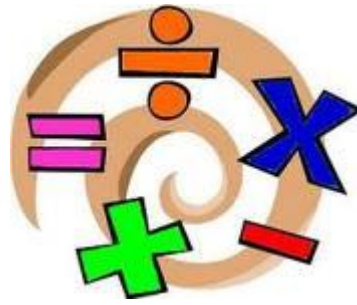# Maths guide for parents and carers of mathematicians in Year 4

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*

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 4

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 money or measures, including time; choose and carry out appropriate methods including using a calculator when appropriate.
- Represent a problem using numbers and diagrams, explaining answers and suggesting solutions.
- Use knowledge of numbers and shapes to identify patterns, properties and relationships, testing statements to find out if they are true.

<u>Number and place value</u>

- count in multiples of 6, 7, 9, 25 and 1000

- find 1000 more or less than a given number

- count backwards through zero to include negative numbers

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

- order and compare numbers beyond 1000

- identify, represent and estimate numbers using different representations

- round any number to the nearest 10, 100 or 1000

- solve number and practical problems that involve all of the above and with increasingly large positive numbers

- read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.

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

- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate

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

- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

- recall multiplication and division facts for multiplication tables up to 12 × 12

- use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers

- recognise and use factor pairs and commutativity in mental calculations

- multiply two-digit and three-digit numbers by a one-digit number using formal written layout

- solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

- recognise and show, using diagrams, families of common equivalent fractions

- count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.

- solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number

- add and subtract fractions with the same denominator

- recognise and write decimal equivalents of any number of tenths or hundredths

- recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$

- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths

- round decimals with one decimal place to the nearest whole number

- compare numbers with the same number of decimal places up to two decimal places

Shape, space and measure

- Convert between different units of measure [for example, kilometre to metre; hour to minute]

- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres

- find the area of rectilinear shapes by counting squares

- estimate, compare and calculate different measures, including money in pounds and pence

- read, write and convert time between analogue and digital 12- and 24-hour clocks

- solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes

- identify acute and obtuse angles and compare and order angles up to two right angles by size

- identify lines of symmetry in 2-D shapes presented in different orientations

- complete a simple symmetric figure with respect to a specific line of symmetry.

- describe positions on a 2-D grid as coordinates in the first quadrant

- describe movements between positions as translations of a given unit to the left/right and up/down

- plot specified points and draw sides to complete a given polygon.

<u>Data handling</u>

- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.

- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

<u>METHODS OF CALCULATION</u>

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 $\square$ + 3 = 10
25 + 75 = 100   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 = 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

<u>Written methods of addition</u>
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                                267
   +  24                             +   85
     1 1  ( 7 +  4)                    12  ( 7 + 5)
     80   (60 + 20)                   140  (60 + 80)
     91                                   200
                                          352
```

From this, children will begin to carry below the line.

```
     625                   783                    367
   +  48                 +   42                  +  85
     673                   825                    452
       1                     1                     1 1
```

Using similar methods, children will:
✓   *add several numbers with different numbers of digits;*
✓   *begin to add two or more three-digit sums of money, with or without adjustment from the pence to the pounds;*
✓   *know that the decimal points should line up under each other, particularly when adding or subtracting mixed amounts, e.g. £3.59 + 78p.*

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

$10 - 6 = 4$ $17 - \square = 11$

$20 - 17 = 3$ $10 - \square = 2$

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
Partitioning and decomposition

```
    754   =
    -86
```

Step 1   700   and 50 and   4
         -           80   and   6
         _____

Step 2   700   and 40 and 14   *(adjust from T to U)*
         -           80   and   6
         _____

Step 3   600   and 140 and 14   *(adjust from H to T)*
         -           80   and   6
             600   and 60 and   8 = 668

This would be recorded by the children as

600   140

         7̶0̶0̶   and 5̶0̶   and ¹4
     -           80   and   6
             600   and   60 and   8 = 668

8

Decomposition

```
    6 14 1
    7̶ 5̶ 4
  -   8 6
      6 6 8
```

Children should:
- ✓ *be able to subtract numbers with different numbers of digits;*
- ✓ *using this method, children should also begin to find the difference between two three-digit sums of money, with or without 'adjustment' from the pence to the pounds;*
- ✓ *know that decimal points should line up under each other.*
- ✓ Alternatively, children can set the amounts to whole numbers, i.e. 895p – 438p and convert to pounds after the calculation.

NB If your children have reached the concise stage they will then continue this method through into years 5 and 6. See year 5 booklet for what to do if there is a 0 in your larger number.
Some children will still feel more comfortable using a number line method (shown below). Where the numbers involved in the calculation are close together or near to multiples of 10, 100 etc. counting on using a number line should be used.

511 – 197 = 314
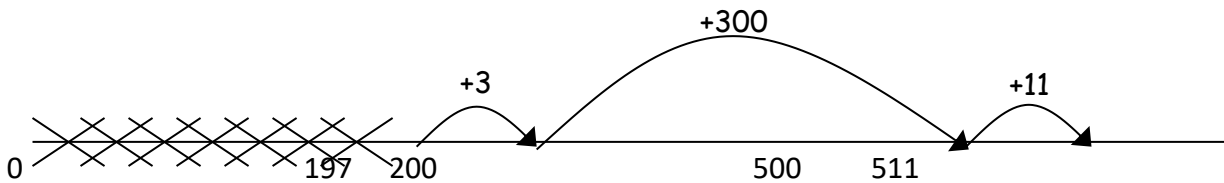
MULTIPLICATION

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 4   Derive and recall all multiplication facts up to 12 x 12

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.
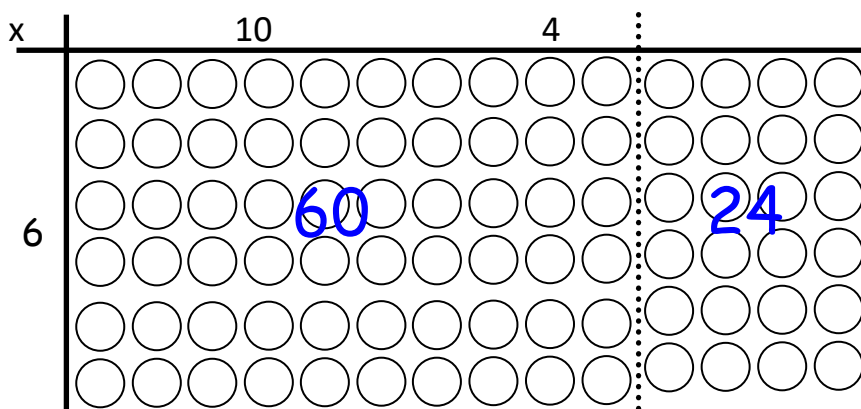
Partitioning

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

(6 x 10) + (6 x 4)

60   +   24

84

Grid method

TU x U
(Short multiplication – multiplication by a single digit)
Children need to understand what happens when we multiply by 10 and investigate what happens when we multiply by a multiple of ten eg.

40 x 8 can be calculated by multiplying 4 by 8 then making this ten times bigger or 'putting back the zero'. We **don't** say 'adding 0'.

23 x 8

Children will approximate first
23 x 8 is approximately 25 x 8 = 200

x	20	3			
8	160	24			160
					+ 24
					‾‾184

Children must know their times tables in order to do grid method multiplication.

DIVISION

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 of factors

378 ÷ 21   378 ÷ 3 = 126   378 ÷ 21 = 18   126 ÷ 7 = 18

Use related facts

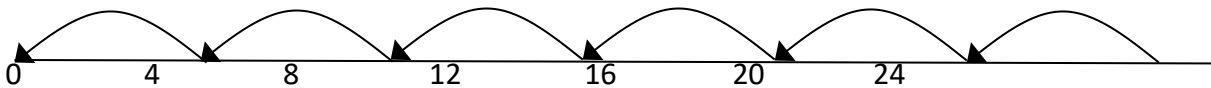Given that 1.4 x 1.1 = 1.54   What is 1.54 ÷ 1.4, or 1.54 ÷ 1.1?

Written methods of division

Children will continue to use:
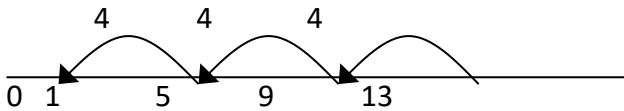
✓   **Repeated subtraction using a number line**

Children will use an empty number line to support their calculation.

24 ÷ 4 = 6
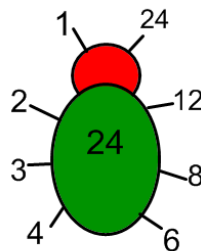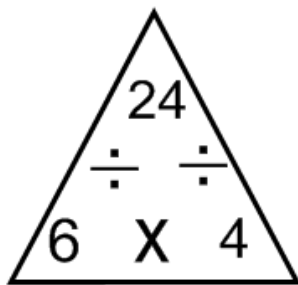

Children should also move onto calculations involving remainders.

13 ÷ 4 = 3 r 1

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

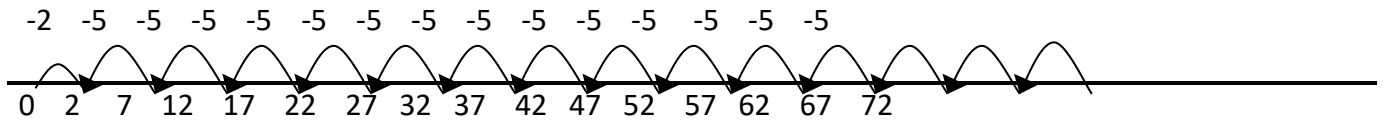✓   **Using symbols to stand for unknown numbers to complete equations using inverse operations**

26 ÷ 2 = □   24 ÷ △ = 12   □ ÷ 10 = 8
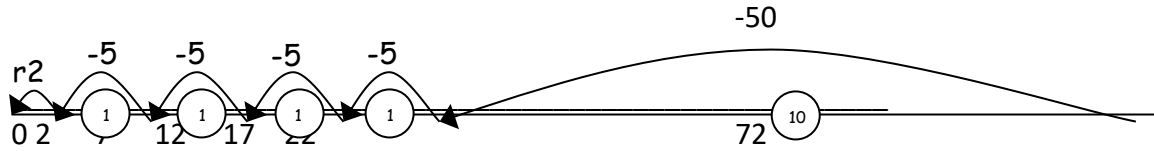
Children will then develop their use of repeated subtraction to be able to subtract multiples of the divisor. Initially, these should be multiples of 10s, 5s, 2s and 1s – numbers with which the children are more familiar.

$72 \div 5$

Moving onto:

Then onto the vertical method:

Short division TU ÷ U – the chunking method
$72 \div 3$

```
        3 ) 72
        - 30        10x
            42
          - 30      10x
            12
        -   6         2x
             6
          -  6         2x
             0

        Answer :      24
```

Leading to subtraction of other multiples.
$96 \div 6$

```
            1 6
    6 )  96
          - 60        10x
              36
            - 36       6x
               0

        Answer :       16
```

Any remainders should be shown as integers, i.e. 14 remainder 2 or 14 r 2.

Children need to be able to decide what to do after division and round up or down accordingly. They should make sensible decisions about rounding up or down after division. For example $62 \div 8$ is 7 remainder 6, but whether the answer should be rounded up to 8 or rounded down to 7 depends on the context.

e.g. I have 62p. Sweets are 8p each. How many can I buy?
Answer: 7 (the remaining 6p is not enough to buy another sweet)

Apples are packed into boxes of 8. There are 62 apples. How many boxes are needed?
Answer: 8 (the remaining 6 apples still need to be placed into a box)

VOCABULARY

Numbers and the number system

PLACE VALUE, ORDERING AND ROUNDING

units, ones
tens, hundreds, thousands
ten thousand, hundred thousand, million
digit, one-, two-, three- or four-digit number
numeral
'teens' number
place, place value
stands for, represents
exchange
the same number as, as many as
equal to
Of two objects/amounts:
>, greater than, more than, larger than, bigger than
<, less than, fewer than, smaller than
Of three or more objects/amounts:
greatest, most, largest, biggest
least, fewest, smallest
one... ten... one hundred... one thousand more/less
compare, order, size
first... tenth... twentieth
last, last but one
before, after
next
between, half-way between
guess how many, estimate
nearly, roughly, close to, about the same as
approximate, approximately
just over, just under
exact, exactly
too many, too few, enough, not enough
round (up or down), nearest
round to the nearest ten
round to the nearest hundred
integer, positive, negative
above/below zero, minus

PROPERTIES OF NUMBERS AND NUMBER SEQUENCES

number, count, how many...?
odd, even
every other
how many times?
multiple of
digit
next, consecutive
sequence
continue
predict
pattern, pair, rule
relationship
sort, classify, property

FRACTIONS AND DECIMALS

part, equal parts
fraction
one whole
half, quarter, eighth
third, sixth
fifth, tenth, twentieth
proportion, in every, for every
decimal, decimal fraction
decimal point, decimal place

Calculations

ADDITION AND SUBTRACTION

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

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...
group in pairs, threes... tens
equal groups of
divide, division, divided by, divided into
remainder
factor, quotient, divisible by
inverse

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
survey, questionnaire, data
graph, block graph, pictogram
represent
group, set
list, chart, bar chart, tally 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, measurement
size
compare
unit, standard unit
metric unit, imperial unit

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, breadth
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....
edge, perimeter
kilometre (km), metre (m)
centimetre (cm), millimetre (mm)
mile
ruler, metre stick, tape measure

MASS

mass: big, bigger, small, smaller, balances
weight: heavy/light, heavier/lighter, heaviest/lightest
weigh, weighs
kilogram (kg), half-kilogram, gram (g)
balance, scales

CAPACITY

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

AREA

area, covers, surface
square centimetre (cm^2)

TIME

time
days of the week: Monday, Tuesday...
months of the year: January, February...
seasons: spring, summer, autumn, winter
day, week, fortnight, month
year, leap year, century, millennium
weekend, birthday, holiday
calendar, date, date of birth
morning, afternoon, evening, night

am, pm, noon, midnight
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…?
timetable, arrive, depart
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

SHAPE AND SPACE

shape, pattern
flat, line
curved, straight
round
hollow, solid
corner
point, pointed
face, side, edge, end
sort
make, build, construct, draw, sketch
centre, radius, diameter
net
surface
angle, right-angled
base, square-based
vertex, vertices
layer, diagram
regular, irregular
concave, convex
open, closed

3D SHAPES

3D, three-dimensional
cube
cuboid
pyramid
sphere, hemi-sphere, spherical
cone
cylinder, cylindrical
prism
tetrahedron, polyhedron

2D SHAPES

2D, two-dimensional
circle, circular, semi-circle
triangle, triangular
equilateral triangle, isosceles triangle

square
rectangle, rectangular, oblong
pentagon, pentagonal
hexagon, hexagonal
heptagon
octagon, octagonal
polygon
quadrilateral

PATTERNS AND SYMMETRY

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

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
origin, coordinates
clockwise, anti-clockwise
compass point, north, south, east, west (N, S, E, W)
north-east, north-west, south-east, south-west
(NE, NW, SE, SW)
horizontal, vertical, diagonal
movement
slide, roll
whole turn, half turn, quarter turn, rotate
angle, …is a greater/smaller angle than
right angle
degree
straight line
stretch, bend
ruler, set square
angle measurer, compasses

Instructions

listen, join in, say, recite
think, imagine, remember
start from, start with, start at
look at, point to, show me

put, place
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, construct

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
justify
make a statement

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

fill in, shade, colour
label, plot

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, pin 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

Looking around

Choose a room at home.
Challenge your child to spot
20 right angles in it.

Dicey division

You each need a piece of paper. Each of you should choose five
numbers from the list below and write them on your paper.

5   6   8   9   12   15   20   30   40   50

- Take turns to roll a dice. If the number you roll divides exactly into
  one of your numbers, then cross it out, e.g. you roll a 4, it goes into
  8, cross out 8.
- If you roll a 1, miss that go. If you roll a 6 have an extra go.
- The first to cross out all five of their numbers wins.

Sum it up

- Each player needs a dice.
- Say: *Go!* Then each rolls a dice at the same time.
- Add up all the numbers showing on your own dice, at the sides as
  well as at the top.
- Whoever has the highest total scores 1 point.
- The first to get 10 points wins.

Out and about

- Choose a three-digit car number, e.g. 569.
- Make a subtraction from this, e.g. 56 – 9.
- Work it out in your head. Say the answer.
- If you are right, score a point.
- The first to get 10 points wins.

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Some fun ideas to try at home

Number game 1

You need about 20 counters or coins.

- Take turns. Roll two dice to make a two-digit number, e.g. if you roll a 4 and 1, this could be 41 or 14.
- Add these two numbers in your head. If you are right, you win a counter. Tell your partner how you worked out the sum.
- The first to get 10 counters wins.

Now try subtracting the smaller number from the larger one.

Number game 2

- Put some dominoes face down.
- Shuffle them.
- Each choose a domino.
- Multiply the two numbers on your domino.
- Whoever has the biggest answer keeps the two dominoes.
- The winner is the person with the most dominoes when they have all been used.

Dicey tens

For this game you need a 1–100 square (a snakes and ladders board will do), 20 counters or coins, and a dice.

- Take turns.
- Choose a two-digit number on the board e.g. 24.
- Roll the dice. If you roll a 6, miss that turn.
- Multiply the dice number by 10, e.g. if you roll a 4, it becomes 40.
- Either add or subtract this number to or from your two-digit number on the board, e.g. 24 + 40 = 64.
- If you are right, put a coin on the answer.
- The first to get 10 coins on the board wins.

Some fun ideas to try at home

Number game 3

Use three dice.
If you have only one dice, roll it 3 times.

- Make three-digit numbers, e.g. if you roll 2, 4 and 6, you could make 246, 264, 426, 462, 624 and 642.
- Ask your child to round the three-digit number to the nearest multiple of 10. Check whether it is correct, e.g.
    76 to the nearest multiple of 10 is 80.
    134 to the nearest multiple of 10 is 130.
  (A number ending in a 5 always **rounds up**.)
- Roll again. This time round three-digit numbers to the nearest 100.

Tables

Practise the 3x, 4x and 5x tables. Say them forwards and backwards.
Ask your child questions like:

What are five threes?   What is 15 divided by 5?
Seven times three?   How many threes in 21?

$$8 \times 3 = 24 \quad 24 \div 3 = 8$$

Measuring

Use a tape measure that shows centimetres.

- Take turns measuring lengths of different objects, e.g. the length of a sofa, the width of a table, the length of the bath, the height of a door.
- Record the measurement in centimetres, or metres and centimetres if it is more than a metre, e.g. if the bath is 165 cm long, you could say it is 1m 65cm (or 1.65m).
- Write all the measurements in order.

<h1 align="center">Calculator costs</h1>

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;

<h2 align="center">MATHS AT HOME FOR ANY AGE</h2>

<h2 align="center">SHOPPING</h2>

£   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.

<h3 align="center">Time</h3>

- 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.

<h3 align="center">Starting off</h3>

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?
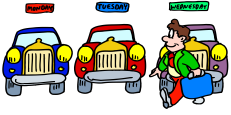
COUNTING

♦ 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 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?
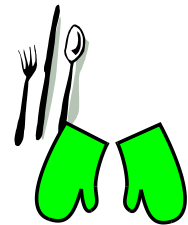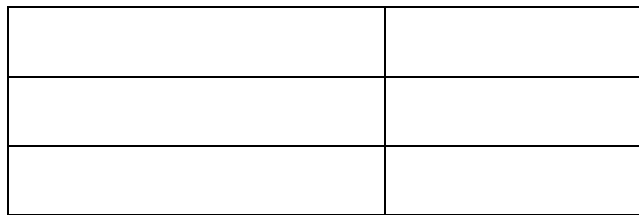
SORTING AND MATCHING

✧ 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.

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 ½, ¼.
❊   Using a round sandwich cake to show fractions ½, ¼, 1/6, 1/8 etc.
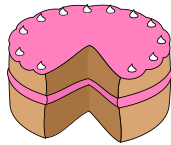
Pizza please!

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.

◎   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 4,most children should be able to...

- [ ] Know the 2,3,4,5 and 10 times tables by heart. E.g. Know facts like 7 x 5 and 36 ÷ 4.

- [ ] Round numbers like 672 to the nearest 10 or 100.

- [ ] Work out that a simple faction like 2/6 is equivalent to 1/3.

- [ ] Work out calculations like 26 + 58 and 62—37 in their heads.

- [ ] Work out calculations like 234 + 479 or 791—223 using pencil and paper and writing them in columns.

- [ ] Multiply numbers like 38 by 10 or by 100, and divide numbers like 4200 by 10 or by 100.

- [ ] Multiply and divide numbers up to 100 by 2,3,4 or 5, and find remainders, e.g. 36 x 3, 87 ÷ 4.

- [ ] Change pounds to pence and centimetres to metres, and vice versa, e.g. Work out that £3.45 is the same as 345p, and that 3.5 metres is the same as 350 centimetres.

- [ ] Tell the time to the nearest minute and use a simple timetable.

- [ ] Pick out shapes with similar features, e.g. Shapes with sides the same length, or with right angles, or symmetrical shapes.

- [ ] Use +, -, x, ÷ to solve problems and decide whether it is best to calculate in their head or on paper.