



2.4 Manual Check Digit Calculation

Standard Check Digit Calculations

Below is a detailed explanation on how to calculate the Check Digits for the different length GS1 Identification Numbers.

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

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}
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}
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	x1
Accumulated results = <i>Sum</i>																		
Subtract sum from the next highest multiple of ten = <i>Check Digit</i>																		

TABLE 29 Manual Check Digit Calculation





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 <i>without</i> 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 <i>sum</i>	=	=	=	=	=	=	=	=	=	=	=	=	
	9	9	1	6	3	12	5	18	7	24	9	0	=103
Step 3: Subtract <i>sum</i> from next highest multiple of ten (110) = Check Digit (7)													
Number <i>with</i> Check Digit	9	3	1	2	3	4	5	6	7	8	9	0	7

TABLE 30 Example One of a Manual Check Digit Calculation for a GTIN-13

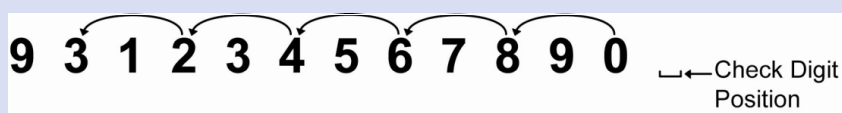
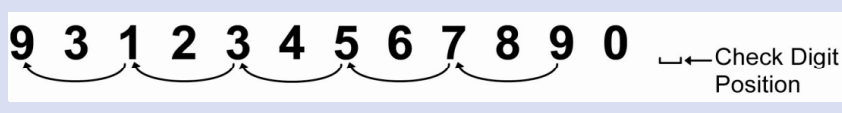

<p>Step One</p> <p>Starting with the first number on the right, add all the alternate numbers</p> <p>  </p> <p>$0 + 8 + 6 + 4 + 2 + 3 = 23$</p>	
<p>Step Two</p> <p>Multiply the result by three</p> <p>$23 \times 3 = 69$</p>	
<p>Step Three</p> <p>Starting with the second number on the right, add all the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

TABLE 31 Example Two of a Manual Check Digit Calculation for a GTIN-13
