



Addressing Cells

ELEC1006: ENGINEERING COMPUTING

Relative & Absolute Cell Addressing

- **Relative cell addressing:**
Automatic incrementing of cell addresses during the copy process, for example: B5.
- **Absolute cell addressing:**
Unchanged during the copy process, for example:
\$B\$5

Relative Cell Address (Row)

The diagram illustrates how a relative cell address changes when a formula is copied down one row. On the left, cell D5 contains the formula `=B5/C5`. A red arrow points from this formula bar to the formula bar of cell D6 on the right, which now contains `=B6/C6`. This shows that the row numbers in the formula increment by one when copied down.

	A	B	C	D	E
1					
2					
3		Distance	Time	Velocity	
4		miles	hours	mph	
5		90	1.5	60	
6		120	6	20	
7		75	3	25	
8		80	2	40	
9		135	9	15	
10					

	A	B	C	D	E
1					
2					
3		Distance	Time	Velocity	
4		miles	hours	mph	
5		90	1.5	60	
6		120	6	20	
7		75	3	25	
8		80	2	40	
9		135	9	15	
10					

Copying down increments row numbers

Relative Cell Address (Column)

The image shows two Excel spreadsheets side-by-side. The left spreadsheet has a formula bar for cell D5 containing `=B5/C5`. The right spreadsheet has a formula bar for cell E5 containing `=C5/D5`. A red arrow points from the formula bar of the left spreadsheet to the formula bar of the right spreadsheet, indicating the copy operation. In both spreadsheets, the data in rows 3-9 is identical: Distance (miles) in column B, Time (hours) in column C, and Velocity (mph) in column D. The velocity values are 60, 20, 25, 40, and 15 for rows 5-9 respectively. In the right spreadsheet, the value 0.025 is shown in cell E5, which is the result of the copied formula.

	A	B	C	D	E
1					
2					
3		Distance	Time	Velocity	
4		miles	hours	mph	
5		90	1.5	60	
6		120	6	20	
7		75	3	25	
8		80	2	40	
9		135	9	15	
10					

	A	B	C	D	E
1					
2					
3		Distance	Time	Velocity	
4		miles	hours	mph	
5		90	1.5	60	0.025
6		120	6	20	
7		75	3	25	
8		80	2	40	
9		135	9	15	

Copying across increments column letters

Relative Cell Address (Row & Column)

	A	B	C	D	E
1					
2					
3		Distance	Time	Velocity	
4		miles	hours	mph	
5		90	1.5	60	
6		120	6	20	
7		75	3	25	
8		80	2	40	
9		135	9	15	
10					

	A	B	C	D	E
1					
2					
3		Distance	Time	Velocity	
4		miles	hours	mph	
5		90	1.5	60	
6		120	6	20	0.3
7		75	3	25	
8		80	2	40	
9		135	9	15	

Copying diagonally increments both row numbers and column letters

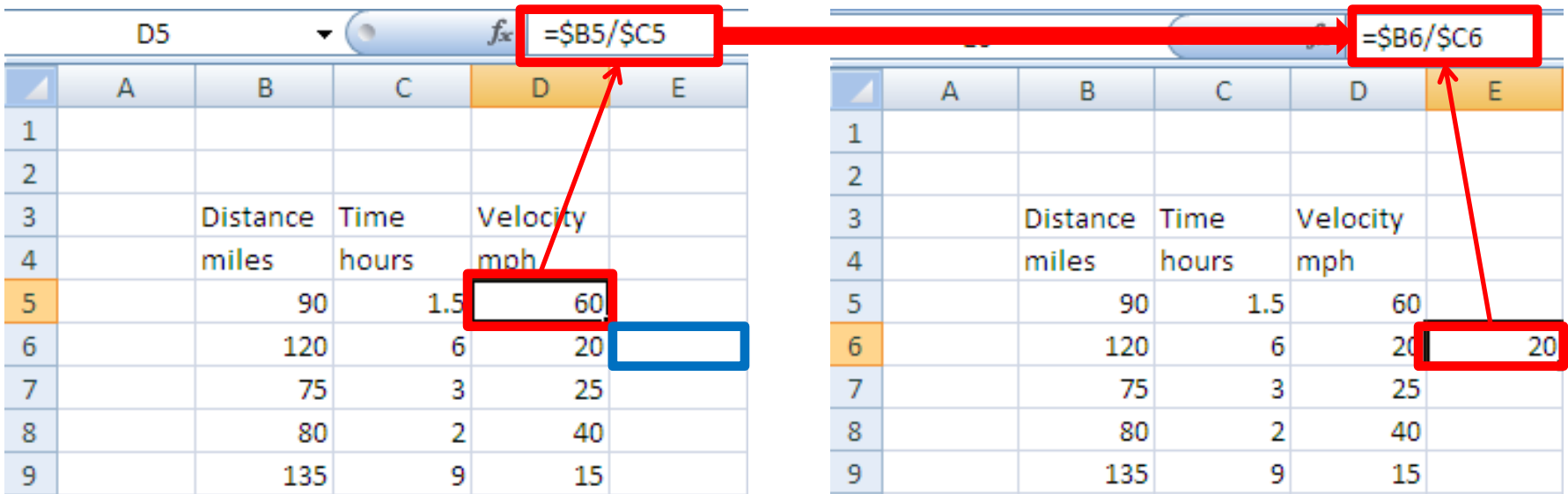
Absolute Cell Address

	A	B	C	D	E
1					
2					
3		Distance	Time	Velocity	
4		miles	hours	mph	
5		90	1.5	60	
6		120	6	20	
7		75	3	25	
8		80	2	40	
9		135	9	15	
10					

	A	B	C	D	E
1					
2					
3		Distance	Time	Velocity	
4		miles	hours	mph	
5		90	1.5	60	
6		120	6	20	60
7		75	3	25	
8		80	2	40	
9		135	9	15	

Unchanged row number & column alphabet.

Relative-Absolute Cell Address



	A	B	C	D	E
1					
2					
3		Distance	Time	Velocity	
4		miles	hours	mph	
5		90	1.5	60	
6		120	6	20	
7		75	3	25	
8		80	2	40	
9		135	9	15	

	A	B	C	D	E
1					
2					
3		Distance	Time	Velocity	
4		miles	hours	mph	
5		90	1.5	60	
6		120	6	20	20
7		75	3	25	
8		80	2	40	
9		135	9	15	

Increments row numbers but column letters unchanged.

Multiplication Table Example

The screenshot shows the Microsoft Excel interface with the 'Formulas' ribbon selected. The grid displays a multiplication table structure with columns A through N and rows 1 through 14. The first row (row 1) contains numbers 1 through 12 in columns A through M. The first column (column B) contains numbers 1 through 12 in rows 2 through 13. Cell B2 is currently selected, and a blue arrow points to it from the text below. The ribbon includes options for Function Library, Defined Names, Formula Auditing, and Calculation.

What is the formula to enter in B2 and drag across, down and diagonally to create the times table?

Incorrect Multiplication Table Implementation: $A^2 * B^1$



	A	B	C	D	E	F	G	H	I	J	K	L	M
1		1	2	3	4	5	6	7	8	9	10	11	12
2	1	1	2	6	24	120	720	5040	40320	362880	3628800	39916800	4.79E+08
3	2	2	4	24	576	69120	49766400	2.51E+11	1.01E+16	3.67E+21	1.33E+28	5.32E+35	2.55E+44
4	3	6	24	576	331776	2.29E+10	1.14E+18	2.86E+29	2.89E+45	1.06E+67	1.41E+95	7.5E+130	1.9E+175
5	4	24	576	331776	1.1E+11	2.52E+21	2.88E+39	8.25E+68	2.4E+114	2.5E+181	3.6E+276	#NUM!	#NUM!
6	5	120	69120	2.29E+10	2.52E+21	6.37E+42	1.84E+82	1.5E+151	3.6E+265	#NUM!	#NUM!	#NUM!	#NUM!
7	6	720	49766400	1.14E+18	2.88E+39	1.84E+82	3.4E+164	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
8	7	5040	2.51E+11	2.86E+29	8.25E+68	1.5E+151	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
9	8	40320	1.01E+16	2.89E+45	2.4E+114	3.6E+265	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
10	9	362880	3.67E+21	1.06E+67	2.5E+181	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
11	10	3628800	1.33E+28	1.41E+95	3.6E+276	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
12	11	39916800	5.32E+35	7.5E+130	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
13	12	4.79E+08	2.55E+44	1.9E+175	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!



Correct Multiplication Table Implementation: \$A2*B\$1

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		1	2	3	4	5	6	7	8	9	10	11	12
2	1	1	2	3	4	5	6	7	8	9	10	11	12
3	2	2	4	6	8	10	12	14	16	18	20	22	24
4	3	3	6	9	12	15	18	21	24	27	30	33	36
5	4	4	8	12	16	20	24	28	32	36	40	44	48
6	5	5	10	15	20	25	30	35	40	45	50	55	60
7	6	6	12	18	24	30	36	42	48	54	60	66	72
8	7	7	14	21	28	35	42	49	56	63	70	77	84
9	8	8	16	24	32	40	48	56	64	72	80	88	96
10	9	9	18	27	36	45	54	63	72	81	90	99	108
11	10	10	20	30	40	50	60	70	80	90	100	110	120
12	11	11	22	33	44	55	66	77	88	99	110	121	132
13	12	12	24	36	48	60	72	84	96	108	120	132	144

More info

- References
 - Excel online help
 - Number of good books on Excel: e.g. Larsen, R. W. (2013). *Engineering with Excel* (4th ed.). Boston: Pearson.
 - Numerous online resources
- Widely available, learn by using