



Year 3

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.

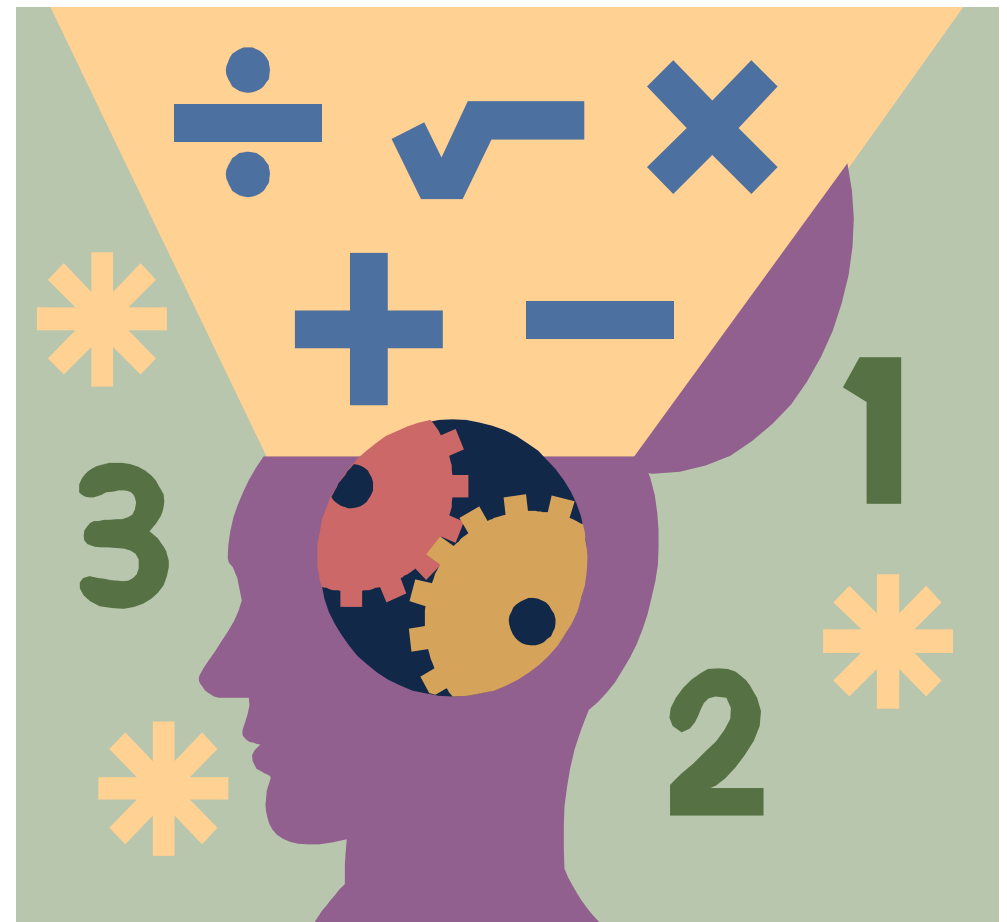
The days are gone when maths lessons are endless pages of calculations to be done in silence. Today it is a lot more about collaboration and investigation. Children are taught why the methods work, not just how to perform them. It is the difference between telling someone directions or giving them a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

SHUSTOKE C.E. PRIMARY SCHOOL



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.

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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!

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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 **22** 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.

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Vocabulary to know by the end of the year

Instructions

listen
join in
say
recite

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?
predict
describe the pattern
describe the rule

find, find all, find different
investigate

choose
decide
collect

use
make
build

tell me
describe
name
pick out
discuss
talk about
explain
explain your method
explain how you got your answer
give an example of...
show how you...
show your working

read
write
record
write in figures

present
represent
interpret
trace
copy
complete
finish, end

fill in
shade, colour
label

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

cost, count, tally

calculate
work out
solve
investigate
question
answer
check

General

same, different
missing number/s
number facts, number pairs, number bonds
greatest value, least value

number line, number track
number square, hundred square
number cards
number grid
abacus
counters, cubes, blocks, rods
die, dice
dominoes
pegs, peg board
geo-strips

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

not
all, every, each

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Vocabulary to know by the end of the year

before, after
next, last
now, soon, early, late, **earliest, latest**
quick, quicker, quickest, quickly
fast, faster, fastest
slow, slower, slowest, slowly
old, older, oldest
new, newer, newest
takes longer, takes less time
how long ago? how long will it be to...?
how long will it take to...?
hour, minute, second
o'clock, half past, quarter to, quarter past
clock, watch, hands
digital/analogue clock/watch, timer
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
surface
right-angled
vertex, vertices
layer, diagram

3D SHAPES

cube
cuboid
pyramid
sphere, **hemi-sphere**
cone
cylinder
prism

2D SHAPES

circle, circular, **semi-circle**
triangle, triangular
square
rectangle, rectangular
star
pentagon, **pentagonal**
hexagon, **hexagonal**
octagon, **octagonal**
quadrilateral

PATTERNS AND SYMMETRY

size
bigger, larger, smaller
symmetrical
line of symmetry
fold
match
mirror line, reflection
pattern
repeating pattern

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, route, **map, plan**
left, right
up, down
higher, lower
forwards, backwards, sideways
across
close, far, near
along
through
to, from, towards, away from
ascend, descend
grid
row, column
clockwise, anti-clockwise
compass point
north, south, east, west (N, S, E, W)
horizontal, vertical
diagonal
movement
slide
roll
whole turn, half turn, quarter turn
angle, ...is a greater/smaller angle than
right angle
straight line
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. **5**

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.

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Vocabulary to know by the end of the year

group in pairs, threes... tens
equal groups of
+, divide, **division**, divided by, divided into
left, left over, **remainder**

Solving problems

MAKING DECISIONS AND REASONING

pattern, puzzle
calculate, calculation
mental calculation
method
jotting
answer
right, correct, wrong
what could we try next?
how did you work it out?
number sentence
sign, operation, symbol, **equation**

MONEY

money
coin, **note**
penny, pence, pound (£)
price, cost
buy, bought, sell, sold
spend, spent
pay
change
dear, costs more, **more/most expensive**
cheap, costs less, cheaper, **less/least expensive**
how much...? how many...?
total, **amount**
value, worth

Handling data

count, tally, sort, vote
graph, block graph, pictogram
represent
group, set
list, **chart**, bar chart
table, **frequency table**
Carroll diagram, Venn diagram
label, title, axis, axes
diagram
most popular, most common
least popular, least common

Measures, shape and space

MEASURES (GENERAL)

measure
size
compare
measuring scale, **division**
guess, estimate
enough, not enough
too much, too little
too many, too few
nearly, roughly, about, close to,
about the same as, **approximately**
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, further, furthest, near, close
distance apart/between, **distance to... from...**
kilometre (km), metre (m), centimetre (cm)
mile
ruler, metre stick, tape measure

MASS

weigh, weighs, balances
heavy/light, heavier/lighter, heaviest/lightest
kilogram (kg), half-kilogram, gram (g)
balance, scales, weight

CAPACITY

capacity
full, half full
empty
holds, contains
litre (l), half-litre, millilitre (ml)
container

TIME

time
days of the week: Monday, Tuesday...
months of the year: January, February...
seasons: spring, summer, autumn, winter
day, week, fortnight, month, year, **century**
weekend, birthday, holiday
calendar, **date**
morning, afternoon, evening, night, midnight
am, **pm**
bedtime, dinnertime, playtime
today, yesterday, tomorrow

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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
zero, one hundred, two hundred... one thousand
none
how many...?
count, count (up) to
count on (from, to)
count back (from, to)
count in ones, twos, threes, fours, fives...
count in tens, **hundreds**
more, less, many, few
tally
odd, even
every other
how many times?
multiple of
sequence
continue
predict
pattern, pair, rule
relationship

PLACE VALUE AND ORDERING

units, ones
tens, hundreds
digit
one-, two- or three-digit number
'teens' number
place, place value
stands for, represents
exchange
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 hundred more**
one less, ten less, **one hundred less**
compare
order
size
first, second, third... tenth... twentieth
twenty-first, twenty-second...
last, last but one
before, after
next
between, half-way between
above, below

ESTIMATING

guess how many, estimate
nearly, roughly, close to
approximate, approximately
about the same as
just over, just under
exact, exactly
too many, too few, enough, not enough
round (**up or down**)
nearest, round to the nearest ten

FRACTIONS

part, equal parts
fraction
one whole
one half, two halves
one quarter, two... three... four quarters
one third, two thirds, three thirds
one tenth

Calculations

ADDITION AND SUBTRACTION

+, add, addition, more, plus
make, sum, total
altogether
score
double, near double
one more, two more... ten more... one hundred more
how many more to make...?
how many more is... than...?
how much more is...?
-, subtract, subtraction, take (away), minus
leave, how many are left/left over?
one less, two less... ten less... one hundred less
how many fewer is... than...?
how much less is...?
difference between
half, halve
=, equals, sign, is the same as
tens boundary, **hundreds boundary**

MULTIPLICATION AND DIVISION

lots of, groups of
×, times, multiply, **multiplication**, multiplied by
multiple of, **product**
once, twice, three times... ten times...
times as (big, long, wide... and so on)
repeated addition
array
row, column
double, halve
share, share equally
one each, two each, three each...

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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 $6 \times 9 = 54$ shows $54 \div 6 = 9$ or $54 \div 9 = 6$

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.

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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 10×10 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.

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Some fun ideas to try at home

Can you tell the time?

Whenever possible, ask your child to tell you the time to the nearest 5 minutes. Use a clock with hands as well as a digital watch or clock.

Also ask:

- ◆ What time will it be one hour from now?
- ◆ What time was it one hour ago?

Time your child doing various tasks, e.g.

- ◆ getting ready for school;
- ◆ tidying a bedroom;
- ◆ saying the 5 times, 10 times or 2 times table...

Ask your child to guess in advance how long they think an activity will take. Can they beat their time when they repeat it?

Fractions

Use 12 buttons, or paper clips or dried beans or...

- ◆ Ask your child to find **half** of the 12 things.
- ◆ Now find one **quarter** of the same group.
- ◆ Find one **third** of the whole group.

Repeat with other numbers.



Order, order!

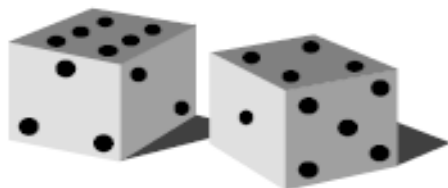
- ◆ Each of you should draw 6 circles in a row.
- ◆ Take turns.
- ◆ Roll two dice and make a two-digit number (see Number games).
- ◆ Write the number in one of your circles. Once the number is written in a circle you cannot change it or move it!
- ◆ The first to get all six of their circle numbers in order wins.

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Some fun ideas to try at home

Number games

Roll two dice. Make two-digit numbers, e.g. if you roll a 6 and 4, this could be 64 or 46. If you haven't got two dice, roll one dice twice. Ask your child to do one or more of the activities below.



- ◆ Count on or back from each number in tens.
- ◆ Add 19 to each number in their head. (A quick way is to add 20 then take away 1.)
- ◆ Subtract 9 from each number. (A quick way is to take away 10 then add back one.)
- ◆ Double each number.

Make 20

For this game you need to write out numbers 0 to 20 on a piece of paper. Make them big enough to put counters or coins on.

- ◆ Take turns. Roll a dice. Put a coin on the number that goes with the dice number to make 20, e.g. throw a '4' and put a coin on 16.
- ◆ If someone else's counter is there already, replace it with yours!
- ◆ The first person to have counters on 6 different numbers wins.
- ◆ Now roll two dice, add the numbers together and look for a number to make 20. The first with coins on 10 different numbers wins.

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 $\frac{1}{100}$ 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.

Maths Overview Year by Year

Year 6

Children find the difference between positive and negative numbers in a context e.g. difference between $+5^{\circ}\text{C}$ 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. 0.6×7 . 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. $24 = 2 \times 2 \times 2 \times 3$.

They learn to multiply and divide integers and decimals with confidence in written methods. Children relate fractions to multiplication and division e.g. $9 \div 3 = 1/3$ or $9 = 9 \times 1/3$. 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. **10**

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Some fun ideas to try at home

Board games

For these games you need to sketch a board like this. Notice how the numbers are arranged.

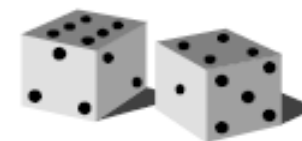
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- ◆ Start on 1. Toss a coin. If it lands heads, move 1 place along. If it lands tails, add 10, saying the total correctly before moving. First person to reach the bottom row wins.
- ◆ Start anywhere on the board. Roll a dice. Even numbers move you forwards and odd numbers move you backwards. If you land on a multiple of five, you can move either 10 forwards or 10 backwards. The first person to reach either the top or bottom of the board wins.

Up and down the scales

- ◆ Guess with your child the weights of people in your home.
- ◆ Then weigh them (if they agree!). Help your child to read the scales.
- ◆ Record each weight, then write all the weights in order.

Repeat after two weeks. What, if any, is the difference in the weights?



Bean race

You need two dice and a pile of dried beans.

- ◆ Take turns to roll the two dice.
- ◆ Multiply the two numbers and call out the answer.
- ◆ If you are right, you win a bean.
- ◆ The first to get 10 beans wins.

Learning intentions by the end of the year

By the end of Year 3, most children should be able to...

- Read and write numbers up to 1000 and put them in order. Know what each digit is worth.
- Count on or back in tens or hundreds from any number under 1000, e.g. 462, 472, 482... or 462, 562, 662...
- Know by heart addition and subtraction facts to 20, e.g. $4 + 16 = 20$, $12 - 8 = 4$.
- Work out in their heads sums such as $56 + 29$, and $97 - 51$.
- Know by heart the 2, 5 and 10 times tables.
- Do simple divisions, such as $27 \div 5$.
- Find simple fractions, such as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{10}$, of shapes and numbers.
- Tell the time to the nearest 5 minutes.
- Use £.p. e.g. know that £2.04 is £2 and 4p.
- Solve simple number problems and explain how to work them out.
- Recognise right angles and lines of symmetry in simple shapes.
- Explain a simple graph.

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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.

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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.