

Allgemeinwissen Zehnerpotenzen und SI-Präfixe

Zahl				
10000000000000000000				
1000000000000000000				
100000000000000000				
100000000000				
1000000				
1000				
100				
10				
1/10				
1/100				
1/1000				
1/1000000				
1/1000000000				
1/1000000000000				
1/1000000000000000				
1/1000000000000000000				

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Zahl	Faktor			
1000000000000000000	10^{18}			
1000000000000000	10^{15}			
1000000000000	10^{12}			
1000000000	10^9			
1000000	10^6			
1000	10^3			
100	10^2			
10	10^1			
1/10	10^{-1}			
1/100	10^{-2}			
1/1000	10^{-3}			
1/1000000	10^{-6}			
1/1000000000	10^{-9}			
1/1000000000000	10^{-12}			
1/1000000000000000	10^{-15}			
1/1000000000000000000	10^{-18}			

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Zahl	Faktor	SI-Präfix	Symbol	Bsp.
1000000000000000000	10^{18}	Exa	E	
1000000000000000	10^{15}	Peta	P	
1000000000000	10^{12}	Tera	T	1 TB = 1 Terabyte
1000000000	10^9	Giga	G	1 GHz = 1 Gigahertz
1000000	10^6	Mega	M	1 Mt = 1 Megatonne
1000	10^3	Kilo	k	1 kg = 1000 g
100	10^2	Hekto	h	1 hPa = 100 Pascal
10	10^1	Deka	da	
1/10	10^{-1}	Dezi	d	1 dm = 0,1 Meter
1/100	10^{-2}	Zenti	c	1 cl = 0,01 Liter
1/1000	10^{-3}	Milli	m	1 mg = 1 Milligramm
1/1000000	10^{-6}	Mikro	μ	1 μs = 1 Mikrosekunde
1/1000000000	10^{-9}	Nano	n	1 nm = 1 Nanometer
1/1000000000000	10^{-12}	Pico	p	1 pF = 1 Picofarad
1/1000000000000000	10^{-15}	Femto	f	
1/1000000000000000000	10^{-18}	Atto	a	

Beispiele und Rechenregeln

$$4,6 \cdot 10^{-6} m = 4,6 \mu m = 0,0000046 m$$

$$13600000000 a = 1,36 \cdot 10^{10} a = 13,6 \cdot 10^9 a = 13,6 \text{ Milliarden Jahre}$$

$$10^2 \cdot 10^3 = 10^{2+3} = 10^5 \quad 10^2 \cdot 10^{-2} = 10^{2+(-2)} = 10^0 = 1$$

denn $x^0 = 1$, für alle $x !!!$

$$10^5 \cdot 10^6 = 10^{(5+6)} = 10^{11}$$

$$10^5 \cdot 10^{-6} = 10^{(5+(-6))} = 10^{-1} = \frac{1}{10^1}$$

$$\frac{10^5}{10^{-6}} = \frac{10^5}{\frac{1}{10^6}} = 10^5 \cdot 10^6 = 10^{11}$$

$$\frac{20 cm}{5 \mu s} = \frac{20 \cdot 10^{-2} m}{5 \cdot 10^{-6} s} = 4 \cdot 10^4 m/s$$

Übungen

a) $3 \cdot 10^{-2} \cdot 7 \cdot 10^5 =$

b) $\frac{3 \cdot 10^{-4}}{6 \cdot 10^2} =$

c) $\frac{5 \cdot 10^3}{5 \cdot 10^{-3}} =$

d) $\frac{10^{36}}{10^{22}} =$

e) $\frac{10^{36}}{10^{-22}} =$

f) $\frac{3,5 \cdot 10^{16}}{7 \cdot 10^{15}} =$