

Converting between units

Starter

1. **(Review of last lesson)** John is telling a friend that he had a lorry load of top soil delivered for his garden. He says that he had about 4 cubic metres delivered and that, with VAT, he paid about £80. The volume is given to the nearest cubic metre. The cost is given to the nearest £5. Find the maximum price that John could have paid for one cubic metre of top soil.

Notes

Metric units

Length:	10 mm \equiv 1 cm	100 cm \equiv 1 m	1000 m \equiv 1 km
Mass:	1000 g \equiv 1 kg	1000 kg \equiv 1 tonne	
Volume:	1000 ml \equiv 1 litre	1 ml \equiv 1 cm ³	1000 litres \equiv 1 m ³

N.B. “Tonne” is the metric tonne, whereas “ton” is the imperial ton (see below).

Imperial units

Length:	12 inches \equiv 1 foot	3 feet \equiv 1 yard	1760 yards \equiv 1 mile
Mass:	16 ounces \equiv 1 lb	14 lb \equiv 1 stone	2240 lb \equiv 1 ton
Volume:	8 pints \equiv 1 gallon	1 ml \equiv 1 cm ³	1000 litres \equiv 1 m ³

E.g. 1 Copy and complete:

- | | |
|------------------------------------|-------------------------------------|
| (a) 50000 mm \equiv _____ km | (b) 2.69 km \equiv _____ cm. |
| (c) 7 gallons \equiv _____ pints | (d) 3.5 miles \equiv _____ yards. |
| (e) 40 ounces \equiv _____ lb | (f) 8 st 9 lb \equiv _____ lb |

Working: (a) 50000 mm \equiv 5000 cm \equiv 50 m \equiv 0.05 km

E.g. 2 Find the percentage decrease in mass when the imperial ton become the metric tonne.

Imperial and metric conversions

Length:	1 inch \approx 2.5 cm	1 foot \approx 30 cm
	1 yard \approx 90 cm	1 mile \approx 1.6 km
Mass:	1 ounce \approx 30 g,	1 kg \approx 2.2 lb
Volume:	1 litre \approx 1.8 pints	1 gallon \approx 4.5 litres

E.g. 3 Copy each statement and fill in the missing numbers:

- | | |
|--------------------------------------|---------------------------------------|
| (a) 4.5 feet \approx _____ cm | (b) 12 gallons \approx _____ litres |
| (c) 750 litres \approx _____ pints | (d) 30 km \approx _____ miles |
| (e) 50 cm \approx _____ inches | (f) 70 mph \approx _____ km/h |

Working: (a) 6.7 feet \approx 6.7 \times 30 = 201 cm

E.g. 4 A car’s petrol consumption is 55 miles per gallon. How far, in kilometres, could it travel if the capacity of its petrol tank is 40 litres? Give your answer to the nearest km.

Exercise

9-1 class textbook: p306 M10.1 Qu 1-9 odd; p308 M10.2 Qu 1-11 odd
A*-G class textbook: p268 M10.1 Qu 1-10 odd; p270 M10.2 Qu 1-14 odd
9-1 homework book: p102 M10.1 Qu 1, 2ace..., 3-6; p103 M10.2 Qu 1ace..., 2-7
A*-G homework book: p74 M10.1 Qu 1ace..., 2-6, 7ace; p75 M10.2 Qu 1-5

Summary

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