

# Algebra - Aufgaben: Zahlensysteme 3

① a)  $1234_5 = 1 \cdot 725_{10} + 2 \cdot 25_{10} + 3 \cdot 5_{10} + 4 \cdot 1_{10} = \underline{194}_{10}$

b)  $588_9 = 5 \cdot 81_{10} + 8 \cdot 9_{10} + 8 \cdot 1_{10} = \underline{485}_{10}$

c)  $12201_3 = 1 \cdot 81_{10} + 2 \cdot 27_{10} + 2 \cdot 9_{10} + 0 \cdot 3_{10} + 1 \cdot 1_{10} = \underline{154}_{10}$

d)  $257_7 = 2 \cdot 49_{10} + 5 \cdot 7_{10} + 4 \cdot 1_{10} = \underline{137}_{10}$

e)  $11010_2 = 1 \cdot 16 + 1 \cdot 8 + 1 \cdot 2 = \underline{26}$

f)  $317_8 = 3 \cdot 64 + 1 \cdot 8 + 7 \cdot 1 = \underline{207}$

g)  $ABD_{12} = 10 \cdot 144 + 11 \cdot 12 + 10 \cdot 1 = \underline{1582}$

h)  $10100100_2 = 1 \cdot 128 + 1 \cdot 32 + 1 \cdot 4 = \underline{164}$

*ab jetzt:*  
Beachte: Ziffern ohne Index  
 gelten ab Ziffern  
 des 10er-Systems.

② a)  $111_2 = 7 = 2 \cdot 3_{10} + 1 \cdot 1_{10} \Rightarrow \underline{21}_3$

b)  $222_3 = 26 = 1 \cdot 16_{10} + 2 \cdot 4_{10} + 2 \cdot 1_{10} \Rightarrow \underline{122}_4$

c)  $444_5 = 124 = 3 \cdot 36_{10} + 2 \cdot 6_{10} + 4 \cdot 1_{10} \Rightarrow \underline{324}_6$

d)  $888_9 = \underline{728}$

e)  $ABD_{12} = 143 = 1 \cdot 128_{10} + 1 \cdot 8_{10} + 1 \cdot 4_{10} + 1 \cdot 2_{10} + 1 \cdot 1_{10} \Rightarrow \underline{10001111}_2$

f)  $538_7 = 440 = 3 \cdot 144_{10} + 8 \cdot 1_{10} \Rightarrow \underline{308}_{12}$

③ a)  $13_4 \stackrel{\checkmark}{=} 21_3$   
 " " " " " " " " " " " "  
 7 " " " " " " " " " " " "

b)  $134_5 \stackrel{\neq}{=} 63_7$   
 " " " " " " " " " " " "  
 44 " " " " " " " " " " " "

c)  $77_8 \stackrel{\checkmark}{=} 88_9$   
 " " " " " " " " " " " "  
 63 " " " " " " " " " " " "

d)  $13_4 \stackrel{\checkmark}{=} 26_8$   
 " " " " " " " " " " " "  
 7 " " " " " " " " " " " "

$$\begin{array}{r}
 \textcircled{4} \quad 23_8 + 434_4 + 3 \cdot 223_4 + 1101_2 + \underline{8232}_6 \\
 \checkmark \qquad \quad \downarrow \qquad \quad \checkmark \qquad \quad \checkmark \qquad \quad \downarrow \\
 \qquad \quad 440_4 \qquad \qquad \qquad \qquad \qquad \qquad \qquad 12232_6 \\
 \qquad \quad \downarrow \\
 \qquad \quad \underline{500}_4 \\
 \qquad \quad \downarrow \\
 \qquad \quad 1100_4
 \end{array}$$

$$\begin{aligned}
 &= 23_8 + 1100_4 + 3 \cdot 223_4 + 1101_2 + 12232_6 \\
 &= 19 + 80 + 3 \cdot 43 + 13 + 1820 \\
 &= 19 + 80 + 129 + 13 + 1820 \\
 &= \underline{2061} \\
 &= \underline{\underline{6003_7}}
 \end{aligned}$$

Beachte:  
 zuerst ins 10er System  
 dann multiplizieren

- a) gibt nicht!
- b) gibt nicht!
- c) im 2067er-System