

This Fact Sheet provides a detailed explanation of how to calculate the Check Digits for the different length GS1 Identification Numbers.

Table 1: Manual Check Digit Calculation




Barcode Type	Digit Positions																	
GTIN-8											n_1	n_2	n_3	n_4	n_5	n_6	n_7	n_8
GTIN-12							n_1	n_2	n_3	n_4	n_5	n_6	n_7	n_8	n_9	n_{10}	n_{11}	n_{12}
GTIN-13						n_1	n_2	n_3	n_4	n_5	n_6	n_7	n_8	n_9	n_{10}	n_{11}	n_{12}	n_{13}
GTIN-14					n_1	n_2	n_3	n_4	n_5	n_6	n_7	n_8	n_9	n_{10}	n_{11}	n_{12}	n_{13}	n_{14}
SSCC	n_1	n_2	n_3	n_4	n_5	n_6	n_7	n_8	n_9	n_{10}	n_{11}	n_{12}	n_{13}	n_{14}	n_{15}	n_{16}	n_{17}	n_{18}
GLN						n_1	n_2	n_3	n_4	n_5	n_6	n_7	n_8	n_9	n_{10}	n_{11}	n_{12}	n_{13}
GDTI						n_1	n_2	n_3	n_4	n_5	n_6	n_7	n_8	n_9	n_{10}	n_{11}	n_{12}	n_{13}
GRAI						n_1	n_2	n_3	n_4	n_5	n_6	n_7	n_8	n_9	n_{10}	n_{11}	n_{12}	n_{13}
GSIN		n_1	n_2	n_3	n_4	n_5	n_6	n_7	n_8	n_9	n_{10}	n_{11}	n_{12}	n_{13}	n_{14}	n_{15}	n_{16}	n_{17}
GSRN	n_1	n_2	n_3	n_4	n_5	n_6	n_7	n_8	n_9	n_{10}	n_{11}	n_{12}	n_{13}	n_{14}	n_{15}	n_{16}	n_{17}	n_{18}
Multiply value of each position by:																		
	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	
Accumulated results = Sum																		
Subtract sum from the next highest multiple of ten = Check Digit																		

Note: The Check Digit for a Zero Suppressed GTIN-12 (encoded in a UPC-Ebarcode) is calculated using the first eleven digits of the GTIN-12 in its expanded form.

Table 2: Example One of a Manual Check Digit Calculation for a GTIN-13

Digit Positions	n ₁	n ₂	n ₃	n ₄	n ₅	n ₆	n ₇	n ₈	n ₉	n ₁₀	n ₁₁	n ₁₂	n ₁₃
Number without Check Digit	9	3	1	2	3	4	5	6	7	8	9	0	
Step 1: Multiply by	x	x	x	x	x	x	x	x	x	x	x	x	
	1	3	1	3	1	3	1	3	1	3	1	3	
Step 2: Add up results to sum	=	=	=	=	=	=	=	=	=	=	=	=	
	9	9	1	6	3	12	5	18	7	24	9	0	= 103
Step 3: Subtract sum from next highest multiple of ten (110) = Check Digit (7)													
Number with Check Digit	9	3	1	2	3	4	5	6	7	8	9	0	7

Table 3: Example Two of a Manual Check Digit Calculation for a GTIN-13

Step	Calculation
Step 1: Starting with the first number on the right, add all the alternate numbers 	$0 + 8 + 6 + 4 + 2 + 3 = 23$
Step 2: Multiply the result by three	$23 \times 3 = 69$
Step 3: Starting with the second number on the right, add all the alternate numbers 	$9 + 7 + 5 + 3 + 1 + 9 = 34$
Step 4: Add the results of Step 1 and Step 2 Note: If the result is an exact multiple of 10 your Check Digit is a 0 (zero): do not continue to Step 5	$69 + 34 = 103$
Step 5: Subtract the sum obtained in Step 4 from the next highest multiple of ten	$110 - 103 = 7$
Check Digit The result of Step 5 is your Check Digit 	Check Digit = 7

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