ST PAUL'S JUNIORS

Common Mathematics Syllabus
8+ Examination

NUMBER AND THE NUMBER SYSTEM

Counting, properties of numbers and number sequences

- Describe and extend number sequences.
- Count on or back in tens or hundreds, starting from any two or three-digit number.
- Count on or back in steps of any single digit number starting from any two- digit number.
- Recognise two-digit and three-digit multiples of 2, 5 or 10, and three-digit multiples of 50 and 100.

Place value and ordering

- Read and write whole numbers to any four-digit whole number in figures and words.
- Know what each digit represents, and partition three-digit numbers into a multiple of 100, a multiple of ten and ones (HTU).
- Use the vocabulary of comparing and ordering numbers, including ordinal numbers to 1000.
- Compare two given three-digit numbers, say which is more or less and give a number which lies between them.
- Say the number that is 1, 10 or 100 more or less than any given two or three-digit number.
- Order any four-digit whole number, and position it on a number line.

Estimating and rounding

- Use the vocabulary of estimation and approximation.
- Round any three-digit number to the nearest 10 or 100.

Fractions

- Recognise the unit fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$ and $\frac{1}{10}$.
- Recognise simple fractions that are several parts of a whole, for example $\frac{3}{4}$, $\frac{2}{3}$ and $\frac{3}{10}$.
- Recognise simple equivalent fractions: for example, five tenths and one half, five fifths and one whole.
- Compare familiar fractions: for example, know that on the number line one half lies between one quarter and three quarters.
- Find a unit fraction ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$ and $\frac{1}{10}$) of a given quantity.

CALCULATIONS

Understanding addition and subtraction

- Understand the operations of addition and subtraction, use the related vocabulary, and recognise that addition can be done in any order.
- Use the +, - and = signs, and recognise the use of a symbol such as ف or Δ to stand for an unknown number.
- Add three or four single-digit numbers mentally, or three or four two-digit numbers with any appropriate method.
- Understand that subtraction is the inverse of addition.

Rapid recall of addition and subtraction facts

- Know by heart:
  - all addition facts to a total of 30 and the corresponding subtraction facts.
  - all pairs of multiples of 100 with a total of 1000 (e.g. 300 + 700).
- Derive quickly:
  - all pairs of multiples of 5 with a total of 100 (e.g. 35 + 65).

Mental calculation strategies (+ and -)

- Use a variety of methods to demonstrate an understanding of addition and subtraction**.**

Pencil and paper procedures (+ and -)

- Use pencil and paper methods to support, record or explain HTU ± TU, HTU ± HTU.
- Use column addition and subtraction for HTU **±** TU where the calculation cannot easily be done mentally.

Understanding multiplication and division

- Understand multiplication as repeated addition.
- Use the related vocabulary.
- Understand that multiplication can be done in any order.
- Understand division as grouping (repeated subtraction) or sharing.
- Use the related vocabulary.
- Recognise that division is the inverse of multiplication, and that halving is the inverse of doubling.
- Find remainders after simple division.
- Round up or down after division, depending on the context.

Rapid recall of multiplication and division facts

- Know by heart:
  - multiplication facts for times tables up to 10 x 10.
- Derive quickly:
  - division facts corresponding to the times tables up to 10 x 10.
  - doubles of all whole numbers to 20 (e.g. 17 + 17 or 17 x 2).

- doubles of multiples of 5 to 100 (e.g. 75 x 2, 90 x 2).
- doubles of multiples of 50 to 500 (e.g. 450 x 2).
- and all the corresponding halves (e.g. 36 ÷ 2, half of 130, 900 ÷ 2).

Mental calculation strategies (x and ÷)

- Use a variety of methods to demonstrate an understanding of multiplication and division.
- Including multiplying by 10 or 100, shift the digits one or two places to the left.

Pen and Paper procedures

- Use any method to calculate TU x U, TU ÷ U

Checking results of calculations

- Use appropriate checking strategies.

MONEY, MEASURES, SHAPE AND SPACE

Money and measures

- Recognise all coins and notes.
- Understand and use £.p notation (for example, know that £3.06 is £3 and 6p).
- Use the vocabulary related to length and mass.
- Measure and compare using standard units (mm, m, cm, kg, g), including using a ruler to draw and measure lines to the nearest half centimetre.
- Know the relationship between metres, centimetres and millimetres; kilograms and grams.
- Read scales to the nearest division (labelled or unlabelled).
- Use the vocabulary related to time.
- Use units of time and the relationships between them (second, minute, hour, day, week).
- Read the time to 5 minutes on an analogue clock and a 12-hour digital clock, and use the notation 9:40.

Shape and space

- Use the mathematical names for common 2-D shapes, including square, rectangle, triangle, pentagon and hexagon.
- Use the mathematical names for common 3-D shapes; including cube, cuboid, cylinder and sphere.
- Refer to properties such as reflective symmetry, the number of sides, whether sides are the same length or parallel, whether or not angles are right angles.
- Identify and sketch lines of symmetry in simple shapes, and recognise shapes with no line of symmetry.
- Sketch the reflection of a simple shape in a mirror line along one edge.
- Use mathematical vocabulary to describe position, direction and movement: for example, describe and find the position of a square on a grid of squares with the rows and columns labelled.
- Make and describe right-angle turns.
- Identify right angles in 2-D shapes.
- Compare angles with a right angle.

SOLVING PROBLEMS

Problems involving money and measures

- Solve word problems involving numbers in money and measures, involving up to three steps.

Organising and using data

- Solve a given problem by sorting, classifying and organising information in simple ways, such as:
  - in a list or simple table:
  - in a pictogram;
  - in a block graph.
- Discuss and explain results.

Making decisions

- Choose and use appropriate operations of up to 3 steps (including multiplication and division) to solve word problems, and appropriate ways of calculating: mental, mental with jottings, pencil and paper.

Reasoning about numbers or shapes

- Solve mathematical problems and puzzles, recognise patterns and relationships, generalise and predict.
- Investigate a general statement about familiar numbers or shapes by finding examples that satisfy it and / or counter examples.
- Explain methods and reasoning.

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