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As a prescriber you may encounter doses of medicines that are expressed in either grams, milligrams or micrograms. You may encounter volumes of medicines that are expressed in litres, millilitres or occasionally microlitres when referring to a very small quantity such as a small number of drops of liquid.

It is important to understand the relationship between these units of mass and volume. The examples in this article provides some practice in converting units.

For the purpose of drug calculations the Standard International (SI) units used will relate to mass and volume:

Mass – the SI unit used to measure mass is the “gram”

Volume - the SI unit used to measure volume is the “litre”

Prefixes

SIZE	PREFIX	SYMBOL
One Hundredth	centi	c
One thousandth	milli	m
One millionth	micro	micro, μ

SI units with prefix

Kilogram (kg)	GRAM (g)	milligram (mg)	microgram (mcg)
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Kilolitre	LITRE (l)	millilitre (ml)	Microlitre (mcl)
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Units of weight and volume

1 kilogram = 1000 grams

1 gram = 1000 milligrams

1 milligram = 1000 micrograms

1 litre = 1000 millilitres

To convert from larger to smaller units we multiply by 1000 for each step

To convert from smaller to larger we divide by 1000

Now try these exercises.

Convert:

- a) 250 mg to g 0.25g
- b) 0.7g to mg 700mg
- c) 50ml to litres 0.05l
- d) 2 litres to ml 2000ml
- e) 568mls to litres 0.568l
- f) 400micrograms to mg 0.4mg
- g) 893micrograms to mg 0.893mg
- h) 0.63g to mg 630mg
- i) 2.5kg to g 2500g