Year group:	3
Type of test:	End of Half Term
Term:	Autumn 2
Test content:	Reasoning
Power Maths topic:	Book 3A, Units 3–5

Q	ANSWER	MARK	INCORRECT ANSWERS AND MISCONCEPTIONS	EVIDENCE OF GREATER DEPTH
1	**500** **5** **50**	1	**Possible incorrect answer has number cards in the wrong order (Answers like this may suggest children are unsure of 100s, 10s and 1s).** This topic is covered in Unit 3, Lessons 2, 3 and 4.	Children are able to set up formal addition and subtraction of 100s, 10s and 1s, with or without background grid.
2	**496** **144**	1	**Possible incorrect answer 469 or 171 (Answers like this may suggest children have ignored the zero in 30).** This topic is covered in Unit 3, Lesson 3.	Children can demonstrate mentally they can add or subtract any number of tens to or from a three digit number.
3	**Allow 1 mark for correct completion of the addition boxes: 1 mark for the multiplication boxes** **There are 4 groups of 5 cubes. 5 + 5 + 5 + 5 = 20** **4 × 5 = 20**	2	**Possible incorrect answer 9 (An answer like this may suggest children have added 4 and 5 instead of multiplying).** Possible incorrect answer 5 groups of 4 instead of 4 groups of 5 (An answer like this may suggest children have been confused by the picture representation). Children may find it difficult to relate repeated additions to multiplication facts. This topic is covered in Unit 4, Lesson 2.	Children know their 4 times-table off by heart and can apply this in a variety of ways.

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4	**15**	1	**Possible incorrect answer 8 (An answer like this may suggest children added 5 and 3 rather than multiplying).** Children may not see that 5 × 3 is the same as 3 × 5. This topic is covered in Unit 4, Lesson 1.	Children know their 3 times-table off by heart and can apply this in a variety of ways.
5	**478**	1	**Possible incorrect answer 8 (An answer like this may suggest children have calculated the difference between the 2 amounts rather than adding).** Children may be unsure which operation is required. This topic is covered in Unit 3, Lesson 1.	Children can add numbers with up to 3 digits within 1,000 and check their answers using estimation and inverse operations.
6	**232**	1	**Possible incorrect answer 502 (An answer like this may suggest children have added rather than subtracting).** Children may find questions confusing when subtraction is in the context of an amount being 'left'. This topic is covered in Unit 3, Lesson 2.	Children can subtract numbers with up to 3 digits within 1,000 and check their answers using estimation and inverse operations. They can justify whether or not an exchange was necessary.
7	**£24**	1	**Possible incorrect answer £11 (An answer like this may suggest children have added instead of multiplying).** Children may find it difficult to identify the operation required, especially when one value is 'different' (e.g. a monetary value). This topic is covered in Unit 5, Lesson 9.	Children know their 3 times-table off by heart and can apply this in a variety of ways.

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8	**6 sweets**	1	**Possible incorrect answer 15 (An answer like this may suggest children have subtracted instead of dividing).** **Possible incorrect answer 54 (An answer like this may suggest children have multiplied rather than dividing).** **Possible incorrect answer 21 (An answer like this may suggest children have added 3).** Children may be unsure whether they need to multiply or divide. This topic is covered in Unit 5, Lesson 2.	Children know their 3 times-table off by heart and can apply this to solve divisions by using the inverse and applying checking strategies.
9	**186 + 203 needs to be written into the 'Approximately 400' column for 1 mark** **946 – 431 needs to be written into the 'Approximately 500' column for 1 mark**	1 1	**Possible incorrect answer calculations written in the wrong columns (An answer like this may suggest children have rounded incorrectly or used the wrong operations).** Children may be confused by the terms 'estimate' and 'approximately'. This topic is covered in Unit 3, Lesson 10.	Children can add and subtract numbers with up to 3 digits within 1,000 and check their answers using estimation by rounding and inverse operations.
10	**193 + 72 = 265** **Yes is circled but do not penalise if left unmarked**	1	**Possible incorrect answer 265 – 72 = 193 (An answer like this may suggest children have written the subtraction statement rather than using the inverse fact).** Children may become confused with the related fact families involved. Possible incorrect answer No (An answer like this may suggest children have made an error in their calculation). This topic is covered in Unit 3, Lesson 11.	Children can justify answers through checking strategies such as the use of inverse operations.

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11	**16**	1	**Possible incorrect answer 8 (An answer like this may suggest children found 32 ÷ 4 but have not found the missing number).** Children may not know which operation they need to use. This topic is covered in Unit 5, Lesson 5.	
12	**24**	1	**Possible incorrect answer 23 or 25 (An answer like this may suggest children have counted (inaccurately) rather than multiplying).** This topic is covered in Unit 5, Lesson 4.	Children can identify multiplication sentences from a variety of pictorial representations, including arrays.
13	**291 m**	1	**Possible incorrect answer 561 m (An answer like this may suggest children have added the heights).** Children may find it difficult to identify the missing information in this context, so they may choose an incorrect operation. This topic is covered in Unit 3, Lesson 13.	Children can subtract numbers with up to 3 digits within 1,000 and check their answers using estimation and inverse operations.
14	**£381**	1	**Possible incorrect answer £392 (An answer like this may suggest children have added the cost of an adult's helmet instead of a child's).** Possible incorrect answer £363 (An answer like this may suggest children have not included the cost of the helmet). Children may find it difficult to use a bar model to represent the whole. This topic is covered in Unit 3, Lesson 13.	Children can use a bar model to represent the context of a story problem and to identify the operation required based on whether the missing information is the whole or a part. Children can represent and justify problem solving decisions through the use of comparison bar models.

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15	**related facts needed:** **5 × 6 = 30** **6 × 5 = 30** **30 ÷ 6 = 5** **30 ÷ 5 = 6** **Order may vary. 2 marks for all 4 correct. 1 mark for 2 or 3 correct.**	2	**Possible incorrect answer incorrect facts, e.g. 30 × 5 = 6 or 5 ÷ 6 = 30.** Possible incorrect answer children may not complete all facts. Children may think that division is commutative, like multiplication. This topic is covered in Unit 4, Lesson 12.	Children can represent related multiplication and division facts accurately, applying known times-table facts.

Mark range	Level
0 – 4	Below
5 – 7	Towards
8 – 11	Expected
12 – 14	Secure
15 – 16	Towards greater depth
17 – 18	Greater depth