

# Unit Conversion

**Use with Appendix B,  
Unit Conversion**

## Common SI Prefixes

Prefix	Symbol	Exponential Notation	Prefix	Symbol	Exponential Notation
peta	P	$10^{15}$	deci	d	$10^{-1}$
tera	T	$10^{12}$	centi	c	$10^{-2}$
giga	G	$10^9$	milli	m	$10^{-3}$
mega	M	$10^6$	micro	$\mu$	$10^{-6}$
kilo	k	$10^3$	nano	n	$10^{-9}$
hecto	h	$10^2$	pico	p	$10^{-12}$
deka	da	$10^1$	femto	f	$10^{-15}$

Express 42 kilograms in grams.

You are given the number of kilograms. To convert to the number of grams, use the table to determine the relationship between kilograms and grams. Set up conversion factors relating the number of kilograms and the number of grams.

$$\frac{1 \text{ kg}}{1000 \text{ g}} \text{ and } \frac{1000 \text{ g}}{1 \text{ kg}}$$

Choose the conversion factor that cancels units of kilograms and gives an answer in number of grams.

$$42 \cancel{\text{ kg}} \times \frac{1000 \text{ g}}{1 \cancel{\text{ kg}}} = 42\,000 \text{ g} = 4.2 \times 10^4 \text{ g}$$

The answer is expressed in the desired unit, grams. When you convert from a large unit to a small unit, the number of units increases.

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Convert the following measurements as indicated. Express each answer in scientific notation.

1.  $6 \text{ km} = \text{_____ m}$

2.  $4.9 \text{ mg} = \text{_____ g}$

3.  $7.6 \text{ dm} = \text{_____ mm}$

4.  $32.1 \text{ g} = \text{_____ cg}$

5.  $5.6 \times 10^3 \text{ cm} = \text{_____ m}$

6.  $760 \text{ g} = \text{_____ kg}$

7.  $4.50 \text{ km}^2 = \text{_____ m}^2$

8.  $1.23 \text{ g/mL} = \text{_____ kg/L}$

9.  $12 \text{ km} = \text{_____ nm}$

10.  $6.4 \text{ mg} = \text{_____ pg}$