Year 5 Autumn 1 • Problem solving and reasoning • Commentary chart

Q. no.	Abacus objectives	National curriculum objectives	Answers	Marks	Common difficulties	Advice
1	**NPV.5q** Order and compare 5-digit numbers and say a number between	**Y5.NPV.1** Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	For example: 10 278 < 10 279 < 10 287 < 10 288 < 10 782	2	Most recognise that the first two digits '10' can be retained in the two missing numbers, but some are unable to work out the remaining three digits. A few may use the digits 2, 7 and 8, which appear in the given three numbers, to complete the missing numbers ignoring the less than signs.	Practise placing numbers on a number line, in this case 10 000–11 000
2	**NPV.5q** Order and compare 5-digit numbers and say a number between	**Y5.NPV.1** Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	q65 q08; q65 80q; q56 q08; q6 q50; q6 5q0	2	Most children find the largest of the five numbers, but some are then unable to continue the process for the remaining four numbers.	Advise children to cross out the largest number and find the largest of the remaining numbers, continuing this process until all five have been ordered.
3	**MAS.55** Subtract 3-digit from 4-digit numbers by counting up **MAS.56** Use mental strategies to add 2-digit, 3-digit and 4-digit numbers	**Y5.NAS.2** Add and subtract numbers mentally with increasingly large numbers	a) ✓ b) ✗ c) ✗ d) ✓	2	These are straightforward questions as there are no place value boundaries crossed. Children who do not realise this may add or subtract in columns which could lead to recording mistakes. Some children may find the subtraction questions harder.	Offer more opportunities to sort questions into those that can be solved simply by mental strategies and those that cannot.
4	**MAS.56** Use mental strategies to add 2-digit, 3-digit and 4-digit numbers **MAS.4q** Count up to subtract any 3-digit from 3-digit number	**Y5.NAS.4** Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	£160	2	Subtracting the £50 (rather than adding) or adding the £80 (rather than subtracting). Some children may add or subtract both, or only carry out one part of the calculation.	When solving word problems, get children to identify which are 1-step and which are 2-step or multi-step problems.
5	**MAS.56** Use mental strategies to add 2-digit, 3-digit and 4-digit numbers	**Y5.NAS.2** Add and subtract numbers mentally with increasingly large numbers	423 Children may recognise that it is 25 from 375 to 400, then partition the 48 into 25 and 23, leaving an answer of 423.	2	Common errors include 433 or 443.	Practise complements to 100 and partitioning 2-digit numbers in different ways, e.g. 48 = 25 + 23.
6	**MAS.4q** Count up to subtract any 3-digit from 3-digit number	**Y5.NAS.2** Add and subtract numbers mentally with increasingly large numbers	a) 44 b) 423	2	Children may be confused by the wording, adding rather than finding the difference / subtracting, giving 396 and 743 respectively as answers.	Visualise numbers on an empty number line to show how they are related to each other.

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7	**DPE.60** Match 2-place decimals to 1/100s, using a place-value grid	**Y5.NPV.1** Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	a) ones b) hundredths c) tenths d) tens e) hundreds	2	Confusing place value; mixing up tens/tenths and hundreds/ hundredths.	Write numbers such as these on a place-value grid.
8	**DPE.62** Use place value to add and subtract 0·1 and 0·01 to and from decimal numbers	**Y5.NF.9** Solve problems involving number up to three decimal places	a) 0·02 b) 0·1	2	Some children may write 2 or 1 as the number added, ignoring the place value of the digits.	Use a place-value grid to identify the value of the digit that has changed in each case.
9	**MMD.41** Use doubling and halving to multiply and divide by 4 and 8 and solve correspondence problems **PRA.71** Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes	**Y5.NMD.5** Multiply and divide numbers mentally drawing upon known facts	a) doubling and halving method should be shown as 50 × 6 = 300 b) doubling and halving method should be shown as 16 × 100 = 1600	2	Some children ignore the instruction to use doubling and halving and attempt long multiplication or the grid method to solve these.	Use simpler examples e.g. 6 × 5 = 3 × 10 (halving the 3 and doubling the 5) to give children confidence in this strategy.
10	**MEA.52** Compare durations of events to calculate the time taken by particular events or tasks **MEA.63** Read, write and convert time between analogue and digital 12 and 24 hour clocks	**Y5.M.6** Solve problems involving converting between units of time	a) 7:15 am; 18:50; 1:30 pm b) 3 hrs 5 min c) 2 hrs	3	Some children may add / subtract 10 rather than 12 when changing between 24 hour and am/pm times. Others may misread information in the timetable when solving the problems.	Children need opportunities to look at a range of real life bus and train timetables, planning their own journeys using them.
11	**MEA.65** Convert between different units of measure, e.g. kilometres to metres, metres to centimetres, etc.	**Y5.M.1** Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	a) 500 m b) 10 cm	1	50 m and 1 cm respectively are common errors.	Children need to learn common metric equivalents for length, mass and capacity and practise finding fractional amounts of each.
12	**MEA.67** Measure and calculate the perimeter of composite rectilinear shapes in m/cm	**Y5.M.3** Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	a) 87 mm Line lengths may vary on different printers so check against your own measurement. Allow children a 1 mm margin of error. b) 104–106 mm	2	Some children may give an answer of 9 or 90 (i.e. reading to nearest cm not mm). Some children may draw a line that is nearer to 100 mm or 110 mm.	Model using a ruler to make accurate measurements; use clear marked see-through rulers. Practise using rulers to draw lines to nearest mm; ensure pencils are sharp and table top is clear.

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13	**MEA.67** Measure and calculate the perimeter of composite rectilinear shapes in m/cm	**Y5.M.3** Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	42 cm	2	21 cm – child has added one length and one width only. 104 cm – child has calculated the area not perimeter.	Encourage children to put in missing lengths (a second 8 cm and a second 13 cm) when finding perimeters; investigate area and perimeter of different rectangles ensuring children distinguish each correctly.
14	**MAS.49** Count up to subtract any 3-digit from 3-digit number **MAS.67** Use counting up strategies to quickly calculate change	**Y5.NAS.2** Add and subtract numbers mentally with increasingly large numbers	a) £7·40 b) £5·95	2	Children who use column subtraction are more likely make place value errors with this question.	Practise using real life examples, with children playing shopkeeper and giving change.
15	**MAS.49** Count up to subtract any 3-digit from 3-digit number	**Y5.NAS.2** Add and subtract numbers mentally with increasingly large numbers	Children should circle 157. A model explanation would show that the child has added 45 to get to the next hundred (600), then 100 more to 700, then 12 more to 712. That makes 45 + 100 + 12 = 167	2	Children may give 167 if they add 55 to 12 rather than find 45 (the complement of 55). Some may work out the answer mentally but give an explanation that relates to column subtraction.	Model the vocabulary needed to explain mental strategies.

Marking guidance

The following marking guidance has been created to support you in marking 1, 2 and 3 mark questions. For more detailed guidance on common difficulties, please look at the information provided in the Commentary chart.

General information

Questions in the **Arithmetic test** are usually worth 1 mark. In Key Stage 2, two marks may be available for the use of an appropriate written method.

Questions in the **Problem solving and reasoning test** can be worth 1, 2 or 3 marks.

If a child has altered an answer or the answer is not clear, ask him or her to read or explain the answer to you.

Occasionally discretion will be needed regarding accuracy, especially where children are asked to mark or read number lines or draw shapes. In these instances, follow the guidance as specified in the Commentary chart.

1 mark questions

- For 1 mark questions with one part, an answer must be correct for the mark to be awarded.
- For 1 mark questions where there are two parts, award $\frac{1}{2}$ a mark for each correct part.
  Example:

  Write in the answers.

  a) **2·3 × 100 =** ☐ b) **35·9 ×** ☐ **= 359**

- For 1 mark questions where there are three or four parts, a child should get at least two parts correct to be awarded with $\frac{1}{2}$ a mark, and all parts correct to be awarded 1 mark.
  Example:

  Write in the answers.

  a) **3 × 6 =** ☐ c) **6 × 12 =** ☐

  b) **98 × 6 =** ☐ d) **6 × 6 =** ☐

2 mark questions

- For 2 mark questions where there are two independent parts, and answers are right or wrong, award 1 mark for each part.
- For 2 mark questions where there are four parts and answers are either right or wrong, award $\frac{1}{2}$ a mark for each correct answer.
  Example:

  Which of these are correct?
  Put a tick (✓) or cross (✗) in the box next to each calculation below.

  a) **1672 + 120 = 1792** ☐ c) **3957 – 2030 = 1627** ☐

  b) **2437 + 520 = 2939** ☐ d) **6781 – 340 = 6441** ☐

- For 2 mark questions where children are asked to show working, award 2 marks for a correct answer regardless of whether any working out is shown. 1 mark may be awarded if an answer is incorrect but an appropriate method was used, with no more than one arithmetical error. This mark should not be awarded if there has been no attempt to write the final answer.
  Example:

  A computer costing **£628** has been reduced by **£145**.
  What is its new cost?

  Show your method

- For 2 mark questions where children are asked to solve a long multiplication or division, 1 mark may be awarded if working is carried through using a formal written method. This mark should not be awarded if either an error is made in place value, or no attempt has been made to write the final answer.

  Example answer 1:

  ```
    273
  ×  14
  ----
   2730
   1092
  ----
   3722
  ```

  The answer should be 3822 but an error has been made in the final addition. 1 mark should be awarded.

  Example answer 2:

  ```
    273
  ×  14
  ----
    273
   1092
  ----
   1365
  ```

  The place-value error (10 × 273 should be 2730) shows a misunderstanding of a critical part of the method. No marks should be awarded.

- In 2 mark questions where a child is required to give an explanation, give 1 mark for the correct answer and the second mark for the explanation.
  Example:

  Circle each of the numbers that are **divisible by 5.**

  79 325 3551 15 752 99 440 60 008

  Explain how you decided which numbers to circle.

  _____

  _____

3 mark questions

- For 3 mark questions where there are three independent parts, and answers are right or wrong, award 1 mark for each part.