



# Maths guide for parents and carers of mathematicians in Year2



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*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.*

## Some Do's and Don'ts

- 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 2**

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

### **Problem solving**

- ❏ Solve problems involving addition, subtraction, multiplication or division in contexts of numbers, measures or pounds and pence
- ❏ Record my mathematical working out in lists, numbers and diagrams.
- ❏ Present solutions to problems in an organised way; explain decisions, methods and results in spoken, pictorial and written form, using mathematical language and symbols
- ❏ Describe patterns and relationships involving numbers or shapes, make predictions and test these with examples

### **Number and place value**

- count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward
- recognise the place value of each digit in a two-digit number (tens, ones)
- identify, represent and estimate numbers using different representations, including the number line
- compare and order numbers from 0 up to 100; use  $<$ ,  $>$  and  $=$  signs
- read and write numbers to at least 100 in numerals and in words
- use place value and number facts to solve problems.

### **Number facts**

- ❏ **Derive and recall all addition and subtraction facts for each number to at least 10, all pairs with totals to 20 and all pairs of multiples of 10 with totals up to 100**
- ❏ **Understand that halving is the inverse of doubling and derive and recall doubles of all numbers to 20, and the corresponding halves**
- ❏ **Find and recall multiplication facts for the 2, 5 and 10 times-tables and the related division facts; recognise multiples of 2, 5 and 10**
- ❏ **Use knowledge of number facts and operations to check answers to calculations**

### **Calculation (see following pages for methods)**

- solve problems with addition and subtraction:
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
  - applying their increasing knowledge of mental and written methods
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- add and subtract numbers using concrete objects, pictorial representations, and mentally, including:

- a two-digit number and ones
- a two-digit number and tens
- two two-digit numbers
- adding three one-digit numbers
- show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.
- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.
- recognise, find, name and write fractions  $\frac{1}{3}$ ,  $\frac{1}{4}$ ,  $\frac{2}{4}$  and  $\frac{3}{4}$  of a length, shape, set of objects or quantity
- write simple fractions for example,  $\frac{1}{2}$  of 6 = 3 and recognise the equivalence of  $\frac{2}{4}$  and  $\frac{1}{2}$ .

### Shape, space and measure

- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature ( $^{\circ}\text{C}$ ); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using  $>$ ,  $<$  and  $=$
- recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
- find different combinations of coins that equal the same amounts of money
- solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change
- compare and sequence intervals of time
- tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times
- know the number of minutes in an hour and the number of hours in a day.

- identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
- identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
- identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid]
- compare and sort common 2-D and 3-D shapes and everyday objects.
- order and arrange combinations of mathematical objects in patterns and sequences
- use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).

### Data handling

- interpret and construct simple pictograms, tally charts, block diagrams and simple tables
- ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- ask and answer questions about totalling and comparing categorical data.

## **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**

$$6 + 4 = 10$$

$$25 + 75 = 100$$

$$\square + 3 = 10$$

$$19 + \square = 20$$

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**

$$6 + 7 = \text{double } 6 + 1 = 13$$

#### **Addition using partitioning and recombining**

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

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

$$86 + 57 = 143 \text{ (by counting on in tens and then in ones)}$$

$$460 - 300 = 160 \text{ (by counting back in hundreds)}$$

#### **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

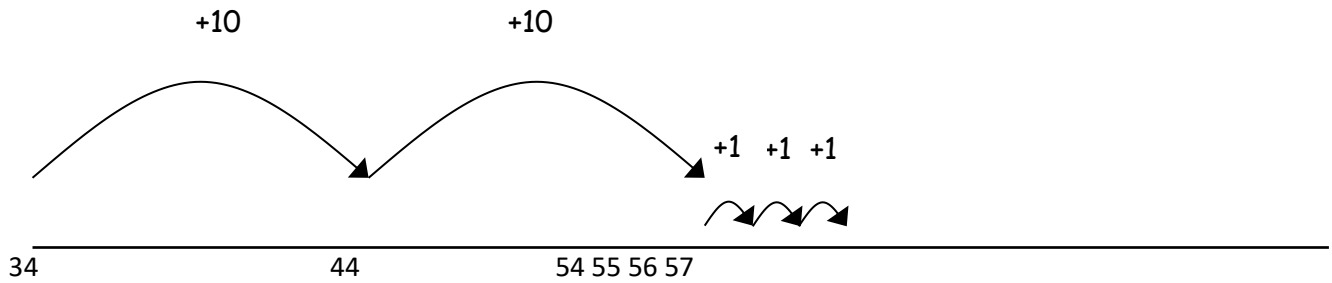
Children will be shown 'spider counting' using a 100 square eg.  $26 + 30$  (three tens) = 56. The spider can only move up or down in tens. This can then be used to help add multiples of ten and adjust.

Children will begin to use 'empty number lines' as an alternative image themselves starting with the larger number and counting on.

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

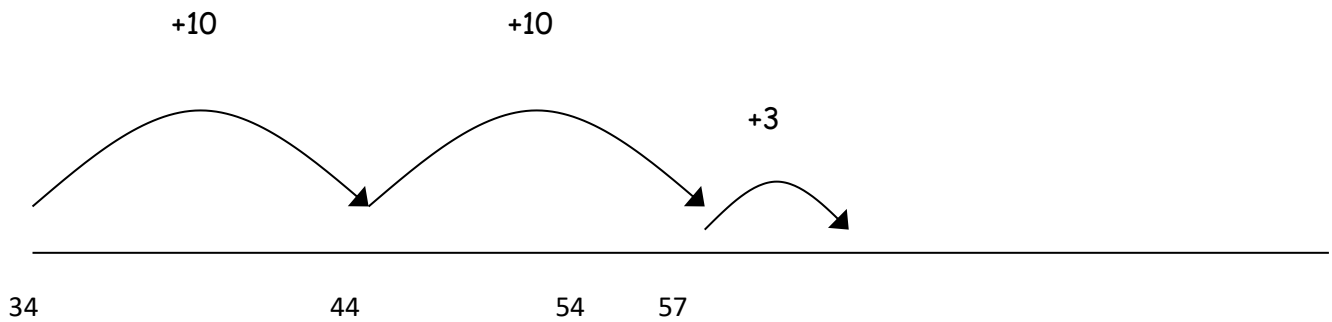


- ✓ First counting on in tens and ones.  
 $34 + 23 = 57$



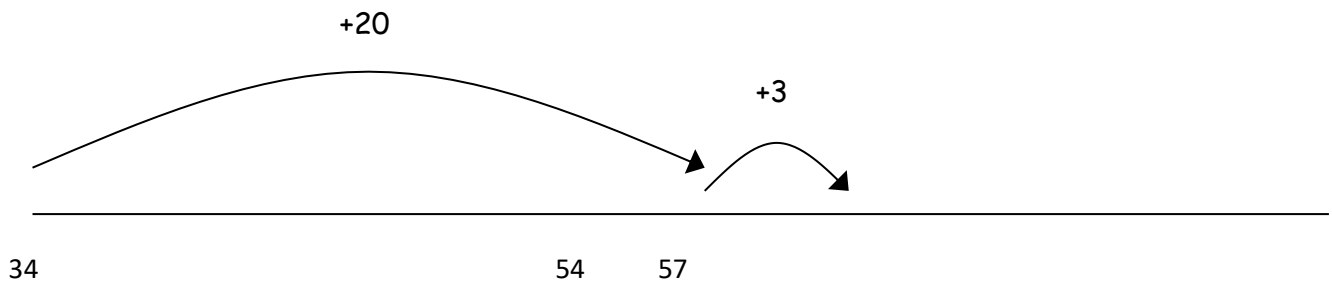
- ✓ Then helping children to become more efficient by adding the units in one jump (by using the known fact  $4 + 3 = 7$ ).

$34 + 23 = 57$



- ✓ Followed by adding the tens in one jump and the units in one jump.

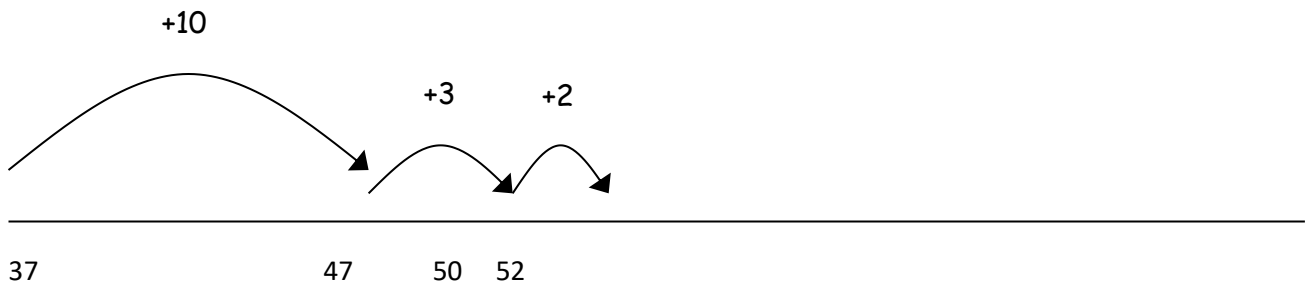
$34 + 23 = 57$





- ✓ Bridging through ten can help children become more efficient.

$$37+15=52$$



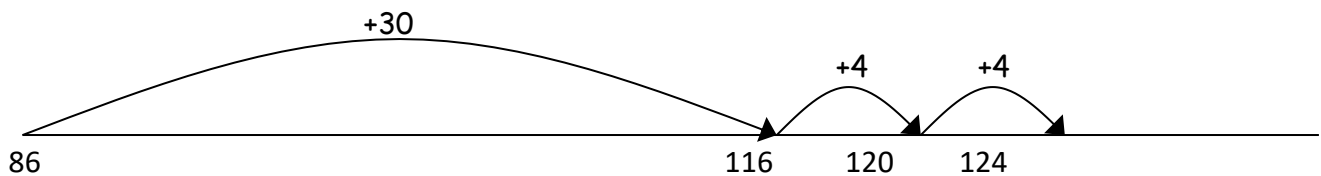
Children will continue to 'build the number' using dienes apparatus and cubes. This will allow them to begin to refer to units, tens and hundreds.

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.

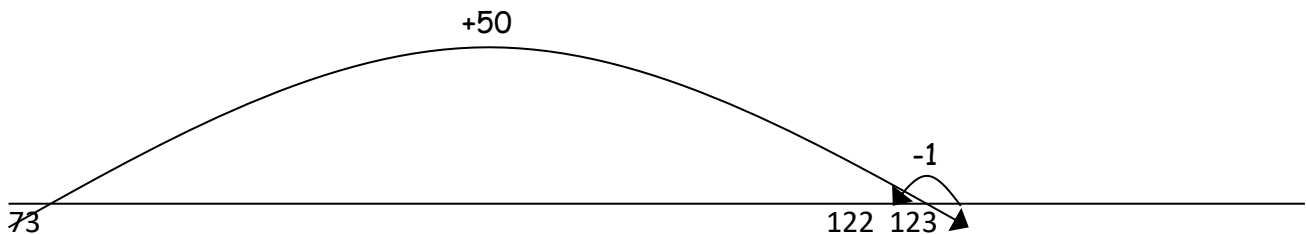
- ✓ Count on from the largest number irrespective of the order of the calculation.

$$38 + 86 = 124$$



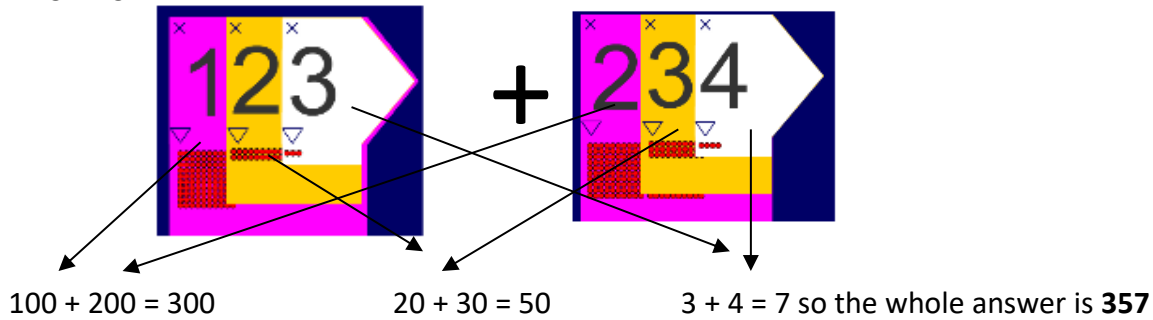
- ✓ Compensation

$$49 + 73 = 122$$



They will begin to use place value cards to support partitioning:

$123 + 234 =$



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

This is the next stage: adding the least significant digits first

$$\begin{array}{r} 67 \\ + 24 \\ \hline 11 \text{ ( } 7 + 4 \text{)} \\ \underline{80} \text{ (} 60 + 20 \text{)} \\ \underline{91} \end{array}$$

$$\begin{array}{r} 267 \\ + 85 \\ \hline 12 \text{ ( } 7 + 5 \text{)} \\ \underline{140} \text{ (} 60 + 80 \text{)} \\ \underline{200} \\ \underline{352} \end{array}$$

## SUBTRACTION

Minus    Take-away    Less    Reduce    Find the difference

### Mental Calculation Strategies for Subtraction

These are a **selection** of mental calculation strategies taught throughout the school:

#### **Mental recall of addition and subtraction facts**

$$\begin{array}{ll} 10 - 6 = 4 & 17 - \square = 11 \\ 20 - 17 = 3 & 10 - \square = 2 \end{array}$$

#### **Find a small difference by counting up**

$82 - 79 = 3$

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

$86 - 52 = 34 \text{ (by counting back in tens and then in ones)}$

#### **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

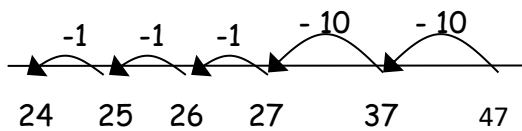
Children will begin to use empty number lines to support calculations.

### Counting back – ‘rob the bank’.

Children will remember the concept of robbing the bank problems as the robber steals in 1s and 10s. When we’ve found out how much is left, we can catch the robber and say ‘take him away’!

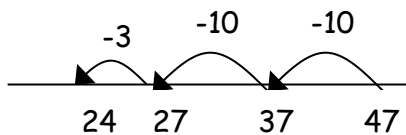
- ✓ First counting back in tens and ones.

$$47 - 23 = 24$$



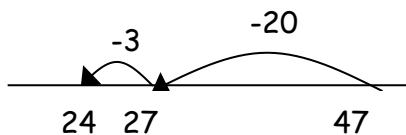
- ✓ Then helping children to become more efficient by subtracting the units in one jump (by using the known fact  $7 - 3 = 4$ ).

$$47 - 23 = 24$$



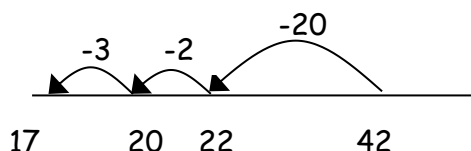
- ✓ Subtracting the tens in one jump and the units in one jump.

$$47 - 23 = 24$$



- ✓ Bridging through ten can help children become more efficient.

$$42 - 25 = 17$$



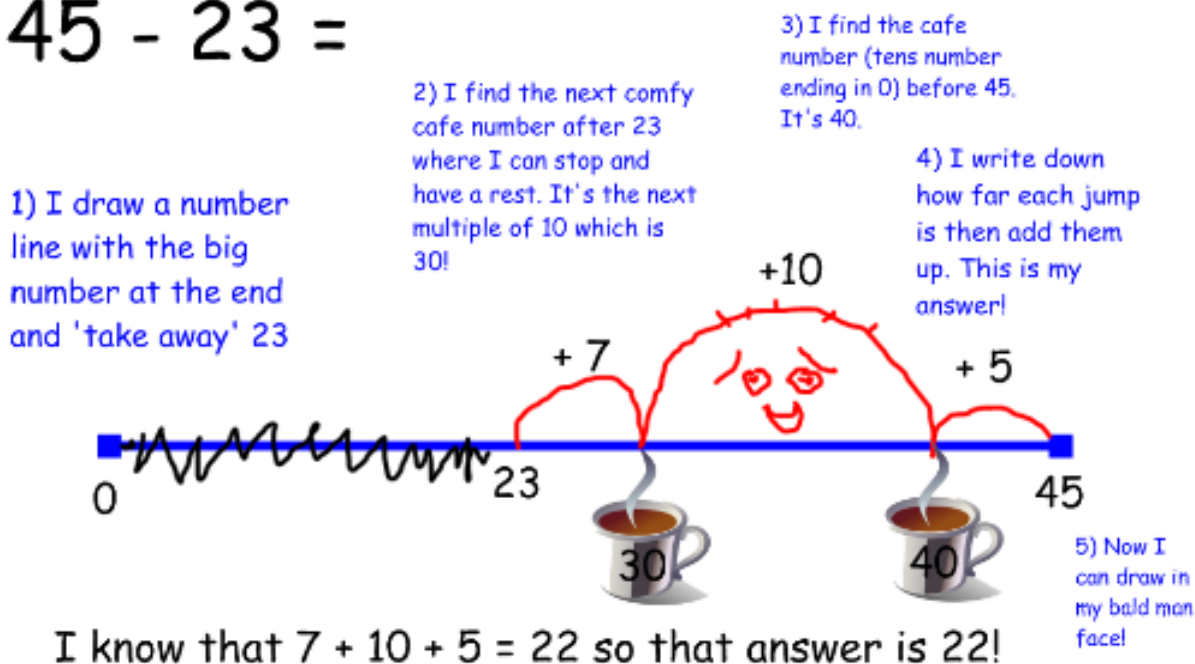
### Counting on – ‘bald-headed man’

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’.

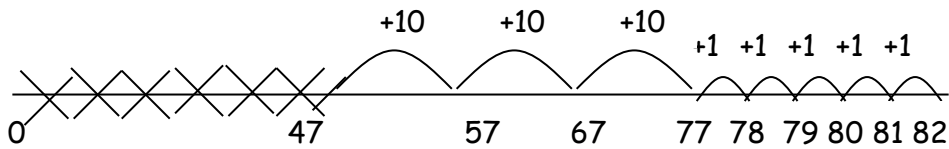
NB. We call multiples of ten here ‘cafe numbers’ where we can have a rest before counting the next jump. It is

$$45 - 23 =$$



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.

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.



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.

### MULTIPLICATION

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

#### **Doubling and halving**

Applying the knowledge of doubles and halves to known facts.

e.g.  $8 \times 4$  is double  $4 \times 4$

#### **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  
           3 times table  
           6 times table

Year 4 Derive and recall all multiplication facts up to  $10 \times 10$

Years 5 & 6    Derive and recall quickly all multiplication facts up to  $10 \times 10$ .

#### **Using and applying division facts**

Children should be able to utilise their tables knowledge to derive other facts.

e.g. If I know  $3 \times 7 = 21$ , what else do I know?

$30 \times 7 = 210$ ,  $300 \times 7 = 2100$ ,  $3000 \times 7 = 21\ 000$ ,  $0.3 \times 7 = 2.1$  etc

#### **Use closely related facts already known**

$13 \times 11 = (13 \times 10) + (13 \times 1)$   
 $= 130 + 13 = 143$

#### **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

$$\begin{aligned} 23 \times 4 &= (20 \times 4) + (3 \times 4) \\ &= 80 + 12 \\ &= 92 \end{aligned}$$

## Use of factors

$$8 \times 12 = 8 \times 4 \times 3$$

## Written methods of multiplication

Children will experience equal groups of objects and will count in and 10s and begin to count in 5s. They will work on practical problem solving activities involving equal sets or groups.

Children will count on in 2s, 5s and 10s use 'finger multiplication' each finger today is worth 2. How many if I hold up 4 fingers?



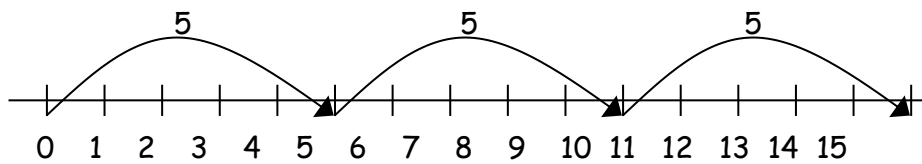
Children will develop their understanding of multiplication and use jottings to support calculation:

### ✓ Repeated addition

3 times 5 is  $5+5+5=15$  or 3 lots of 5 or  $5 \times 3$

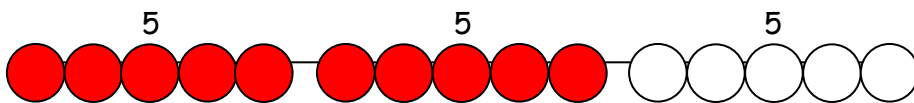
Repeated addition can be shown easily on a number line:

$$5 \times 3 = 5 + 5 + 5$$



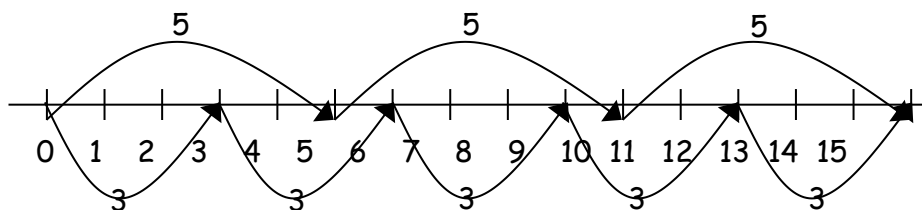
and on a bead bar:

$$5 \times 3 = 5 + 5 + 5$$



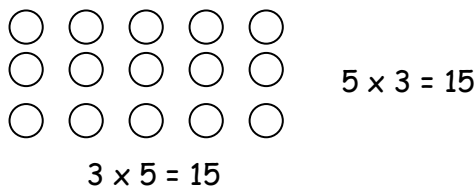
### ✓ Commutativity

Children should know that  $3 \times 5$  has the same answer as  $5 \times 3$ . This can also be shown on the number line:



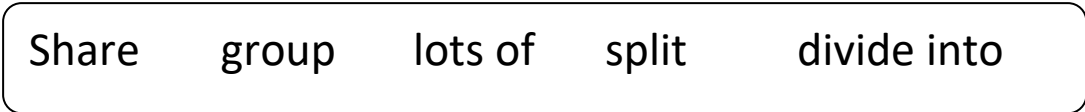
✓ **Arrays**

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



Children will also learn how to double (0-10) and halve (0-20) using objects to support initial understanding.

**DIVISION**



**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  $3 \times 7 = 21$ , what else do I know?

$30 \times 7 = 210$ ,  $300 \times 7 = 2100$ ,  $3000 \times 7 = 21\ 000$ ,  $0.3 \times 7 = 2.1$  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**

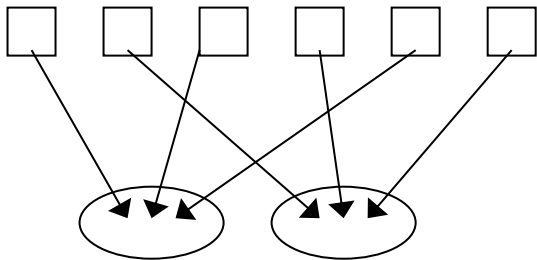
Children will understand equal groups and share items out in play and problem solving. They will count in 2s and 10s and later in 5s.



Children will develop their understanding of division and use jottings to support calculation

✓ **Sharing equally**

6 sweets shared between 2 people, how many do they each get?



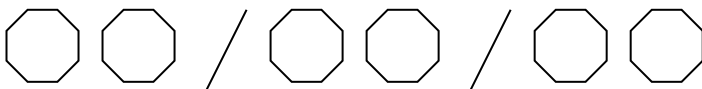
**Y2**

Children will continue to use cubes, other objects and jottings:

✓ **Sharing equally**

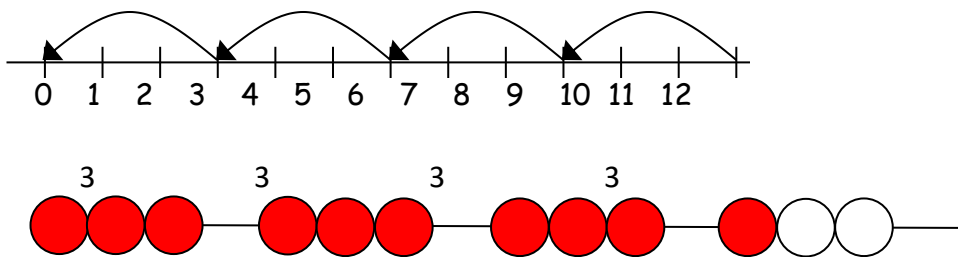
✓ **Grouping or repeated subtraction**

There are 6 sweets, how many people can have 2 sweets each?



✓ **Repeated subtraction using a number line or bead bar**

$$12 \div 3 = 4$$



The bead bar will help children with interpreting division calculations such as  $10 \div 5$  as 'how many 5s make 10?'

✓ **Using symbols to stand for unknown numbers to complete equations using inverse operations of times tables they know.**

$$\square \div 2 = 4$$

$$20 \div \triangle = 4$$

$$\square \div \triangle = 4$$

Children will begin to relate dividing to finding fractions of shapes.



# 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  
more, less, many, few  
tally  
odd, even  
every other  
how many times?  
multiple of  
sequence  
continue  
predict  
pattern, pair, rule

### 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 less, ten 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  
about the same as  
just over, just under  
exact, exactly  
too many, too few, enough, not enough  
round, nearest, round to the nearest ten

### FRACTIONS

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

## 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

### MULTIPLICATION AND DIVISION

lots of, groups of  
x, times, multiply, multiplied by  
multiple of  
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, divided by, divided into  
left, left over

## Solving problems

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### MAKING DECISIONS AND REASONING

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

---

### MONEY

money  
coin  
penny, pence, pound (£)  
price, cost  
buy, bought, sell, sold  
spend, spent  
pay  
change  
dear, costs more  
cheap, costs less, cheaper  
how much...? how many...?  
total

## Organising and using data

count, tally, sort, vote  
graph, block graph, pictogram  
represent  
group, set  
same, different  
list, table  
label, title  
most popular, most common  
least popular, least common

## Measures, shape and space

---

### MEASURES (GENERAL)

measure  
size  
compare  
measuring scale  
guess, estimate  
enough, not enough  
too much, too little  
too many, too few  
nearly, roughly, about, 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, further, furthest, near, close  
metre (m), centimetre (cm)  
ruler, metre stick, tape measure

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### MASS

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

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### 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  
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  
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

---

## 3D SHAPES

cube  
cuboid  
pyramid  
sphere  
cone  
cylinder

---

## 2D SHAPES

circle, circular  
triangle, triangular  
square  
rectangle, rectangular  
star  
pentagon  
hexagon  
octagon

---

## 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  
left, right  
up, down  
higher, lower  
forwards, backwards, sideways  
across  
close, far, near  
along  
through  
to, from, towards, away from  
clockwise, anti-clockwise  
movement  
slide  
roll  
whole turn, half turn, quarter turn  
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...

read  
write  
record  
write in figures  
present  
represent  
trace  
copy  
complete  
finish, end

fill in  
shade, colour  
label

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

cost, count, tally

calculate  
work out  
solve  
answer  
check

## General

same, different  
missing number/s  
number facts  
number pairs  
number bonds

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

### 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.

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

### Speedy pairs to 10

Make a set of 12 cards showing the numbers 0 to 10, but with two 5s. If you wish, you could use playing cards.

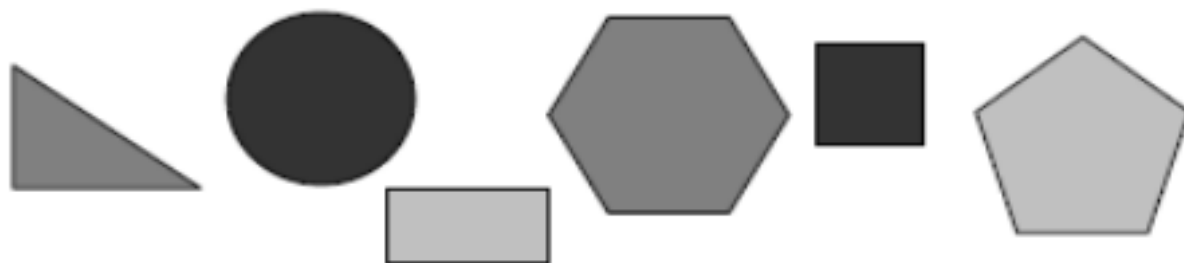
- ◆ Shuffle the cards and give them to your child.
- ◆ Time how long it takes to find all the pairs to 10.



Repeat later in the week. See if your child can beat his / her time.

### Guess my shape

- ◆ Think of a 2-D shape (triangle, circle, rectangle, square, pentagon or hexagon). Ask your child to ask questions to try and guess what it is.
- ◆ You can only answer *Yes* or *No*. For example, your child could ask: *Does it have 3 sides?* or: *Are its sides straight?*
- ◆ See if he can guess your shape using fewer than five questions.
- ◆ Now ask them to choose a shape so you can ask questions.



## Some fun ideas to try at home

### Number facts

You need a 1–6 dice.

- ◆ Take turns. Roll the dice. See how quickly you can say the number to add to the number on the dice to make 10, e.g.



and **6**

- ◆ If you are right, you score a point.
- ◆ The first to get 10 points wins.

You can extend this activity by making the two numbers add up to 20, or 50.

### Car numbers

- ◆ Each person chooses a target number, e.g. 15.
- ◆ How many car numbers can you spot with 3 digits adding up to your target number, e.g. K456 XWL.
- ◆ So  $4 + 5 + 6 = 15$ , bingo!



### Bean subtraction

For this game you need a dice and some dried beans or buttons.

- ◆ Start with a pile of beans in the middle. Count them.
- ◆ Throw a dice. Say how many beans will be left if you subtract that number.
- ◆ Then take the beans away and check if you were right!
- ◆ Keep playing.
- ◆ The person to take the last bean wins!

## Some fun ideas to try at home

### How heavy?

You will need some kitchen scales that can weigh things in kilograms.



- ◆ Ask your child to find something that weighs close to 1 kilogram.
- ◆ Can he / she find something that weighs exactly 1 kilogram?
- ◆ Find some things that weigh about half a kilogram.

### Out and about

- ◆ During a week, look outside for 'thirties' numbers, such as 34 or 38, on house doors, number plates, bus stops, etc. How many can you spot? What is the biggest one you can find?

31 39 36 35 33

- ◆ Next week, look for 'fifties' numbers, or 'sixties'...

### How much?

- ◆ Once a week, tip out the small change from a purse. Count it up with your child.



▲



### 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  $\div$  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

### SEQUENCING

- 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

### MEASUREMENT

- 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?

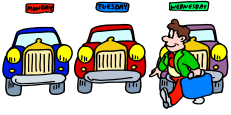
Can you find two things heavier than your child and two things lighter than your child around the house?



### COUNTING

- ◆ 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 Stobart lorries, motorbikes, etc.





### Beat the clock

Time your child as they do one of the following:

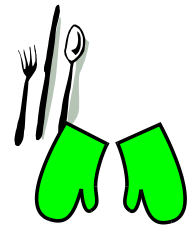
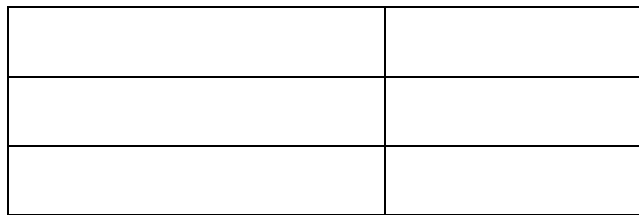
- Count back from 100 in tens.
- Count back from 75 in fives.
- Starting at six, count up in tens to 206.
- Starting at 39, count up in twenties to 239.
- Starting at 67, count up in thirties to 367.

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?



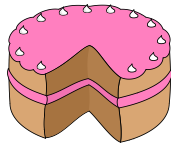
### SORTING AND MATCHING

- ✧ 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.



## ACTIVITIES USING NUMBERS AROUND US

- \* 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  $\frac{1}{2}$ ,  $\frac{1}{4}$ .
- \* Using a round sandwich cake to show fractions  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{6}$ ,  $\frac{1}{8}$  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 ( $\frac{1}{2}$ ) of the whole pizza cost?








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

- How much does one slice ( $\frac{1}{4}$ ) 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](http://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](http://www.counton.org) has lots of ideas and games to play.
-  [www.learn.co.uk](http://www.learn.co.uk) help for all children with reading, maths and revision.
-  [www.bbc.co.uk/schools](http://www.bbc.co.uk/schools) games to play and links to many subjects.
-  <http://www.beam.co.uk/mathsofthemoth.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 2, most children should be able to...

- Count to at least 100, and read and write numbers to 100.
- Given any six numbers up to 100, put them in order.
- Count forwards and backwards in ones or tens from any two-digit number, e.g. *twenty-six, thirty-six, forty-six...*
- Recognise odd and even numbers.
- Add and subtract numbers under 20 in their heads.
- Know pairs of 'tens' numbers that make 100, e.g.  $30 + 70$ .
- Double and halve small numbers, e.g. double 9 is 18, and half of 18 is 9.
- Know by heart the 2 and 10 times tables.
- Find the total value of a handful of coins to £1.
- Measure or weigh using metres, centimetres, kilograms or litres.
- Use a ruler to draw and measure lines to the nearest centimetre.
- Tell the time to the half and quarter hour.
- Name and describe common 2-D and 3-D shapes.
- Solve simple number problems, and explain how to work them out.