

# calc\_decimal\_example

## Student Group

First Name	Surname	Matrikel Nr.

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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 }{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*}

```

```

\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}{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\$	\$\quad\quad\$	\$\quad\quad\$	\$\quad\quad\$

value	2	6	5	8	4	7
index	$i$	3	2	1	0	-1
place value	$B^i$	$\$ \small\{10^3\}$	$\$ \small\{10^2\}$	$\$ \small\{10^1\}$	$\$ \small\{10^0\}$	$\$ \small\{10^{-1}\}$
digit	$z_i$	2	6	5	8	4
calc.	$\sum_{i=-1}^3 z_i B^i$	2000	600	50	8	0.4

Result  $\sum_{i=-1}^3 z_i B^i$  2658,47

aus (2+3)	$\color{blue}\{I_p\} = \color{blue}\{I_m\} = 0$	$I_p$ und $I_m$ sind damit definiert
$\color{blue}\{I_o\} = I_1$	$I_o$ ist damit bekannt, wenn $I_1$ bekannt ist	
$I_1 - I_2 \cdot \color{blue}\{0\} = 0$	$I_1 = I_2 = I_o$	
$\color{blue}\{I_1\} = \color{blue}\{I_2\} = \color{blue}\{I_o\}$	mit (8) und (9): $\boxed{I_1} = \frac{1}{R_2} \cdot \boxed{I_2}$ und (5)	
$\frac{I_1}{R_2} = \frac{I_2}{R_2} = \frac{U_A}{R_1 + R_2}$	Spannungsteilerformel, $I = \text{const.}$	
$U_2 = U_A \cdot \frac{R_2}{R_1 + R_2}$	Spannungsteilerformel	

## II. Betrachtung der Spannungsverstärkung

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

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