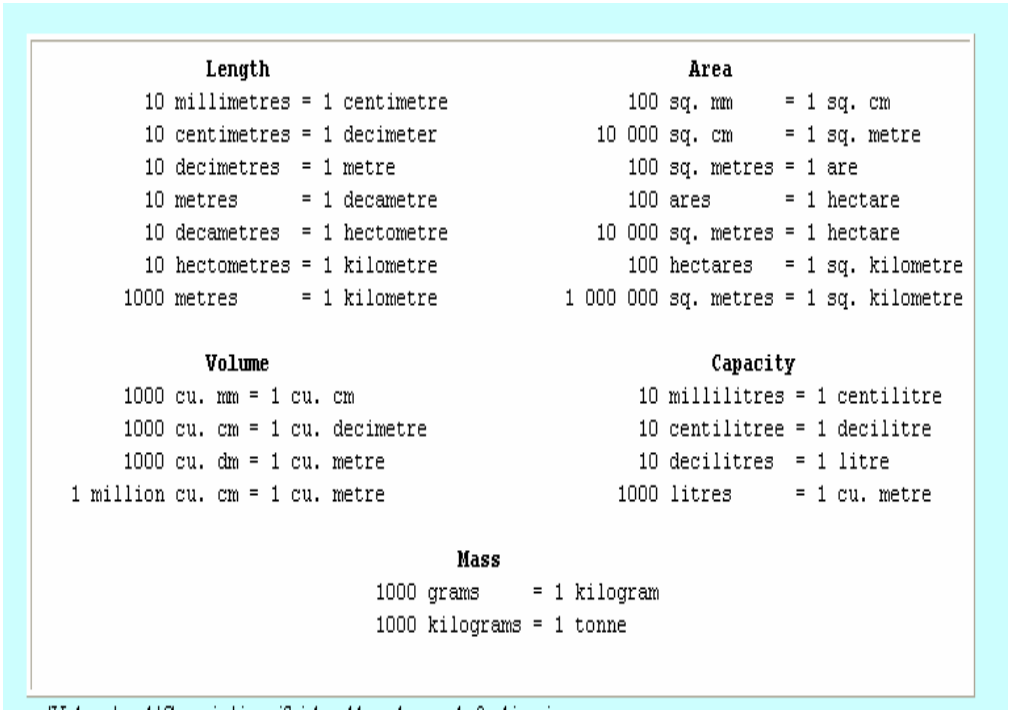
Dimensional Analysis: Practice Problems

When necessary, use the following conversion charts to complete the problems below.

Metric Conversions 1



Length

10 millimetres = 1 centimetre
10 centimetres = 1 decimeter
10 decimetres = 1 metre
10 metres = 1 decametre
10 decametres = 1 hectometre
10 hectometres = 1 kilometre
1000 metres = 1 kilometre

Area

100 sq. mm = 1 sq. cm
10 000 sq. cm = 1 sq. metre
100 sq. metres = 1 are
100 ares = 1 hectare
10 000 sq. metres = 1 hectare
100 hectares = 1 sq. kilometre
1 000 000 sq. metres = 1 sq. kilometre

Volume

1000 cu. mm = 1 cu. cm
1000 cu. cm = 1 cu. decimetre
1000 cu. dm = 1 cu. metre
1 million cu. cm = 1 cu. metre

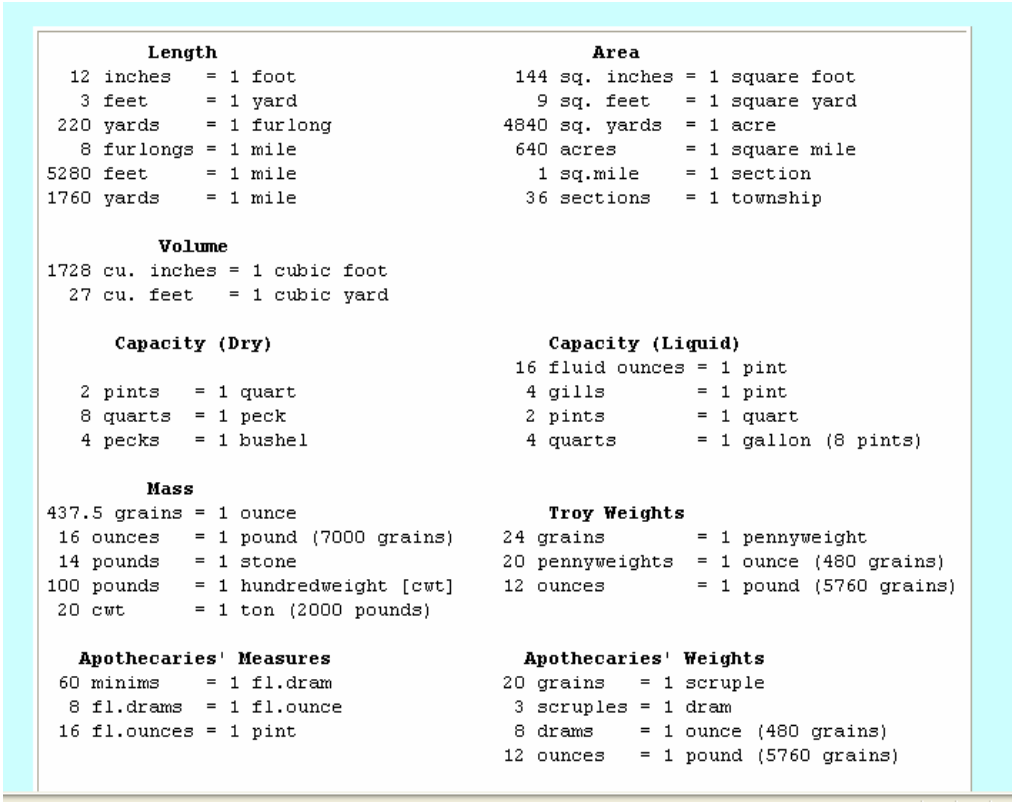
Capacity

10 millilitres = 1 centilitre
10 centilitree = 1 decilitre
10 decilitres = 1 litre
1000 litres = 1 cu. metre

Mass

1000 grams = 1 kilogram
1000 kilograms = 1 tonne

U.S. Conversions 1



Length

12 inches = 1 foot
3 feet = 1 yard
220 yards = 1 furlong
8 furlongs = 1 mile
5280 feet = 1 mile
1760 yards = 1 mile

Area

144 sq. inches = 1 square foot
9 sq. feet = 1 square yard
4840 sq. yards = 1 acre
640 acres = 1 square mile
1 sq.mile = 1 section
36 sections = 1 township

Volume

1728 cu. inches = 1 cubic foot
27 cu. feet = 1 cubic yard

Capacity (Dry)

2 pints = 1 quart
8 quarts = 1 peck
4 pecks = 1 bushel

Capacity (Liquid)

16 fluid ounces = 1 pint
4 gills = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon (8 pints)

Mass

437.5 grains = 1 ounce
16 ounces = 1 pound (7000 grains)
14 pounds = 1 stone
100 pounds = 1 hundredweight [cwt]
20 cwt = 1 ton (2000 pounds)

Troy Weights

24 grains = 1 pennyweight
20 pennyweights = 1 ounce (480 grains)
12 ounces = 1 pound (5760 grains)

Apothecaries' Measures

60 minims = 1 fl.dram
8 fl.drams = 1 fl.ounce
16 fl.ounces = 1 pint

Apothecaries' Weights

20 grains = 1 scruple
3 scruples = 1 dram
8 drams = 1 ounce (480 grains)
12 ounces = 1 pound (5760 grains)

U. S. – Metric Conversions

Length

1 in = 2.54 cm
1 ft = 30.5 cm
1 yd = 91.4 cm
1 mi = 1610 m
1 mi = 1.61 km
0.0394 in = 1mm
0.394 in = 1 cm
39.4 in = 1 m
3.28 ft = 1 m
1.09 yd = 1 m
0.621 mi = 1 km

Weight

1 oz = 28.3 g
1 lb = 454 g
1 lb = 0.454 kg
0.0353 oz = 1 g
0.00220 lb = 1 g
2.20 lb = 1 kg

Capacity

1 gal = 3.79 L
1 qt = 0.946 L
0.264 gal = 1 L
1.06 qt = 1 L

1. 2500 m = _____ km

2. 3.54 m = _____ cm

3. 1,234,560 cm = _____ km

4. 30,000 kg = _____ g

5. 48 oz = _____ lb

6. 2.4 mi = _____ ft

7. 420 hr = _____ wks

8. $\frac{3}{4}$ hr = _____ sec

9. $88\frac{ft}{\text{sec}} =$ _____ $\frac{mi}{hr}$

10. $45\frac{mi}{hr} =$ _____ $\frac{ft}{\text{sec}}$

11. 256 fl drams = _____ pt

12. 12 drams = _____ grains

13. 17.0 in = _____ cm

14. 1950 g = _____ lb

15. 0.85 qt = _____ mL

16. 61 cm = _____ ft

17. 1.2 kg = _____ oz

18. 2 L = _____ pt

19. The distance from a Port Huron to the Indiana State line is approximately 271 miles (via I-94). Express this distance in kilometers.

20. A baby born in the US weighs 3.295 kg according to the scale in the birthing room. Convert this to pounds and ounces so you can tell the grandparents how much the baby weighed.

21. A child requires a 5 ml dose of medicine each day. How many days would a gallon of this medicine last?

22. The moon is 384,403 km from the earth. Estimate how many quarters laid end to end it would take to reach the moon if a quarter has a diameter of 2.3 cm.

23. How many years old are you if you have lived 1 billion seconds?

24. 1 milliliter of ink can print 50 pages of text. If you had 100 gallons of ink then how many pages could you print?

25. A clerk can sort 375 sheets per hour. If there are 225 sheets in an inch, how long will it take her to file 125 inches of loose sheets.