KS3 Mathematics & Programming Long Term Plan - revised for September 2022

| Year 1 | | | | | | | | |
|---|---|---|--|---|--|---|--|--|
| | Term 1a | Term 1b | Term 2a | Term 2b | Term 3a | Term 3b | | |
| Application | All about me | My week | My money | My Leisure | My & my | My movement | | |
| themes>>> | | | | activities | objects | & visits | | |
| Core number work | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | | |
| Primary focus | Sorting | Measurement- | Measurement- | Data & | Geometry- | Geometry- | | |
| skill | Measurement | time | value | Statistics | properties | position & | | |
| in addition to | - spatial | | | | of shapes | direction | | |
| number | | | | | | | | |
| Year 1 Application Themes & reinforcement opportunities | Me and my class Reinforcement Opportunities: Geometry- position & direction Data & Statistics Prog: Instructions for friends, Programming my avatar & my friends | How long does it take? My day & week Months & Seasons Christmas Reinforcement Opportunities: Geometry- properties of Christmas shapes Prog: instructions for my time, Sequencing time on screen, programming a timer | Food shopping Reinforcement Opportunities: Measurement - spatial Geometry- properties of shapes (stacking and packing) Prog: Shopping list and instructions- if they don't have Screen shopping sequence and planning on screen— 'sum above' function | Music and dance Reinforcement Opportunities: Geometry- position & direction Prog: dance/music instructions (notation) Making things dance on screen, drum machine, lighting rig Robot dancing Data of music and dance | Tidying & cleaning up Reinforcement Opportunities: Measurement - spatial Prog: instructions for tidying/ sequencing tidy-up on screen Robot cleaner | My trip to recreation: playground/hydro & park Reinforcement Opportunities: Measurement- time Geometry- properties of shapes of the playground Prog: precise instructions, Acted and Virtual visit, beebot/robot visit | | |

| Year 2 | | | | | | | |
|---|--|---|--|--|--|--|--|
| | Term 1a | Term 1b | Term 2a | Term 2b | Term 3a | Term 3b | |
| Application | All about me | My week | My money | My Leisure | My & my | My movement | |
| themes>>> | | | | activities | objects | & visits | |
| Core number work | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | |
| Primary focus | Sorting | Measurement- | Measurement- | Data & | Geometry- | Geometry- | |
| skill | Measurement | time | value | Statistics | properties | position & | |
| in addition to | - spatial | | | | of shapes | direction | |
| number | | | | | | | |
| Year 2 Application Themes & reinforcement opportunities | Me and my family Reinforcement Opportunities: Measurement- time Data & Statistics Prog: Instructions for family, Programming my avatar & my family | How long does it take? My day & week Months & Seasons Christmas Reinforcement Opportunities: Geometry- position & direction Geometry- properties of Christmas shapes Prog: instructions for my time, Sequencing time on screen programming a timer | Clothes shopping Reinforcement Opportunities: Measurement – spatial Geometry- properties of shapes Prog: Instructions for shopping and shopping sequence and planning on SCreen – 'sum above' function | Table top gamesReinforcementOpportunities:Measurement- valueProg: instructionsfor games,Scoring/ data onscreenMaking computergames/motivatingsequences | Building bridges & other constructions Reinforcement Opportunities: Measurement - spatial Prog: instructions for construction, sequencing building on screen Robot builder | My trip to food: the canteen & supermarket Reinforcement Opportunities: Measurement-value Data & Statistics Prog: precise instructions, Acted and Virtual visit, robot visit, Data of people's trips to supermarket | |

| Year 3 | | | | | | | |
|---|--|---|--|---|--|--|--|
| | Term 1a | Term 1b | Term 2a | Term 2b | Term 3a | Term 3b | |
| Application themes>>> | All about me | My week | My money | My Leisure | My & my objects | My movement | |
| Core number work | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | Number system Number Sets +- Number x/ Number parts | |
| Primary focus skill development in addition to number | Sorting Measurement - spatial | Measurement- time | Measurement- value | Data & Statistics | Geometry- properties of shapes | Geometry- position & direction | |
| Year 3 Application Themes & reinforcement opportunities | Me and my team Reinforcement Opportunities: Geometry- position & direction Data & Statistics Prog: Instructions for my team, | How long does it take? My day & week Months & Seasons Christmas Reinforcement Opportunities: Geometry- position & direction Geometry- properties of | Leisure shopping Reinforcement Opportunities: Measurement- time Geometry- properties of shapes | Athletics Reinforcement Opportunities: Measurement - spatial | My craft activities Reinforcement Opportunities: Measurement - spatial | My trip to school: from entrance to class & school to home Reinforcement Opportunities: Measurement- time Data & Statistics | |
| | Programming my avatar & my teamChristme Progr for m for m Seque scree progr timer | Christmas shapes Prog: instructions for my time, Sequencing time on screen programming a timer | for shopping and shopping sequence and planning on screen — 'sum above' function | data on screen Presenting on screen Robot Olympics | Prog: instructions for craft, sequencing craft on screen | instructions, Acted and Virtual visit, robot visit Data of people's trips to school and back home | |

See Onwards and Upwards for Precise Individual Progress Steps

Year 1 National Curriculum* – with developmental core skills

Programming

Key stage 1

Increasingly precise instructions and sequences – in life and on a computer – predicting and planning for cause, process, effect

understand what algorithms are; how they are implemented as programs on digital

devices; and that programs execute by following precise and unambiguous instructions

 \Box create and debug simple programs

use logical reasoning to predict the behaviour of simple programs

Mathematics

Number system – number and place value Number rhymes, anticipation and sequences **1:1 correspondence Cardinal number** A lot /few More / less Number Steps (+/- 1) Ordinal numbers – first, second, last * AVOID THE NUMERAL TRAP! (numerals are not numbers in themselves) '-

* AVOID THE NUMBER LINE TRAP! (steps are more accessible)

□ count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number

□ count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens

 \Box given a number, identify one more and one less

identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least

 \square read and write numbers from 1 to 20 in numerals and words.

Number sets – addition and subtraction

Creation of sets – Sorting, subsets (eg fruit= apples and oranges / boys & girls = children)

Conservation of set - remembering hidden cards/objects etc, pairs, twoness of two etc, numicon,

Sequences – cause and effect - before and after change

Number bonds to 5 and then 10

AVOID THE FALSE ADDITION TRAP! - counting 3 times is not addition – addition is to a conserved set

 \Box read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs

 \Box represent and use number bonds and related subtraction facts within 20

 \Box add and subtract one-digit and two-digit numbers to 20, including zero

 \Box solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = -9.

Number x/ – multiplication and division

Aggregating repeated groups of the same number (eg two eyes per face, 2 wheels per bike....)

Repeated patterns

Sharing fairly

 \Box solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Number parts – fractions Parts of the whole

Sharing fairly

□ recognise, find and name a half as one of two equal parts of an object, shape or quantity

 \Box recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.

Measurement – spatial

Opposites and quantitative comparatives - Big/little, Large/small Objects in combination & in space (stacking, nesting/fitting, building, rolling) – prepositions Ordination by size, weight, capacity, time (& volume, brightness, roughness, smelliness) Sequencing by cause and effect of one object to another

 \Box compare, describe and solve practical problems for:

- 🗆 lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
- 🗆 mass/weight [for example, heavy/light, heavier than, lighter than]
- 🗆 capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]

□ measure and begin to record the following:

- \Box lengths and heights
- \Box mass/weight
- \Box capacity and volume

Measurement – time Opposites and quantitative comparatives – long / short time, quicker, longer Ordination by, time

Sequencing by cause and effect

Sequencing by time in the day

Days, dates and longer time periods- week, month, season, year

AVOID THE TIME TRAP! – only use numerical time for sets that the pupil can fully and consistently conserve as time is the most abstract context of all

 \Box compare, describe and solve practical problems for:

- 🗆 time [for example, quicker, slower, earlier, later]
- \Box measure and begin to record the following:
 - \Box time (hours, minutes, seconds)

□ sequence events in chronological order using language [for example, before and

after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]

 \Box recognise and use language relating to dates, including days of the week, weeks, months and years

 \Box tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

Measurement – value

'Valuing' – looking after/caring for things
Property- some things are yours and others other peoples- you can't take without consent
Opposites and quantitative comparatives – valuable, worthless
Ordination by big/little value – that value is not related to size
Barter – how many less valuable items for a big value item?
Earn – 'work' for additional access to motivators
Exchange and value,, paying, change (eg looking after things, exchanging, saving (similar to reward chart), 'big money' = pounds, 'little money' = pennies)
Prioritisation – can't have everything- what to have and what to leave
AVOID THE MONEY TRAP! – only use money numerically for sets that the pupil can fully and consistently conserve, as money is the most abstract context of all
□ recognise and know the value of different denominations of coins and notes

Geometry – properties of shapes

objects in combination & in space (stacking, nesting/fitting, building, rolling) – prepositions

vocab of shape - side, straight, curve, point, corner, angle, height/high, width/wide/narrow, thin, deep,

□ recognise and name common 2-D and 3-D shapes, including:

□ 2-D shapes [for example, rectangles (including squares), circles and triangles]

□ 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].

 \Box describe position,

Geometry – position and direction direction and movement, including whole, half, quarter (sideways) Repeating patterns

□ direction and movement, including whole, half, quarter and threequarter turns.

Cultural Capital Data & Statistics Sorting Counting: Number order, anticipation and sequences, 1:1 correspondence, Cardinal number Scoring and tallying (physical stacking tally)

 \Box 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.

*Pupils working above Year 1 expectations <u>must</u> have targets appropriate to their National Curriculum year group level