

Unit Conversions

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General Chemistry I & II and Chemistry and the Citizen

Length

$$1 \text{ ft} = 12 \text{ in (exact)}$$

$$1 \text{ mi} = 1.609 \text{ km}$$

$$1 \text{ yd} = 3 \text{ ft (exact)}$$

$$1 \text{ in} = 2.54 \text{ cm (exact)}$$

$$1 \text{ mi} = 5280 \text{ ft (exact)}$$

Mass*

$$1 \text{ lb} = 16 \text{ oz (exact)}$$

$$1 \text{ u} = 1.66054 \times 10^{-27} \text{ kg}$$

$$1 \text{ lb} = 0.4536 \text{ kg}$$

Volume

$$1 \text{ gal} = 4 \text{ qt (exact)}$$

$$1 \text{ L} = 1.057 \text{ qt}$$

$$1 \text{ mL} = 1 \text{ cm}^3 \text{ (exact)}$$

$$1 \text{ gal} = 3.785 \text{ L}$$

Energy

$$1 \text{ cal} = 4.184 \text{ J (exact)}$$

$$1 \text{ Cal} = 1000 \text{ cal (exact)}$$

Pressure

$$1 \text{ atm} = 760 \text{ torr (exact)}$$

$$1 \text{ atm} = 101,325 \text{ Pa}$$

$$1 \text{ torr} = 1 \text{ mmHg (exact)}$$

$$1 \text{ bar} = 1 \times 10^5 \text{ Pa (exact)}$$

Time

$$1 \text{ day} = 24 \text{ hr (exact)}$$

$$1 \text{ hr} = 60 \text{ min (exact)}$$

$$1 \text{ min} = 60 \text{ sec (exact)}$$

*In the English system, the pound is defined with respect to the kilogram at the standard value for acceleration, 9.80665 m/s^2 .

Lide, David R., Ed., Handbook of Chemistry and Physics, 83rd ed.; CRC Press: Boca Raton FL, 2002, 1-34 to 1-45.