


# Maths Facts

## SYMBOLS

+	plus or add	$6^4$	6 raised to the 4 <sup>th</sup> power, $6 \times 6 \times 6 \times 6$
-	minus or subtract	$\sqrt{9}$	square root of 9
$\times$	multiplied by, times, lots of	( )	parentheses, or brackets - a grouping symbol
$\div$	divided by, into groups of	$\frac{4}{7}$	fraction, $4 \div 7$ , four sevenths
=	equals, is equal to	$3x, 3(x)$	3 times $x$ , 3 lots of $x$
$\neq$	is not equal to	$a:b$	ratio of $a$ to $b$
$\approx$	is approximately equal to	-3	negative 3
<	is less than, $4 < 6$	$\pi$	pi, $\approx 3.14$ or $\frac{22}{7}$ , ratio of circumference to diameter for a circle
>	is greater than, $8 > 5$	$\triangle ABC$	triangle with vertices $A, B$ and $C$
$\leq$	is less than or equal to		right angle
$\geq$	is greater than or equal to		
%	percentage, $12\% = \frac{12}{100}$		
.	decimal point as in 7.9		

## MEASURES

### Length

10 millimetres (mm) = 1 centimetre (cm)  
 $\left. \begin{array}{l} 100 \text{ cm} = \\ 1000 \text{ mm} = \end{array} \right\} 1 \text{ metre (m)}$   
 1000 m = 1 kilometre (km)

### Area

100 square mm (mm<sup>2</sup>) = 1 square cm (cm<sup>2</sup>)  
 10 000 cm<sup>2</sup> = 1 square metre (m<sup>2</sup>)  
 10 000 m<sup>2</sup> = 1 hectare (ha)  
 1 000 000 m<sup>2</sup> = 1 square km (km<sup>2</sup>)

### Volume

1000 cubic mm (mm<sup>3</sup>) = 1 cubic cm (cm<sup>3</sup>)  
 1 000 000 cm<sup>3</sup> = 1 cubic metre (m<sup>3</sup>)

### Liquid Capacity

$\left. \begin{array}{l} 1000 \text{ millilitres (mL)} = \\ 1000 \text{ cm}^3 = \end{array} \right\} 1 \text{ litre (L)}$   
 1000 L = 1 kilolitre (kL)

### Temperature - degrees Celsius (°C)

0°C = freezing point of water  
 100°C = boiling point of water

### Time

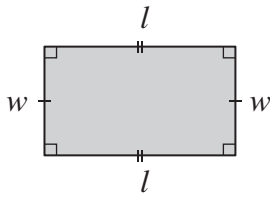
60 seconds (s) = 1 minute (min)  
 60 minutes (min) = 1 hour (h)  
 24 hours = 1 day  
 7 days = 1 week  
 4 weeks (approx.) = 1 month  
 $\left. \begin{array}{l} 365 \text{ or } 366 \text{ days} = \\ 52 \text{ weeks (approx.)} = \\ 12 \text{ months} = \end{array} \right\} 1 \text{ year}$   
 10 years = 1 decade  
 100 years = 1 century

### Mass

1000 milligrams (mg) = 1 gram (g)  
 1000 g = 1 kilogram (kg)  
 1000 kg = 1 tonne (t)

# GEOMETRIC FORMULAS

## Rectangle



Perimeter =  $2 \times \text{length} + 2 \times \text{width}$

$$P = 2l + 2w$$

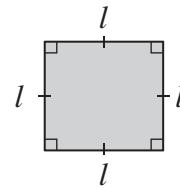
$$P = 2(l + w)$$

Area = length  $\times$  width

$$A = l \times w$$

$$A = lw$$

## Square



Perimeter =  $4 \times \text{length}$

$$P = 4 \times l$$

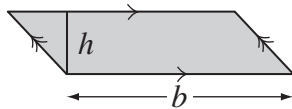
$$P = 4l$$

Area = (length)<sup>2</sup>

$$A = l \times l$$

$$A = l^2$$

## Parallelogram

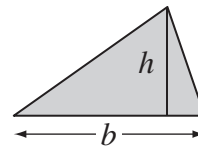


Area = base  $\times$  height

$$A = b \times h$$

$$A = bh$$

## Triangle

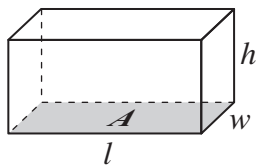


Area =  $\frac{\text{base} \times \text{height}}{2}$

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

$$A = \frac{1}{2}bh$$

## Prism



Volume = length  $\times$  width  $\times$  height

$$V = l \times w \times h$$

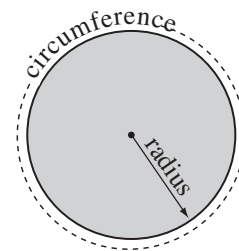
$$V = lwh$$

or  $V = \text{Area} \times \text{height}$

$$V = A \times h$$

$$V = Ah$$

## Circle



Circumference =  $2 \times \pi \times \text{radius}$

$$C = 2\pi r$$

Area =  $\pi \times \text{radius}^2$

$$A = \pi r^2$$

where  $\pi \approx 3.14$  or  $\frac{22}{7}$

# GEOMETRIC PREFIXES

**poly** - many

**equi** - equal

**hedra** - face

**gon** - angle

**lateral** - side

**hedron** - face

**mono** - one

**bi** or **di** - two

**tri** - three

**quad** or **tetra** - four

**penta** - five

**hexa** - six

**hepta** - seven

**octa** - eight

**nona** - nine

**deca** - ten

# ZERO

## Adding and subtracting 0

*Adding and subtracting 0 to any number leaves the number unchanged.*

$$\begin{array}{l} 3 + 0 = 3 \\ 2.5 + 0 = 2.5 \\ \frac{4}{9} + 0 = \frac{4}{9} \end{array} \quad \begin{array}{l} 3 - 0 = 3 \\ 2.5 - 0 = 2.5 \\ \frac{4}{9} - 0 = \frac{4}{9} \end{array}$$

## 0 used in decimals

*0's can be added when needed after the last digit and the decimal point.*

$$4 = 4.000$$

*0's can be added when needed before the first digit of the decimal number.*

$$4 = 4.0 = 0004.0$$

*By convention, decimal numbers less than 1 are written with a zero before the decimal point.*

$$.4 = 0.4$$

## 0 as a probability

*When the probability of an event is 0, the event is 'impossible'.*

## 0 in words

*Some of the words used to represent zero 0 are: nought, nil, none, nothing, zilch, zip.*

## Multiplying by 0

*The product of any number and 0 is 0.*

$$\begin{array}{l} 7 \times 0 = 0 \\ 81.6 \times 0 = 0 \\ \frac{3}{5} \times 0 = 0 \end{array}$$

## Dividing by 0

*Dividing by 0 is meaningless.*

$4 \div 0$ ,  $\frac{3}{0}$  are meaningless operations.

## Power of 0

*Any number raised to the power of 0 is 1.*

$$\begin{array}{l} 1^0 = 1 \\ (0.5)^0 = 1 \\ (-24)^0 = 1 \end{array}$$

## 0 as the result of a sum

*The sum of any number, except zero, and its opposite is 0.*

$$\begin{array}{l} 4 + (-4) = 0 \\ 2.6 + (-2.6) = 0 \\ \frac{5}{8} + (-\frac{5}{8}) = 0 \end{array}$$

## 0 facts

*0 is a whole number and a digit but is neither a positive nor a negative number.*

# ONE

## Multiplying by 1

*Any number multiplied by 1 remains unchanged.*

$$3 \times 1 = 3$$

$$2.5 \times 1 = 2.5$$

$$\frac{4}{9} \times 1 = \frac{4}{9}$$

## 1 as a fraction

**1** can be renamed as a fraction whenever the numerator is the same as the denominator.



$$1 = \frac{2}{2}$$



$$1 = \frac{3}{3}$$



$$1 = \frac{4}{4}$$



$$1 = \frac{5}{5}$$

## 1 as a probability

When the probability of an event is **1**, the event is 'certain' to happen.

## 1 as a denominator

*Any whole number can be written as a fraction with denominator **1***

$$20 = \frac{20}{1}$$

## 1 in words

*Some of the words used to represent the digit **1** are: one, a, an, each, single, unit.*

## Dividing by 1

*Any number divided by 1 remains unchanged.*

$$7 \div 1 = 7$$

$$81.6 \div 1 = 81.6$$

$$\frac{3}{5} \div 1 = \frac{3}{5}$$

## Power of 1

*Any number raised to the power of **1** remains unchanged.*

$$7^1 = 7$$

$$(6.8)^1 = 6.8$$

$$(-4)^1 = -4$$

## 1 as a percentage

**1** is the same as 100%.

$$1 = \frac{100}{100} = 100\%$$

## 1 as the result of a product

*The product of any number, except zero, and its reciprocal is **1***

$$4 \times \frac{1}{4} = 1$$

## 1 facts

**1** is a whole number and a digit, but not a prime number.

**1** is a factor of any whole number.