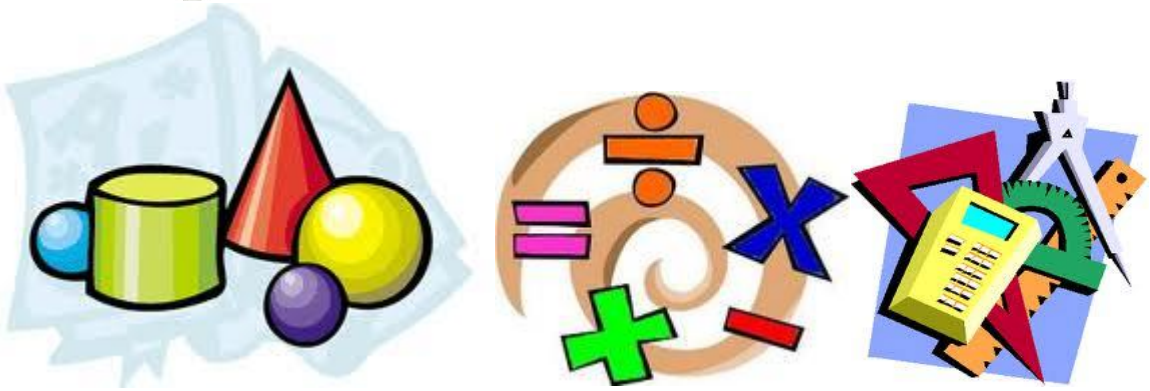
Maths guide for parents and carers of mathematicians in Year 5



Contents

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 5

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

Problem solving

- Solve one and two step problems involving decimals and all four operations (+ - x and ÷), choosing appropriate methods including calculator use.
- Record calculations and check their working out.
- Explore patterns, properties and relationships involving numbers and shapes, identify examples of where statements are true or false.
- Explain reasoning using diagrams, graphs, and text.

Number and place value

- read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
- count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
- interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero
- round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
- solve number problems and practical problems that involve all of the above
- read Roman numerals to 1000 (M) and recognise years written in Roman numerals.

Calculation (see following pages for methods)

- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- add and subtract numbers mentally with increasingly large numbers
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- multiply and divide numbers mentally drawing upon known facts

- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
- recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})
- solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Number – fractions

- compare and order fractions whose denominators are all multiples of the same number
- identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
- recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]
- add and subtract fractions with the same denominator and denominators that are multiples of the same number
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
- read and write decimal numbers as fractions [for example, 0.71 = $\frac{71}{100}$]
- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- round decimals with two decimal places to the nearest whole number and to one decimal place
- read, write, order and compare numbers with up to three decimal places
- solve problems involving number up to three decimal places
- recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
- solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.

Shape, space and measure

- convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)

- understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes
- estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water]
- solve problems involving converting between units of time
- use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.
- identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- draw given angles, and measure them in degrees (^{o})
- identify:
  - angles at a point and one whole turn (total 360^o)
  - angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180^o)
  - other multiples of 90^o
- use the properties of rectangles to deduce related facts and find missing lengths and angles
- distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
- identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.

<u>Data handling</u>

- solve comparison, sum and difference problems using information presented in a line graph
- complete, read and interpret information in tables, including timetables.

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 extend the carrying method to numbers with at least four digits.

```
  587          3587
+ 475        + 675
 1062         4262
  1 1          1 1 1
```

Using similar methods, children will:

- ✓ *add more than two numbers with different numbers of digits;*
- ✓ *begin to add two or more decimal fractions with up to three digits and the same number of decimal places;*
- ✓ *know that decimal points should line up under each other, particularly when adding or subtracting mixed amounts, e.g. 3.2 m – 280 cm.*

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 - ☐ = 11

20 - 17 = 3 10 - ☐ = 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

Partitioning and decomposition

```
Step 1    754  =  700 and 50 and 4
          -286   - 200 and 80 and 6
```

Step 2 700 and 40 and 14 *(adjust from T to U)*
-200 and 80 and 6

Step 3 600 and 140 and 14 *(adjust from H to T)*
- 200 and 80 and 6
400 and 60 and 8 = 468

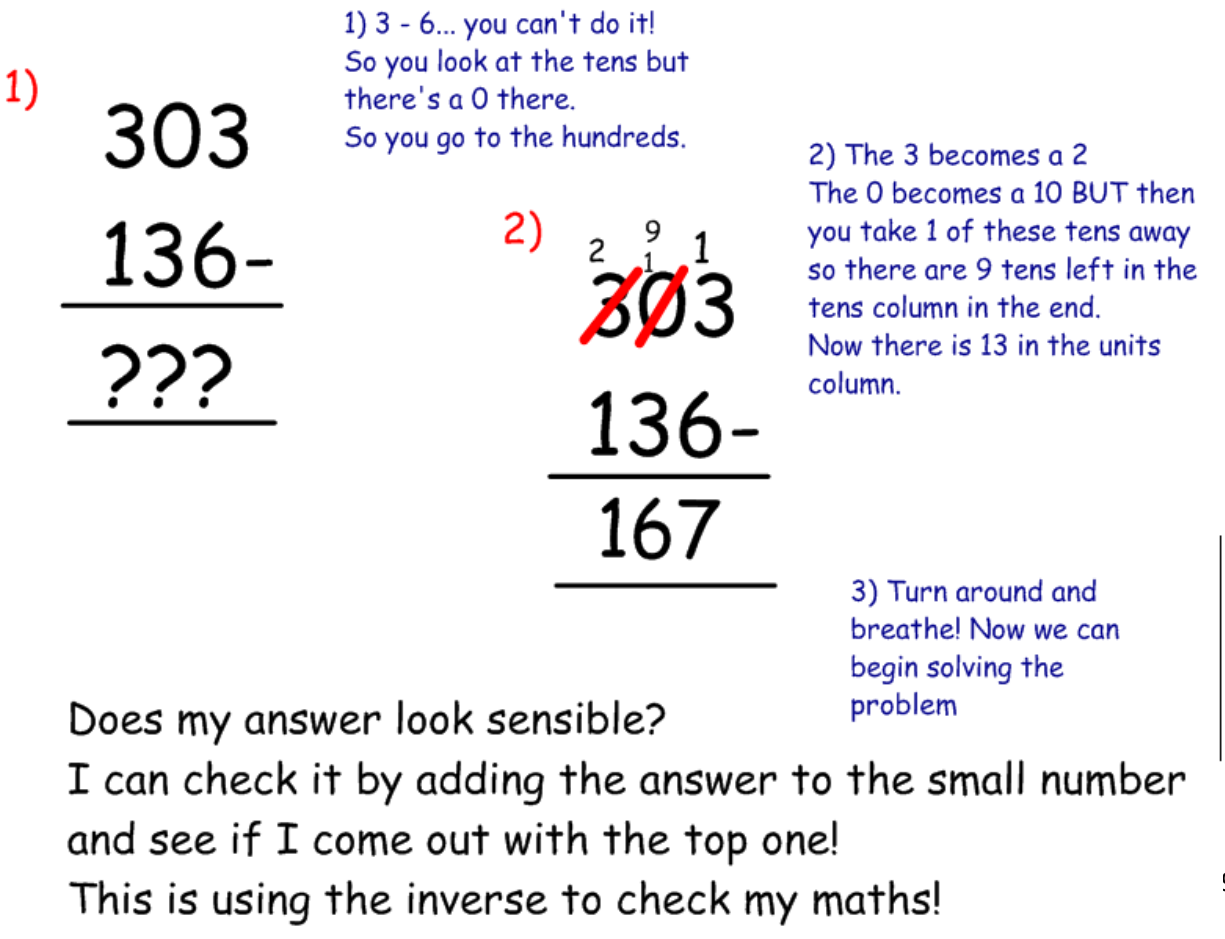
This would be recorded by the children as

600 140
~~700~~ and ~~50~~ and $^{1}4$
-200 and 80 and 6
400 and 60 and 8 = 468

Decomposition

614 1
~~7~~ ~~7~~4
- 286
468

Children able to decomposition confidently can then move on to learning what happens if there is a 0 in your larger number:



Ch

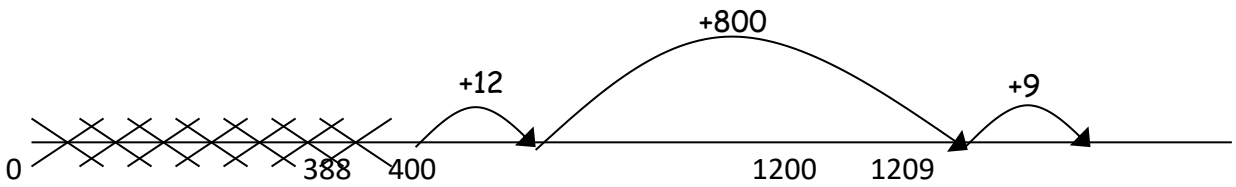
Children should

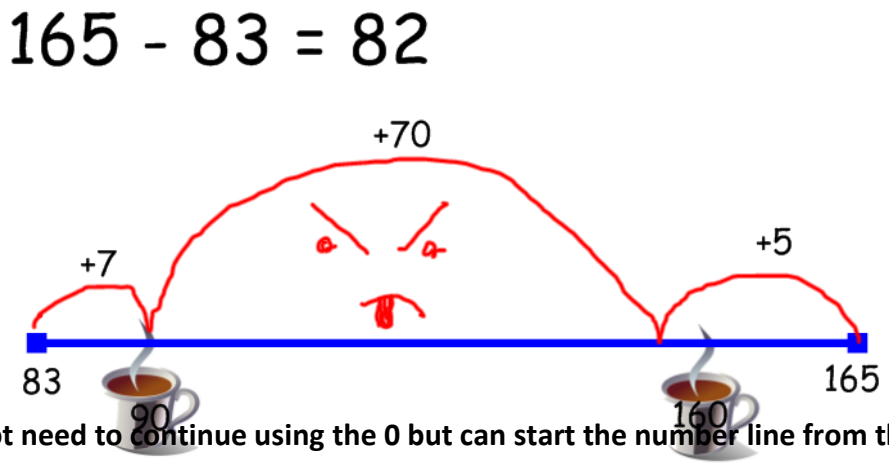
- ✓ *be able to subtract numbers with different numbers of digits;*
- ✓ *begin to find the difference between two decimal fractions with up to three digits and the same number of decimal places;*
- ✓ *know that decimal points should line up under each other.*

NB If your children have reached the concise stage they will then continue this method through into year 6. They will not go back to using the expanded methods.

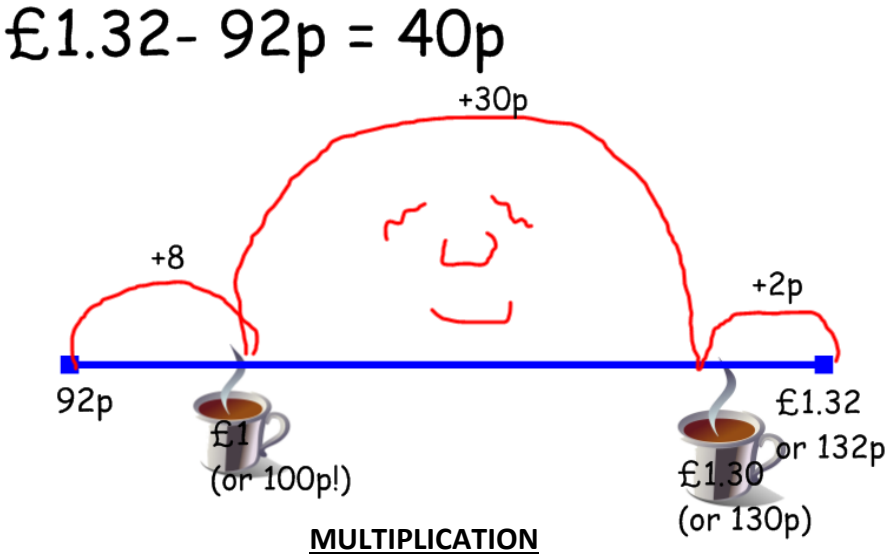
Where the numbers are involved in the calculation are close together or near to multiples of 10, 100 etc counting on using a number line should be used.

1209 – 388 = 821





Children do not need to continue using the 0 but can start the number line from their smaller number.



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

Tables will be taught everyday from the last term of year 1 onwards, either as part of the mental oral starter or other times as appropriate within the day, particularly using the times table tournament.

Years 5 & 6 Derive and recall quickly 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

Grid method

HTU x U
(Short multiplication – multiplication by a single digit)

346 x 9

Children will approximate first
346 x 9 is approximately 350 x 10 = 3500

x	300	40	6			
9	2700	360	54			2700
						+ 360
						+ 54
						3114
						1 1

TU x TU
(Long multiplication – multiplication by more than a single digit)

72 x 38

Children will approximate first
72 x 38 is approximately 70 x 40 = 2800

x	70	2			
30	2100	60			2100
8	560	16			+ 560
					+ 60
					+ 16
					2736
					1

Using similar methods, they will be able to multiply decimals with one decimal place by a single digit number, approximating first. They should know that the decimal points line up under each other.

e.g. 4.9 x 3

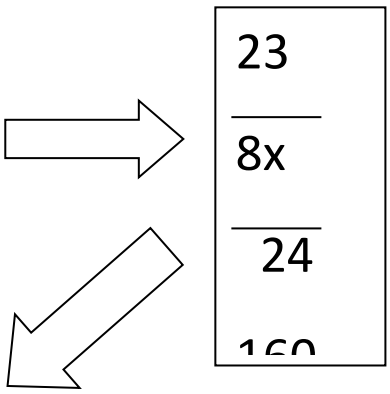
Children will approximate first
4.9 x 3 is approximately 5 x 3 = 15

x	4	0.9			
3	12	2.7			12
					+ 2.7
					14.7

When children are confident in doing short multiplication using the grid method, they can be shown how this can be represented in columns using first the **fat sandwich** then the **skinny sandwich:**

Fat sandwich shows how the grid method can be rearranged and then this can in turn be condensed to form the skinny sandwich:

x	20	3			
8	160	24			160
					+ 24
					184



23
8x

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

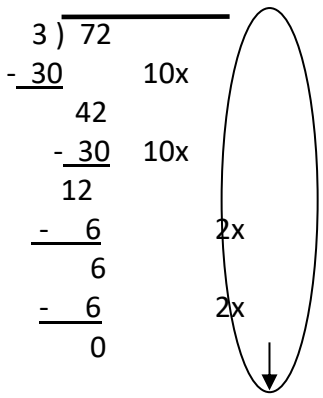
Use related facts

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

Written methods of division

Short division HTU ÷ U by chunking

72 ÷ 3



Answer : 24

When children are secure in using the chunking method (see above) and understand how to find remainders accurately, they can be shown the briefer version:

Short division - briefer version:

196 ÷ 6

32 r 4

$$6\overline{)\,19^{1}6}$$

3 lots of 6 in 19 r 1

2 lots of 6 in 16 r 4

Children can use chunking to start to subtract larger multiples of the divisor, e.g. 30x

Short division HTU ÷ U

196 ÷ 6
32 r 4

```
   6 ) 196
 -   180    30x
      16
 -    12         2x
       4
```

Answer : 32 remainder 4 or 32 r 4

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 240 ÷ 52 is 4 remainder 32, but whether the answer should be rounded up to 5 or rounded down to 4 depends on the context.

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
≥, greater than or equal to
≤, less than or equal to
*Of **three** or more objects/amounts:*
greatest, most, largest, biggest
least, fewest, smallest
one… ten… one hundred… one thousand more/less
compare, order, size
ascending/descending order
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
≈, is approximately equal to
just over, just under
exact, exactly
too many, too few, enough, not enough
round (up or down), nearest
round to the nearest ten/hundred
round to the nearest thousand
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
formula
divisible (by), divisibility, factor
square number
one squared, two squared… (1^2, 2^2…)

FRACTIONS, DECIMALS, PERCENTAGES, RATIO AND PROPORTION

part, equal parts
fraction, proper/improper fraction
mixed number
numerator, denominator
equivalent, reduced to, cancel
one whole
half, quarter, eighth
third, sixth, ninth, twelfth
fifth, tenth, twentieth, hundredth
proportion, ratio
in every, for every
to every, as many as
decimal, decimal fraction
decimal point, decimal place
percentage, per cent, %

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
units boundary, tenths 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

USING A CALCULATOR

calculator
display, key, enter, clear
constant

Solving problems

MAKING DECISIONS AND REASONING

pattern, puzzle
calculate, calculation
mental calculation
method, strategy
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
discount
currency

Handling data

count, tally, sort, vote
survey, questionnaire
data, database
graph, block graph, line graph
pictogram,
represent
group, set
list, chart, bar chart, bar line chart
tally chart
table, frequency table
Carroll diagram, Venn diagram
label, title, axis, axes
diagram
most popular, most common
least popular, least common
mode, range
maximum/minimum value
classify, outcome

PROBABILITY

fair, unfair
likely, unlikely, likelihood
certain, uncertain
probable, possible, impossible
chance, good chance
poor chance, no chance
risk, doubt

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, gallon
container, measuring cylinder

AREA

area, covers, surface
square centimetre (cm^2), square metre (m^2)
square millimetre (mm^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
24-hour clock, 12-hour clock
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
congruent
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, octahedron

2D SHAPES

2D, two-dimensional
circle, circular, semi-circle
triangle, triangular
equilateral triangle, isosceles triangle, scalene 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, axis of symmetry
line symmetry, reflective 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
parallel, perpendicular
x-axis, y-axis
quadrant
movement
slide, roll
whole turn, half turn, quarter turn
rotate, rotation
angle, …is a greater/smaller angle than
right angle, acute, obtuse
degree
straight line
stretch, bend
ruler, set square
angle measurer, compasses, protractor

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, bisect

tell me, describe, name, pick out, identify
discuss, talk about
explain
explain your method/answer/reasoning
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, convert
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, spinner
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

Tables

Make a times-table grid like this.

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

- Shade in all the tables facts that your child knows, probably the 1s, 2s, 3s, 4s, 5s and 10s.
- Some facts appear twice, e.g. 7 x 3 and 3 x 7, so cross out one of each.
- Are you surprised how few facts are left?
- There might only be 10 facts to learn. So take one fact a day and make up a silly rhyme together to help your child to learn it, e.g. *nine sevens are sixty-three, let's have lots of chips for tea!*

Telephone challenges

- Challenge your child to find numbers in the telephone directory where the digits add up to 42.
- Find as many as possible in 10 minutes.
- On another day, see if they can beat their previous total.

Telephone: 01264 738 281

Target 1000

- Roll a dice 6 times.
- Use the six digits to make two three-digit numbers.
- Add the two numbers together.
- How close to 1000 can you get?

Some fun ideas to try at home

How much?

- While shopping, point out an item costing less than £1.
- Ask your child to work out in their head the cost of 3 items.
- Ask them to guess first. See how close they come.
- If you see any items labelled, for example, '2 for £3.50', ask them to work out the cost of 1 item for you, and to explain how they got the answer.

Times tables

Say together the six times table forwards, then backwards. Ask your child questions, such as:

Nine sixes?	How many sixes in 42?
Six times four?	Forty-eight divided by six?
Three multiplied by six?	Six times what equals sixty?

Repeat with the seven, eight and nine times tables.

Car numbers

- Try reading a car number as a measurement in centimetres, then converting it to metres, e.g. 456cm, which is 4.56m, or 4m and 56cm.
- Try this with car numbers that have zeros in them, e.g. 307cm, which is 3.07m or 3m and 7cm; 370cm, which is 3.7m, or 3m and 70cm. These are harder!

Dicey subtractions

- Take turns to roll a dice twice.
- Fill in the missing boxes.

400□ - 399□

e.g. 4002 – 3994

- Count on from the smaller to the larger number, e.g *3995, 3996, 3997, 3998, 3999, 4000, 4001, 4002.*
- You counted on 8, so you score 8 points.
- Keep a running total of your score.
- The first to get 50 or more points wins.

Some fun ideas to try at home

Decimal number plates

- Each choose a car number plate with three digits.

P645 CJM

- Choose two of the digits, e.g. 4 and 6. Make the smallest and largest numbers you can, each with 1 decimal places, e.g. 4.6 and 6.4.
- Now find the difference between the two decimal numbers, e.g. 6.4 – 4.6 = 1.8.
- Whoever makes the biggest difference scores 10 points.
- The person with the most points wins.

Play the game again, but this time score 10 points for the smallest difference, or 10 points for the biggest total.

Finding areas and perimeters

Perimeter = distance around the edge of a shape
Area of a rectangle = length x breadth (width)

- Collect 5 or 6 used envelopes of different sizes.
- Ask your child to estimate the perimeter of each one to the nearest centimetre. Write the estimate on the back.
- Now measure. Write the estimate next to the measurement.
- How close did your child get?
- Now estimate then work out the area of each envelope.
- Were perimeters or areas easier to estimate? Why?

You could do something similar using an old newspaper, e.g.

- Work out which page has the biggest area used for photographs.
- Choose a page and work out the total area of news stories or adverts on that page.

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

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

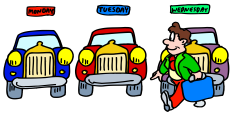
Weigh your child on the bathroom scales.

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:

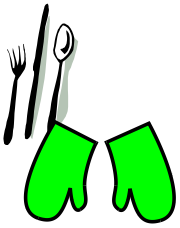
- Count back from 100 in tens.
- Count back from 75 in fives.
- Starting at six, count up in tens to 206.
- Starting at 39, count up in twenties to 239.
- Starting at 67, count up in thirties to 367.

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?'

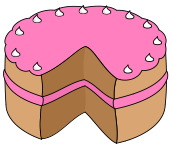


- How many rectangles can you count?

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.

- 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 5, most children should be able to...

- ☐ Multiply and divide any whole number up to 10 000 by 10 or 100.
- ☐ Know what the digits in a decimal number stand for, e.g. the 6 in 2.63 stands for 6 tenths and the 3 for 3 hundredths.
- ☐ Round numbers with 1 decimal place to the nearest whole number, e.g. 9.7 rounds up to 10, 147.2 rounds down to 147.
- ☐ Use division to find a fraction of a number, e.g. find one fifth by dividing by 5.
- ☐ Work out in their head the difference between two numbers such as 3994 and 9007.
- ☐ Use pencil and paper to add and subtract big numbers, e.g. 5792 + 8436, 13 912 – 5829.
- ☐ Know by heart all multiplication tables up to 10 x 10.
- ☐ Double numbers up to 100 in their heads.
- ☐ Use pencil and paper to multiply and divide, e.g. 328 x 4, 72 x 56, 329 ÷ 6.
- ☐ Draw and measure lines to the nearest millimetre.
- ☐ Work out the perimeter and area of a rectangle, e.g. the perimeter and area of a book cover measuring 25cm by 20cm.
- ☐ Solve word problems and explain their method.