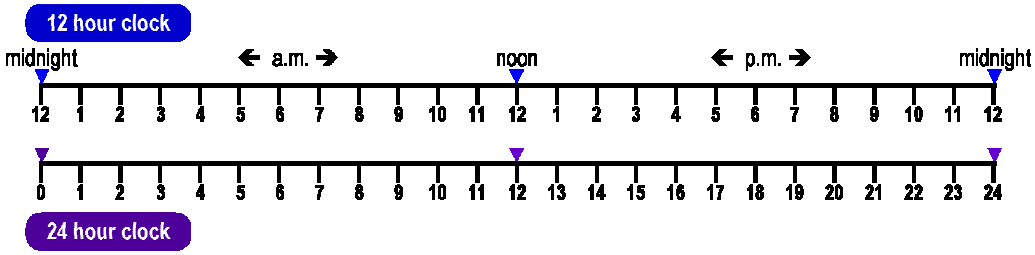
Measurement

TIME

You need to know these equivalent times:

- 1 minute = 60 seconds
- 1 hour = 60 minutes
- 1 day = 24 hours
- 1 week = 7 days
- 1 fortnight = 14 days
- 1 year = 365 days = 52 weeks = 12 months
- leap year = 366 days

Many timetables and digital watches use the 24-hour clock time (sometimes known as military time). Use this scale to change between 12-hour and 24-hour time.



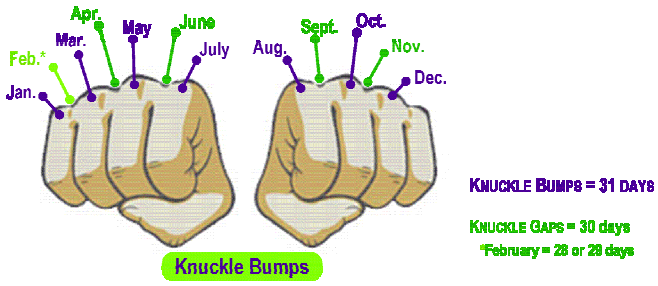
12 hour time		24 hour time
6:15 am	➔	0615 hours
6:15 pm	➔	1815 hours

Remember:

- a.m. is morning time (it comes from the Latin ante meridian, meaning 'before midday').
- p.m. is afternoon and evening time (it comes from the Latin post meridian, meaning 'after midday').
- The 24-hour clock always uses 4 digits

Months

Here is a way to remember how many days there are in each month.



February has 28 days (29 in a leap year). April, June, September, and November have 30 days.

31 Days	30 Days	28 (or 29) Days
January	April	February
March	June	
May	September	
July	November	
August		
October		
December		

UNITS OF MEASUREMENT

Length

Measurement of distance between to points. The following terms are used to identify linear measurements.

 LENGTH
inch (in)
foot / feet (ft)
centimeter (cm)
meter (m)
kilometer (km)

Length Equivalents (English)

mile (mi)	yard (yd)	foot (ft)	inch (in)
		1 ft	12 in
	1 yd	3 ft	36 in
1 mi	1,760 yd	5,280 ft	63,360 in

Length Equivalents (Metric)

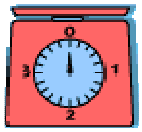
kilometer (km)	hectometer (hm)	dekameter (dam)	meter (m)	dm	centimeter (cm)	millimeter (mm)
		also spelled decameter			1 cm	10 mm
				1 dm	10 cm	100 mm
			1 m	10 dm	100 cm	1,000 mm
		1 dam	10 m	100 dm	1,000 cm	10,000 mm
	1 hm	10 dam	100 m	1,000 dm	10,000 cm	100,000 mm
1 km	10 hm	100 dam	1,000 m	10,000 dm	100,000 cm	1,000,000 mm

Remember:

deci = tenth ($^1/_{10}$) part
centi = hundredth ($^1/_{100}$) part
milli = thousandth ($^1/_{1000}$) part
kilo = 1,000 times the unit

Weight

The heaviness of a person or thing. (Weight is NOT the same as mass.) The following terms are used to identify weight.



WEIGHT
ounce (oz)
pound (lb)
ton (T)
gram (g)
kilogram (kg)

Weight Equivalents (English)

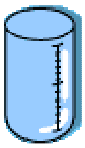
Ton (T)	pound (lb)	ounce (oz)
	1 lb	16 oz
1 T	2,000 lb	32,000 oz

Weight Equivalents (Metric)

kilogram (kg)	gram (g)	decigram (dg)	centigram (cg)	milligram (mg)
			1 cg	10 mg
		1 dg	10 cg	100 mg
	1 g	10 dg	100 cg	1,000 mg
	10 g	100 dg	1,000 cg	10,000 mg
	100 g	1,000 dg	10,000 cg	100,000 mg
1 kg	1,000 g	10,000 dg	100,000 cg	1,000,000 mg

Capacity

A measure of liquid or day volume of a container. The following terms are used to identify capacity.



CAPACITY
pint (pt)
quart (qt)
gallon (g)
milliliter (ml)
liter (l)

Capacity Equivalents [Liquid or Dry] (English)

gallon (g)	quart (qt)	pint (pt)	cup (c)	ounce (oz)	tablespoon (tbsp or T)	teaspoon (tsp or t)
					1 tbsp	3 tsp
				1 oz	2 tbsp	
			1 c	8 oz	16 tbsp	
		1 pt	2 c	16 oz		
	1 qt	2 pt	4 c	32 oz		
1 g	4 qt	8 pt	16 c	128 oz		

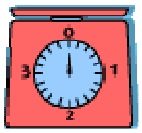
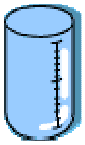
Capacity Equivalents [Liquid or Dry] (Metric)

liter (l or L)	deciliter (dl / dL)	centiliter (cl / cL)	milliliter (ml or mL)
		1 cl	10 ml
	1 dl	10 cl	100 ml
1 l	10 dl	100 cl	1,000 ml

IMPERIAL UNITS (ENGLISH SYSTEM)

Most countries use metric measures, but there are some older units called imperial units that we use in the USA. For example, road signs give distance in miles rather than kilometers.

Here are the rough approximations between metric and imperial units (≈ means approximately):

 LENGTH	 WEIGHT	 CAPACITY
12 inches = 1 foot	16 ounces = 1 pound	2 cups = 1 pint
3 feet = 1 yard		2 pints = 1 quart
		4 quarts = 1 gallon
1 inch ≈ 2½ cm	1 ounce ≈ 25g	1¾ pints ≈ 1 liter
1 foot ≈ 30 cm	2¼ pounds ≈ 1kg	1 quart ≈ 1 liter
1 yard ≈ 1 meter		1 gallon ≈ 4½ liters

LENGTH, WEIGHT, AND CAPACITY EQUIVALENTS SUMMARIZED

Length Equivalents (English)

mile (mi)	yard (yd)	foot (ft)	inch (in)
		1 ft	12 in
	1 yd	3 ft	36 in
1 mi	1,760 yd	5,280 ft	63,360 in

Length Equivalents (Metric)

kilometer (km)	hectometer (hm)	dekameter (dam)	meter (m)	dm	centimeter (cm)	millimeter (mm)
		also spelled decameter			1 cm	10 mm
				1 dm	10 cm	100 mm
			1 m	10 dm	100 cm	1,000 mm
		1 dam	10 m	100 dm	1,000 cm	10,000 mm
	1 hm	10 dam	100 m	1,000 dm	10,000 cm	100,000 mm
1 km	10 hm	100 dam	1,000 m	10,000 dm	100,000 cm	1,000,000 mm

Weight (English)

Ton (T)	pound (lb)	ounce (oz)
	1 lb	16 oz
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Weight (Metric)

kilogram (kg)	gram (g)	decigram (dg)	centigram (cg)	milligram (mg)
			1 cg	10 mg
		1 dg	10 cg	100 mg
	1 g	10 dg	100 cg	1,000 mg
	10 g	100 dg	1,000 cg	10,000 mg
	100 g	1,000 dg	10,000 cg	100,000 mg
1 kg	1,000 g	10,000 dg	100,000 cg	1,000,000 mg

Weight (Metric)…a different perspective

kilogram (kg)	gram (g)	decigram (dg)	centigram (cg)	milligram (mg)
.000001 kg	.001 gram	.01 dg	0.1 cg	1 mg
.00001 kg	.01 gram	0.1 dg	1 cg	10 mg
.0001 kg	0.1 gram	1 dg	10 cg	100 mg
.001 kg	1 gram	10 dg	100 cg	1,000 mg

LENGTH, WEIGHT, AND CAPACITY EQUIVALENTS SUMMARIZED (continued)

Liquid or Dry (English)

gallon (g)	quart (qt)	pint (pt)	cup (c)	ounce (oz)	tablespoon (tbsp or T)	teaspoon (tsp or t)
					1 tbsp	3 tsp
				1 oz	2 tbsp	
			1 c	8 oz	16 tbsp	
		1 pt	2 c	16 oz		
	1 qt	2 pt	4 c	32 oz		
1 g	4 qt	8 pt	16 c	128 oz		

Liquid or Dry (Metric)

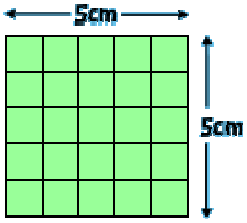
liter (l or L)	deciliter (dl / dL)	centiliter (cl / cL)	milliliter (ml or mL)
		1 cl	10 ml
	1 dl	10 cl	100 ml
1 l	10 dl	100 cl	1,000 ml

PERIMETER

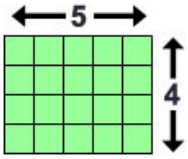
The perimeter is the distance around a shape. It is a LINEAR measurement. The label for perimeter is only the type of unit (inch, feet, meter, centimeter).

PERIMETER = LENGTH + WIDTH + LENGTH + WIDTH
(if there are more that 4 sides, add the lengths of all sides)

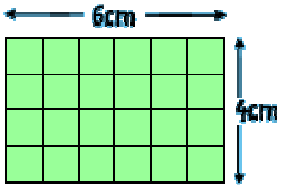
Perimeter of this SQUARE is: 5cm + 5cm + 5cm + 5cm= 20 cm.



Perimeter of this RECTANGLE is: 4 units + 5 units + 4 units + 5 units= 18 units.



Perimeter of this RECTANGLE is: 4cm + 6cm + 4cm + 6cm = 20 cm.

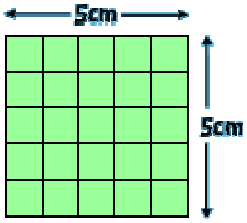


AREA

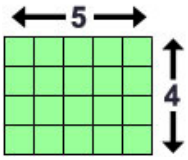
The area is the amount of surface a 2D (two dimensional) shape covers. It is a SQUARE measurement. The label for area is "square" or units **"2"**.

AREA = LENGTH X WIDTH

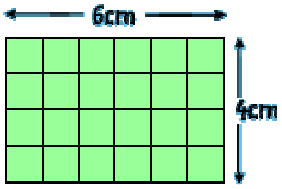
Area of this SQUARE is: 5cm x 5cm = 25 cm².



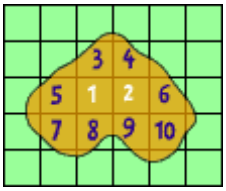
Area of this RECTANGLE is: 4 units x 5 units = 20 units².



Area of this RECTANGLE is: 4cm x 6cm = 24 cm².



Area of this IRREGULAR SHAPE is more difficult to measure. Look at this shape:



To measure its area:

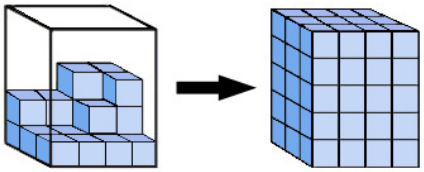
- Count the squares that are wholly within the shape. 1, 2
- Squares that are half or more in the shape count as whole ones. 3, 4, 5, 6, 7, 8, 9, 10
- Don't count squares that are less than half in the shape.

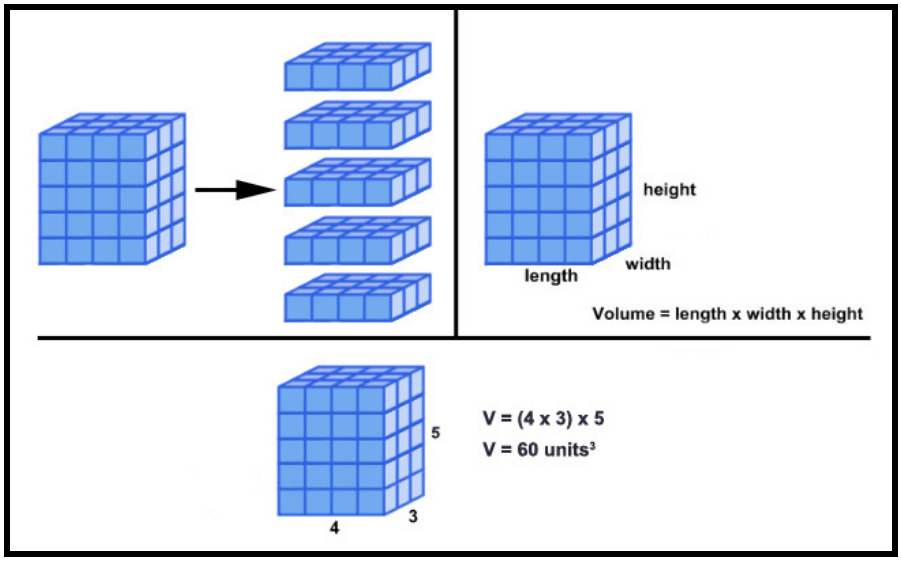
The area of this irregular shape is approximately 10 cm²

VOLUME

The volume is the amount 3D (three dimensional) an object occupies.

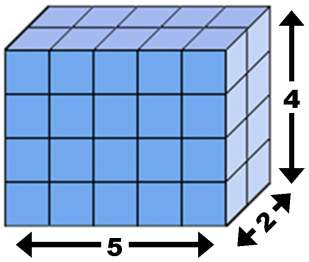
It is a CUBIC measurement. The label for volume is "cubic" or units "3".





VOLUME = LENGTH X WIDTH X HEIGHT

Volume of this RECTANGULAR PRISM is: 5 units x 2 units x 4 units = 40 units^3.



Volume of this RECTANGULAR PRISM is: 10 units x 3 units x 5 units = 150 units^3.