



# Fundamental Maths Facts

## Introduction

By the time a resitter turns up in a resit class they have commonly gone through several years of primary and then secondary education. They have seen a large percentage of the maths curriculum yet there is fundamental knowledge that is either unlearned or they remain unsure of and this situation has been compounded since the pandemic.

The hierarchical nature of maths shows that insecure foundations, or cornerstones, have an impact as we progress on to harder and more complicated areas, requiring thinking and reasoning skills.

## Pre-requisite knowledge

Because this knowledge underpins other areas of maths it is vital to consider these as pre-requisite skills which may require some scaffolding. For example, the pre-requisite skills to a volume problem may include conversion of length, time, capacity, area as well as general multiplication and division.

Here is some fundamental maths knowledge that you would assume that resitters know. It is not a definitive list but it will highlight to you where there are deficiencies and more work can be done to shore up the foundations. For example, if learners do not know the number of degrees in a triangle you can assume that other angle facts will need some reminders and practice opportunities.

We have split this fundamental knowledge into 8 areas, and a [test](#) is available for each area.

## Measure

- number of millimetres in 1 cm
- number of centimetres in 1 m
- number of metres in 1 km
- number of grams in 1 kg
- number of millilitres in 1 litre
- conversion between these measures, eg writing 125 mm in cm, writing 13.6 m in cm
- drawing a line of a given length



## Time

- number of seconds in 1 minute
- number of minutes in 1 hour
- number of hours in 1 day
- number of days in 1 week
- number of weeks in 1 year
- number of days in 1 year
- number of days in the different months
- conversion between 12- and 24-hour clock

## Shape and Space – types of triangle, types of quadrilateral, common angle facts

- number of degrees in different angles:
  - acute
  - right-angle
  - obtuse
  - reflex
- angles on a straight line add to  $180^\circ$
- angles around a point add to  $360^\circ$
- internal angles of a triangle add to  $180^\circ$
- names of types of triangles
  - equilateral
  - isosceles
  - scalene
  - right-angled
- names of quadrilaterals and facts about them
  - square
  - rectangle
  - parallelogram
  - trapezium
  - rhombus
  - kite
- name of a 5-sided shape
- name of an 8-sided shape
- difference between a cube and a cuboid
- drawing of a given angle



## Money

- number of pence in 1 pound
- correct money notation
- conversion between pounds and pence
- coin denominations

## Negative numbers

- order of negative numbers
- how to add, subtract, multiply and divide negative numbers
- what negative numbers mean in context, ie temperature

## Decimal-fraction-percentage conversions


- conversion between decimals and fractions
- conversion between fractions and percentages
- conversion between percentages and decimals

## Place Value

- understand the place value of digits in a number
- conversion between numbers and words, eg 2645 = two thousand, six hundred and forty-five

## Factors, multiples and primes

- know the difference between odd and even numbers
- know the first 10 square numbers
- know the square roots of the first 10 square numbers
- know the definition of a prime number
- recognise prime numbers under 100
- know what a factor is
- know what a multiple is



Fundamental Knowledge together with the [Basic Skills questions](#) will ensure a solid maths foundation. By having a solid base then it has been shown that this mathematical fluency supports both reasoning and problem solving which becomes that much more accessible. Cognitive load is considered when mathematical fluency is improved and where skills are more fluent then more working memory is available and capacity improved to focus upon both reasoning and problem solving.

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