KS3 Mastery SoL

Year 7

Year 8

Curriculum Objectives in more detail

Year 7　　2021-22

2 days	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	October Half term	October Half term	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
AQA baseline	Place value and estimation		Addition and Subtraction		AQA test 1 / Applications of add / subtraction & worded				Multiplication and Division		Applications of mult^n & division		Factors, HCF, multiples, LCM		

Xmas Holidays	Xmas Holidays	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Feb Half Term	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Easter Holidays
		Angles		Properties of Triangles / Quadr's		AQA test 2 / Construction and Loci			Equivalent Fractions		Fraction, Decimals, Percentages		Mult, divide & Fractions of amounts		

Easter Holidays	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	May Half Term	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Summer Holidays
	Algebra: BIDMAS, Substitution		Algebra: simplify, expand, factorise		Coordinates & lines			Percentage... of amount, change, reverse...		AQA test 3 / Statistical diagrams		Probability		BUFFER	

Year 8   2021-22

INSET	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	October Half term	October Half term	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Staggered start	Primes, Indices, squares and cubes		**AQA test 1**				October Half term	October Half term	Ratio			Direct & Inverse Proportion			Unit conversions
			Venn diagrams and sets		Add and Subtract fractions										

Xmas Holidays	Xmas Holidays	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Feb Half Term	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Easter Holidays
Xmas Holidays	Xmas Holidays	Pythagoras			**AQA test 2**			Feb Half Term	Change subject of formula			Construct and solve linear eqns			Easter Holidays
					Areas & Perimeters										

Easter Holidays	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	May Half Term	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Summer Holidays
Easter Holidays	Sequences			Angle facts			May Half Term	Transformations, similarity & congruence			**AQA test 3**				Summer Holidays
											3D geometry			Geometry extension	

YEAR 7

Place value and estimation

N1 - understand and use place value for decimals, measures and integers of any size

N2 - order positive and negative integers, decimals ~~and fractions~~; use the number line as a model for ordering of the real numbers; **use the symbols =, ≠, <, >, ≤, ≥**

N13 - round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]

N14 - use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation $a < x ≤ b$

Nxx - references are to the mymaths KS3 curriculum. See the full document for further detail

Addition and Subtraction

N4 - use the ~~four~~ operations, including formal written methods, applied to integers, **decimals**, ~~proper and improper fractions, and mixed numbers~~, all both positive **and negative**

Including but not limited to…
- Mental calculations,
- partitioning,
- column method,
- use of number lines,
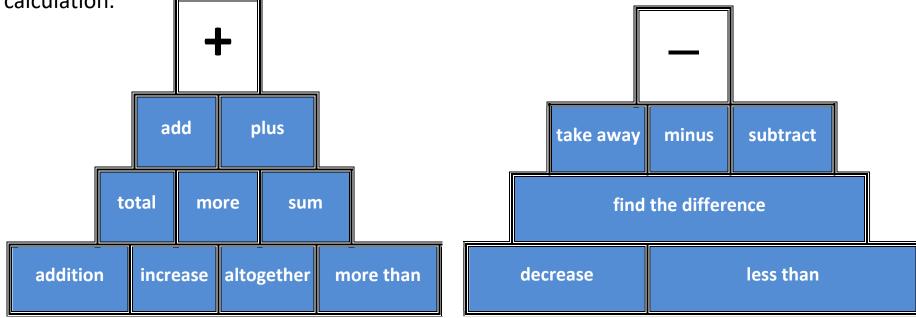- complements / number bonds

<u>Suggestions for further depth:</u>
Investigate different bases such as binary, dozenal, hexadecimal etc. Consider the advantages and disadvantages of addition and subtraction in these bases.
See MEP Base Arithmetic

Nxx - references are to the mymaths KS3 curriculum. See the full document for further detail

Applications of addition and subtraction

- Perimeter and other applications   ??? Ref to mymaths

  - word problems,
  - money calculations,

For very low attainers, knowledge of synonyms below. Match the phrase to the correct calculation.

+

add	plus

total	more	sum

addition	increase	altogether	more than

−

take away	minus	subtract

find the difference

decrease	less than

Multiplication and Division

- Multiply and divide (including decimals and negatives)

N4 - use the ~~four~~ operations, including formal written methods, applied to integers, **decimals**, ~~proper and improper fractions, and mixed numbers~~, all both positive **and negative**

Including but not limited to…
- Mental calculations,
- Doubling and halving
- Multiply and divide by powers of 10
- Written methods for multiplication
- Written methods for division
- Division where the answer is a decimal
(dividing by a decimal after covering fractions…?)

> ICCAMS
> Consider LP1 (lower ability), LP2 and LP15

Suggestions for further depth:
Explore and compare different multiplication methods e.g vedic, Russian peasant, Egyptian, napiers bones etc

Nxx - references are to the mymaths KS3 curriculum. See the full document for further detail

Applications of Multiplication and Division

- Applications (Area of rectangle and triangle, calculating the mean etc)

ICCAMS
Consider LP6, LP7, LP8, Lesson 10B, LP11 and LP17

Note: all of these lessons explore multiplicative relationships. Functional relationships versus scalar relationships and different representations (e.g. ratio table, double number line and Cartesian graph

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Suggestions for further depth:

Nxx - references are to the mymaths KS3 curriculum. See the full document for further detail

Factors, HCF, Multiples and LCM

N3 - use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property

Suggestions for further depth:

Nxx - references are to the mymaths KS3 curriculum. See the full document for further detail

Geometry: Angles

- Draw, measure and name angles, find unknown angles (straight lines, at a point,

  vertically opposite)

Suggestions for further depth:

Geometry: Triangles and Quadrilaterals

- Properties of triangles and quadrilaterals (Inc. Intro to Pythagoras)

Suggestions for further depth:

Use geoboards (http://www.mathlearningcenter.org/web-apps/geoboard/) to find different types of triangles with a given area.

Geometry: Constructions and Loci

- Construction and Loci

Suggestions for further depth:

Buffer Week

- This week could be used for the following;
- TBC

Fractions 1

- Equivalent fractions (inc. mixed numbers) to compare and order fractions

ICCAMS
Consider LP9

Suggestions for further depth:

Fractions 2

- Multiply and divide fractions, fraction of a quantity

Suggestions for further depth:

"show me an equivalent calculation to $18 \div \frac{3}{5}$ which uses/does not use fractions" etc.

- Order of operations (BIDMAS) and substitution

ICCAMS
Consider LP4, LP3 and LP13 (harder version of LP3 with substitution), LP12, Lesson 19A, Lesson 21A (extension of 4B)

Suggestions for further depth:

Applications of Algebra 2

- Simplify algebraic expressions, linear expansion and factorisation

ICCAMS
Consider LP4, LP14,

Suggestions for further depth:

Form expressions from worded problems inc. area, perimeter, mean etc

Applications of Algebra 3

- Co-ordinates and plotting linear graphs

ICCAMS
Consider LP5, LP3, LP13, Lesson 4B, Lesson 18B and Lesson 21A

Suggestions for further depth:

Percentages 1: F, D, P

- Convert between percentages, vulgar fractions and decimals

ICCAMS
Consider LP9 and lesson 16B

Suggestions for further depth:

- Percentage of a quantity, percentage change and reverse percentages

ICCAMS
Consider Lesson 16A

Suggestions for further depth:

Kieran, Tyrell and Sian were sharing a pizza. Kieran's share is 80% of Tyrell's. Sian's was 25% the size of Kieran/s. What percentage of the pizza did they each have?

Statistical diagrams

- Construct and interpret statistical diagrams including pictograms, bar charts, line graphs, frequency polygons, scatter graphs, stem and leaf, **pie charts** etc

Suggestions for further depth:

Misleading diagrams and anomalies, comparing pie charts

Probability

- Probability scale and describe using words

- Sum of probabilities

- Calculate simple probabilities as fractions/decimals

- Simple probability experiments

- Create sample space diagrams for combined events

Suggestions for further depth:

Monty Hall problem

YEAR 8

Further Number 1

- Primes and indices inc. prime factorisation to find LCM, HCF, squares and cubes

Suggestions for further depth:

Find a multiple of 5 and a multiple of 6 that have a difference of 11. Find a multiple of 7 and a multiple of 4 that add to 100 etc.

Further Number 2

- Venn diagrams and enumerating sets

Suggestions for further depth:

Further Number 3

- Add and subtract fractions

Suggestions for further depth:

Algebra 1

- Change the subject of a formula (algebraic fluency and manipulation)

ICCAMS
Consider LP13, LP19 and LP14

Suggestions for further depth:

Investigate how many squares (of any size) there are on a chessboard.
Can every integer be written as a sum of consecutive numbers? E.g 12 = 3 + 4 + 5

Algebra 2

- Construct and solve linear equations (inc. from real-world situations)

ICCAMS
Consider LP18 and Lesson 21B

Suggestions for further depth:

Investigate how many squares (of any size) there are on a chessboard.
Can every integer be written as a sum of consecutive numbers? E.g 12 = 3 + 4 + 5

Algebra 3

- Arithmetic and geometric sequences and nth term

- Quadratic sequences (HA only)

Suggestions for further depth:

Investigate how many squares (of any size) there are on a chessboard.
Can every integer be written as a sum of consecutive numbers? E.g 12 = 3 + 4 + 5

- Areas and perimeters of parallelograms, trapeziums and composite figures

ICCAMS
Consider LP2

Suggestions for further depth:

4 rods, 2 of length a, 2 of length b, are linked to form a kite. The links are movable so the angles can change. What is the maximum area of the kite?
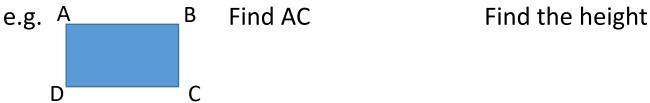
- Find unknown angles (including parallel lines)

Suggestions for further depth:

FOR HIGHER ATTAINING STUDENTS ONLY

- Use Pythagoras' Theorem to find any missing side in a right angle triangle

- Use Pythagoras' Theorem to prove if a triangle is right angled

- Solve problems involving Pythagoras' Theorem.

Suggestions for further depth:
3D applications. Use of halving rectangles or isosceles triangles.
e.g. A   B   Find AC   Find the height

D   C

- Ratio (equivalent, of a quantity)

ICCAMS
Consider LP6, LP7, LP8, Lesson 10B, LP11 and LP17

Note: all of these lessons explore multiplicative relationships. Functional relationships versus scalar relationships and different representations (e.g. ratio table, double number line and Cartesian graph

Suggestions for further depth:

- Direct and inverse proportion (inc. unitary method)

ICCAMS
Consider LP6, LP7, LP8, Lesson 10B, LP11 and LP17

Note: all of these lessons explore multiplicative relationships. Functional relationships versus scalar relationships and different representations (e.g. ratio table, double number line and Cartesian graph

Suggestions for further depth:

Which is the better special offer? 20% extra free or 15% off

- Conversion of metric units

- Conversion of time units

- m/s to km/h

Suggestions for further depth:
Conversion of area and volume units (LAV scale factors)

Transformations

- Transformations, congruence and similarity (inc. unit conversions LAV)

ICCAMS
Consider Lesson 8B

Suggestions for further depth:

- Identify 3D shapes, draw their nets, find their volume (inc. cuboid, prism,

  cylinder, composite solids)

- To encompass:

  - Rounding, significant figures and estimation

Suggestions for further depth:

The areas of the faces of a cuboid are 3,12 and 25 cm^2.

- Circumference and area of a circle (may stop at this for LA students)

- Volume of cylinder, cone

- To encompass:

  - Rounding, significant figures and estimation

Suggestions for further depth:

Which is a better fit, a square peg in a round hole or a round peg in a square hole?