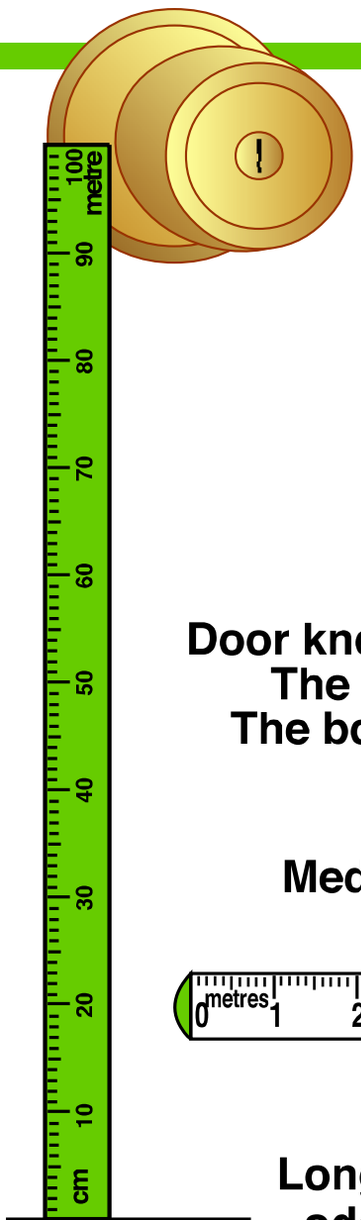
Length

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Length is the measurement of distance between two points.

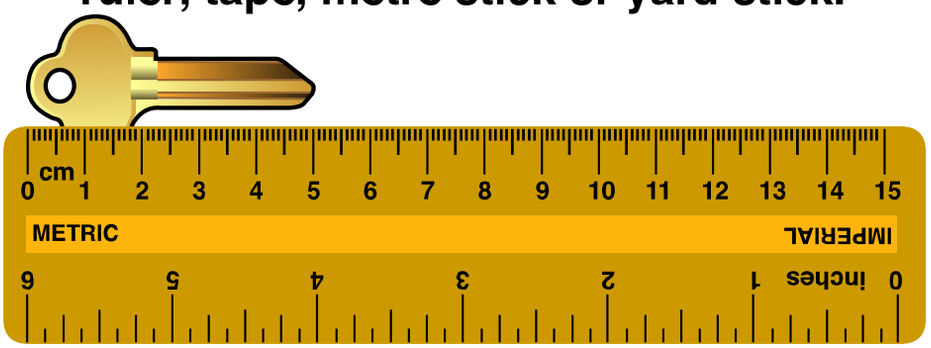
It is used to measure how tall, long, wide or deep something is, the distance around something or the distance between things.

Measuring Length



Short distances

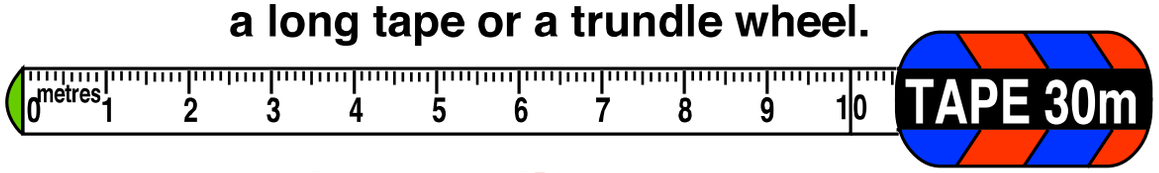
Short distances may be measured with a ruler, tape, metre stick or yard stick.

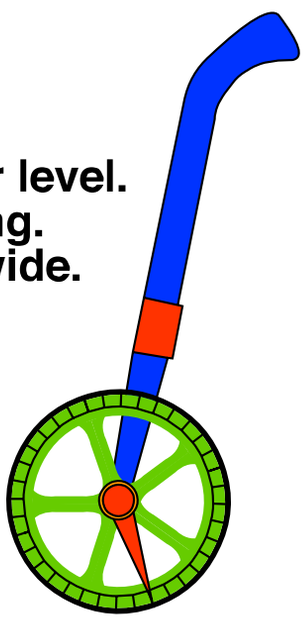


Door knobs are often 1 metre or 39 inches above floor level.
The door key is 5 centimetres (cm) or 2 inches long.
The bottom groove in the key is 1 millimetre (mm) wide.

Medium distances

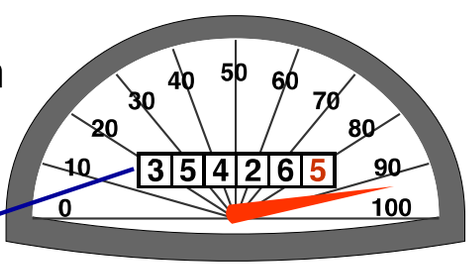
Medium distances may be measured with a long tape or a trundle wheel.





Long distances

Long distances may be measured with an odometer in a vehicle or by using GPS.



odometer

GPS device

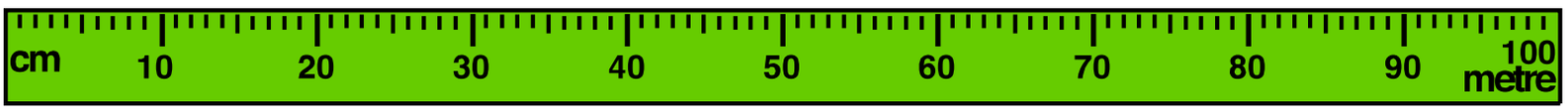
GPS, the Global Positioning System is a space satellite global navigation system that identifies locations and calculates the distance between them. It is maintained by the United States government and is freely available to anyone with a GPS receiver.

Length - metric units

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

The decimal system of measurement uses multiples of 10.

The metre is the base unit of length in the international metric system.
Symbol: m

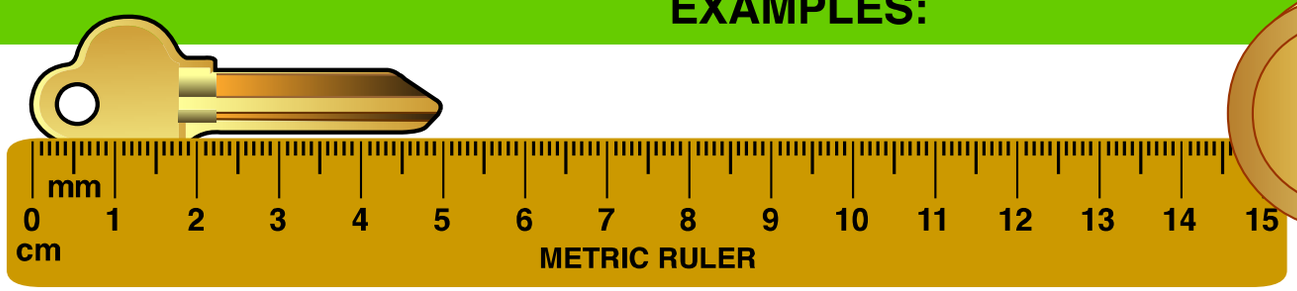


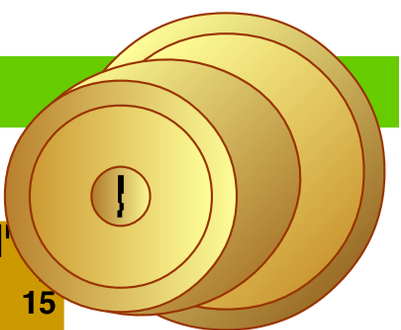
The most commonly used units are:

millimetre mm centimetre cm metre m kilometre km

1 metre = 100 centimetres = 1000 millimetres
1000 metres = 1 kilometre

EXAMPLES:





Door knobs are often 1 m above floor level.
The door key is 5 cm long.
The bottom groove in the key is 1 mm wide.

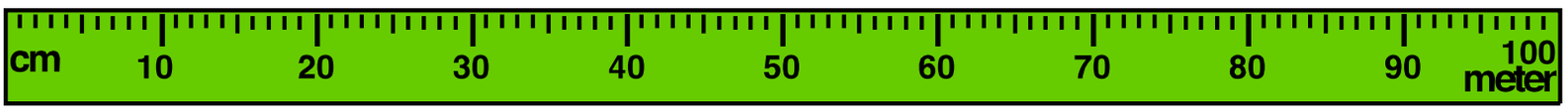
10 millimetres = 1 centimetre
10 centimetres = 1 decimetre
10 decimetres = 1 metre
10 metres = 1 decametre
10 decametres = 1 hectometre
10 hectometres = 1 kilometre
1000 metres = 1 kilometre

Length - metric units US

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

The decimal system of measurement uses multiples of 10.

The meter is the base unit of length in the international metric system.
Symbol: m

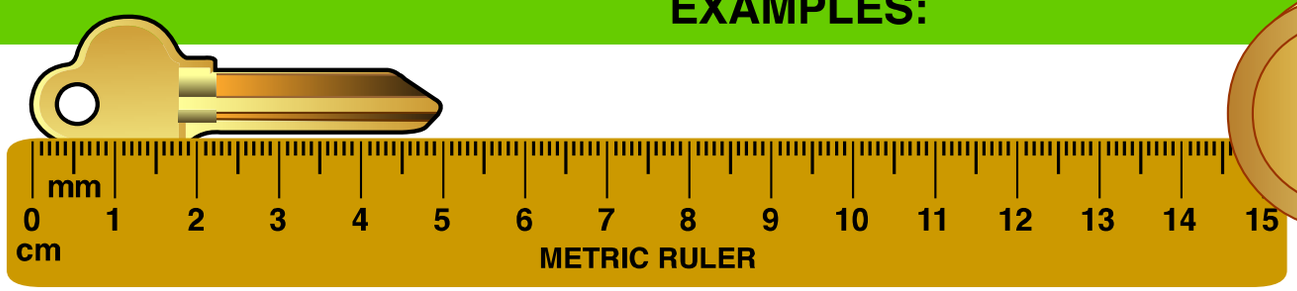


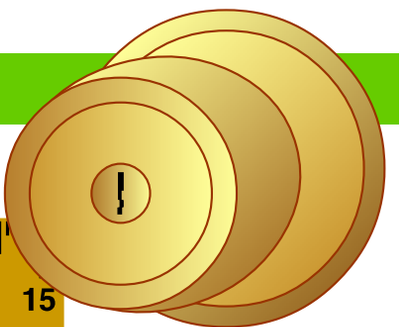
The most commonly used units are:

millimeter mm centimeter cm meter m kilometer km

1 meter = 100 centimeters = 1,000 millimeters
1,000 meters = 1 kilometer

EXAMPLES:





Door knobs are often 1 m above floor level.
The door key is 5 cm long.
The bottom groove in the key is 1 mm wide.

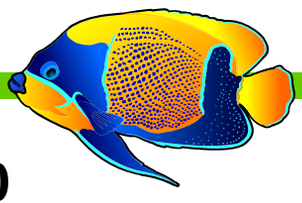
10 millimeters = 1 centimeter
10 centimeters = 1 decimeter
10 decimeters = 1 meter
10 meters = 1 decameter
10 decameters = 1 hectometer
10 hectometers = 1 kilometer
1,000 meters = 1 kilometer

Length - metric conversions

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

The decimal system of measurement uses multiples of 10.

To multiply by 10, move the decimal point one place to the right.
To divide by 10, move the decimal point one place to the left.



Convert - larger to smaller

kilometres to metres ... multiply by 1000
metres to centimetres ... multiply by 100
centimetres to millimetres ... multiply by 10

Convert - smaller to larger

millimetres to centimetres ... divide by 10
centimetres to metres ... divide by 100
metres to kilometres ... divide by 1000

Units

1 millimetre = 0.1 centimetre
= 0.001 metre

1 centimetre = 10 millimetres
= 0.01 metre

1 metre = 1000 millimetres
= 100 centimetres
= 0.001 kilometre

1 kilometre = 1000 metres

Writing metric length units

Lengths can be written in a number of different ways.

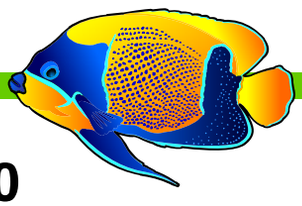
1600 mm	1.6 m	1m 60 cm	160 cm
140. 25 m	14 025 cm	140m 25 cm	0.14025 km

Length - metric conversions US

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

The decimal system of measurement uses multiples of 10.

To multiply by 10, move the decimal point one place to the right.
To divide by 10, move the decimal point one place to the left.



Convert - larger to smaller

kilometers to meters ... multiply by 1,000
meters to centimeters ... multiply by 100
centimeters to millimeters ... multiply by 10

Convert - smaller to larger

millimeters to centimeters ... divide by 10
centimeters to meters ... divide by 100
meters to kilometers ... divide by 1,000

Units

1 millimeter = 0.1 centimeter
= 0.001 meter

1 centimeter = 10 millimeters
= 0.01 meter

1 meter = 1,000 millimeters
= 100 centimeters
= 0.001 kilometer

1 kilometer = 1,000 meters

Writing metric length units

Lengths can be written in a number of different ways.

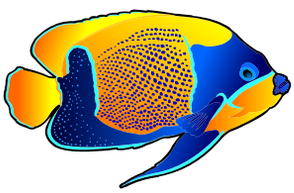
1600 mm	1.6 m	1m 60 cm	160 cm
140. 25 m	14 025 cm	140m 25 cm	0.14025 km

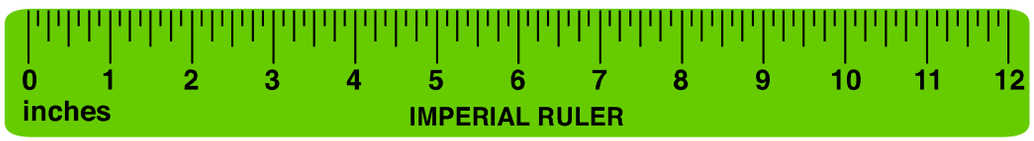
Length - imperial, US units

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

The imperial system of measurement is an old system based on everyday activities that originated in England. The US customary units developed from this system.

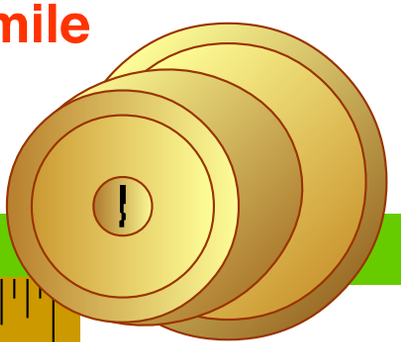
Most countries use the metric system of measurement but imperial units remain in everyday use in some places.





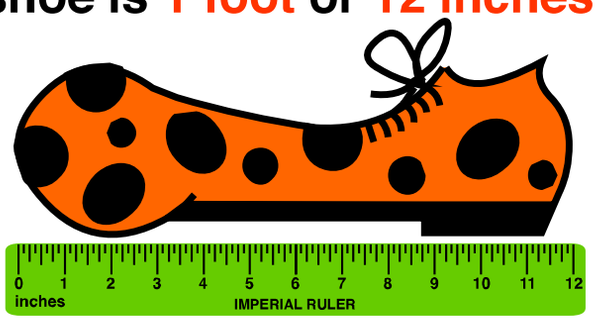
The most commonly used units are:
inch - in or ″, foot - ft or ′, yard - yd, mile

1 yard = 3 feet = 36 inches
1,760 yards = 1 mile



EXAMPLES:

Door knobs are often about 1 yard above floor level.
The door key is 2 inches long.
The shoe is 1 foot or 12 inches long.



12 inches	= 1 foot
3 feet	= 1 yard
22 yards	= 1 chain
10 chains	= 1 furlong
8 furlongs	= 1 mile
5,280 feet	= 1 mile
1,760 yards	= 1 mile

Length - imperial, US conversions

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

The imperial system and the US customary (standard) system of measurement both use a variety of equivalent units.

Convert - larger to smaller

feet to inches ... multiply by 12
yards to inches ... multiply by 36
yards to feet ... multiply by 3
miles to yards ... multiply by 1,760

Convert - smaller to larger

inches to feet ... divide by 12
inches to yards ... divide by 36
feet to yards ... divide by 3
yards to miles ... divide by 1,760

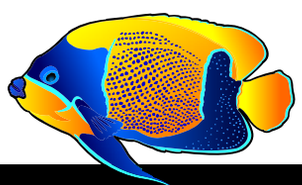
Units

12 inches	= 1 foot
3 feet	= 1 yard
22 yards	= 1 chain
10 chains	= 1 furlong
8 furlongs	= 1 mile
5,280 feet	= 1 mile
1,760 yards	= 1 mile

Writing the length units

Lengths can be written in a number of different ways.

inch inches abbreviations in in. or ″
foot feet abbreviations ft ft. or ′
yard yards abbreviations yd yd.
mile miles abbreviations mi mi.



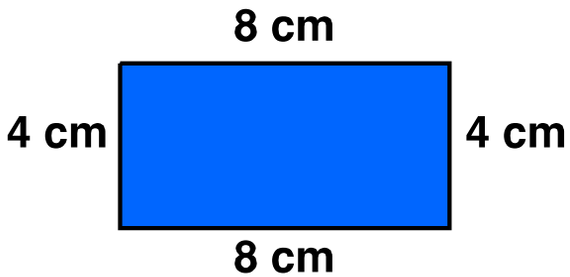
Perimeter of 2D shapes

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

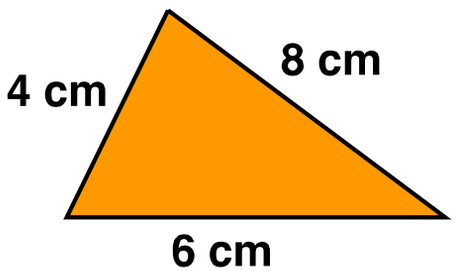
Perimeter is the distance around the outside of a shape.

Adding the length of sides

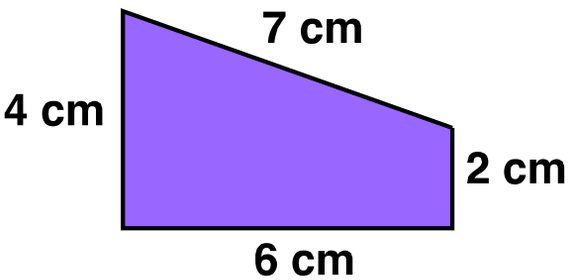
The perimeter of a polygon is the sum of the length of all its sides.



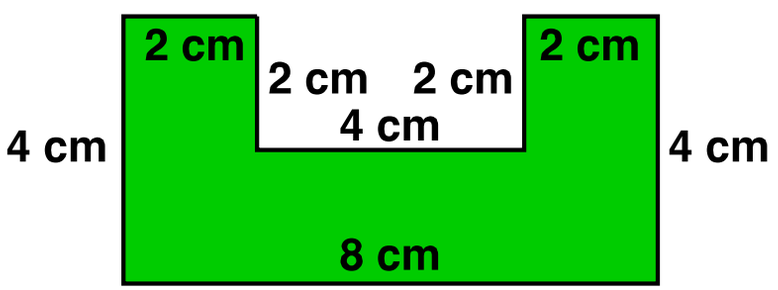
$P = 4 + 8 + 4 + 8$
$= 24$ cm



$P = 4 + 8 + 6$
$= 18$ cm



$P = 4 + 7 + 2 + 6$
$= 19$ cm



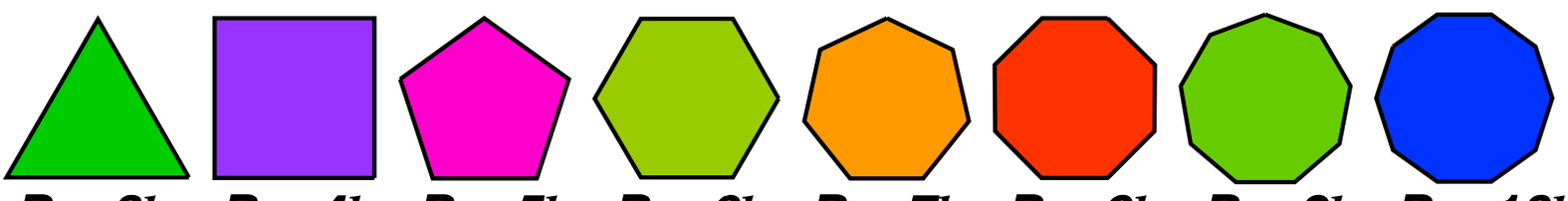
$P = 4 + 2 + 2 + 4 + 2 + 2 + 4 + 8 = 28$ cm

Regular Polygons

The perimeter of a regular polygon is the number of sides multiplied by the length of one side.

$$P = n \times l$$

P = perimeter *n = number of sides* *l = length of one side*



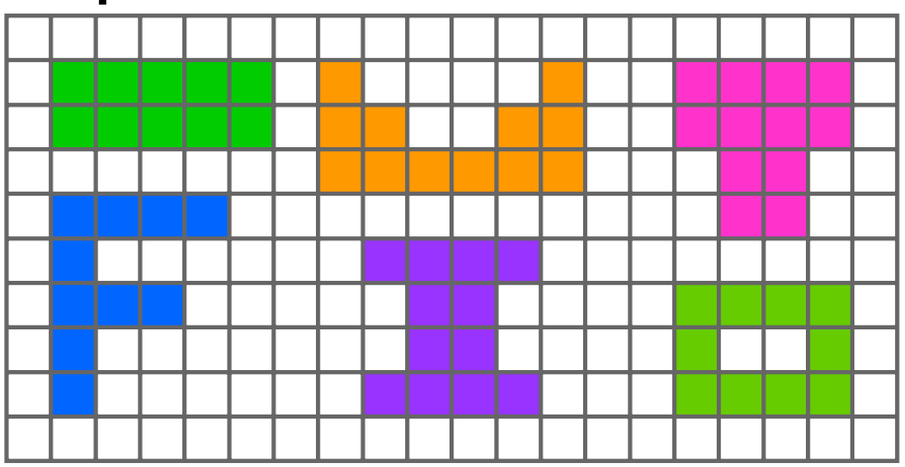
Area

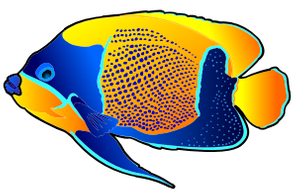
From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Area is the size a surface takes up measured in square units. Area can be determined using a grid or a formula.

Using a grid

The squares are counted to find an area.

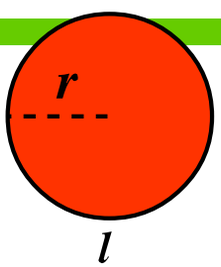




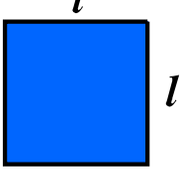
Using a formula

A = area
l = length
b = base
h = height
r = radius
π = pi

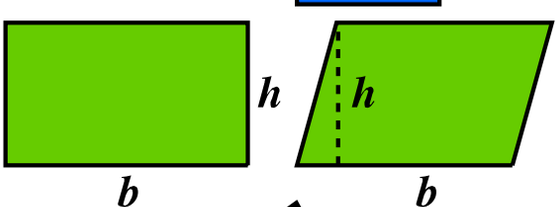
Circle $A = \pi \times r^2$



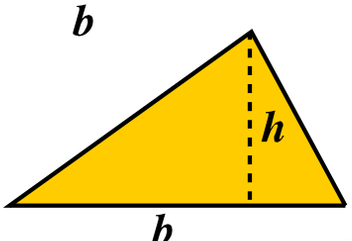
Square $A = l \times l$



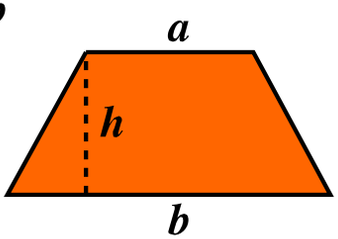
Rectangle and Parallelogram $A = b \times h$



Triangle $A = \frac{1}{2} b \times h$



Isosceles Trapezium (UK), Trapezoid (US) $A = \frac{(a + b) \times h}{2}$



Area - metric units

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

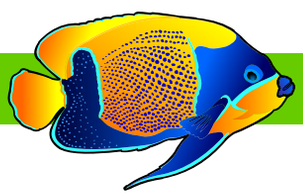
The square metre is the base unit of area in the international metric system.

Symbol: m^2

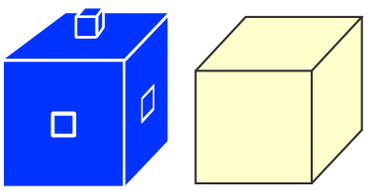
The most commonly used units are:

square centimetre cm^2 square metre m^2
hectare ha square kilometre km^2

1 square metre = 10 000 square centimetres
1 hectare = 10 000 square metres
1 square kilometre = 100 hectares

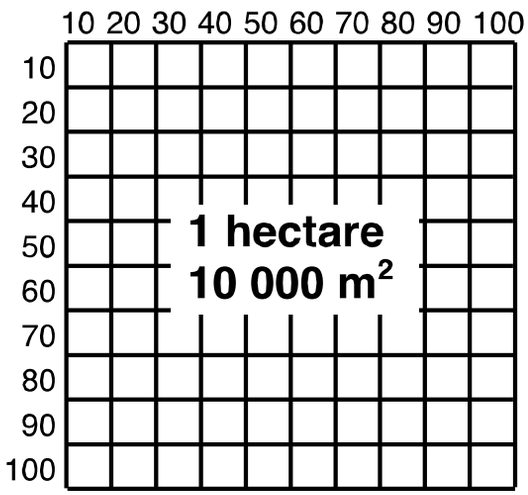


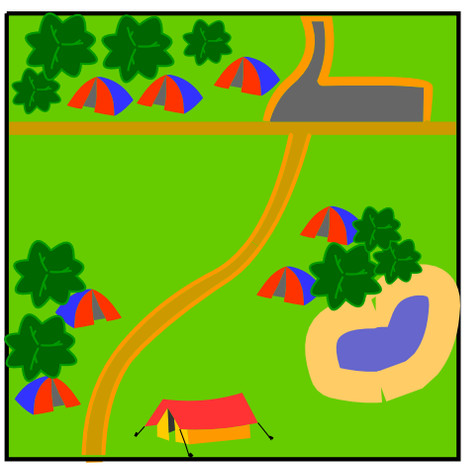
EXAMPLES:



The face of a centicube or a ones block is 1 square centimetre.

A 1 metre table has a top that is 1 square metre.





The camping area has an area of 1 hectare.

Australia has an area of 7.69 million square kilometres.

Area - metric units US

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

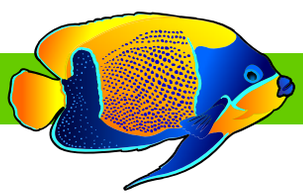
The square meter is the base unit of area in the international metric system.

Symbol: m^2

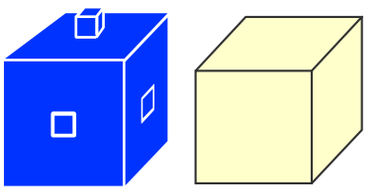
The most commonly used units are:

square centimeter cm^2 square meter m^2
hectare ha square kilometer km^2

1 square meter = 10,000 square centimeters
1 hectare = 10,000 square meters
1 square kilometer = 100 hectares

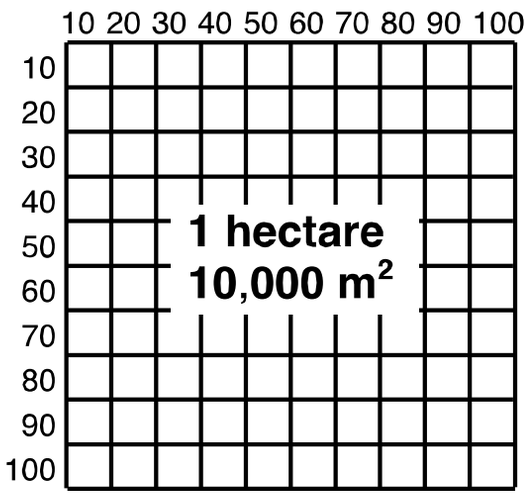


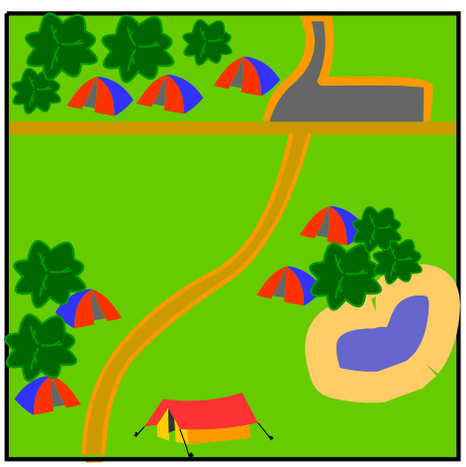
EXAMPLES:



The face of a centicube or a ones block is 1 square centimeter.

A 1 meter table has a top that is 1 square meter.





The camp ground has an area of 1 hectare.

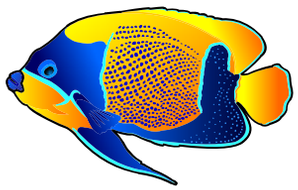
Australia has an area of 7.69 million square kilometers.

Area - metric conversions

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

The square metre is the base unit of area in the international metric system.

Symbol: m^2



Convert - larger to smaller

square kilometres to hectares ... multiply by 100
hectares to square metres ... multiply by 10 000
square metres to square centimetres ... multiply by 10 000

Convert - smaller to larger

square centimetres to square metres ... divide by 10 000
square metres to hectares ... divide by 10 000
hectares to square kilometres ... divide by 100

Units

1 square metre = 10 000 square centimetres
1 hectare = 10 000 square metres
1 square kilometre = 100 hectares

Abbreviations

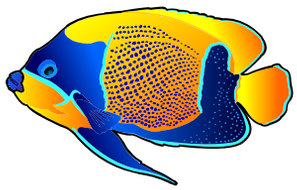
square centimetres = cm^2
square metres = m^2
hectares = ha
square kilometres= km^2

Area - metric conversions US

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

The square meter is the base unit of area in the international metric system.

Symbol: m^2



Convert - larger to smaller

square kilometers to hectares ... multiply by 100
hectares to square meters ... multiply by 10,000
square meters to square centimeters ... multiply by 10,000

Convert - smaller to larger

square centimeters to square meters ... divide by 10,000
square meters to hectares ... divide by 10,000
hectares to square kilometers ... divide by 100

Units

1 square meter = 10,000 square centimeters
1 hectare = 10,000 square meters
1 square kilometer = 100 hectares

Abbreviations

square centimeters = cm^2
square meters = m^2
hectares = ha
square kilometers= km^2

Area - imperial, US units

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

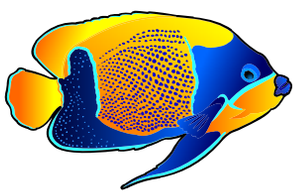
The imperial system of measurement is an old system based on everyday activities that originated in England. The US customary units developed from this system.

Most countries use the metric system of measurement but imperial units remain in everyday use in some places.

The most commonly used units of area are:

square inch in^2 sq in square foot ft^2 sq ft

square yard yd^2 sq yd square mile mi^2 sq mi



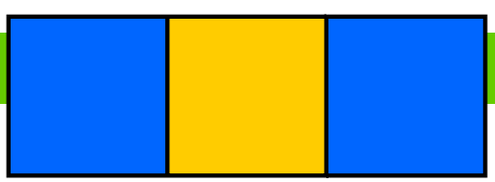
144 square inches = 1 square foot

9 square feet = 1 square yard

4,840 square yards = 1 acre

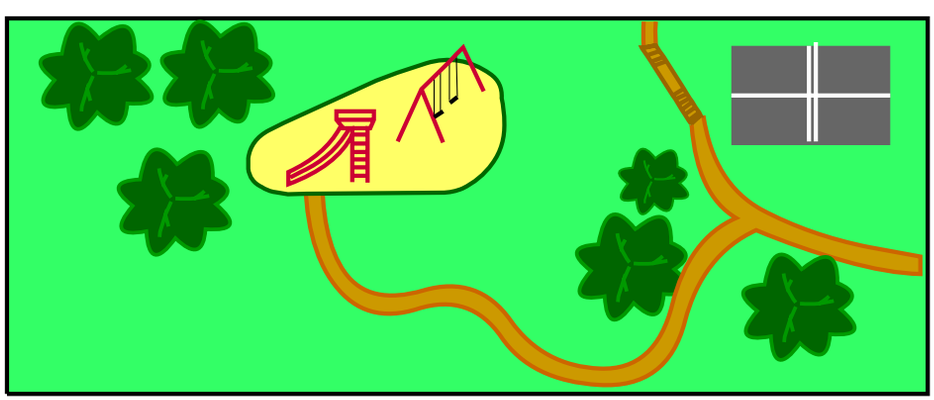
640 acres = 1 square mile

EXAMPLES:

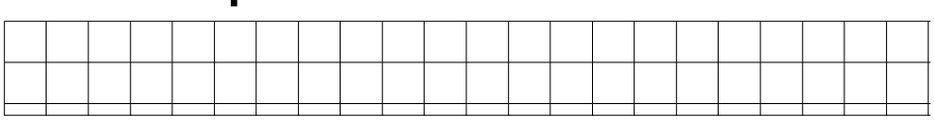


A 12 x 12 inch large floor tile has an area of 144 square inches or 1 square foot.

This outdoor four-seater table has a top that is 1 square yard.



This park has an area of 4 acres.



An acre was originally an area of 220 yards (1 furlong) by 22 yards (1 chain) but may be any shape now.

Australia has an area of 679,539 square miles.

Area - imperial, US conversions

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

The imperial system and the US customary (standard) system of measurement both use a variety of equivalent units.

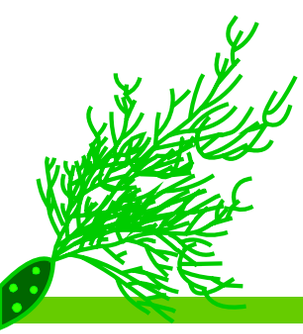
Convert - larger to smaller

square feet to square inches ... multiply by 144
square yards to square feet ... multiply by 9
acres to square yards ... multiply by 4,840
square miles to acres ... multiply by 640

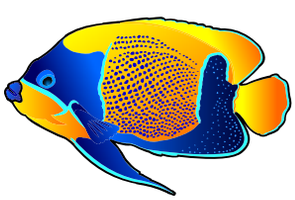
Convert - smaller to larger

square inches to square feet ... divide by 144
square feet to square yards ... divide by 9
square yards to acres ... divide by 4,840
acres to square miles ... divide by 640

Units



144 square inches = 1 square foot
9 square feet = 1 square yard
4,840 square yards = 1 acre
640 acres = 1 square mile



Writing area units

Areas can be written in a number of different ways.

square inch inches abbreviations in^2 sq in
square foot feet abbreviations ft^2 sq ft
square yard yards abbreviations yd^2 sq yd
square mile miles abbreviations mi^2 sq mi

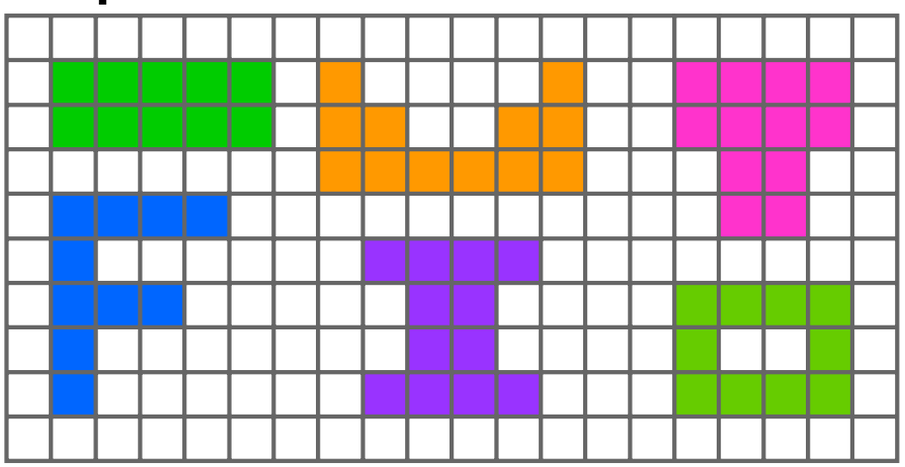
Area of 2D shapes

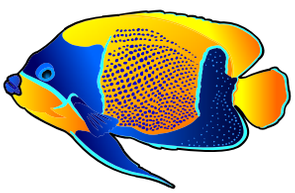
From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Area is the size a surface takes up measured in square units. Area can be determined using a grid or a formula.

Using a grid

The squares are counted to find an area.

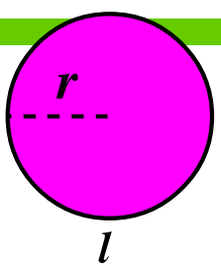




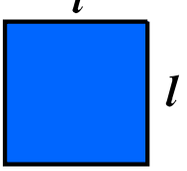
Using a formula

A = area
l = length
b = base
h = height
r = radius
π = pi

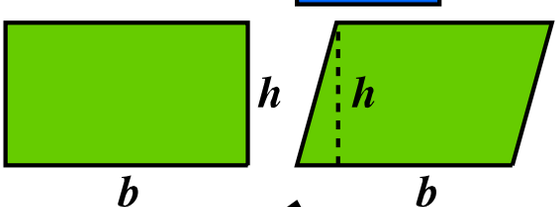
Circle $A = \pi \times r^2$



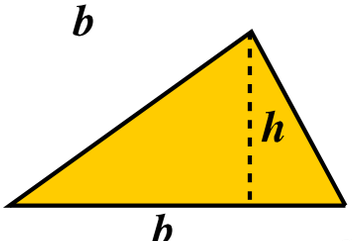
Square $A = l \times l$



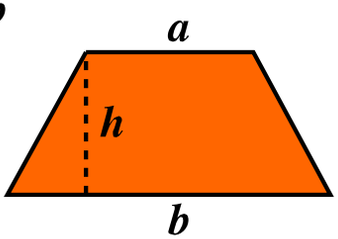
Rectangle and Parallelogram $A = b \times h$



Triangle $A = \frac{1}{2} b \times h$



Isosceles Trapezium (UK), Trapezoid (US) $A = \frac{(a + b) \times h}{2}$

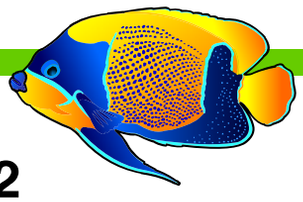


Surface area of 3D shapes

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

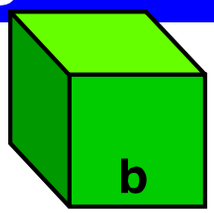
Surface area is the total area of the surface of a three-dimensional object, measured in square units.

Using a formula



Cube

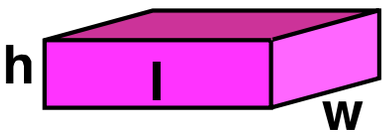
b = base length



$6b^2$

Rectangular prism

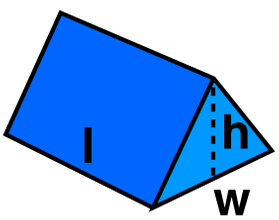
l = length
w = width
h = height



$2lw + 2lh + 2wh$

Triangular prism

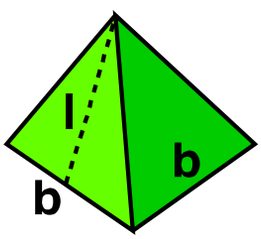
l = length
w = width
h = height



$wh + 3lw$

Square pyramid

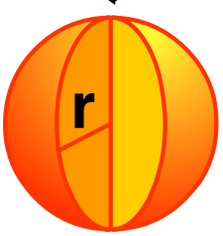
b = length base side
l = length base to vertex



$2bl + b^2$

Sphere

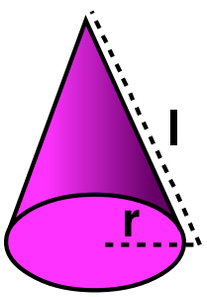
r = radius



$4\pi r^2$

Right circular cone

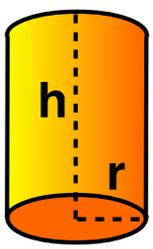
r = radius
l = length base to vertex



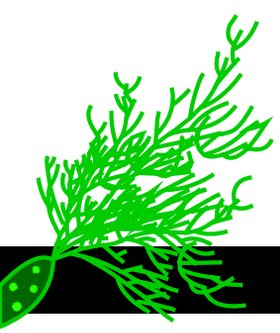
$\pi rl + \pi r^2$

Cylinder

r = radius
h = height



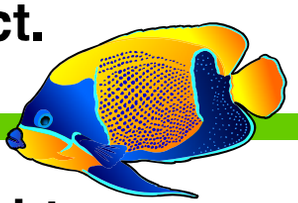
$2\pi rh + 2\pi r^2$



Mass

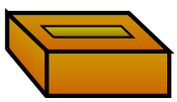
From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

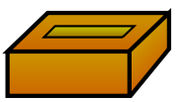
Mass is the quantity of matter in an object.



Mass and Weight

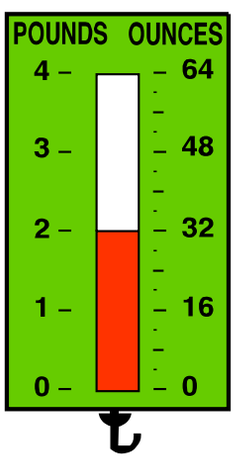
In everyday life, mass is often called weight but mass and weight are not the same. The weight of an object changes according to gravity. A brick would be weightless in space, even though it still has the same mass as on earth.



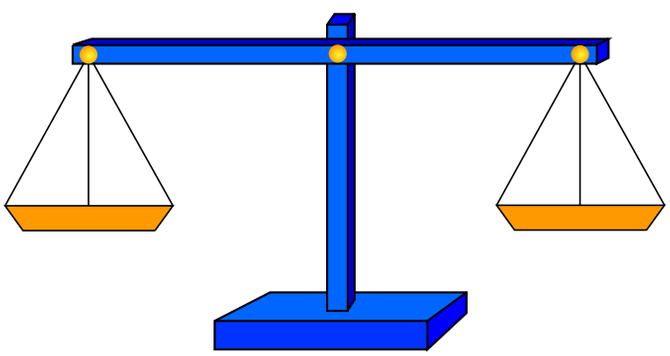


Measuring Mass

Mass is measured using scales. There are many types of scales. Some examples are shown below.

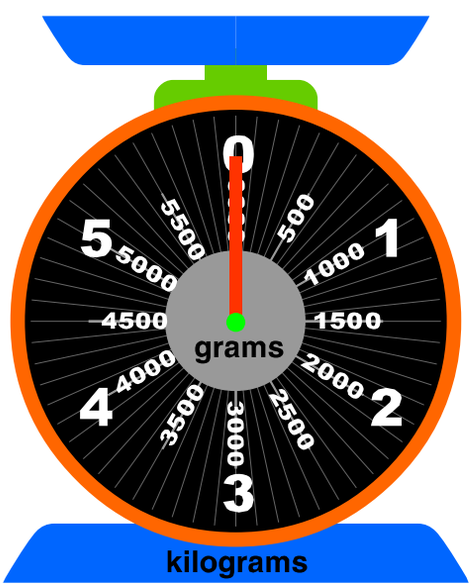


spring scales



balance scales

digital scales



kitchen scales

bathroom scales

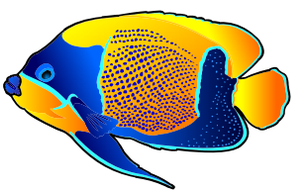
Mass - metric units

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Mass is the quantity of matter in an object.

The metric units for measuring mass are:

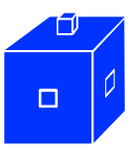
milligram mg gram g
kilogram k tonne t



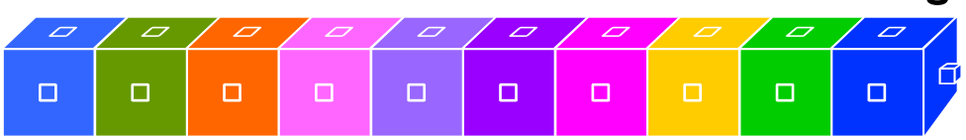
1000 milligrams = 1 gram
1000 grams = 1 kilogram
1000 kilograms = 1 tonne

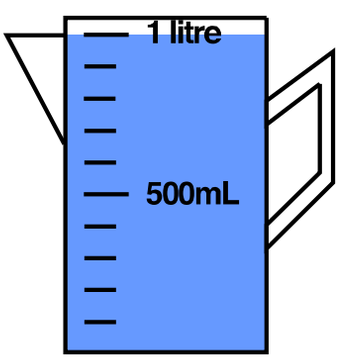
EXAMPLES:

A paperclip has a mass of about 1 gram.



A centicube block has a mass of 1 gram.
This rod of centicube blocks has a mass of 10 grams.





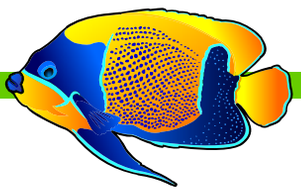
One litre of water has a mass of 1 kilogram at 4° C.

A humpback whale has a mass of around 58 500 kilograms or 58.5 tonnes.

Mass - metric conversions

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Mass is the quantity of matter in an object.



Convert - larger to smaller

tonne to kilograms ... multiply by 1000
kilograms to grams ... multiply by 1000
grams to milligrams ... multiply by 1000

Convert - smaller to larger

milligrams to grams ... divide by 1000
grams to kilograms ... divide by 1000
kilograms to tonnes ... divide by 1000

Units

1000 milligrams = 1 gram
1000 grams = 1 kilogram
1000 kilograms = 1 tonne

Writing metric mass units

Mass can be written in a number of different ways.

1600 g	1 kg 600 g	1.6 kg
2456 kg	2 t 456 kg	2.456 t

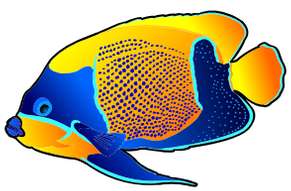
Mass - imperial, US units

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Mass is the quantity of matter in an object.

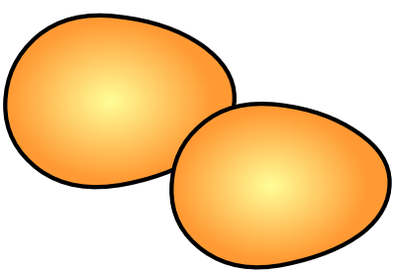
Imperial and US customary units of mass include:

ounce oz pound lb stone st ton

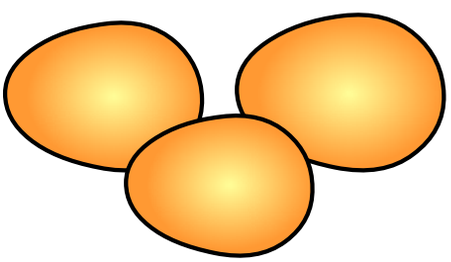


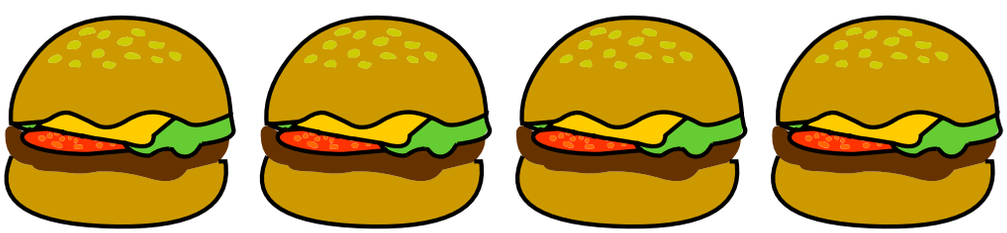
16 ounces = 1 pound
14 pounds = 1 stone
2,000 pounds = 1 short ton (US)
2,240 pounds = 1 long ton (UK)

EXAMPLES:

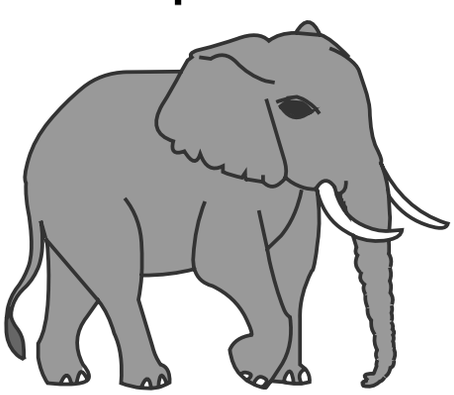


US egg sizes	Minimum
Jumbo	2.5 oz
Extra Large	2.25 oz
Large	2 oz
Medium	1.75 oz
Small	1.5 oz





Four 'Quarter Pounder' burgers contain 1 pound of meat.



This African elephant has a mass of 13,200 pounds or 6.6 short tons or 5.9 long tons.

Mass - imperial, US conversions

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Mass is the quantity of matter in an object.

Convert - larger to smaller

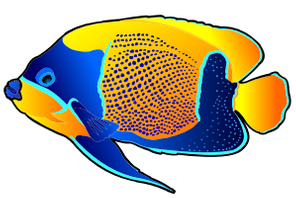
short tons to pounds ... multiply by 2,000 (US)
long tons to pounds ... multiply by 2,240 (UK)
stones to pounds ... multiply by 14
pounds to ounces ... multiply by 16

Convert - smaller to larger

ounces to pounds ... divide by 16
pounds to stones ... divide by 14
pounds to short tons ... divide by 2,000 (US)
pounds to long tons ... divide by 2,240 (UK)

Units

16 ounces = 1 pound
14 pounds = 1 stone
2,000 pounds = 1 short ton (US)
2,240 pounds = 1 long ton (UK)



Writing the mass units

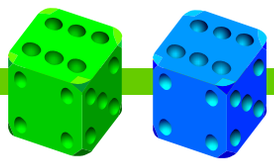
Mass can be written in a number of different ways.

ounce abbreviations oz, oz.
stone abbreviations st, st.
pound abbreviations lb, lb.

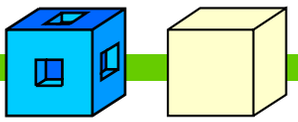
Volume

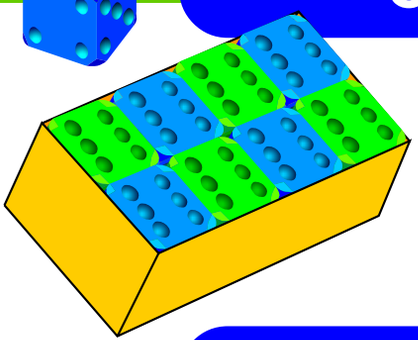
From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Volume is the amount of space occupied by a 3D object or a substance, measured in cubic units. Volume can be determined by counting cubes or by using a formula.

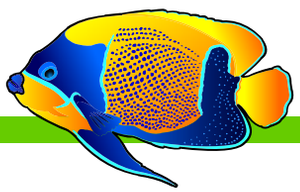


Counting cubes

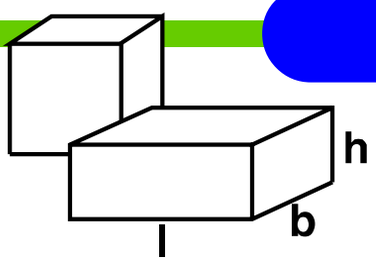




These mini dice are 1 centimetre cubes. So, the dice box has a volume of 8 cubic centimetres or 8 cm^3.



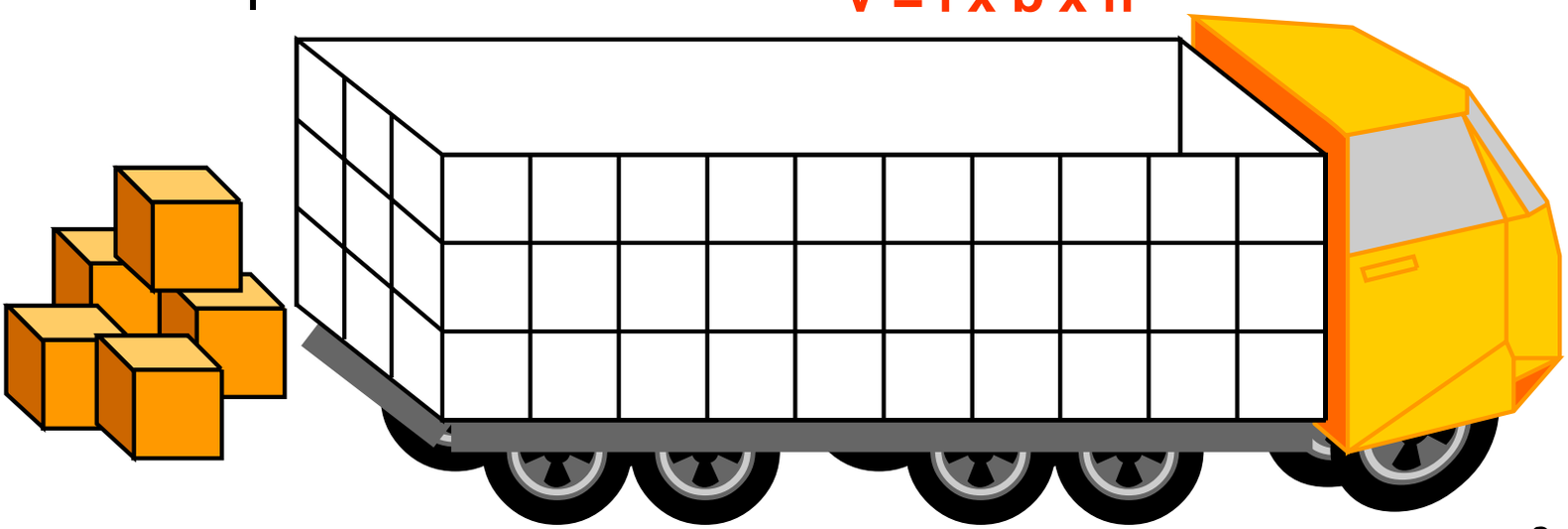
Using a formula



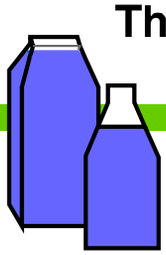
For cubes and rectangular prisms:

Volume = length x breadth x height

V = l x b x h



The truck tray is 10 m long, 3 m wide and 3 m high so its volume is 90 m^3. The boxes are 1 m^3 so it would take 90 boxes to fill the truck.

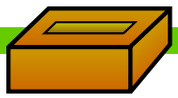


containers
volume AND capacity

Note

Volume and capacity are not the same.

A container has volume - it takes up space, AND it has capacity - the amount it can hold. Other solid objects do not have capacity.



brick
volume ONLY

Volume - metric units

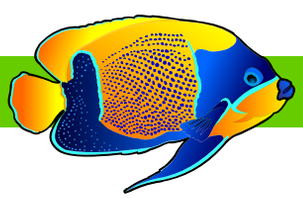
From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Volume is the amount of space occupied by a 3D object or a substance, measured in cubic units.

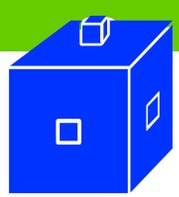
The most commonly used units are:

cubic millimetre mm^3 cubic centimetre cm^3
cubic metre m^3

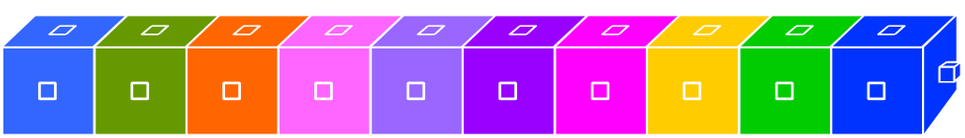
1000 cubic millimetres	= 1 cubic centimetre
1000 cubic centimetres	= 1 cubic decimetre
1000 cubic decimetres	= 1 cubic metre
1 000 000 cubic centimetres	= 1 cubic metre



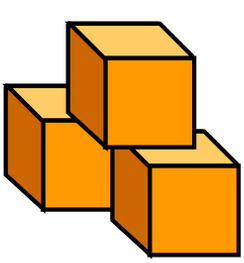
EXAMPLES:

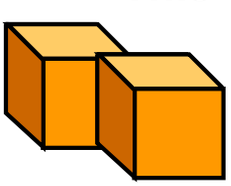


A centicube block has a volume of 1 cm^3.



This rod of centicube blocks has a volume of 10 cm^3.





This shipping container has a volume of 90 m^3.

Each brown box has a volume of 1 m^3.

Volume - metric units US

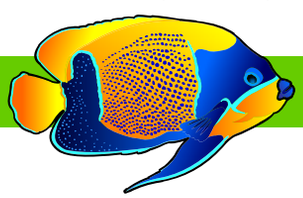
From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Volume is the amount of space occupied by a 3D object or a substance, measured in cubic units.

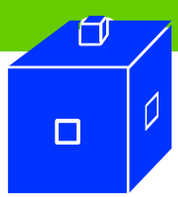
The most commonly used units are:

cubic millimeter mm^3 cubic centimeter cm^3
cubic meter m^3

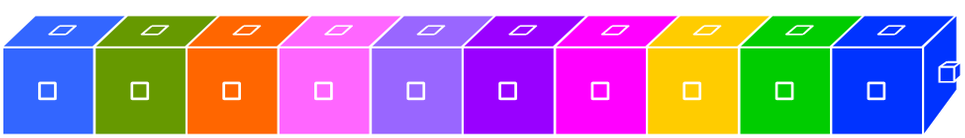
1,000 cubic millimeters	= 1 cubic centimeter
1,000 cubic centimeters	= 1 cubic decimeter
1,000 cubic decimeters	= 1 cubic meter
1,000,000 cubic centimeters	= 1 cubic meter



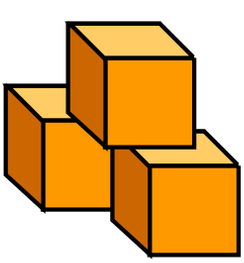
EXAMPLES:

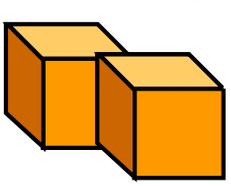


A centicube block has a volume of 1 cm^3.



This rod of centicube blocks has a volume of 10 cm^3.





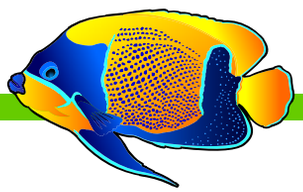
This shipping container has a volume of 90 m^3.

Each brown box has a volume of 1 m^3.

Volume - metric conversions

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Volume is the amount of space occupied by a 3D object or a substance, measured in cubic units.



Convert - larger to smaller

cubic metres to cubic centimetres ... multiply by 1 000 000
cubic decimetres to cubic centimetres ... multiply by 1000
cubic centimetres to cubic millimetres ... multiply by 1000

Convert - smaller to larger

cubic millimetres to cubic centimetres ... divide by 1000
cubic centimetres to cubic decimetres ... divide by 1000
cubic centimetres to cubic metres ... divide by 1 000 000

Units

1000 cubic millimetres	= 1 cubic centimetre
1000 cubic centimetres	= 1 cubic decimetre
1000 cubic decimetres	= 1 cubic metre
1 000 000 cubic centimetres	= 1 cubic metre

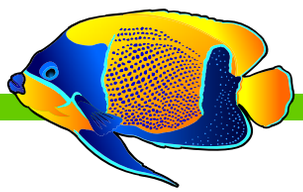
Abbreviations

cubic millimetres = mm^3
cubic centimetres = cm^3
cubic decimetres = dm^3
cubic metres = m^3

Volume - metric conversions US

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Volume is the amount of space occupied by a 3D object or a substance, measured in cubic units.



Convert - larger to smaller

cubic meters to cubic centimeters ... multiply by 1,000,000
cubic decimeters to cubic centimeters ... multiply by 1,000
cubic centimeters to cubic millimeters ... multiply by 1,000

Convert - smaller to larger

cubic millimeters to cubic centimeters ... divide by 1,000
cubic centimeters to cubic decimeters ... divide by 1,000
cubic centimeters to cubic meters ... divide by 1,000,000

Units

1,000 cubic millimeters	= 1 cubic centimeter
1,000 cubic centimeters	= 1 cubic decimeter
1,000 cubic decimeters	= 1 cubic meter
1,000,000 cubic centimeters	= 1 cubic meter

Abbreviations

cubic millimeters = mm^3
cubic centimeters = cm^3
cubic decimeters = dm^3
cubic meters = m^3

Volume - imperial, US units

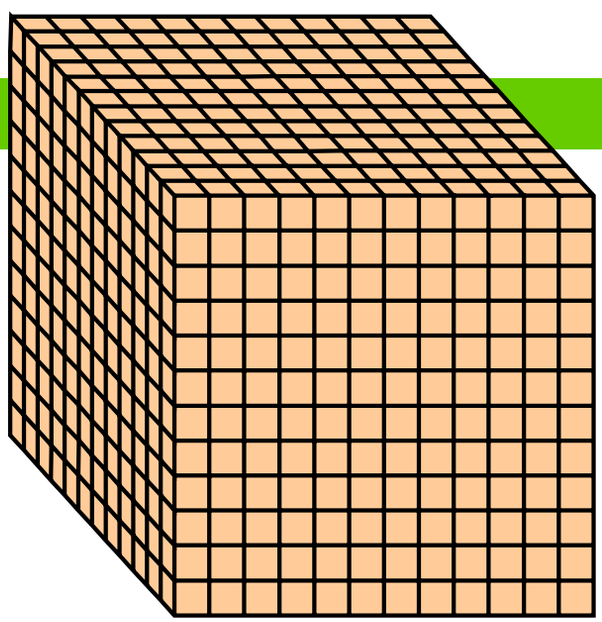
From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Volume is the amount of space occupied by a 3D object or a substance, measured in cubic units.

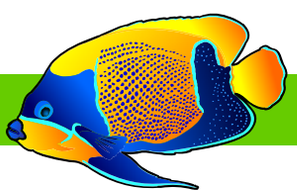
Imperial and US customary units of volume include:

cubic inch in^3 cubic foot ft^3
cubic yard yd^3 cubic mile mi^3

1,728 cubic inches	= 1 cubic foot
27 cubic feet	= 1 cubic yard
5,451,776,000 cubic yards	= 1 cubic mile

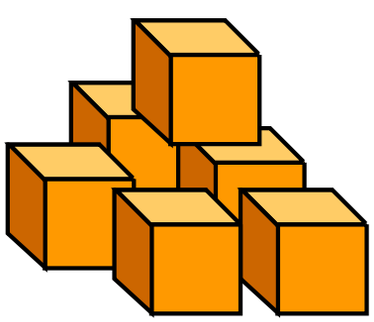


EXAMPLES:



This 1 inch block has a volume of 1 cubic inch, 1 in^3.

So this cube made from 1,728 blocks has a volume of 1,728 in^3, or 1 cubic foot, 1 ft^3.



Each brown box has a volume of 1 cubic yard or 1 yd^3.

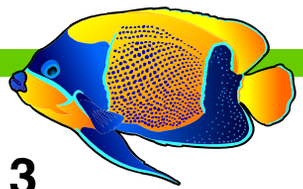
This shipping container has a volume of 90 cubic yards, 90 yd^3. So it would hold 90 brown boxes.

Volume of 3D shapes

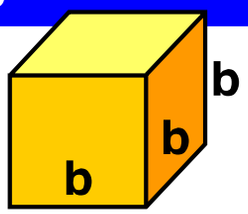
From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Volume is the amount of space occupied by a 3D object.
Volume can be determined by using a formula.

Using a formula

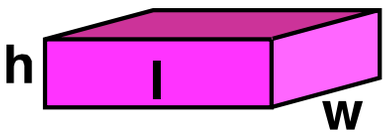


Cube
b = base length



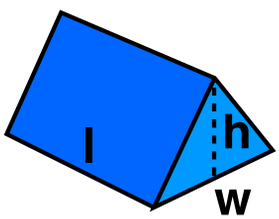
b^3

Rectangular prism
l = length
w = width
h = height



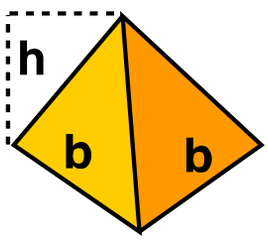
lwh

Triangular prism
l = length
w = width
h = height



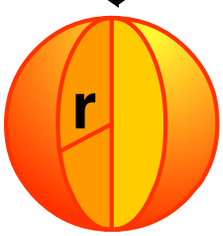
$$\frac{lwh}{2}$$

Square pyramid
b = length base side
h = perpendicular height



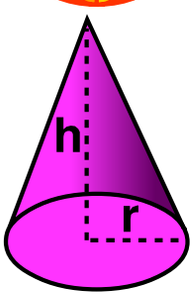
$$\frac{b^2h}{3}$$

Sphere
r = radius



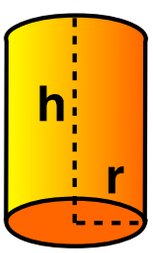
$$\frac{4\pi r^3}{3}$$

Right circular cone
r = radius
h = perpendicular height



$$\frac{\pi r^2 h}{3}$$

Cylinder
r = radius
h = height



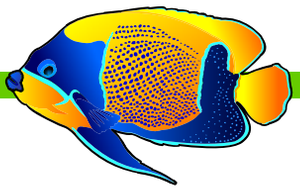
$\pi r^2 h$

Capacity (Fluid Volume)

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

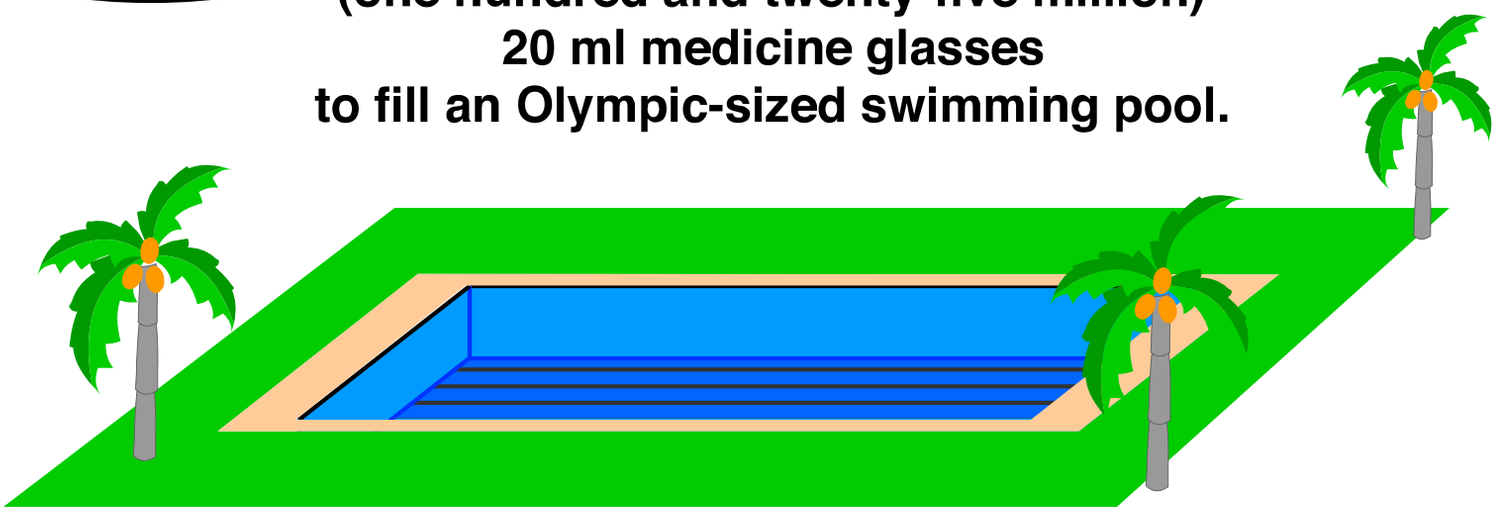
Capacity is the maximum amount of fluid a container or something can hold. Capacity may also be called fluid volume.

Examples



This medicine glass holds 20 ml.

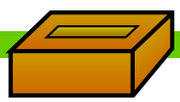
**It would take 125 000 000
(one hundred and twenty-five million)
20 ml medicine glasses
to fill an Olympic-sized swimming pool.**



Olympic Swimming Pool

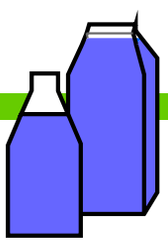
**An Olympic-sized swimming pool
(50 metres long x 25 metres wide x 2 metres deep)
has a volume of 2 500 cubic metres which is
a capacity of 2 500 000 litres or 2.5 megalitres.**

Note



brick
volume
ONLY

Volume and capacity are not the same.
A container has volume - it takes up space,
AND it has capacity - the amount it can hold.
Other solid objects do not have capacity.



containers
volume AND
capacity

Capacity - metric units

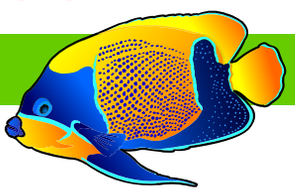
From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Capacity is the maximum amount of fluid a container or something can hold. Capacity may also be called fluid volume.

The most commonly used units are:

1000 millilitres	= 1 litre	ml mL	millilitre
1000 litres	= 1 kilolitre	l L	litre
1000 kilolitres	= 1 megalitre	kl kL	kilolitre
1000 megalitres	= 1 gigalitre	Ml ML	megalitre
		Gl GL	gigalitre

EXAMPLES:

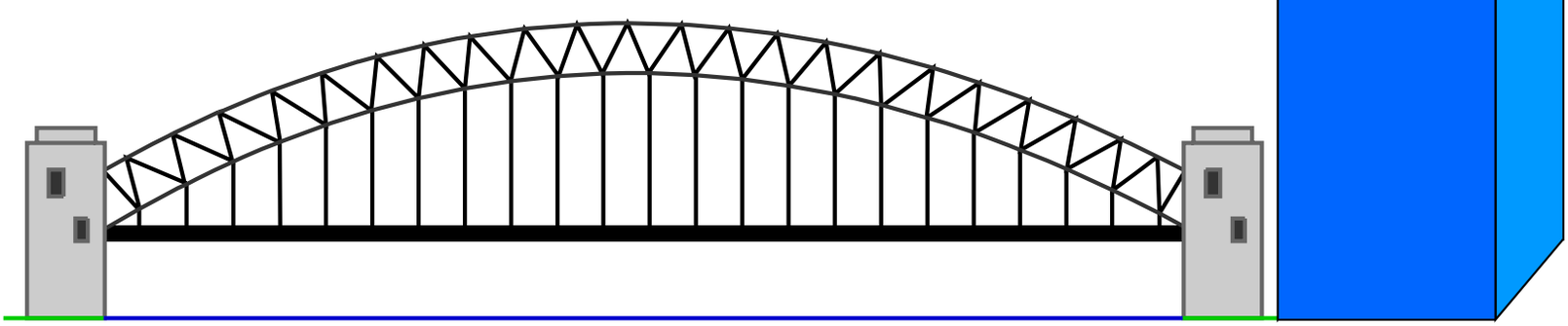


This medicine glass holds 20 ml.

A metric tablespoon of fluid is 15 ml in most countries but in Australia a metric tablespoon is 20 ml.

Look at the pictures to get an idea of how big a one gigalitre water tank would be.

A Boeing 747-400ER Jumbo Jet is 70.7 metres long.



Sydney Harbour Bridge
The arch span is 503 metres long. The top of the arch is 134 metres above mean sea level.

One gigalitre water tank.

Sydney Harbour holds 562 000 megalitres or 562 gigalitres.

Capacity - metric units US

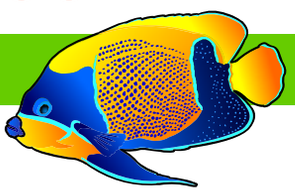
From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

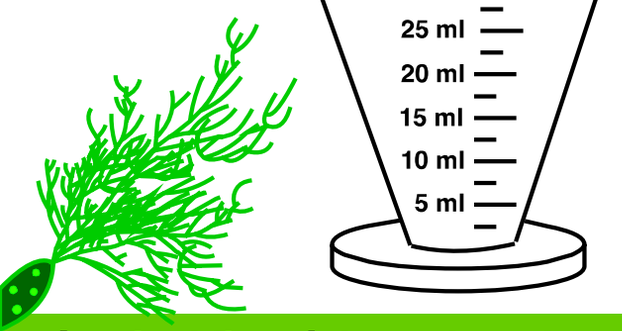
Capacity is the maximum amount of fluid a container or something can hold. Capacity may also be called fluid volume.

The most commonly used units are:

1,000 milliliters	= 1 liter	ml mL milliliter
1,000 liters	= 1 kiloliter	l L liter
1,000 kiloliters	= 1 megaliter	kl kL kiloliter
1,000 megaliters	= 1 gigaliter	Ml ML megaliter
		Gl GL gigaliter

EXAMPLES:

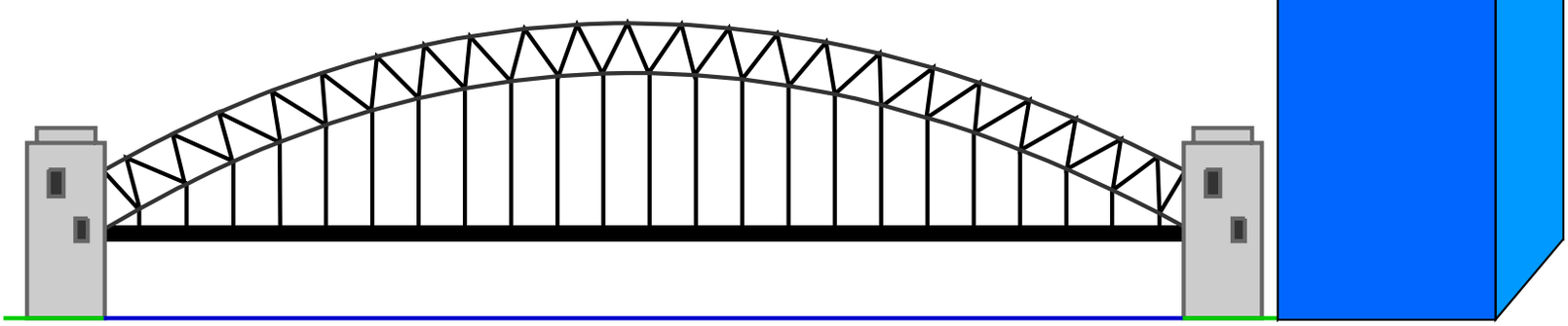




A 30 ml medicine glass holds approximately 1 fluid ounce.

Look at the pictures to get an idea of how big a one gigaliter water tank would be.

A Boeing 747-400ER Jumbo Jet is 70.7 meters long.



Sydney Harbour Bridge
The arch span is 503 meters long. The top of the arch is 134 meters above mean sea level.

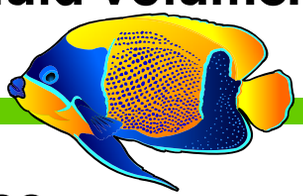
One gigaliter water tank.

Sydney Harbour holds 562,000 megaliters or 562 gigaliters.

Capacity - metric conversions

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Capacity is the maximum amount of fluid a container or something can hold. Capacity may also be called fluid volume.



Convert - larger to smaller

gigalitres to megalitres ... multiply by 1000
megalitres to kilolitres ... multiply by 1000
kilolitres to litres ... multiply by 1000
litres to millilitres ... multiply by 1000

Convert - smaller to larger

millilitres to litres ... divide by 1000
litres to kilolitres ... divide by 1000
kilolitres to megalitres ... divide by 1000
megalitres to 1 gigalitres ... divide by 1000

Units

1000 millilitres	= 1 litre
1000 litres	= 1 kilolitre
1000 kilolitres	= 1 megalitre
1000 megalitres	= 1 gigalitre

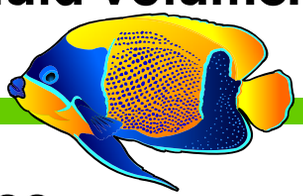
Abbreviations

ml	mL	millilitre
l	L	litre
kl	kL	kilolitre
Ml	ML	megalitre
Gl	GL	gigalitre

Capacity - metric conversions US

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Capacity is the maximum amount of fluid a container or something can hold. Capacity may also be called fluid volume.



Convert - larger to smaller

gigaliters to megaliters ... multiply by 1,000
megaliters to kiloliters ... multiply by 1,000
kiloliters to liters ... multiply by 1,000
liters to milliliters ... multiply by 1,000

Convert - smaller to larger

milliliters to liters ... divide by 1,000
liters to kiloliters ... divide by 1,000
kiloliters to megaliters ... divide by 1,000
megaliters to 1 gigaliters ... divide by 1,000

Units

1,000 milliliters	= 1 liter
1,000 liters	= 1 kiloliter
1,000 kiloliters	= 1 megaliter
1,000 megaliters	= 1 gigaliter

Abbreviations

ml	mL	milliliter
l	L	liter
kl	kL	kiloliter
Ml	ML	megaliter
Gl	GL	gigaliter

Capacity - imperial, US units

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

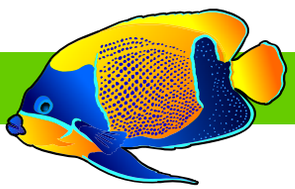
Capacity is the maximum amount of fluid a container or something can hold.

Imperial and US customary units of capacity (fluid volume) include:

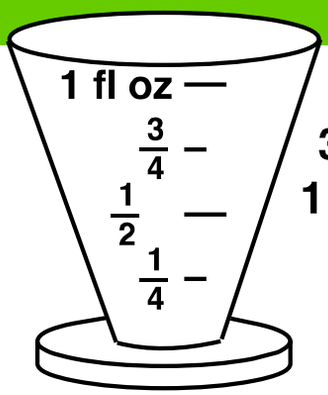
fluid ounce ... fl oz, fl. oz.

pint ... pt, pt. quart ... qt, qt. gallon ... gal, gal.

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

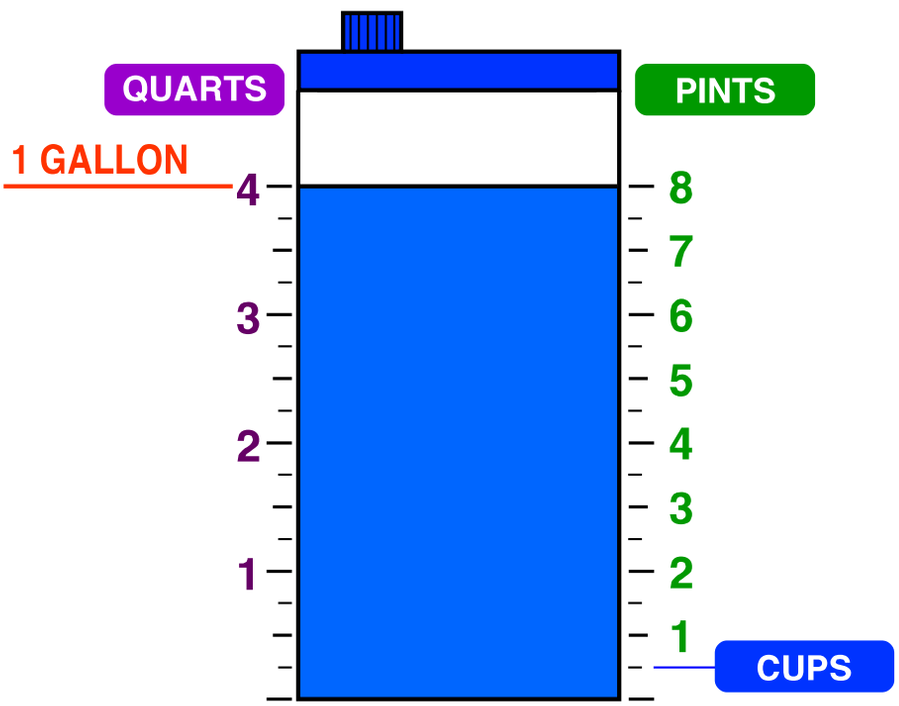


EXAMPLES:



US system of measurement

3 teaspoons	= 1 tablespoon
1 fluid ounce	= 2 tablespoons, 6 teaspoons
1 cup	= 8 fluid ounces, 16 tablespoons
1 pint	= 2 cups, 16 fluid ounces
1 quart	= 2 pints, 4 cups, 32 fluid ounces
1 gallon	= 4 quarts, 8 pints, 16 cups, 128 fluid ounces



Capacity - imperial, US conversions

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

Capacity is the maximum amount of fluid a container or something can hold. Capacity may also be called fluid volume.

Convert - larger to smaller

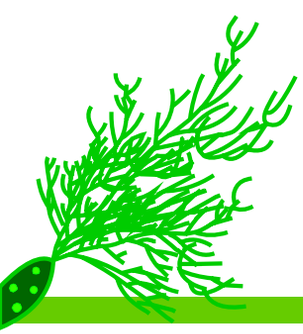
gallons to quarts ... multiply by 4
gallons to pints ... multiply by 8
quarts to pints ... multiply by 2
pints to fluid ounces ... multiply by 16 (US), 20 (UK)

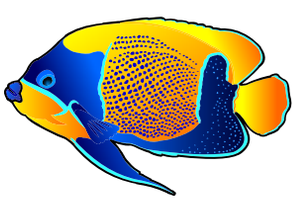
Convert - smaller to larger

fluid ounces to pints ... divide by 16 (US), 20 (UK)
pints to quarts ... divide by 2
pints to gallons ... divide by 8
quarts to gallons ... divide by 4

Units

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





Writing capacity, fluid volume units

The units may be written in a number of different ways.

fluid ounce abbreviations fl oz, fl. oz., oz. fl.
pint abbreviations pt, pt.
quart abbreviations qt, qt.
gallon abbreviations gal, gal.

Temperature

From: A Maths Dictionary for Kids by Jenny Eather at www.amathsdictionaryforkids.com

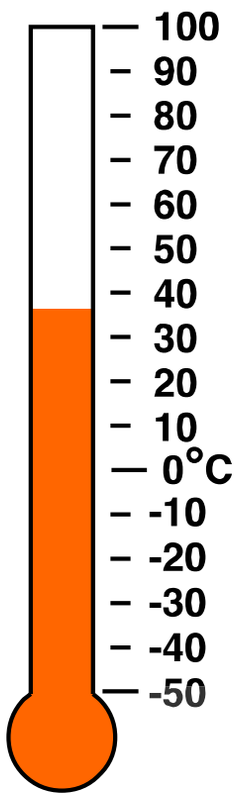
Temperature is a measurement of how hot or cold something is. Temperature is measured in degrees using a thermometer. Two common temperature scales are the Celsius scale (°C) and the Fahrenheit scale (°F).

Thermometers

Celsius

Anders Celsius
1742

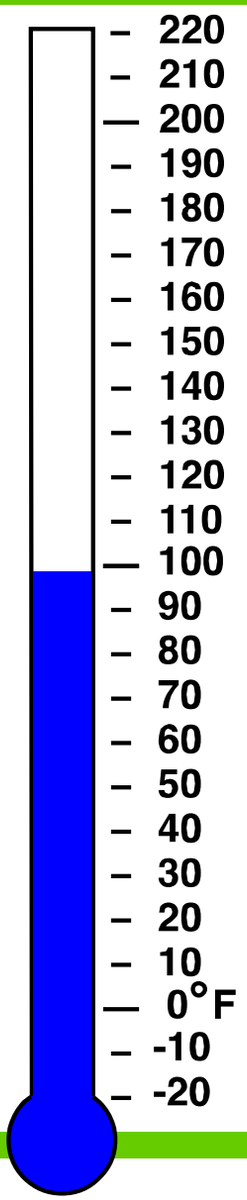
37 °C



Fahrenheit

Gabriel Fahrenheit
1724

98.6 °F



Common temperatures

Category	Celsius (Centigrade)	Fahrenheit
• Freezing point of water	0°	32°
• Boiling point of water	100°	212°
• Human body temperature	37°	98.6°

Measurements Conversion Chart

Length

Metric Unit →	x CF	US Standard Unit	x CF	Metric Unit
millimetre, mm	0.04	inch, in	25.4	millimetre, mm
centimetre, cm	0.39	inch, in	2.54	centimetre, cm
metre, m	3.28	foot, ft	30.48	centimetre, cm
metre, m	1.09	yard, yd	0.91	metre, m
kilometre, km	0.62	mile, mi	1.61	kilometre, km

Area

Metric Unit →	x CF	US Standard Unit	x CF	Metric Unit
square centimetre, cm^2	0.16	square inch, in^2	6.45	square centimetre, cm^2
square centimetre, cm^2	0.001	square foot, in^2	0.09	square metre, m^2
square metre, m^2	1.20	square yard, yd^2	0.84	square metre, m^2
square kilometre, km^2	0.39	square mile, mi^2	2.59	square kilometre, km^2
hectare, ha	2.47	acre	0.41	hectare, ha

Mass (weight)

Metric Unit →	x CF	US Standard Unit	x CF	Metric Unit
gram, g	0.04	ounce, oz	28.35	gram, g
kilogram, kg	2.20	pound, lb	0.45	kilogram, kg
metric ton, t	1.10	short ton	0.91	metric ton, t
1,000 kg		2,000 lb		1,000 kg

Volume

Metric Unit →	x CF	US Standard Unit	x CF	Metric Unit
millilitre, mL	0.02	teaspoon, tsp	4.93	millilitre, mL
millilitre, mL	0.07	tablespoon, Tbsp	14.79	millilitre, mL
millilitre, mL	0.06	cubic inch, in^3	16.39	millilitre, mL
millilitre, mL	0.03	fluid ounce, fl oz	29.57	millilitre, mL
litre, L	4.23	cup, c	0.24	litre, L
litre, L	2.11	pint, pt	0.47	litre, L
litre, L	1.06	quart, qt	0.95	litre, L
litre, L	0.26	gallon, gal	3.79	litre, L
cubic metre, m^3	35.31	cubic foot, ft^3	0.03	cubic metre, m^3
cubic metre, m^3	1.31	cubic yard, yd^3	0.76	cubic metre, m^3

Temperature, degrees →

Metric Unit	Conversion Formula	US Standard Unit	Conversion Formula	Metric Unit
Celsius, °C	(°C x 1.8) + 32	Fahrenheit, °F	(°F - 32) x 1.8	Celsius, °C

CF = conversion factor rounded to 2 decimal places.