

calc_decimal_example

Student Group

First Name	Surname	Matrikel Nr.

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```
\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*} Third: calculate the place value
$\quad$
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```
\begin{align*} \begin{smallmatrix} \color{white}{\text{number}:} & \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}{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*} First: But space between the numerals to
see the thousands, hundreds, tens, ones, tenths, hundredths
```

```
\begin{align*} \begin{smallmatrix} \color{blue}{\text{number}:} & \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}{1000} & \color{blue}{100} & \color{blue}{10} &
\color{blue}{1} & \color{blue}{0.1} & \color{blue}{0.01} \\ \color{blue}{\text{numerals}:} &
\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*} First: But space between the
numerals to see the thousands, hundreds, tens, ones, tenths, hundredths
```

```
\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{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}{1000} &
\color{black}{100} & \color{black}{10} & \color{black}{1} & \color{black}{0.1} &
\color{black}{0.01} \\ \color{black}{\text{numerals}:} & \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*} First: But space between the
numerals to see the thousands, hundreds, tens, ones, tenths, hundredths
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$\sum_{i=0}^7 z_i \cdot B^i$ & $\{2000\}$ & $\{600\}$ & $\{50\}$ & $\{8\}$ & $\{0.4\}$ & $\{0.07\}$ \\
 \text{result}: & $\sum_{i=0}^7 z_i \cdot B^i$ & & $\{2658.47\}$ \\
 \end{smallmatrix} \end{align*}
 First: But space between the numerals to see the thousands, hundreds, tens, ones, tenths, hundredths

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\$	\$\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\$	$\{10^3\}$	$\{10^2\}$	$\{10^1\}$	$\{10^0\}$	$\{10^{-1}\}$	$\{10^{-2}\}$	
digit	\$z_i\$	2	6	5	8	4	7	
calc.	$\sum_{i=0}^7 z_i \cdot B^i$	2000	600	50	8	0.4	0.07	
Result	$\sum_{i=0}^7 z_i \cdot B^i$	2658,47						
aus (2+3)		$\{l_p\} = \{l_m\} = 0$			\$l_p\$ und \$l_m\$ sind damit definiert			
aus (6)		$\{l_o\} = 1$			\$l_o\$ ist damit bekannt, wenn \$l_1\$ bekannt ist			
aus (7) und (3)		$\{l_1 - l_2 - \{0\} = 0$						
		$\{l_1 = l_2 = 1$						
		$\{l_1\} = \{l_2\} = \{l_o\}$			mit (8) und (9): $\{l_{boxed}\} = \{l_{boxed}\} \cdot \{R_{boxed}\}$ und (5)			
		$\{U_1\} = \{U_2\} = \{U_A\}$			Spannungsteilerformel, $\{I\} = \text{const.}$			
(10)		$\{U_2\} = U_A \cdot \{R_2\} / \{R_1 + R_2\}$			Spannungsteilerformel			

II. Betrachtung der Spannungsverstärkung

aus (0)	$\{A_V\} = \{U_A\} / \{U_E\}$	
	$\{A_V\} = \{U_A\} / \{U_E\}$	mit (4): $\{U_E\} = \{U_2\} + \{U_D\}$
	$\{A_V\} = \{U_A\} / \{U_2 + U_D\}$	
	$\{A_V\} = \{U_A\} / \{U_2 + U_D\}$	mit (10): $\{U_2\} = U_A \cdot \{R_2\} / \{R_1 + R_2\}$
	$\{A_V\} = \{U_A\} / \{U_A \cdot \{R_2\} / \{R_1 + R_2\} + \{U_D\}\}$	
	$\{A_V\} = \{U_A\} / \{U_A \cdot \{R_2\} / \{R_1 + R_2\} + \{U_D\}\}$	mit (1)
	$\{A_V\} = \{U_A\} / \{U_A \cdot \{R_2\} / \{R_1 + R_2\} + \{U_D\}\}$	Erweitern mit $\{1\} / \{U_A\}$
	$\{A_V\} = \{1\} / \{R_2 / \{R_1 + R_2\} + \{A_D\}\}$	
	$\{A_V\} = \{1\} / \{R_2 / \{R_1 + R_2\} + \{A_D\}\}$	Bruch umformen
	$\{A_V\} = \{R_1 + R_2\} / \{R_2 + \{A_D\} \cdot \{R_1 + R_2\}\}$	

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