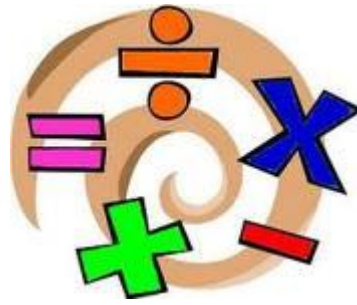# Maths guide for parents and carers of mathematicians in Year 3

Contents

- *Introduction, do's and don'ts*
- *Overview of the year – key concepts that your child will be learning in mathematics*
- *Methods of calculation taught& mental strategies*
- *Vocabulary – mathematical words they need to know*
- *Maths at home, games and internet links*
- *Key objectives your child should know by the end of the year*

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, and outlines what your child will be learning this year.

We know that you are keen to help with your child's maths education but may find you do not understand what their child is doing at school. Methods we teach might be different from the way you were taught. Many of you might feel less confident in mathematics because you did not understand it or enjoy the subject when you were at school. We all want your children to feel the opposite. We want them to feel confident in their mathematical abilities and to enjoy maths lessons. Children are taught why the methods work, not just how to perform them. It is the difference between telling someone directions and giving them a map.

We hope that you use this guide to help you support your child with maths at home. If you have any questions about anything in this guide, please ask your child's teacher or Becca Wall (maths coordinator) and we will be more than happy to talk things through.

Reference materials include: Mathematical Vocabulary booklet (DfE), target setting booklet (DfE), Maths for Mums & Dads (Rob Eastaway& Mike Askew), the latter of which is a well worth reading.

<u>Some Do's and Don'ts</u>

- Make maths 'hands on'—remember the three C's of everyday maths: cash, clocks and cooking. All three are perfect opportunities to practise maths (see maths at home section)
- Recognise there's more than one way of doing a calculation. Children's methods may seem long-winded or confusing, but you should always let them try their own way of solving a problem – it's how they will learn to understand maths rather than finding quick short-cuts.
- Discuss how one method may not be appropriate for all calculations e.g. you would use different methods to find 3,786+4,999 and 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.
- 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.
- 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?
- Don't accept it if your child says they are bad at maths and don't say that you are bad at maths either —this can give the message that maths is difficult, not enjoyable and ultimately not important for success in life. This just isn't true; as adults we deal with mathematics every day in cooking, shopping, sharing, games, parking... the list is endless. If you are positive your child will be too.

OVERVIEW OF MATHS IN YEAR 3

This outlines what the children will be learning over the course of the year:

<u>Problem solving</u>

- ⌗ Solve one- and two-step problems involving numbers, money or measures, including time, choosing and carrying out appropriate calculations
- ⌗ Record and represent maths working out, where appropriate using £ p or units of measure.Describe and explain methods, choices and solutions to problems, orally and in writing, using pictures and diagrams
- ⌗ Use patterns, properties of and relationships between numbers or shapes to identify similarities and differences, and to solve puzzles

<u>Number and place value</u>

- count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number

- recognise the place value of each digit in a three-digit number (hundreds, tens, ones)

- compare and order numbers up to 1000

- identify, represent and estimate numbers using different representations

- read and write numbers up to 1000 in numerals and in words

- solve number problems and practical problems involving these ideas.

<u>Calculation (see following pages for methods)</u>

- add and subtract numbers mentally, including:
    - a three-digit number and ones
    - a three-digit number and tens
    - a three-digit number and hundreds
- add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction

- estimate the answer to a calculation and use inverse operations to check answers

- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods

- solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

- count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10

- recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators

- recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators

- recognise and show, using diagrams, equivalent fractions with small denominators

- add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]

- compare and order unit fractions, and fractions with the same denominators

- solve problems that involve all of the above.

Shape, space and measure

- measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

- measure the perimeter of simple 2-D shapes

- add and subtract amounts of money to give change, using both £ and p in practical contexts

- tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks

- estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight

- know the number of seconds in a minute and the number of days in each month, year and leap year

- compare durations of events [for example to calculate the time taken by particular events or tasks].

- draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them

- recognise angles as a property of shape or a description of a turn

- identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle

- identify horizontal and vertical lines and pairs of perpendicular and parallel lines.

Data handling

- interpret and present data using bar charts, pictograms and tables

- solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.

METHODS OF CALCULATION

If you would like to see detail of how these methods progress through each year group, please ask your child's teacher for our school calculation policy. If you use different methods, feel free to discuss these with your child but allow them to explain what they have learnt at school too.

MANY MENTAL CALCULATION STRATEGIES WILL CONTINUE TO BE USED THROUGHOUT YOUR CHILD'S SCHOOLING. THEY ARE NOT REPLACED BY WRITTEN METHODS.

Children should be encouraged to

-   **consider if a mental calculation would be appropriate before using written methods.**
-   **approximate their answers before calculating.**
-   **check their answers after calculation using an appropriate strategy.**

ADDITION

Sum   Plus   Altogether   Total

Mental Calculation Strategies for Addition

These are a **selection** of mental calculation strategies which should continue to be practiced and used in lessons right up to year 6.

Mental recall of number bonds

6 + 4 = 10   □ + 3 = 10

25 + 75 = 100   19 + □ = 20

Using number bonds to add many numbers

5 + 2 + 8 + 9 + 1 combine 9 and 1, 8 and 2 to see the answer is 25

Use near doubles

6 + 7 = double 6 + 1 = 13

Addition using partitioning and recombining

34 + 45 = (30 + 40) + (4 + 5) = 79

Counting on or back in repeated steps of 1, 10, 100, 1000

86 + 57 = 143 (by counting on in tens and then in ones)

460 - 300 = 160 (by counting back in hundreds)

Add the nearest multiple of 10, 100 and 1000 and adjust

24 + 19 = 24 + 20 – 1 = 43

458 + 71 = 458 + 70 + 1 = 529

Use the relationship between addition and subtraction

36 + 19 = 55   19 + 36 = 55

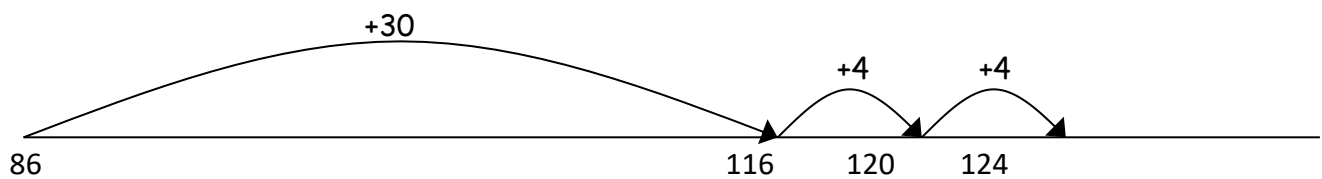55 – 19 = 36   55 – 36 = 19

Written methods of addition

Children should know that these words mean addition: add, sum, plus, altogether and total.

Children will continue to use empty number lines with increasingly large numbers, including compensation where appropriate.
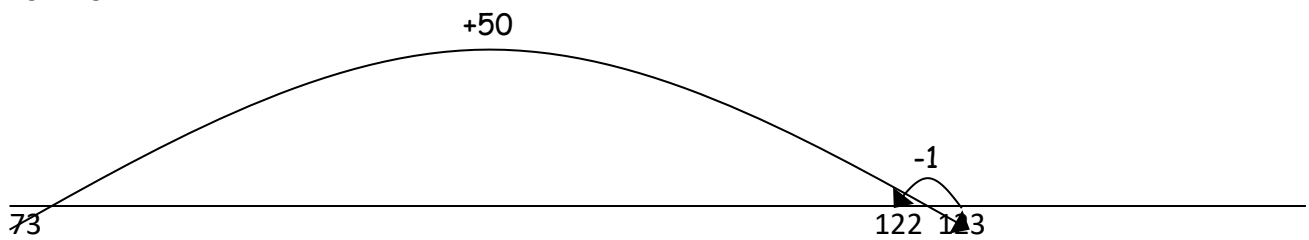
✓   Count on from the largest number irrespective of the order of the calculation.
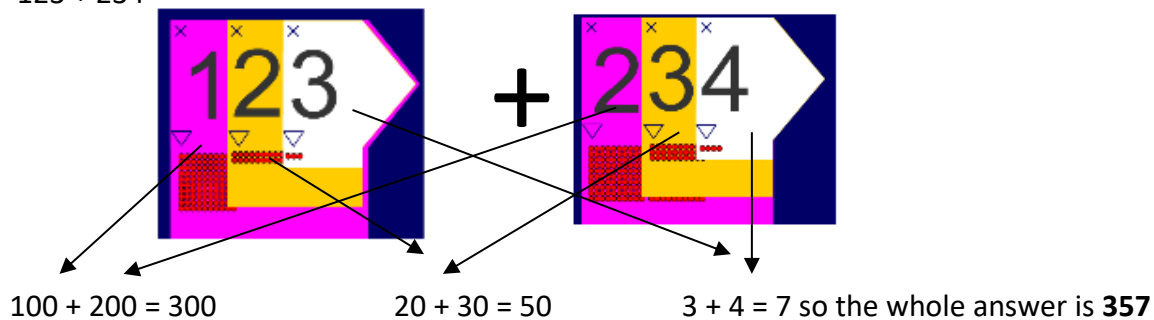
38 + 86 = 124

✓   Compensation

49 + 73 = 122

Children will be taught how to partition numbers, using dienes apparatus to support their understanding. They should know that 124 = 100 + 20 + 4.

They will use place value cards to support partitioning:

123 + 234 =

100 + 200 = 300   20 + 30 = 50   3 + 4 = 7 so the whole answer is **357**

Children will begin to use informal pencil and paper methods (jottings) to support, record and explain partial mental methods building on existing mental strategies.

Adding the least significant digits first:

```
     67
  +  24
     11  ( 7 +  4)
     80  (60 + 20)
     91
```

```
    267
  +  85
     12  ( 7 + 5)
    140  (60 + 80)
    200
    352
```

SUBTRACTION

<div style="border:1px solid">

Minus   Take-away   Less   Reduce   Find the difference

</div>

Mental Calculation Strategies for Subtraction
These are a **selection** of mental calculation strategies taught throughout the school:

Mental recall of addition and subtraction facts
$10 - 6 = 4$ $17 - \square = 11$
$20 - 17 = 3$ $10 - \square = 2$

Find a small difference by counting up
$82 - 79 = 3$

Counting on or back in repeated steps of 1, 10, 100, 1000
86 - 52 = 34 (by counting back in tens and then in ones)
460 - 300 = 160 (by counting back in hundreds)

Subtract the nearest multiple of 10, 100 and 1000 and adjust
24 - 19 = 24 - 20 + 1 = 5
458 - 71 = 458 - 70 - 1 = 387

Use the relationship between addition and subtraction
36 + 19 = 55   19 + 36 = 55
55 − 19 = 36   55 − 36 = 19

Written Methods of subtraction
Counting on – 'bald-headed man'

If the numbers involved in the calculation are close together or near to multiples of 10, 100 etc, it can be more efficient to count on.

The number line should still show 0 so children can cross out the section from 0 to the smallest number. They then associate this method with 'taking away'.

NB. We call multiples of ten here 'cafe numbers' where we can have a rest before counting the next jump. It is important to continue to call them multiples of ten as well, showing children how they can use number bonds to ten, to find out how big their jump is.
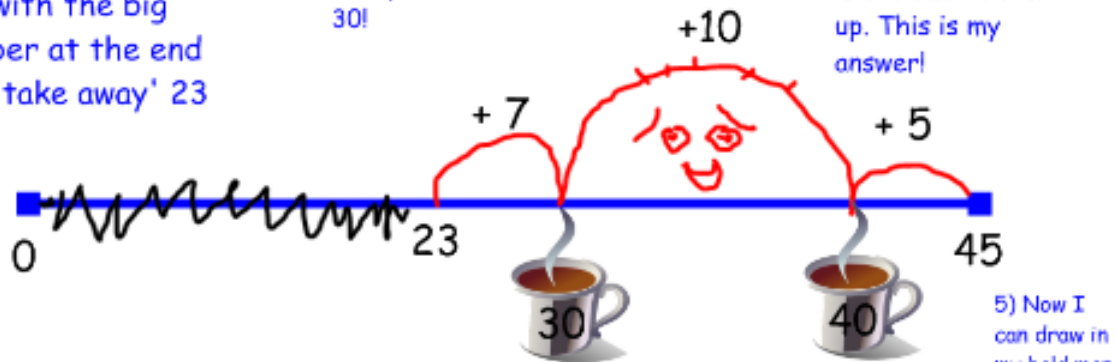
45 - 23 =

1) I draw a number line with the big number at the end and 'take away' 23

2) I find the next comfy cafe number after 23 where I can stop and have a rest. It's the next multiple of 10 which is 30!

3) I find the cafe number (tens number ending in 0) before 45. It's 40.

4) I write down how far each jump is then add them up. This is my answer!
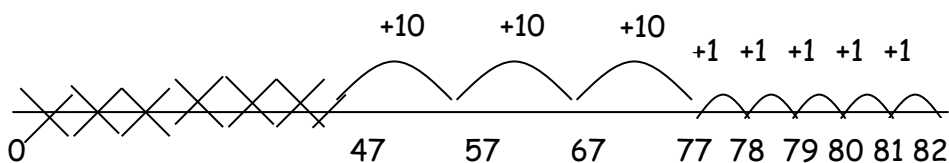
+10

+ 7

+ 5

0   23   30   40   45

5) Now I can draw in my bald man face!

I know that 7 + 10 + 5 = 22 so that answer is 22!

Some children may bridge ten (going from 47 to 57 rather than to 50). This is fine too:
Count up from 47 to 82 in jumps of 10 and jumps of 1.

82 - 47

+10   +10   +10   +1 +1 +1 +1 +1

0   47   57   67   77 78 79 80 81 82

Help children to become more efficient with counting on by:

✓ Subtracting the units in one jump;
✓ Subtracting the tens in one jump and the units in one jump;
✓ Bridging through ten.
✓ Children will begin to use informal pencil and paper methods (jottings) to support, record and explain partial mental methods building on existing mental strategies.

Partitioning and decomposition

This process should be demonstrated using arrow cards to show the partitioning and base 10 materials to show the decomposition of the number.

NOTE When solving the calculation 89 – 57, children should know that 57 **does NOT EXIST AS AN AMOUNT** - it is what you are subtracting from the other number. Therefore, when using base 10 materials, children would need to count out only the 89.

```
    89     =      80   and   9
 -  57            50   and   7
 _____           30   and   2  =  32
```

Initially, the children will be taught using examples that do not need the children to exchange.

Next the children will begin to exchange. Most children in year 3 will only just be ready for this so tread carefully. It is essential that children understand how to use a number line and have a secure understanding of place value before progressing to this stage. There are lots of pitfalls they can fall into if they don't have the right foundations.

```
   71
 - 46
 ____
```

Step 1   70   and   1
                     - 40   and   6
                     _____

The calculation should be read as e.g. take 6 from 1. Get the whole class to chant 'you can't do it' and make sure they don't come up with an answer of 5!

        Step 2 60   and   11
                  -   40   and   6
                     20   and   5   =   25

This would be recorded by the children as

60
        70   and   ⁶1
     - 40   and   6
        20   and   5   =   25

Tell the children there are plenty of units hanging around in the tens column, grouped as tens. We exchange one ten for ten units and put them in the units column. Spin around and come back to it. Now we can take 6 from 11!

Children should know that units line up under units, tens under tens, and so on.

Where the numbers are involved in the calculation are close together or near to multiples of 10, 100 etc counting on using a number line should be used. This method can continue to be practised for children not ready for decomposition.

| Times | Lots of... | Product | Double | Groups of... |
| Multiple | | Repeated addition | Array | |

Mental Calculation Strategies for Multiplication

These are a **selection** of mental calculation strategies:

Doubling and halving

Applying the knowledge of doubles and halves to known facts.
e.g. 8 x 4 is double 4 x 4

Using multiplication facts

Year 1-2   2 times table
                10 times table
                5 times table

Year 3   2 times table
                10 times table
                5 times table
                4 times table
                8 times table

Year 4   Derive and recall all multiplication facts up to 10 x 10
Years 5 & 6   Derive and recall quickly all multiplication facts up to 10 x 10.

Using and applying division facts

Children should be able to utilise their tables knowledge to derive other facts.
e.g. If I know 3 x 7 = 21, what else do I know?
30 x 7 = 210, 300 x 7 = 2100, 3000 x 7 = 21 000, 0.3 x 7 = 2.1 etc

Use closely related facts already known

13 x 11 = (13 x 10) + (13 x 1)
        = 130 + 13 = 143

Multiplying by 10 or 100

Knowing that the effect of multiplying by 10 is a shift in the digits one place to the left.
Knowing that the effect of multiplying by 100 is a shift in the digits two places to the left.

Partitioning

23 x 4 = (20 x 4) + (3 x 4)
        = 80 + 12
        = 92
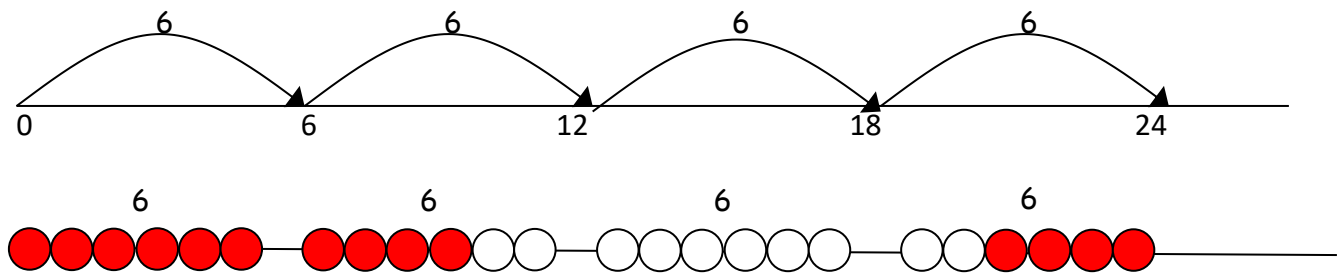
Use of factors

8 x 12 = 8 x 4 x 3

Written methods of multiplication

Children will learn how to use:

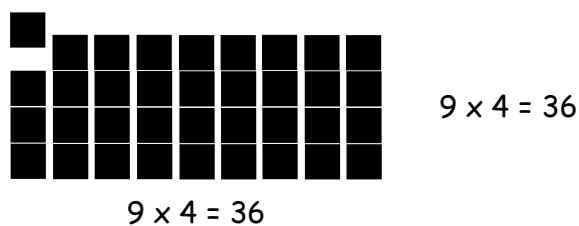✓ **Repeated addition**

4 times 6   is   6 + 6 + 6 + 6 = 24   or   4 lots of 6   or   6 x 4

Children should use number lines or bead bars to support their understanding.

✓ **Arrays**

Children should be able to model a multiplication calculation using an array. This knowledge will support with the development of the grid method.

9 x 4 = 36

9 x 4 = 36

Children will also develop an understanding of

✓ **Scaling**

e.g. Find a ribbon that is 4 times as long as the blue ribbon

5 cm

20 cm

✓ **Using symbols to stand for unknown numbers to complete equations using inverse operations**

□x 5 = 20   3 x △ = 18   □ x O = 32

✓ **Partitioning** NB.This is a big step so keep the numbers low to begin with. Children need to understand how to multiply by ten and one hundred before tackling larger numbers.

18 x 5 = (10 x 5) + (8 x 5)
        = 50 + 40
        = 90

Share   group   lots of   split   divide into

Mental Calculation Strategies for Division
These are a **selection** of mental calculation strategies:
Doubling and halving
Knowing that halving is dividing by 2
Deriving and recalling division facts
Using and applying division facts
Children should be able to utilise their tables knowledge to derive other facts.
e.g. If I know 3 x 7 = 21, what else do I know?
30 x 7 = 210, 300 x 7 = 2100, 3000 x 7 = 21 000, 0.3 x 7 = 2.1 etc
Dividing by 10 or 100
Knowing that the effect of dividing by 10 is a shift in the digits one place to the right.
Knowing that the effect of dividing by 100 is a shift in the digits two places to the right.
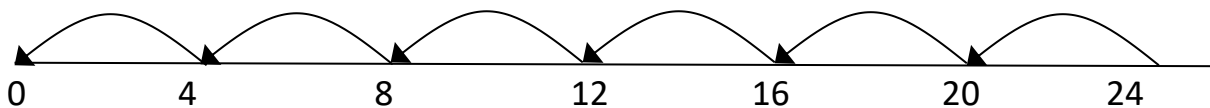**Use related facts**

Written methods of division
Children will continue to use:

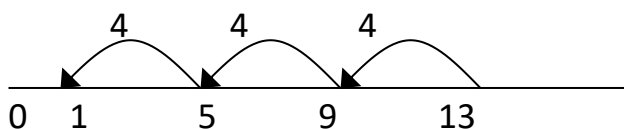✓ **Repeated subtraction using a number line**
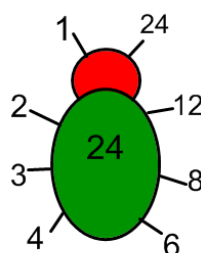Children will use an empty number line to support their calculation.

$24 \div 4 = 6$

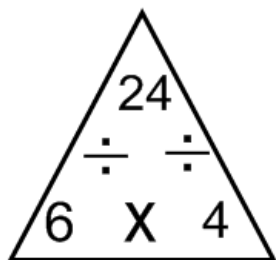0   4   8   12   16   20   24

Children should also move onto calculations involving remainders.
$13 \div 4 = 3 \text{ r } 1$

0   1   5   9   13

✓ **Using factor families and factor bugs to see the inverse relationship with multiplication for times tables they know well:**

✓ **Using symbols to stand for unknown numbers to complete equations using inverse operations**

26 ÷ 2 = □   24 ÷ △ = 12   □ ÷ 10 = 8

VOCABULARY

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
x, 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...

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

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

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

MATHS AT HOME

<u>Maths props to have in the house</u>

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.

Chess & draughts – a great turn taking game involving strategy.

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

A prominent clock - use 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 eg. The 7 x table since there are 7 days in a week

Board games with dice or spinner

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

Money – count with coins and discuss all the ways of making an amount of money with different coins.

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?
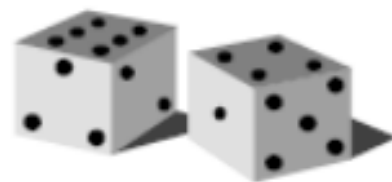
Bean race

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.

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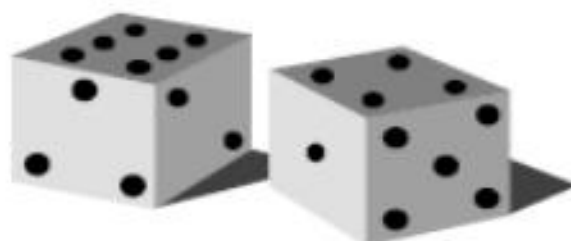
- Count on or back from each number in tens.
- Add 19 to each number in their head. (A quick way is to add 20 then take away 1.)
- Subtract 9 from each number. (A quick way is to take away 10 then add back one.)
- Double each number.

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.

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.

Calculator costs

Use a calculator to find the cost of one sweet:

Clues:

1. Enter the cost of the packet of sweets on the calculator display, for example 35 pence.

2. Press the divide ÷ button

3. Count the number of sweets in the packet, and enter this number on the calculator, for example 42 (sweets).

4. Press the equals = button

5. The answer is 0.833 (pence), which is less than 1p for each sweet.

Now use your calculator to find the cost of:

- One stick of chewing gum;
- One finger of a chocolate bar;
- One segment of a tangerine;

MATHS AT HOME FOR ANY AGE

SHOPPING

£   Looking at prices

£   Calculating change – which coins, different combinations.

£   Weighing fruit and vegetables in the supermarket.

£   Counting pocket money.

£   Reading labels on bottles, packets, in order to discuss capacity, weight, shape and colour.

£   Estimating the final bill at the end of shopping while waiting at the cash out.

£   Calculating the cost of the family going to the swimming baths, etc.

Time

- Looking at the clock – identify the numbers telling the time using analogue and digital clocks.
- Calculating how long a journey will take looking at train/bus/airline timetables.
- Using TV guide to calculate the length of programmes.
- Programming the video or the microwave.
- Looking at the posting times on the post box.
- Discussing events in the day e.g. teatime, bed time, bath time.
- Setting an alarm clock.

Starting off

Discuss with the family what would be the most popular outings. Countryside, seaside, a theme park, a museum, a tourist attraction or just a picnic in the local park?

Which outings can you reach from home in…?

- Less than 1 hour
- Between 1 and 2 hours
- More than 2 hours

<div align="center">SEQUENCING</div>

- The main events of the day;
- Routines and what comes next;
- The parts of a recipe, set of instructions;
- Getting dressed;
- Tying shoe laces;
- Imagine you have a week to do whatever you wish. Plan your week on the timetable

<div align="center">MEASUREMENT</div>

- Calculating distances in a journey e.g. how much further?
- Calculating heights of family members – who is the tallest?
- Measuring weights of ingredients for baking.
- Playing with plastic jugs and containers in the bath.
- Comparing sizes of clothes – bigger than, smaller than.
- Wrapping parcels – what amount of paper, string do we need?
- Reading the scale on weighing machines and calculating the calibrations.
- Measuring ingredients out for a recipe using different types of spoons
- Estimating the quantity of milk from a cow/herd.
- Estimate the amount of time to harvest a field

Weigh your child on the bathroom scales.

Weigh them again while they are holding the family pet. Can they work out how much heavier they are?

Can you find two things heavier than your child and two things lighter than your child around the house?

<div align="center">COUNTING</div>

- Collections of objects – shells, buttons, pretty stones.
- Cars on a journey e.g. how many red cars?
- Animals in a field e.g. sheep, cows.
- Stairs up to bed, steps etc.
- Sports scores – cricket averages, goal averages.
- Pages in a storybook.
- Counting up to 10, 20, and 100 – backwards and forwards.
- Counting buttons, shoes, socks as a child gets dressed.
- Tidy a cupboard or shelf and count the contents e.g. tins, shoes, etc.
- Counting particular vehicles on a journey e.g. Eddie Stobartlorries, motorbikes, etc.
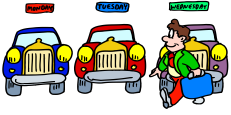
Beat the clock

Time your child as they do one of the following:

- Count back from 100 in tens.
- Count back from 75 in fives.
- Starting at six, count up in tens to 206.
- Starting at 39, count up in twenties to 239.
- Starting at 67, count up in thirties to 367.

Can they beat their record?

REASONING

? Laying the table for four people, 'How many knives, forks and spoons will I need altogether?

? Planning a TV viewing session, 'How long will the programme last?'

- How many rectangles can you count?
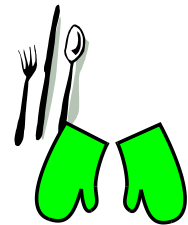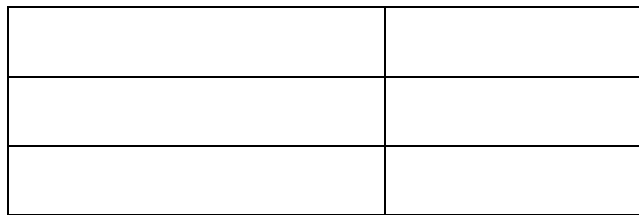
SORTING AND MATCHING

✧ Setting the table and sorting cutlery. This teaches 1 to 1 correspondence and is helpful for you!
✧ Sorting clothes for washing – size, colour.
✧ Matching pairs of socks, gloves, shoes.
✧ Sorting groceries.

❋ Using car number plates – add the digits to find biggest, smallest and total.
❋ Sharing out sweets, toys etc in groups of 2, 3, 4, 5, 6 etc to help with times tables.
❋ Using telephone numbers – value of each digit.
❋ Using sandwiches to show fractions ½, ¼.
❋ Using a round sandwich cake to show fractions ½, ¼, 1/6, 1/8 etc.
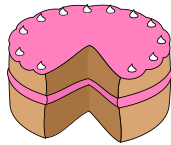
Pizza please!

Your pizza costs £3.60. Cut it into six equal slices.

How much does each slice cost?

The answer is that each slice costs 60p.

- How much is half a slice?
- How much do two slices cost?
- How much does half (1/2) of the whole pizza cost?

What if you cut your pizza into four equal slices (quarters)?

- How much does one slice (1/4) cost now?
- How much does half cost now?
- Is it the same, more or less than above?

GAMES AND INTERNET LINKS

WEB SITES

- www.mathletics.co.uk has mental maths games played live against children from around the world and tutorials and homework sections. Your child's teacher will give your child a login and username.
- http://nrich.maths.org/public/ has heaps of problems for KS1 and 2 which they call 'stage 1' and 'stage 2'
- http://www.mathszone.co.uk/ has links organised by maths area and key objective.
- www.counton.org has lots of ideas and games to play.
- www.learn.co.ukhelp for all children with reading, maths and revision.
- www.bbc.co.uk/schools games to play and links to many subjects.
- http://www.beam.co.uk/mathsofthemonth.php has problem solving activities for each age.

NUMBER GAMES

- ◎ Skipping – every skip count 2, 3, 4 etc.
- ◎ Hop scotch
- ◎ Ludo
- ◎ Snakes and ladders
- ◎ Dominoes
- ◎ Cards – number sequences
- ◎ Cards – Rummy, Patience, Pontoon, Snap
- ◎ Bingo
- ◎ Yahtzee
- ◎ Darts
- ◎ Heads & Tails and keep a tally
- ◎ Chess and draughts
- ◎ Monopoly
- ◎ Computer programmes
- ◎ Beetle
- ◎ Connect 4
- ◎ Counting games to practise times tables
- ◎ I spy a number in town, on a journey
- ◎ Number jigsaws
- ◎ Clock golf, croquet, crazy golf on holiday to help counting
- ◎ Snooker and pool
- ◎ Number Lotto
- ◎ Dot to dot with numbers
- ◎ Skittles
- ◎ Happy families
- ◎ Whist
- ◎ Cribbage
- ◎ Number crosswords, dot to dot, puzzles

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 $1/2$, $1/3$, $1/4$, $1/5$, $1/10$, 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.