This booklet has been written to help you understand how mathematics is taught in school. It also gives practical ideas and suggestions for helping your child at home.

We know that parents are keen to help with their child's education but may find they do not understand what their child is doing as it is different to the way they were taught or find they confuse their children with their methods.

The days are gone when maths lessons are endless pages of calculations to be done in silence. Today it is a lot more about collaboration and investigation. Children are taught why the methods work, not just how to perform them. It is the difference between telling someone directions or giving them a map.

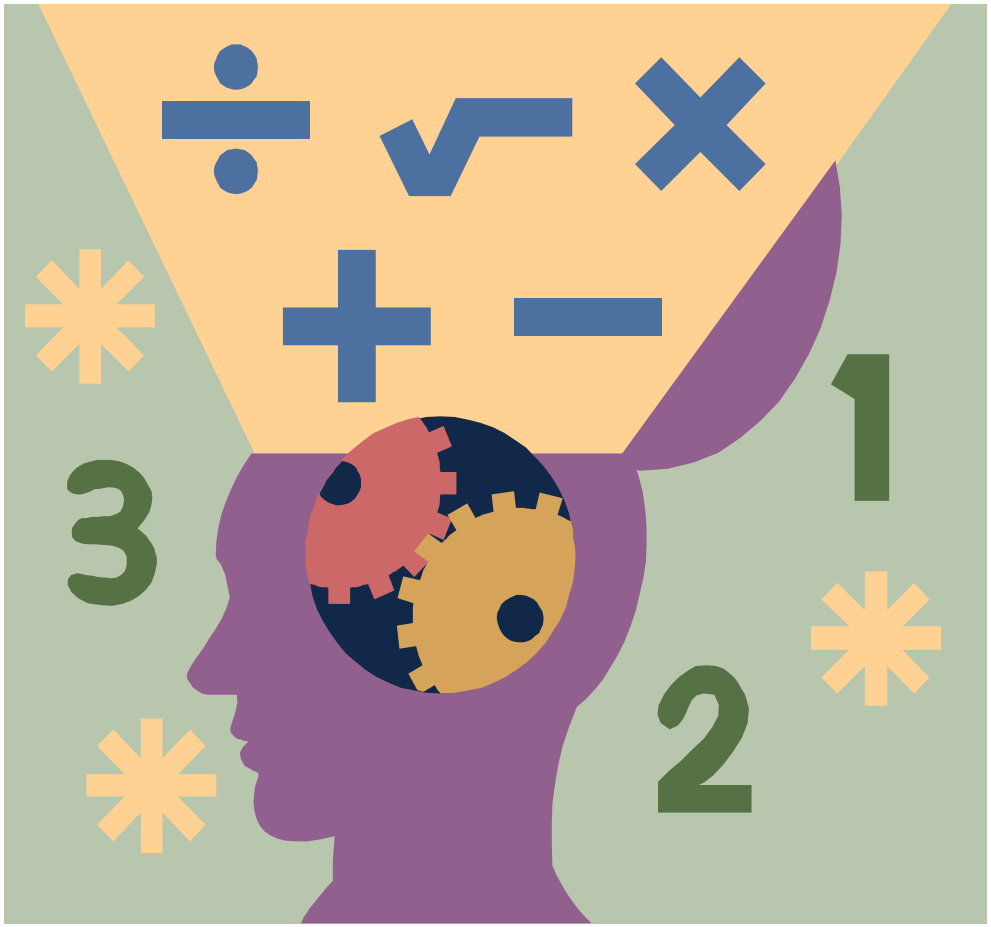
Many parents also feel less confident in mathematics as they feel they do not understand it. This feeling could rub off onto your child.

So use this guide to help you and your child gain in confidence and remember to make maths fun!

Reference materials include: Mathematical Vocabulary booklet (DfE), target setting booklet (DfE), Maths for Mums & Dads (Rob Eastaway & Mike Askew)

Year 1

SHUSTOKE C.E. PRIMARY SCHOOL



A Parent's Guide to Mathematics

Maths props to have in the house

Tape measure and ruler - get your child involved when completing DIY.

Bar of chocolate (with squares) - good for showing multiplication and fractions.

Magnet numbers - a great way for impromptu maths in the house.

Dartboard - darts teaches not only addition, subtraction and multiplication but also raises discussions of what is needed to finish the game.

Unusual dice - they don't have to be 6 sided.

Dominoes - another great game to show combinations of numbers

Guess who - this game shows how to group characters into categories and can be extended to shapes and numbers.

Thermometer - shows both positive and negative numbers to discuss.

Remember to make maths fun and relevant!

Some Do's and Don'ts

- Make maths silly, gruesome, scary or dangerous—get your child excited about maths questions e.g. I bet you don't know the answer?
- Recognise there's more than one way of doing calculations— children's methods may be long winded or confusing, but you should always let them try their own way of solving a problem. Notice one method does not solve all calculations e.g. you would use different methods to find 3,786+4,999 to 3,786 + 4,568.
- Don't expect children to 'get it' after you've explained to once—it can take a long time for the penny to drop. It is perfectly normal for children not to recognise a concept learnt in a new context.
- Don't tell your child you are hopeless at maths—many adults claim to be hopeless at maths and this can give the message that maths is difficult, not enjoyable and ultimately not important to succeed in life. This just isn't true, as adults we deal with mathematics everyday and cope with it. Just because you don't understand or remember how to complete long division, doesn't mean you don't understand mathematics.
- Mathematics is a large, rich and imaginative subject that can inspire and be used in the everyday life and you can make this subject come to life!

Some Do's and Don'ts

- When a child gets a question wrong, it is tempting to tell them they are wrong and how to correct it. Why not ask them to explain their method and help them spot their mistake.
- Similarly if a child gets a question right, get them to explain how they reached their answer, perhaps pretending not to understand their reasoning.
- Play maths with your child — games are full of maths and are an ideal way to engage mathematical thinking. Consider questioning when playing e.g. Can you be the banker and change £500?
- Let your child win, or be 'better than you' - of course you know your child best, so will know the correct balance of winning and losing, but can compete against one another within a mathematical context e.g. I bet you can't get ready for bed in 5 minutes.
- Make maths a casual part of what you do while you're doing something else — instead of making maths formal find ways to sneak it in e.g. How many more plates do I need? Have we got enough for the bread and milk? Did you see the number 23 bus? I was wondering, is 23 a prime number?
- Make maths 'hands on'—remember the three C's of everyday maths: cash, clocks and cooking. All three perfect opportunities to practise maths.

Maths props to have in the house

A prominent clock - try using both an analogue and digital clock. Can you compare the two?

A wall calendar - not only good for noticing days and months, but also for finding patterns e.g. 7 times table

Board games with dice or spinner - why not make your own board game?

Pack of playing cards - not only can you learn about counting but also chance and probability.

Calculator - you can discover so many patterns with calculators, not just basic computation.

Measuring jug - discover both imperial and metric ways of measuring.

Scales - traditional balances can show counting as well as measuring.

Dried beans, pasta - useful for counting, dividing and finding the difference.

Remember to make maths fun and relevant!

Maths Overview Year by Year

Reception

Counting is important and the basis of arithmetic. Children in Reception will be learning to say the number names in order, forwards and backwards, and count collections of objects.

They will be encouraged to use the language more or less to add and subtract with numbers to 10.
e.g. 1 more than 6? The number 1 less than 7?

Children will engage in activities such as putting two groups of objects together to find the total. They remove some objects showing 'taking away.'

The beginnings of multiplication and division are developed through counting groups of the same size and sharing.

Making patterns, building models and sorting things around the classroom develop reasoning using everyday language to describe them.

They will compare things using language like bigger, greater, heavier and lighter.

Remember this is an overview, not an exhaustive list.

Vocabulary to know by the end of the year

Instructions

listen
join in
say

think
imagine
remember

start from
start with
start at

look at
point to
show me

put, place
fit
arrange
rearrange
change, change over
split
separate

carry on, continue
repeat
what comes next?

find
choose
collect

use
make
build

tell me
describe
pick out
talk about
explain
show me

read
write
record
trace
copy
complete
finish, end

fill in
shade
colour

tick, cross
draw
draw a line between
join (up)
ring
arrow

cost
count
work out
answer
check

General

same number/s
different number/s
missing number/s
number facts

number line, number track
number square
number cards
abacus
counters, cubes, blocks, rods
die, dice
dominoes
pegs, peg board

same way, different way
best way, another way
in order, in a different order

not
all, every, each

Vocabulary to know by the end of the year

TIME

time
days of the week: Monday, Tuesday…
seasons: spring, summer, autumn, winter
day, week, month, year
weekend, birthday, holiday
morning, afternoon, evening
night, midnight
bedtime, dinnertime, playtime
today, yesterday, tomorrow
before, after
next, last
now, soon, early, late
quick, quicker, quickest, quickly
fast, faster, fastest
slow, slower, slowest, slowly
old, older, oldest
new, newer, newest
takes longer, takes less time
hour, o'clock, half past
clock, watch, hands
how long ago?
how long will it be to…?
how long will it take to…?
how often?
always, never, often, sometimes, usually
once, twice

SHAPE AND SPACE

shape, pattern
flat
curved, straight
round
hollow, solid
corner
point, pointed
face, side, edge, end
sort
make, build, draw

3D SHAPES

cube
cuboid
pyramid
sphere
cone
cylinder

2D SHAPES

circle
triangle
square
rectangle
star

PATTERNS AND SYMMETRY

size
bigger, larger, smaller
symmetrical
pattern
repeating pattern
match

POSITION, DIRECTION AND MOVEMENT

position
over, under, underneath
above, below
top, bottom, side
on, in
outside, inside
around
in front, behind
front, back
before, after
beside, next to
opposite
apart
between
middle, edge
centre
corner
direction
journey
left, right
up, down
forwards, backwards, sideways
across
close, far, near
along
through
to, from, towards, away from
movement
slide
roll
turn, whole turn, half turn
stretch, bend

Maths Overview Year by Year

Year 1

Counting is extended to objects up to 20 and recording the total.

Children learn pairs of numbers that add up to 10 (number bonds e.g. 4+6 or 7+3.) They also learn that addition can be reversed e.g. 2+8=8+2.

Skills needed for multiplication are developed by learning to count in twos and fives. They also double numbers to 10. Sharing collections of objects into equal groups will help explore division and talk about half and quarter.

Children make patterns, pictures and models of common 2-D and 3-D shapes using their names. They will also talk about the position of things using everyday language like behind, above, next to.

Estimating, measuring, comparing and weighing objects help them to understand measuring. They will talk about when things happen or put events in order to introduce time.

Block graphs and pictograms help to display information.

Remember this is an overview, not an exhaustive list.

Maths Overview Year by Year

Year 2

The reading and writing of numbers is extended up to 1000. Children learn about odd and even numbers. Number bonds to 20 should be learnt and the patterns in counting to tens help children to answer calculations like 50+20 or 80-30.

They work on mental methods to add and subtract single digits or multiples of 10 e.g. 36+40, 45-8. A key idea is learning that subtraction is the inverse of addition: knowing 16+7=23 means you also know 23-7=16.

In multiplication children will be doubling numbers to 20 and halving the answers. Tables are introduced starting with the 2, 5 and 10 times tables.

Children learn common 2D and 3D shapes e.g. square, cube. In addition they look at symmetry of shapes.

Half, quarter and full turns are introduced. Measuring becomes more accurate using metres, centimetres, kilograms and litres. Learning to read divisions on scales is also introduced.

Children gather data linked to topics. This data is then represented in tables, diagrams, block graphs and pictograms.

Remember this is an overview, not an exhaustive list.

Vocabulary to know by the end of the year

Solving problems

MAKING DECISIONS AND REASONING

pattern
puzzle
answer
right, wrong
what could we try next?
how did you work it out?
count out, share out, left, left over
number sentence
sign, operation

MONEY

money
coin
penny, pence, pound
price
cost
buy
sell
spend, spent
pay
change
dear, costs more
cheap, costs less, cheaper
costs the same as
how much...? how many...?
total

Organising and using data

count, sort, vote
group, set
list
same, different
table

Measures, shape and space

MEASURES (GENERAL)

measure
size
compare
guess, estimate
enough, not enough
too much, too little
too many, too few
nearly, roughly, close to, about the same as
just over, just under

LENGTH

length, width, height, depth
long, short, tall
high, low
wide, narrow
deep, shallow
thick, thin
longer, shorter, taller, higher... and so on
longest, shortest, tallest, highest... and so on
far, near, close
metre
ruler, metre stick

MASS

weigh, weighs, balances
heavy/light, heavier/lighter, heaviest/lightest
balance, scales, weight

CAPACITY

full
half full
empty
holds
container

Vocabulary to know by the end of the year

Numbers and the number system

COUNTING, PROPERTIES OF NUMBERS AND NUMBER SEQUENCES

number
zero, one, two, three… to twenty and beyond
zero, ten, twenty… one hundred
none
how many…?
count, count (up) to
count on (from, to)
count back (from, to)
count in ones, twos… tens…
more, less, many, few
odd, even
every other
how many times?
pattern, pair

PLACE VALUE AND ORDERING

units, ones
tens
exchange
digit
'teens' number
the same number as, as many as
equal to
*Of **two** objects/amounts:*
greater, more, larger, bigger
less, fewer, smaller
*Of **three** or more objects/amounts:*
greatest, most, biggest, largest
least, fewest, smallest
one more, ten more
one less, ten less
compare
order
size
first, second, third… tenth, eleventh… twentieth
last, last but one
before, after
next
between, half-way between
above, below

ESTIMATING

guess how many, estimate
nearly, roughly, close to
about the same as
just over, just under
too many, too few, enough, not enough

Calculations

ADDITION AND SUBTRACTION

+, add, more, plus
make, sum, total
altogether
score
double, near double
one more, two more… ten more
how many more to make…?
how many more is… than…?
how much more is…?
–, subtract, take (away), minus
leave
how many are left/left over?
how many have gone?
one less, two less, ten less…
how many fewer is… than…?
how much less is…?
difference between
half, halve
=, equals, sign, is the same as

Maths Overview Year by Year

Year 3

Numbers up to 1000 will now be worked with, and placed on a number line. Children should be confident in counting on or back in tens. They will be able to partition a number into hundreds, tens and units and be able to round to the nearest 10 or 100.

Learning to add and subtract pairs of numbers mentally helps children to begin to look at how they can be recorded in writing.

The 3, 4 and 6 times tables will be rehearsed along with multiplying and dividing by 10, 100 and 1000. The idea that division is the inverse of multiplication is introduced to help divide e.g. knowing that 6x9=54 shows 54÷6=9 or 54÷9=6

Proper fractions are developed further through diagrams, fractions of numbers and amounts. Work on angles is extended to recognising right angles. Children work on relationships in measures e.g. metres in a kilometre.

Telling the time to the nearest 5 minutes on a clock is developed. Venn and Carroll diagrams are used to sort information.

Remember this is an overview, not an exhaustive list.

Maths Overview Year by Year

Year 4

Children move from working with whole numbers to meeting decimals, particularly in relation to money and measurement.

Mental calculations like 700+600 or 6000-3000, continue to build on knowledge of number bonds. They continue with mental addition and subtraction along with written calculations for 3 digit numbers and money.

Knowing your tables up to 10x10 is extended and the use of the grid method for multiplication is shown. The idea of equivalent fractions is introduced along with mixed and improper fractions. Children identify fractions that total a whole and carry out calculations using fractions e.g. 1/5 of 30 apples or shading 5/8 of a rectangle.

Children work on the ideas of vertical and horizontal. They find areas perimeters of rectangular shapes and measure angles in degrees.

They tell the time to the nearest minute using different clock notations: am, pm or the 24-hour clock.

Remember this is an overview, not an exhaustive list.

Some fun ideas to try at home

Takings

For this game you will need a dice and a collection of small things such as Lego bricks, sticky shapes or dried beans. You will also need pencil and paper.

- Take turns.
- Roll a dice. Take that number of beans. Write down the number.
- Keep rolling the dice and taking that number of beans. BUT, before you take them, you must write down your new total. For example, Sally has 7. She throws 4. She has to work out how many she will have now. She starts counting from seven: *eight, nine, ten, eleven.* She writes 11.
- You can only take your beans if you are right.
- The first person to collect 20 beans wins!

Secret numbers

- Write the numbers 0 to 20 on a sheet of paper.
- Ask your child secretly to choose a number on the paper. Then ask him / her some questions to find out what the secret number is, e.g.

  Is it less than 10?
  Is it between 10 and 20?
  Does it have a 5 in it?

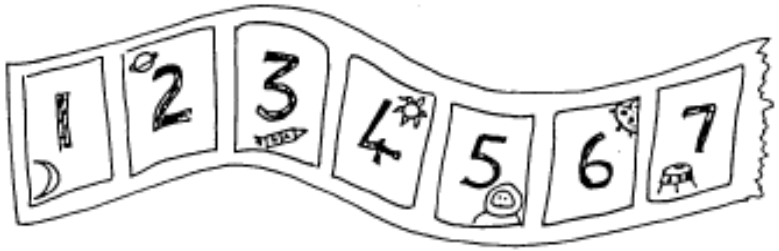
  He / she may answer only yes or no.
- Once you have guessed the number, it is your turn to choose a number. Your child asks the questions.

For an easier game, use numbers up to 10. For a harder game, use only 5 questions, or use bigger numbers.

Some fun ideas to try at home

Track games

Make a number track to 20, or longer. Make it relevant to your child's interests – sea world, space, monsters… Then play games on it.



- Throw a dice. Move along that number of spaces. BUT before you move, you must work out what number you will land on. If you are wrong, you don't move! The winner is the first to land exactly on 20. Now play going backwards to 1.
- Throw a dice. Find a number on the track that goes with the number thrown to make either 10 or 20. Put a counter on it, e.g. you throw a '4' and put a counter on either 6 or 16. If someone else's counter is there already, you may replace it with yours! The winner is the first person to have a counter on 8 different numbers.

Cupboard maths

- Choose two tins or packets from your food cupboard.
- Ask your child to hold one in each hand and tell you which is heavier, and which is lighter. (Check by reading the weight on each tin or packet.)
- If he / she is right, they keep the lighter one. Then choose another item from the cupboard, trying to find one that is lighter still.
- Carry on until your child has found the lightest item in the cupboard. It might be suitable to eat as a prize!

Maths Overview Year by Year

Year 5

Children are mentally adding, subtracting and doubling simple decimals e.g. 6.5-2.7 or double 2.4. They use written methods to add and subtract large whole numbers and decimals up to two places e.g. 23.45-17.67

Children find factor pairs of 2-digit numbers. They learn about common multiples of two numbers. Written methods are now used to multiply and divide 3-digit numbers and decimals.

As well as solving fraction problems like finding 1/100 of 5 litres, they find percentages of numbers and quantities e.g. 10% of £60.

Children use co-ordinates and recognise and construct parallel and perpendicular lines. Measuring becomes increasingly accurate e.g. to the nearest millimetre

They meet the idea of mode as a measure of average.

Remember this is an overview, not an exhaustive list.

Maths Overview Year by Year

Year 6

Children find the difference between positive and negative numbers in a context e.g. difference between +5°C and –4°C.

Children are using a variety of written methods to add and subtract integers (positive and negative) and decimals.

They use their knowledge of table facts to mentally work out decimal multiplications and divisions, e.g. 0.6x7. They figure out squares of numbers. Prime numbers less than 100 are explored and the prime factors of 2-digit numbers are found e.g. 24 = 2x2x2x3.

They learn to multiply and divide integers and decimals with confidence in written methods. Children relate fractions to multiplication and division
e.g. 9 ÷ 3 = 1/3 o f 9 =9 x 1/3. They find fractions and percentages of whole numbers.

Children calculate angles in triangles and convert between metric units using decimals. They use the terms mode, range, median and mean when learning about averages.

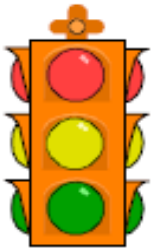
Remember this is an overview, not an exhaustive list.

Some fun ideas to try at home

Shape activity

At home, or when you are out, look at the surface of shapes.

- Ask your child – what shape is this plate, this mirror, the bath mat, the tea towel, the window, the door, the red traffic light, and so on.
- Choose a shape for the week, e.g. a square. How many of these shapes can your child spot during the week, at home and when you are out?

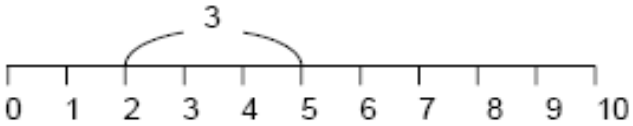


Dice game

You need a 1–6 dice, paper and pencil.

- Take turns.
- Choose a number between 1 and 10 and write it down.
- Throw the dice and say the dice number.
- Work out the difference between the chosen number and the dice number, e.g. if you wrote down a 2 and the dice shows 5, the difference is 3.

You could also draw a number line to help your child to see the difference between the two numbers.



How old?

Start with your child's age. Ask your child:

How old will you be when you are 1 year older?
How old were you last year?
How old will you be 10 years from now?

and so on.

Learning intentions by the end of the year

By the end of Year 1, most children should be able to…

- ☐ Count at least 20 everyday objects.
- ☐ Count forwards and backwards in ones, starting from a small number.
- ☐ Count forwards and backwards in tens (zero, ten, twenty, thirty…)
- ☐ Read and write numbers to at least 20.
- ☐ Put the numbers 0 to 20 in order.
- ☐ Use the words *first, second, third...*
- ☐ Given a number from 10 to 20, say the number that is 1 more, 1 less, 10 more, 10 less.
- ☐ Use the words *add, sum, total, take away, subtract, difference between…* in practical situations.
- ☐ Know by heart all pairs of numbers that make 10, e.g. 3 + 7, 8 + 2.
- ☐ Add and subtract two numbers under 10.
- ☐ Compare two objects or containers, and say which is longer or shorter, or heavier or lighter, or which holds more.
- ☐ Name and describe simple flat and solid shapes, e.g. *It's got 3 corners.*

Maths Overview Year by Year

Moving On

By now children work on ordering fractions by converting them into decimals and they use ratio notation. They are familiar with the ideas of multiples, factors, divisors, common factors, highest common factors and lowest common multiples. They calculate percentage increases or decreases and calculate efficiently.

They learn to calculate area of right-angled triangles and volume and surface area of cubes and cuboids.

They work with the probability scale from 0 to 1 and carry out statistical inquiries.

Further mathematical skills are introduced in other areas like trigonometry and algebra.

Remember this is an overview, not an exhaustive list.

On this page should be information on our calculation policy.
Unfortunately it would not convert to a PDF format.
These pages can still be found on the website as
Microsoft Word document.
Apologies for any inconvenience caused.