

How to Convert Units of Measure

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Cross-multiplication

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- In simple words, the method of “cross-multiplying” means that we multiply the numerator of each (or one) side by the denominator of the other side,

$$\frac{a}{b} \swarrow \quad \frac{c}{d} \quad \frac{a}{b} \nearrow \quad \frac{c}{d}$$

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- **Example** Assume we want to know how far a car will travel in 7 h, if we know that its speed is constant and that it already travelled 90 Km in the last 3 h. The problem can be converted into ratios:

$$\frac{x}{7\text{h}} = \frac{90\text{ Km}}{3\text{ h}}.$$

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- Remark Even simple equations like this

$$a = \frac{x}{d}$$

can be solved using cross multiplication:

$$\frac{a}{1} = \frac{x}{d}$$

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- **Problem** If 4 meters of Cloth cost 12 Euros, what will 6 meters cost at that Rate? The answer gives the following:

$$\frac{12 \text{ Euro} \times 6 \text{ m}}{4 \text{ m}} = 18 \text{ Euro}.$$

Units of Digital Information

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- The multiples of bytes are given in the following table.

Symbol	Name	Value
KB	kilobyte	1000^1 B
MB	megabyte	1000^2 B
GB	gigabyte	1000^3 B
TB	terabyte	1000^4 B
PB	petabyte	1000^5 B
EB	exabyte	1000^6 B
ZB	zettabyte	1000^7 B
YB	yottabyte	1000^8 B

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- The size of an average MP3 file is 6 MB and the capacity of a USB thumb disk is 7 GB. How many songs can be stored in the USB thumb disk?
- The size of an average MKV file is 1.2 GB and the capacity of a USB external disk is 2 TB. How many movies can be stored in the USB external disk?

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- Thank you for your attention!