

calc_decimal_example

Student Group

First Name	Surname	Matrikel Nr.

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$\$1.\!\!\!\square$ Calculation example for decimal value

$$\begin{aligned} & \text{\color{black}\{}} & \text{\color{black}\{}} \\ & \text{\color{black}\{2\}} & \text{\color{black}\{6\}} & \text{\color{black}\{5\}} & \text{\color{black}\{8\}} & \text{\color{black}\{4\}} & \\ & \text{\color{black}\{7\}} \parallel \text{\color{white}\{\text{index}\}: } & \text{\color{white}\{i\}} & \text{\color{white}\{3\}} & \\ & \text{\color{white}\{2\}} & \text{\color{white}\{1\}} & \text{\color{white}\{0\}} & \text{\color{white}\{-1\}} & \text{\color{white}\{-2\}} \parallel \\ & \text{\color{white}\{\text{place value}\}: } & \text{\color{white}\{B^i\}} & \text{\color{white}\{10^3\}} & \\ & \text{\color{white}\{10^2\}} & \text{\color{white}\{10^1\}} & \text{\color{white}\{10^0\}} & \text{\color{white}\{10^{-1}\}} & \\ & \text{\color{white}\{10^{-2}\}} \parallel \text{\color{white}\{}} & \text{\color{white}\{}} & \text{\color{white}\{1000\}} & \\ & \text{\color{white}\{100\}} & \text{\color{white}\{10\}} & \text{\color{white}\{1\}} & \text{\color{white}\{0.1\}} & \\ & \text{\color{white}\{0.01\}} \parallel \text{\color{white}\{\text{digit}\}: } & \text{\color{white}\{z_i\}} & \text{\color{white}\{2\}} & \\ & \text{\color{white}\{6\}} & \text{\color{white}\{5\}} & \text{\color{white}\{8\}} & \text{\color{white}\{4\}} & \text{\color{white}\{7\}} \parallel \\ & \text{\color{white}\{\text{calc.}\}: } & \text{\color{white}\{z_i \cdot B^i\}} & \text{\color{white}\{2000\}} & \\ & \text{\color{white}\{600\}} & \text{\color{white}\{50\}} & \text{\color{white}\{8\}} & \text{\color{white}\{0.4\}} & \\ & \text{\color{white}\{0.07\}} \parallel \text{\color{white}\{\text{result}\}: } & \text{\color{white}\{\sum_i z_i \cdot B^i\}} & \& \& \\ & \text{\color{white}\{2658.47\}} \parallel \end{aligned}$$

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\begin{align*} \begin{smallmatrix} \color{black}{\text{value}}: & \color{black}{} & \\ \color{black}{2} & \color{black}{6} & \color{black}{5} & \color{black}{8.} & \color{black}{4} & \\ \color{black}{7} & \color{blue}{\text{index}}: & \color{blue}{i} & \color{blue}{3} & \color{blue}{} & \\ \color{blue}{2} & \color{blue}{1} & \color{blue}{0} & \color{blue}{-1} & \color{blue}{-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{digit}}: & \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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$$\begin{aligned} & \text{\color{black}\{\text{value}\}}: \& \text{\color{black}\{}} \& \\ & \text{\color{black}\{2\}} \& \text{\color{black}\{6\}} \& \text{\color{black}\{5\}} \& \text{\color{black}\{8.\}} \& \text{\color{black}\{4\}} \& \\ & \text{\color{black}\{7\}} \\\text{\color{black}\{\text{index}\}}: \& \text{\color{black}\{i\}} \& \text{\color{black}\{3\}} \& \\ & \text{\color{black}\{2\}} \& \text{\color{black}\{1\}} \& \text{\color{black}\{0\}} \& \text{\color{black}\{-1\}} \& \text{\color{black}\{-2\}} \\\text{\color{blue}\{\text{place value}\}}: \& \text{\color{blue}\{B^i\}} \& \text{\color{blue}\{10^3\}} \& \text{\color{blue}\{10^2\}} \\ & \& \text{\color{blue}\{10^1\}} \& \text{\color{blue}\{10^0\}} \& \text{\color{blue}\{10^{-1}\}} \& \text{\color{blue}\{10^{-2}\}} \\\text{\color{white}\{}} \& \text{\color{white}\{}} \& \text{\color{white}\{1000\}} \& \text{\color{white}\{100\}} \& \\ & \text{\color{white}\{10\}} \& \text{\color{white}\{1\}} \& \text{\color{white}\{0.1\}} \& \text{\color{white}\{0.01\}} \\\text{\color{white}\{\text{digit}\}}: \& \text{\color{white}\{z_i\}} \& \text{\color{white}\{2\}} \& \text{\color{white}\{6\}} \& \\ & \text{\color{white}\{5\}} \& \text{\color{white}\{8\}} \& \text{\color{white}\{4\}} \& \text{\color{white}\{7\}} \\\text{\color{white}\{\text{calc.}\}}: \& \text{\color{white}\{z_i \cdot B^i\}} \& \text{\color{white}\{2000\}} \& \\ & \text{\color{white}\{600\}} \& \text{\color{white}\{50\}} \& \text{\color{white}\{8\}} \& \text{\color{white}\{0.4\}} \& \\ & \text{\color{white}\{0.07\}} \\\text{\color{white}\{\text{result}\}}: \& \text{\color{white}\{\sum_i z_i \cdot B^i\}} \& \& \& \\ & \text{\color{white}\{2658.47\}} \\\end{aligned}$$
$$\begin{matrix} \text{\color{black}\textit{value}} & : & \text{\color{black}} & \& \end{matrix}$$

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\color{black}{2} & \color{black}{6} & \color{black}{5} & \color{black}{8.} & \color{black}{4} &
\color{black}{7} \\ \color{black}{\text{index}}: & \color{black}{i} & \color{black}{3} &
\color{black}{2} & \color{black}{1} & \color{black}{0} & \color{black}{-1} & \color{black}{-2} \\
\color{black}{\text{place value}}: & \color{black}{B^i} & \color{black}{10^3} &
\color{black}{10^2} & \color{black}{10^1} & \color{black}{10^0} & \color{black}{10^{-1}} &
\color{black}{10^{-2}} \\ \color{black}{} & \color{black}{} & \color{black}{} & \color{black}{1000} &
\color{black}{100} & \color{black}{10} & \color{black}{1} & \color{black}{0.1} &
\color{black}{0.01} \\ \color{black}{\text{digit}}: & \color{black}{z_i} & \color{black}{2} &
\color{black}{6} & \color{black}{5} & \color{black}{8} & \color{black}{4} & \color{black}{7} \\
\color{black}{\text{calc.}}: & \color{black}{z_i \cdot B^i} & \color{black}{2000} &
\color{black}{600} & \color{black}{50} & \color{black}{8} & \color{black}{0.4} &
\color{black}{0.07} \\ \color{black}{\text{result}}: & \color{black}{\sum_i z_i \cdot B^i} & &
\color{black}{2658.47} \\ \end{smallmatrix} \end{align*}

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\begin{align*} \begin{smallmatrix} \color{blue}{\text{value}}: & \color{blue}{} & \color{blue}
{2} & \color{blue}{6} & \color{blue}{5} & \color{blue}{8.} & \color{blue}{4} & \color{blue}
{7} \\ \color{blue}{\text{index}}: & \color{blue}{i} & \color{blue}{3} & \color{blue}{2} &
\color{blue}{1} & \color{blue}{0} & \color{blue}{-1} & \color{blue}{-2} \\
\color{blue}{\text{place value}}: & \color{blue}{B^i} & \color{blue}{10^3} & \color{blue}{10^2} &
\color{blue}{10^1} & \color{blue}{10^0} & \color{blue}{10^{-1}} & \color{blue}{10^{-2}} \\
\color{blue}{} & \color{blue}{} & \color{blue}{} & \color{blue}{1000} & \color{blue}{100} &
\color{blue}{10} & \color{blue}{1} & \color{blue}{0.1} & \color{blue}{0.01} \\
\color{blue}{\text{digit}}: & \color{blue}{z_i} & \color{blue}{2} & \color{blue}{6} & \color{blue}{5} &
\color{blue}{8} & \color{blue}{4} & \color{blue}{7} \\
\color{blue}{\text{calc.}}: & \color{blue}{z_i \cdot B^i} & \color{blue}{2000} & \color{blue}{600} &
\color{blue}{50} & \color{blue}{8} & \color{blue}{0.4} & \color{blue}{0.07} \\
\color{blue}{\text{result}}: & \color{blue}{\sum_i z_i \cdot B^i} & & & & & &
& \color{blue}{2658.47} \end{smallmatrix} \end{align*}

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\begin{align*} \begin{smallmatrix} \color{white}{\text{value}}: & \color{white}{} & \color{white}
{2} & \color{white}{6} & \color{white}{5} & \color{white}{8.} & \color{white}{4} & \color{white}
{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}{} & \color{white}{1000} & \color{white}{100} &
\color{white}{10} & \color{white}{1} & \color{white}{0.1} & \color{white}{0.01} \\
\color{white}{\text{digit}}: & \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	
\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$
\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	
\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	
\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$	

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)

$\textcolor{blue}\{l_p\} = \textcolor{blue}\{l_m\} = 0\$$

$\$1_p\$$ und $\$1_m\$$ sind damit definiert

aus (6)

$\textcolor{blue}\{l_o\} = l_1 \$$

$\$l_o\$$ ist damit bekannt, wenn $\$l_1\$$ bekannt ist

aus (7) und (3)

$l_1 - l_2 - \textcolor{blue}\{0\} = 0 \$$

$\$l_1 - l_2 = l_o\$$

mit (8) und (9): $\$_\boxed{} = \frac{\$U_\boxed{}\$}{\$R_\boxed{}\$}$ und (5)

$\$l_1 = l_2 = l_o\$$

Spannungsteilerformel, $\$l = \text{const.}\$$

(10)

$\$U_2 = U_A \cdot \frac{\$R_2\$}{\$R_1 + \$R_2\$}$

Spannungsteilerformel

\$II.\quad\$ Betrachtung der Spannungsverstärkung

[illegible]

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