

calc_decimal_example

Student Group

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\$I.\quad\$ Calculation example for decimal value

Idea: The number \$2658.47\$ is only the representation with the numerals \$[0..9]\$, but what is the value behind it?

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\begin{align*} \begin{smallmatrix} \color{black}{\text{number}:} & \color{black}{} & \\ \color{black}{2} & \color{black}{6} & \color{black}{5} & \color{black}{8.} & \color{black}{4} & \\ \color{black}{7} & \color{white}{\text{index}:} & \color{white}{i} & \color{white}{3} & & \\ \color{white}{2} & \color{white}{1} & \color{white}{0} & \color{white}{-1} & \color{white}{-2} & \\ \color{white}{\text{place value}:} & \color{white}{B^i} & \color{white}{10^3} & & & \\ \color{white}{10^2} & \color{white}{10^1} & \color{white}{10^0} & \color{white}{10^{-1}} & & \\ \color{white}{10^{-2}} & \color{white}{} & \color{white}{} & \color{white}{1000} & & \\ \color{white}{100} & \color{white}{10} & \color{white}{1} & \color{white}{0.1} & & \\ \color{white}{0.01} & \color{white}{\text{numerals}:} & \color{white}{z_i} & \color{white}{2} & & \\ \color{white}{6} & \color{white}{5} & \color{white}{8} & \color{white}{4} & \color{white}{7} & \\ \color{white}{\text{calc}.} & \color{white}{z_i \cdot B^i} & \color{white}{2000} & & & \\ \color{white}{600} & \color{white}{50} & \color{white}{8} & \color{white}{0.4} & & \\ \color{white}{0.07} & \color{white}{\text{result}:} & \color{white}{\sum_i z_i \cdot B^i} & & & \\ \color{white}{2658.47} & & & & & \end{smallmatrix} \end{align*}
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value	2	6	5	8 ,	4	7	
index	\$i\$	3	2	1	0	-1	-2
place value	B^i	$\{10^3\}$ $\{1000\}$	$\{10^2\}$ $\{100\}$	$\{10^1\}$ $\{10\}$	$\{10^0\}$ $\{1\}$	$\{10^{-1}\}$ $\{0.10\}$	$\{10^{-2}\}$ $\{0.01\}$
digit	z_i	2	6	5	8	4	7
calc.	$z_i \cdot B^i$	2000	600	50	8	0.4	0.07
Result $\sum_i z_i \cdot B^i$	2658,47						
aus (2+3)		$\{l_p\} = \{l_m\} = 0\$$			l_p und l_m sind damit definiert		
aus (6)		$\{l_o\} = l_1 \$$			l_o ist damit bekannt, wenn l_1 bekannt ist		
aus (7) und (3)		$l_1 - l_2 \cdot \{l\}_0 = 0 \$$					
		$l_1 = l_2 = l_o \$$					
		$\{l_1\} = \{l_2\} = \{l_o\} \$$			mit (8) und (9): $\boxed{l} = \frac{\boxed{U}}{\boxed{R}}$ und (5)		
		$\frac{U_1}{R_1} = \frac{U_2}{R_2} = \frac{U_A}{R_1 + R_2} \$$			Spannungsteilerformel, $i=const.\$$		
(10)		$U_2 = U_A \cdot \frac{R_2}{R_1 + R_2} \$$			Spannungsteilerformel		

\$II.\quad\$ Betrachtung der Spannungsverstärkung

[illegible]

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