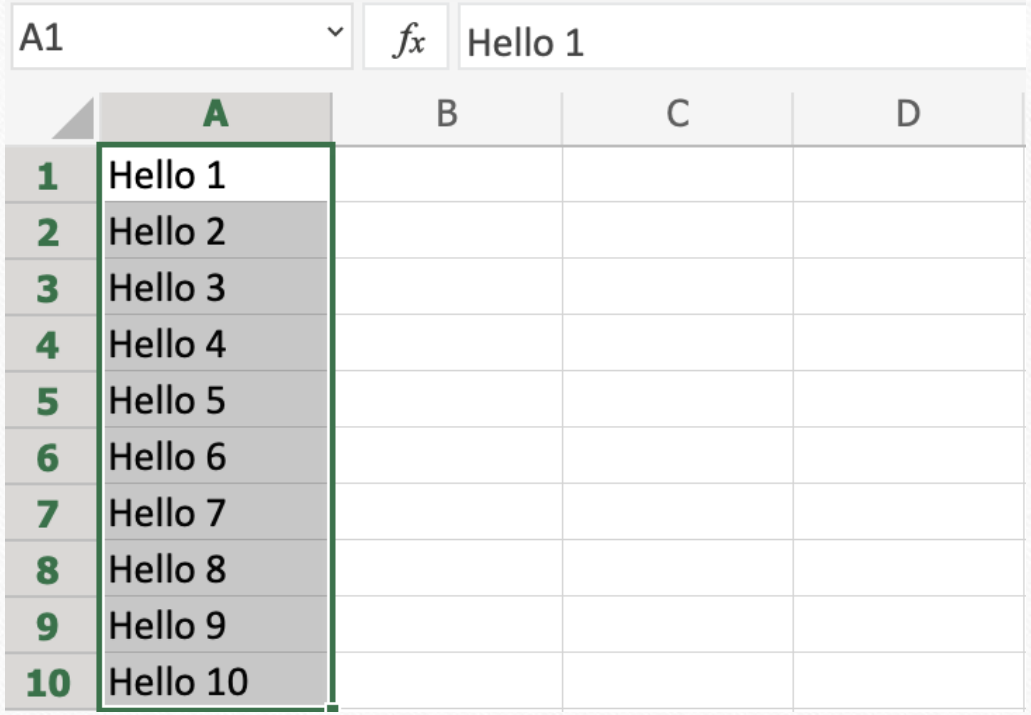
Sequence of Dates





Sequence of Dates





	A	B	C	D	E
1	Name	Attack	Defense	Total	
2	Caterpie	30	35	=	
3	Metapod	20	55		
4	Butterfree	45	50		
5	Weedle	35	30		
6	Kakuna	25	50		
7	Beedrill	90	40		
8	Pidgey	45	40		
9	Pidgeotto	60	55		
10	Pidgeot	80	75		
11	Rattata	56	35		
12	Raticate	81	60		
13	Spearow	60	30		
14	Fearow	90	65		
15	Ekans	60	44		
16	Arbok	85	69		
17	Pikachu	55	40		
18	Raichu	90	55		
19	Sandshrew	75	85		
20	Sandslash	100	110		
21					

	A	B	C	D	E
1	Name	Attack	Defense	Total	
2	Caterpie	30	35	=B2+C2	
3	Metapod	20	55		
4	Butterfree	45	50		
5	Weedle	35	30		
6	Kakuna	25	50		
7	Beedrill	90	40		
8	Pidgey	45	40		
9	Pidgeotto	60	55		
10	Pidgeot	80	75		
11	Rattata	56	35		
12	Raticate	81	60		
13	Spearow	60	30		
14	Fearow	90	65		
15	Ekans	60	44		
16	Arbok	85	69		
17	Pikachu	55	40		
18	Raichu	90	55		
19	Sandshrew	75	85		
20	Sandslash	100	110		
21					

	A	B	C	D	E
1	Name	Attack	Defense	Total	
2	Caterpie	30	35	65	
3	Metapod	20	55		
4	Butterfree	45	50		
5	Weedle	35	30		
6	Kakuna	25	50		
7	Beedrill	90	40		
8	Pidgey	45	40		
9	Pidgeotto	60	55		
10	Pidgeot	80	75		
11	Rattata	56	35		
12	Raticate	81	60		
13	Spearow	60	30		
14	Fearow	90	65		
15	Ekans	60	44		
16	Arbok	85	69		
17	Pikachu	55	40		
18	Raichu	90	55		
19	Sandshrew	75	85		
20	Sandslash	100	110		
21					

	A	B	C	D	E
1	Name	Attack	Defense	Total	
2	Caterpie	30	35	65	
3	Metapod	20	55	75	
4	Butterfree	45	50	95	
5	Weedle	35	30	65	
6	Kakuna	25	50	75	
7	Beedrill	90	40	130	
8	Pidgey	45	40	85	
9	Pidgeotto	60	55	115	
10	Pidgeot	80	75	155	
11	Rattata	56	35	91	
12	Raticate	81	60	141	
13	Spearow	60	30	90	
14	Fearow	90	65	155	
15	Ekans	60	44	104	
16	Arbok	85	69	154	
17	Pikachu	55	40	95	
18	Raichu	90	55	145	
19	Sandshrew	75	85	160	
20	Sandslash	100	110	210	
21					

Task

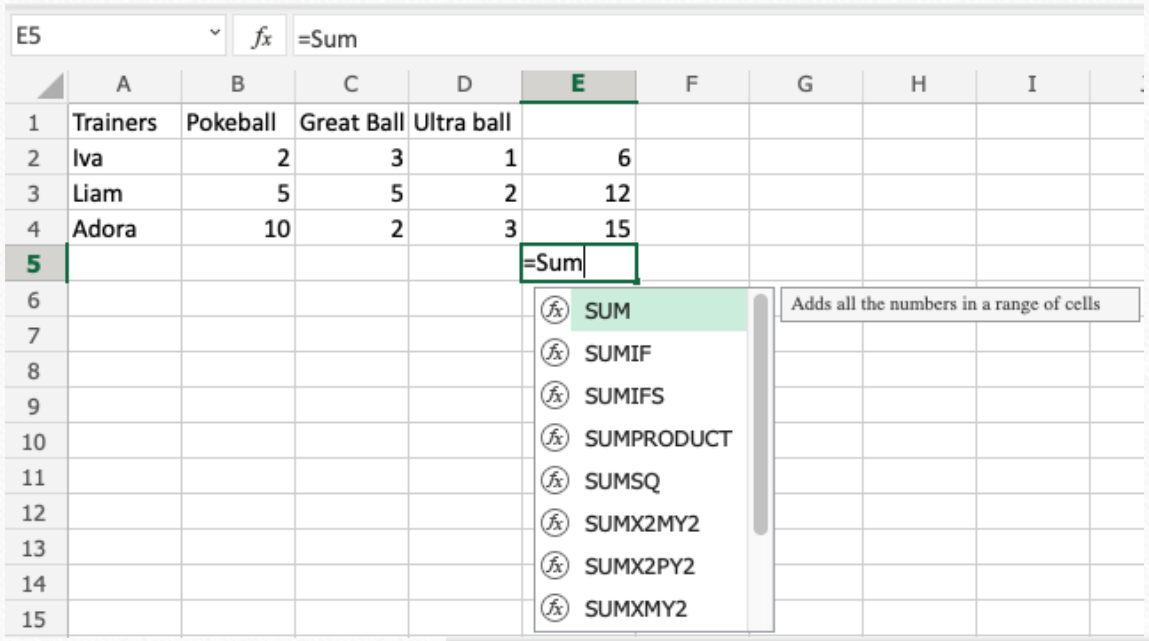
	A	B	C	D	E	F
1	Trainers	Pokeball	Great Ball	Ultra ball		
2	Iva	2	3	1		
3	Liam	5	5	2		
4	Adora	10	2	3		
5						
6						
7						
8						
9						
10						

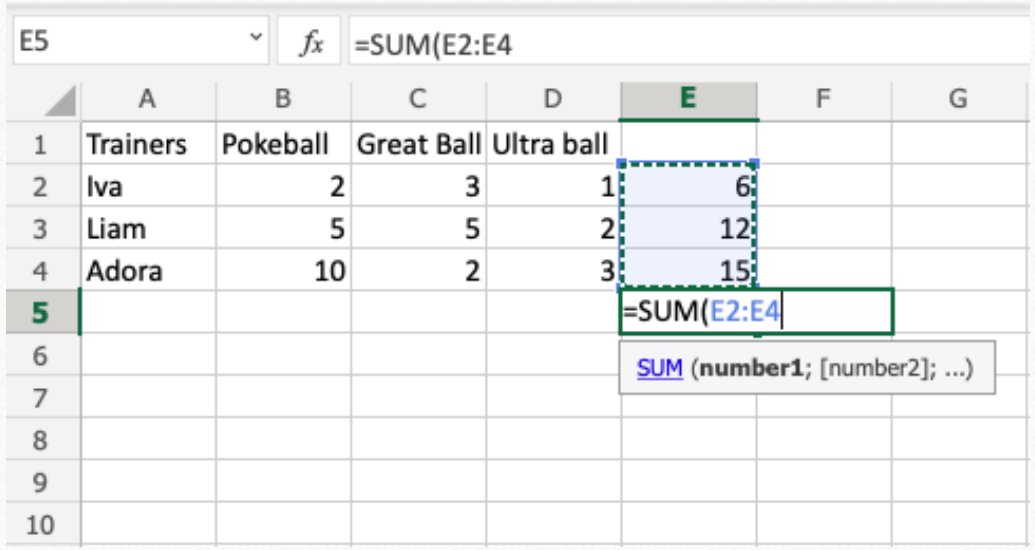
E2 f_x =B2+C2+D2

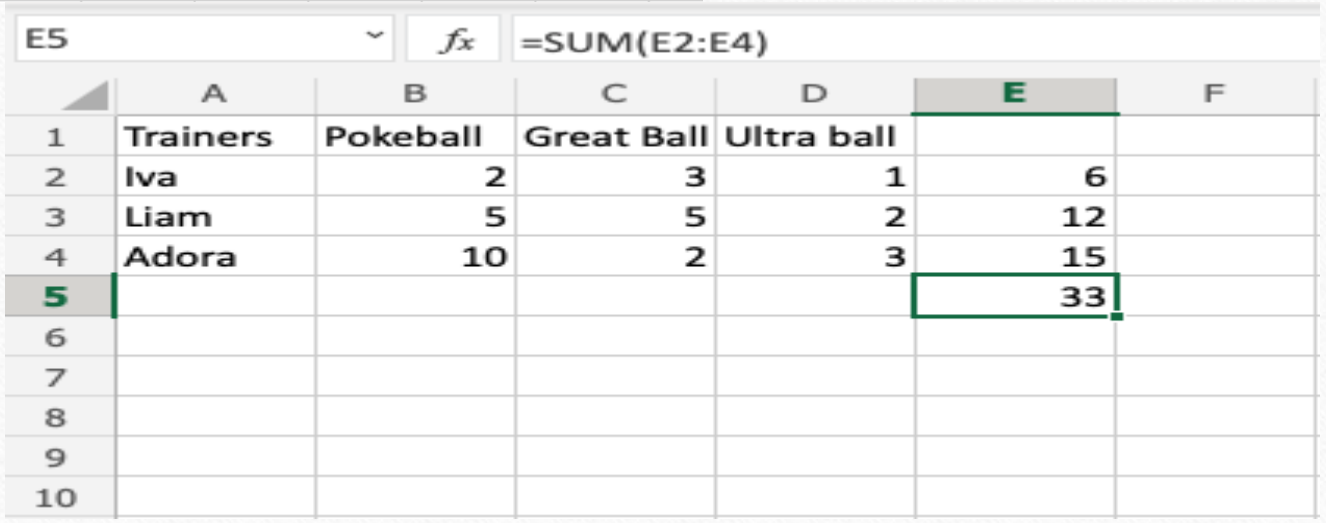
	A	B	C	D	E	F
1	Trainers	Pokeball	Great Ball	Ultra ball		
2	Iva	2	3	1	6	
3	Liam	5	5	2	12	
4	Adora	10	2	3	15	
5						
6						
7						
8						
9						
10						

SUM function

- **Type E5(=)**
- **Write SUM**
- **Double click SUM in the menu**
- **Mark the range E2:E4**


E5
=Sum
Trainers
Pokeball
Great Ball
Ultra ball
Iva 2 3 1 6
Liam 5 5 2 12
Adora 10 2 3 15
=Sum
SUM
SUMIF
SUMIFS
SUMPRODUCT
SUMSQ
SUMX2MY2
SUMX2PY2
SUMXMY2
Adds all the numbers in a range of cells


E5
=SUM(E2:E4
Trainers
Pokeball
Great Ball
Ultra ball
Iva 2 3 1 6
Liam 5 5 2 12
Adora 10 2 3 15
=SUM(E2:E4
SUM (number1; [number2]; ...)


E5
=SUM(E2:E4)
Trainers
Pokeball
Great Ball
Ultra ball
Iva 2 3 1 6
Liam 5 5 2 12
Adora 10 2 3 15
33

Task

```
((2*2)+(3*4)+(5*5))*2
```

MAX Function

- **Select a cell (G5)**
- **Type =MAX**
- **Double click the MAX command**
- **Select a range (D2:D21)**

	A	B	D	E	F	G	H	I
1	**Name**	**Type 1**	**Total stats**					
2	Mankey	Fighting	305					
3	Poliwrath	Water	510					
4	Victreebel	Grass	490					
5	Tentacool	Water	335		**MAX**	=MAX(D2:D21		
6	Magneton	Electric	465					
7	Dewgong	Water	475					
8	Cloyster	Water	525					
9	Onix	Rock	385					
10	Dragonair	Dragon	420					
11	Pidgeotto	Normal	349					
12	Rattata	Normal	253					
13	Beedrill	Bug	395					
14	Doduo	Normal	310					
15	Kingler	Water	475					
16	Nidoqueen	Poison	505					
17	Hitmonchan	Fighting	455					
18	Charmeleon	Fire	405					
19	Arbok	Poison	438					
20	Gastly	Ghost	310					
21	Magikarp	Water	200					
22								

MAX (**number1**; [number2]; ...)

	A	B	D	E	F	G
1	**Name**	**Type 1**	**Total stats**			
2	Mankey	Fighting	305			
3	Poliwrath	Water	510			
4	Victreebel	Grass	490			
5	Tentacool	Water	335		**MAX**	525
6	Magneton	Electric	465			
7	Dewgong	Water	475			
8	Cloyster	Water	525			
9	Onix	Rock	385			
10	Dragonair	Dragon	420			
11	Pidgeotto	Normal	349			
12	Rattata	Normal	253			
13	Beedrill	Bug	395			
14	Doduo	Normal	310			
15	Kingler	Water	475			
16	Nidoqueen	Poison	505			
17	Hitmonchan	Fighting	455			
18	Charmeleon	Fire	405			
19	Arbok	Poison	438			
20	Gastly	Ghost	310			
21	Magikarp	Water	200			
22						

Task

	A	B	D	E	F	G
1	**Name**	**Type 1**	**Total stats**			
2	Mankey	Fighting	305			
3	Poliwrath	Water	510			
4	Victreebel	Grass	490			
5	Tentacool	Water	335		**MIN**	=
6	Magneton	Electric	465			
7	Dewgong	Water	475			
8	Cloyster	Water	525			
9	Onix	Rock	385			
10	Dragonair	Dragon	420			
11	Pidgeotto	Normal	349			
12	Rattata	Normal	253			
13	Beedrill	Bug	395			
14	Doduo	Normal	310			
15	Kingler	Water	475			
16	Nidoqueen	Poison	505			
17	Hitmonchan	Fighting	455			
18	Charmeleon	Fire	405			
19	Arbok	Poison	438			
20	Gastly	Ghost	310			
21	Magikarp	Water	200			
22						

IF Function

- **=IF(logical_test, [value_if_true], [value_if_false])**
- **The condition is referred to as logical_test, which can check things like:**
  - **If a number is greater than another number >**
  - **If a number is smaller than another number <**
  - **If a number or text is equal to something =**

IF Function Example

- **The condition is if the "Type 1" value is "Grass“.**
- **The function returns "Yes" or "No".**

	A	B	C	D	E
1	Name	Type 1	Total	Grass Type	
2	Bulbasaur	Grass	318		
3	Ivysaur	Grass	405		
4	Venusaur	Grass	525		
5	Charmander	Fire	309		
6	Charmeleon	Fire	405		
7	Charizard	Fire	534		
8	Squirtle	Water	314		
9	Wartortle	Water	405		
10	Blastoise	Water	530		
11					

	A	B	C	D	E	F	G
1	Name	Type 1	Total	Grass Type			
2	Bulbasaur	Grass	318	=IF(B2="Grass"; "Yes"; "No"			
3	Ivysaur	Grass	405				
4	Venusaur	Grass	525				
5	Charmander	Fire	309				
6	Charmeleon	Fire	405				
7	Charizard	Fire	534				
8	Squirtle	Water	314				
9	Wartortle	Water	405				
10	Blastoise	Water	530				
11							

IF (logical_test; [value_if_true]; [value_if_false])

	A	B	C	D	E
1	Name	Type 1	Total	Grass Type	
2	Bulbasaur	Grass	318	=IF(B2="Grass"; "Yes"; "No")	
3	Ivysaur	Grass	405	=IF(B3="Grass"; "Yes"; "No")	
4	Venusaur	Grass	525	=IF(B4="Grass"; "Yes"; "No")	
5	Charmander	Fire	309	=IF(B5="Grass"; "Yes"; "No")	
6	Charmeleon	Fire	405	=IF(B6="Grass"; "Yes"; "No")	
7	Charizard	Fire	534	=IF(B7="Grass"; "Yes"; "No")	
8	Squirtle	Water	314	=IF(B8="Grass"; "Yes"; "No")	
9	Wartortle	Water	405	=IF(B9="Grass"; "Yes"; "No")	
10	Blastoise	Water	530	=IF(B10="Grass"; "Yes"; "No")	
11					
12					

IF (logical_test; [value_if_true]; [value_if_false])

	A	B	C	D	E
1	Name	Type 1	Total	Grass Type	
2	Bulbasaur	Grass	318	Yes	
3	Ivysaur	Grass	405	Yes	
4	Venusaur	Grass	525	Yes	
5	Charmander	Fire	309	No	
6	Charmeleon	Fire	405	No	
7	Charizard	Fire	534	No	
8	Squirtle	Water	314	No	
9	Wartortle	Water	405	No	
10	Blastoise	Water	530	No	
11					

Task

	A	B	C	D	E
1	Name	Type 1	Total	More than 500 Total Stats	
2	Bulbasaur	Grass	318		
3	Ivysaur	Grass	405		
4	Venusaur	Grass	525		
5	Charmander	Fire	309		
6	Charmeleon	Fire	405		
7	Charizard	Fire	534		
8	Squirtle	Water	314		
9	Wartortle	Water	405		
10	Blastoise	Water	530		
11					

COUNT Function

- **counts cells with numbers in a range.**

	A	B	C	D
1	**Name**	**Type 1**	**Type 2**	**Total stats**
2	Mankey	Fighting		305
3	Poliwrath	Water	Fighting	510
4	Victreebel	Grass	Poison	490
5	Tentacool	Water	Poison	335
6	Magneton	Electric	Steel	465
7	Dewgong	Water	Ice	475
8	Cloyster	Water	Ice	525
9	Onix	Rock	Ground	385
10	Dragonair	Dragon		420
11	Pidgeotto	Normal	Flying	349
12	Rattata	Normal		253
13	Beedrill	Bug	Poison	395
14	Doduo	Normal	Flying	310
15	Kingler	Water		475
16	Nidoqueen	Poison	Ground	505
17	Hitmonchan	Fighting		455
18	Charmeleon	Fire		405
19	Arbok	Poison		438
20	Gastly	Ghost	Poison	310
21	Magikarp	Water		200
22				
23				

	A	B	C	D	E	F	G	H	I
8	Cloyster	Water	Ice	525					
9	Onix	Rock	Ground	385					
10	Dragonair	Dragon		420					
11	Pidgeotto	Normal	Flying	349					
12	Rattata	Normal		253					
13	Beedrill	Bug	Poison	395					
14	Doduo	Normal	Flying	310					
15	Kingler	Water		475					
16	Nidoqueen	Poison	Ground	505					
17	Hitmonchan	Fighting		455					
18	Charmeleon	Fire		405					
19	Arbok	Poison		438					
20	Gastly	Ghost	Poison	310					
21	Magikarp	Water		200					
22									
23				=count					
24									

COUNT

Counts the number of cells in a range that contain numbers

	A	B	C	D	E	F
1	Name	Type 1	Type 2	Total stats		
2	Mankey	Fighting		305		
3	Poliwrath	Water	Fighting	510		
4	Victreebel	Grass	Poison	490		
5	Tentacool	Water	Poison	335		
6	Magneton	Electric	Steel	465		
7	Dewgong	Water	Ice	475		
8	Cloyster	Water	Ice	525		
9	Onix	Rock	Ground	385		
10	Dragonair	Dragon		420		
11	Pidgeotto	Normal	Flying	349		
12	Rattata	Normal		253		
13	Beedrill	Bug	Poison	395		
14	Doduo	Normal	Flying	310		
15	Kingler	Water		475		
16	Nidoqueen	Poison	Ground	505		
17	Hitmonchan	Fighting		455		
18	Charmeleon	Fire		405		
19	Arbok	Poison		438		
20	Gastly	Ghost	Poison	310		
21	Magikarp	Water		200		
22						
23				=COUNT(D2:D21		
24						
25						

COUNT (**value1**; [value2]; ...)

	A	B	C	D
1	Name	Type 1	Type 2	Total stats
2	Mankey	Fighting		305
3	Poliwrath	Water	Fighting	510
4	Victreebel	Grass	Poison	490
5	Tentacool	Water	Poison	335
6	Magneton	Electric	Steel	465
7	Dewgong	Water	Ice	475
8	Cloyster	Water	Ice	525
9	Onix	Rock	Ground	385
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18	Charmeleon	Fire		405
19	Arbok	Poison		438
20	Gastly	Ghost	Poison	310
21	Magikarp	Water		200
22				
23				20
24				

	A	B	C	D
1	Name	Type 1	Type 2	Total stats
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6	Magneton	Electric	Steel	465
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14	Doduo	Normal	Flying	310
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18	Charmeleon	Fire		405
19	Arbok	Poison		438
20	Gastly	Ghost	Poison	310
21	Magikarp	Water		200
22				
23	=COUNT(A2:A21			
24				
25				

COUNT (**value1**; [value2]; ...)

	A	B	C	D
1	Name	Type 1	Type 2	Total stats
2	Mankey	Fighting		305
3	Poliwrath	Water	Fighting	510
4	Victreebel	Grass	Poison	490
5	Tentacool	Water	Poison	335
6	Magneton	Electric	Steel	465
7	Dewgong	Water	Ice	475
8	Cloyster	Water	Ice	525
9	Onix	Rock	Ground	385
10	Dragonair	Dragon		420
11	Pidgeotto	Normal	Flying	349
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13	Beedrill	Bug	Poison	395
14	Doduo	Normal	Flying	310
15	Kingler	Water		475
16	Nidoqueen	Poison	Ground	505
17	Hitmonchan	Fighting		455
18	Charmeleon	Fire		405
19	Arbok	Poison		438
20	Gastly	Ghost	Poison	310
21	Magikarp	Water		200
22				
23	0			

AVERAGE Function

- The average of (2, 3, 4) is 3.

  3 observations (2, 3 and 4)

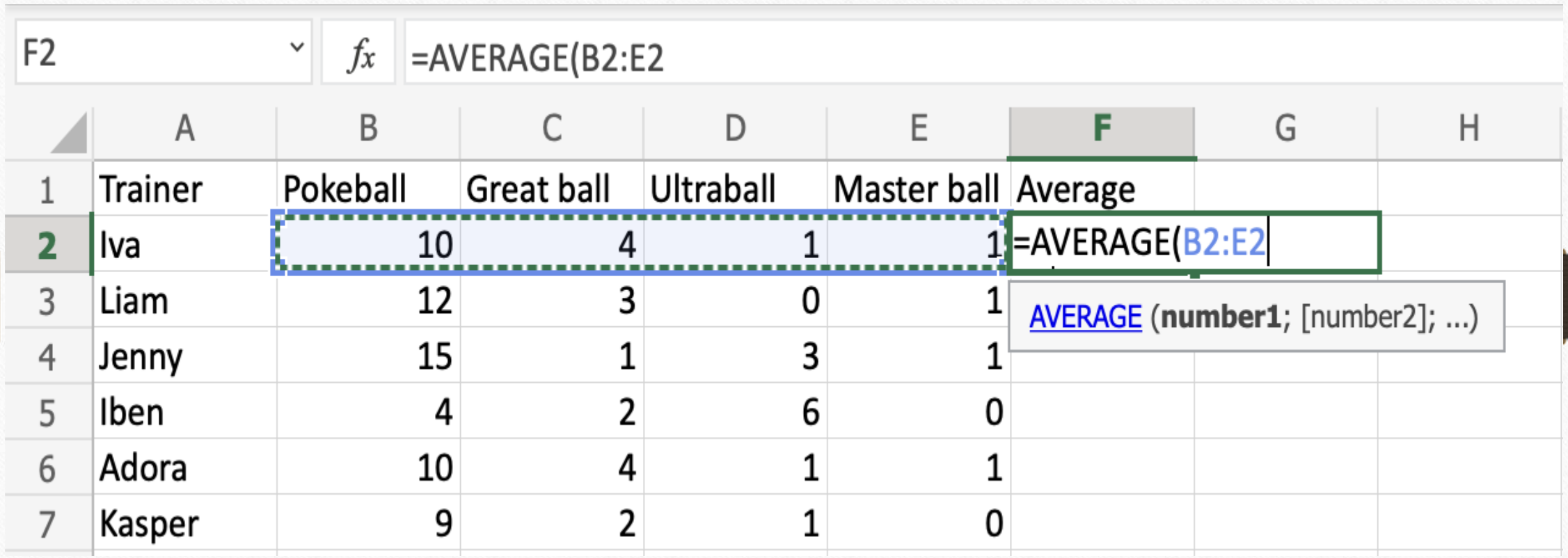
  The sum of the observations (2 + 3 + 4 = 9)

  (9 / 3 = 3)

  The average is 3

F2 fx

	A	B	C	D	E	F
1	Trainer	Pokeball	Great ball	Ultraball	Master ball	Average
2	Iva	10	4	1	1	
3	Liam	12	3	0	1	
4	Jenny	15	1	3	1	
5	Iben	4	2	6	0	
6	Adora	10	4	1	1	
7	Kasper	9	2	1	0	


F2
=AVERAGE(B2:E2
A
B
C
D
E
F
G
H
1 Trainer Pokeball Great ball Ultraball Master ball Average
2 Iva 10 4 1 1 =AVERAGE(B2:E2
3 Liam 12 3 0 1
4 Jenny 15 1 3 1
5 Iben 4 2 6 0
6 Adora 10 4 1 1
7 Kasper 9 2 1 0
AVERAGE (number1; [number2]; ...)

F2 =AVERAGE(B2:E2)

	A	B	C	D	E	F	G	H
1	Trainer	Pokeball	Great ball	Ultraball	Master ball	Average		
2	Iva	10	4	1	1	4		
3	Liam	12	3	0	1			
4	Jenny	15	1	3	1			
5	Iben	4	2	6	0			
6	Adora	10	4	1	1			
7	Kasper	9	2	1	0			

Tasks

Phiwe Nkomo

	Term1	Term2	Term3	Term4	FINAL
Math	45	56	60	56	
English	50	83	54	70	
History	60	50	50	60	
Geography	80	70	20	90	
Biology	50	60	40	50	
Average					
Highest					
Lowest					

Exercise 02: Use of Fill Handle

Value 01	Value 02	Sum	Average
35	58	**93**	**46.5**
77	86	**163**	**81.5**
81	92	**173**	**86.5**
75	27	**102**	**51**
83	84	**167**	**83.5**
55	42	**97**	**48.5**
17	67	**84**	**42**

Problem | **Solution**

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	A	B	C	D
1	Invoice Number	Amount Invoice	Amount Received	Test
2	INV-0001	317.38	317.38	
3	INV-0002	442.76	442.66	
4	INV-0003	398.19	393.19	
5	INV-0004	428.44	428.44	
6	INV-0005	103.69	103.39	
7	INV-0006	290.00	290.00	
8				

D2 | =B2=C2

WWW.EXCEL-EXERCISE.COM

	A	B	C	D	E
1	Invoice Number	Amount Invoice	Amount Received	Test	
2	INV-0001	317.38	317.38	TRUE	
3	INV-0002	442.76	442.66	FALSE	
4	INV-0003	398.19	393.19	FALSE	
5	INV-0004	428.44	428.44	TRUE	
6		103.69		FALSE	
7	INV-0006	290.00	290.00	TRUE	
8					
9					
10					

When the 2 values are different, the test returns FALSE

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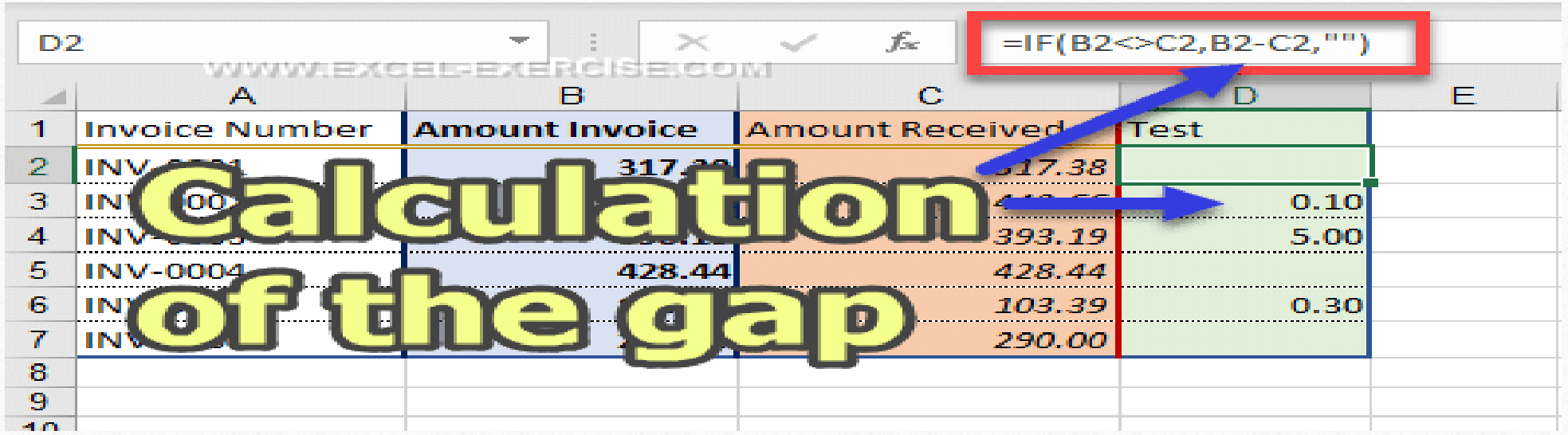
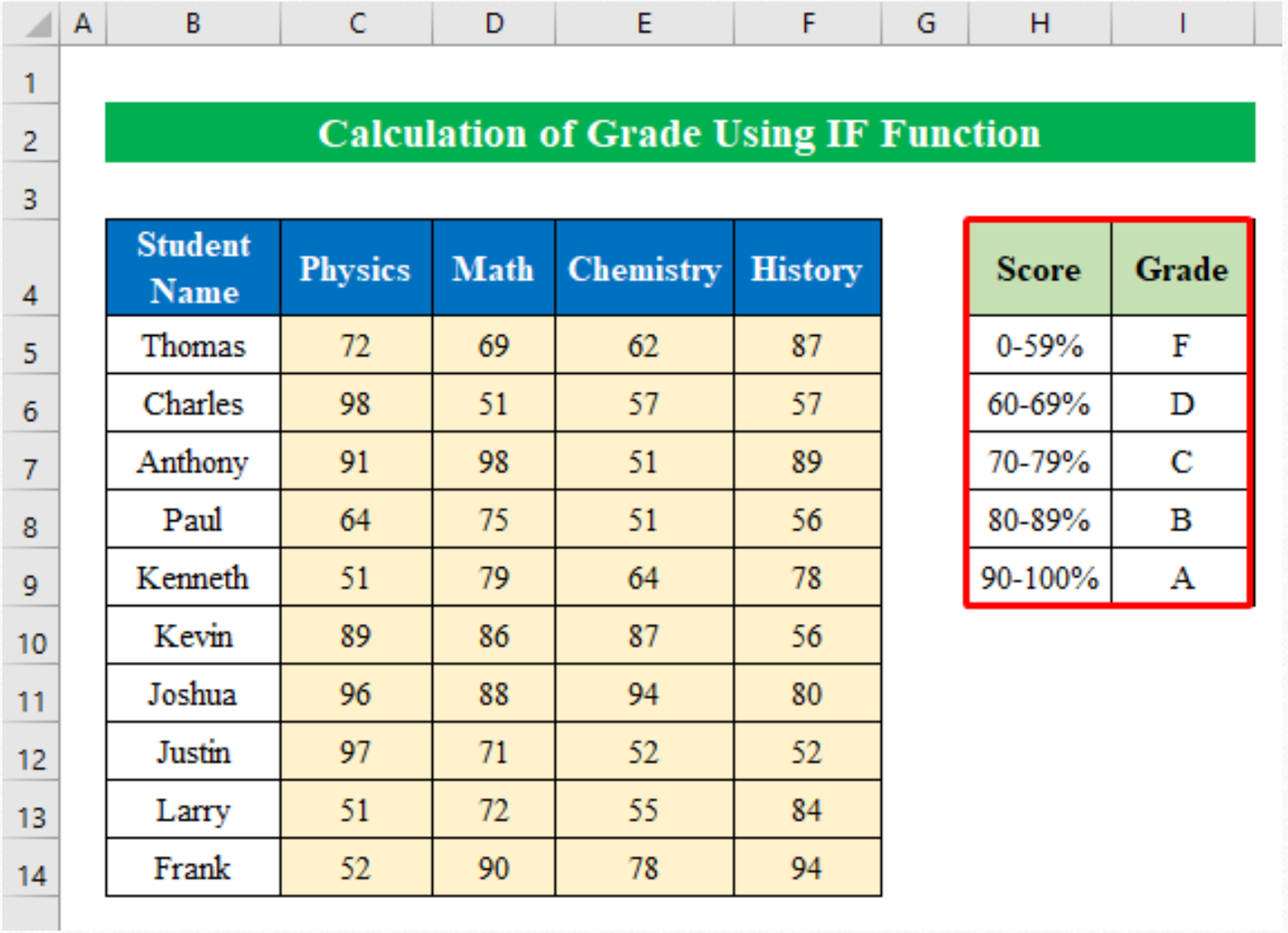
	A	B	C	D
1	Invoice Number	Amount Invoice	Amount Received	Test
2	INV-0001	317.38	317.38	
3	INV-0002	442.76	442.66	
4	INV-0003	398.19	393.19	
5	INV-0004	428.44	428.44	
6	INV-0005	103.69	103.39	
7	INV-0006	290.00	290.00	
8				



	A	B	C	D	E
1	Invoice Number	Amount Invoice	Amount Received	Test	
2	INV-0001	317.38	317.38		
3	INV-0002	442.76	442.66	0.10	
4	INV-0003	398.19	393.19	5.00	
5	INV-0004	428.44	428.44		
6	INV-0005	103.69	103.39	0.30	
7	INV-0006	290.00	290.00		
8					
9					



Calculation of Grade Using IF Function

Student Name	Physics	Math	Chemistry	History
Thomas	72	69	62	87
Charles	98	51	57	57
Anthony	91	98	51	89
Paul	64	75	51	56
Kenneth	51	79	64	78
Kevin	89	86	87	56
Joshua	96	88	94	80
Justin	97	71	52	52
Larry	51	72	55	84
Frank	52	90	78	94

Score	Grade
0-59%	F
60-69%	D
70-79%	C
80-89%	B
90-100%	A