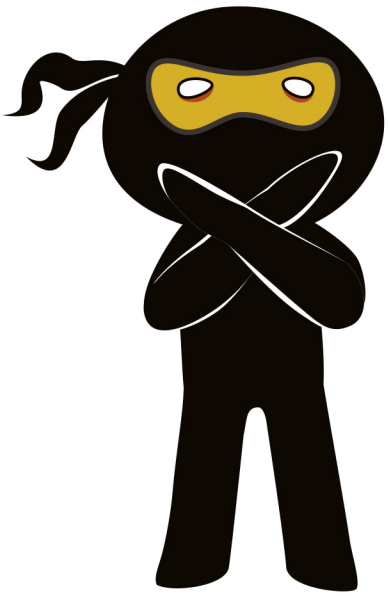
VOCABULARY NINJA



ANDREW JENNINGS WITH PAUL TUCKER

ARITHMETIC NINJA

PHOTOCOPIABLE MATHS ACTIVITIES THAT SUPPORT THE NATIONAL CURRICULUM

FOR AGES 10–11

BLOOMSBURY

ANDREW JENNINGS WITH PAUL TUCKER

ARITHMETIC NINJA

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OTHER NINJA RESOURCES FOR TEACHERS

FOR TEACHERS

TIMES TABLE NINJA
BY SARAH FARRELL AND ANDREW JENNINGS

A treasure trove of photocopiable multiplication worksheets that give Key Stage 2 pupils all the tools they need to gain fluency in multiplication and division up to their 12 times tables. Each chapter begins with exercises for practising rapid recall, followed by visually engaging activities for applying knowledge to other areas of maths including shape, perimeter, scale factors, fractions and more.

COMPREHENSION NINJA FICTION & POETRY

A set of six books for ages 5–11 that provide strategies and carefully curated resources to teach the key comprehension skills of skimming, scanning and retrieving information effectively. Each book curates 24 high-quality fiction or poetry texts by authors such as Roald Dahl, Katherine Rundell and Chitra Soundar, alongside photocopiable activities with strong links to the National Curriculum.

VOCABULARY NINJA

A practical guide featuring strategies and photocopiable activities to help transform pupils into vocabulary ninjas. With easy-to-follow theory and teaching approaches, as well as key curriculum topic vocabulary, etymology and phrases, this book will help bring the primary curriculum to life.

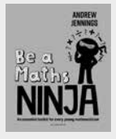
COMPREHENSION NINJA NON-FICTION

A set of six books for ages 5–11 that provide strategies and carefully curated resources to teach the key comprehension skills of skimming, scanning and retrieving information effectively. Each book presents 24 high-quality non-fiction texts and photocopiable activities with strong links to the National Curriculum.

FOR CHILDREN

WRITE LIKE A NINJA

A pocket-sized book packed full of all the grammar, vocabulary and sentence structures that children need in order to improve and develop their writing skills. Fully aligned to the Key Stage 2 National Curriculum, this book is designed to be used independently by pupils both in the classroom and at home.



BE A MATHS NINJA

Be a Maths Ninja is jam-packed with key concepts, mathematical vocabulary and practice advice to support every child's growing independence in maths. It covers all the key areas of the National Curriculum for Key Stage 2 and is perfect for children needing all the important maths facts at their fingertips.

Head to www.vocabularyninja.co.uk and follow @VocabularyNinja on Twitter for more teaching and learning resources to support the teaching of vocabulary, reading, writing and the wider primary curriculum.

INTRODUCTION

Arithmetic is the study of a core part of mathematics that involves the varied properties of numbers and how they can be manipulated using the four operations: addition, subtraction, multiplication and division. A pupil's ability to confidently calculate using the four operations is essential as it underpins their ability to access the reasoning and mastery objectives set out by the primary National Curriculum.

HOW DOES ARITHMETIC NINJA SUPPORT TEACHERS AND SCHOOLS?

Arithmetic Ninja has been created to support the daily planning, preparation, teaching and assessment of arithmetic throughout each year group and across the whole school from Year 1 to Year 6. Each book contains almost 6,000 arithmetic-style questions and word problems that have been tailored to meet the needs of the primary National Curriculum, meaning that high-quality, whole-school arithmetic teaching and learning can be consistently and effectively embedded within each classroom without any of the time-consuming preparation. It's teaching simplified, learning amplified. Arithmetic Ninja is another outstanding whole-school resource that embodies the Vocabulary Ninja principles of simplicity, consistency and marginal gains!

HOW TO USE THIS BOOK

Arithmetic Ninja is much more than just a series of age-related arithmetic questions. Each day provides three differentiated sets of ten questions. Grasshopper, Shinobi and Grand Master each have a specific focus and purpose to support all pupils in the modern primary classroom.

GRASSHOPPER – CATCH-UP AND KEEP UP

Grasshopper questions have been designed to support pupils who are not working at the expected standard of their year group and require daily opportunities for repeated practice within a standard mathematical representation of part + part = whole (10 + 4 = 14). Grasshopper questions provide opportunities to build confidence in content from three half-terms prior to the age-related expectation. So, questions in the Spring 2 term will include content from Autumn 2, Spring 1 and Spring 2, allowing pupils to not only catch-up, but keep up too!

SHINOBI – BUILD LINKS AND MAKE CONNECTIONS

Shinobi questions have been created beyond the standard age-related expectation for arithmetic questions. The focus at the Shinobi level is to provide an age-appropriate arithmetic resource – one that provides regular opportunities for pupils to build links and make connections between related mathematical facts. Within the daily series of ten questions, questions have been carefully crafted to allow pupils to make cognitive links between related facts. For example, 9 x 8 = 72 and within the Shinobi series, subsequent questions may focus on 0.8 x 9, 7.2 ÷ 9 or even 0.9 x 0.8. Where possible, the Shinobi strand provides teachers with the mathematical opportunities to dive deeper into a pupil's understanding with effective questioning to support the link-building process and to make these crucial connections.

GRAND MASTER – VARIED FLUENCY, REPRESENTATION AND MASTERY

Grand Master questions provide pupils with a greater level of challenge, with questions bridging into mathematical content up to three half-terms beyond the age-related expectation. So, questions in the Autumn 2 term could also contain content from Spring 1 and Spring 2. Grand Master questions go even further still by presenting questions with varied representations such as whole = part + part (200 = 160 + 40) or questions with unknown parts (200 = __ + 40). Grand Master questions allow teachers to provide a greater level of challenge for pupils who are ready for it and are designed to provide opportunities for pupils to develop a mastery level of mathematical understanding.

Each Arithmetic Ninja book is an extremely versatile resource for teachers, schools and tutors and could be used to begin daily maths lessons, as part of high-quality intervention, within private tuition or even as part of regular homework provision.

Comprehension Ninja 10-11 © Andrew Jennings, 2021

Content map for Arithmetic Ninja

	Autumn term 1: Weeks 1–6	Autumn term 2: Weeks 7–12	Spring term 1: Weeks 13–18	Spring term 2: Weeks 19–25	Summer term 1: Weeks 26–32	Summer term 2: Weeks 33–39
Year 1 (for ages 5-6)	• Number bonds to 10, e.g. 9 + 1 / 1+ 9 • Add one- and two-digit numbers within 20 (13 + 1 / 13 + 2 / 13 + 3) • Include language of 1 more • Double • Count in 2s (lots of)	• Number bonds to 10 (alternate representations, e.g. 10 = __ + 4) • Subtract one- and two-digit numbers within 20 (15 – 3 / 15 – 4 / 15 – 5) • Include language of 1 less • Double • Count in 2s (lots of)	• Number bonds to 20 (19 + 1 / 1 + 19) • Add and subtract one- and two-digit numbers within 20 (answer box at beginning OR missing number question, e.g. __ – 7 = 9 OR __ = 16 – 9) • Count in 5s (lots of) • 1 more to 50 • 5 + 5 • Half	• Number bonds to 20 (alternate representations, e.g. 20 = __ + 1) • Add and subtract one- and two-digit numbers within 20 (answer box at beginning OR missing number question, e.g. __ – 7 = 9 OR __ = 16 – 9) • Count in 5s (lots of) • 1 less to 50 • 5 + 5 • Half	• Add and subtract one- and two-digit numbers within 20 (alternate representations including answer box at the beginning AND missing number, e.g. 7 = __ – 9) • Count in 10s (lots of) • 10 + 10 • Quarter • 1 more to 100	• Mixed adding and subtracting within 20 (alternate representations) and within 30 • Mixed counting in 2s, 5s and 10s • Quarter • 1 less to 100 • Mixed 1 more and 1 less in different representations
Year 2 (for ages 6-7)	• Number bonds to 10 (alternate representations) • Number bonds to 20 (alternate representations) • Addition and subtraction within 10 • Count in 2s • Double	• Addition and subtraction within 20 • Partition two-digit numbers in different ways (20 + 3 / 10 + 13) • Double and half • Quarter	• Add and subtract two-digit and one-digit numbers (34 + 3 / 34 + 5 / 34 + 6) • Using the inverse (1 + 2 = 3 / 3 – 2 = 1) • 2 times table • Half / two quarters	• Add and subtract two-digit numbers and tens (34 + 10 / 34 + 20 / 34 + 30) • Derive related facts to 100 (3 + 4 = 30 / 30 + 40 = 70 / 70 = 30 + 40) • Thirds	• Add and subtract two two-digit numbers (56 – 22 / 56 – 23 / 56 – 24) • Add three one-digit numbers (1 + 5 + 7 / 1 + 4 + 8) • 5 times table	• Add and subtract two two-digit numbers (56 + __ = 79 / 79 = __ + 56) • 5 and 10 times tables
Year 3 (for ages 7-8)	• Three-digit numbers add ones (456 + 2 / + 3 / + 4) • Partition two-digit numbers in different ways (80 + 2 / 70 + 12) • Mixed 2, 5 and 10 times tables (including halves and doubles)	• Three-digit numbers subtract ones (456 – 2 / – 3 / – 4) • Partition three-digit numbers in different ways (100 + 40 + 6 / 130 + 16) • 3 and 4 times tables (including quarters)	• Three-digit numbers add tens (456 + 20 / + 30 / + 40) • Derive related facts (30 + 40 / 300 + 400 / 50 + 20) • 8 times table • Add and subtract fractions with the same denominator (+)	• Three-digit numbers subtract tens (456 – 20 / – 30 / – 40) • Add and subtract three-digit numbers (246 – 123 / 123 + 246) • Distribute (4 x 12 x 5 / 4 x 5 x 12 / 20 x 12 = 240) • Mixed times tables • Unit fractions of numbers linking to those times tables	• Three-digit numbers add hundreds (456 + 200 / + 300 / + 400) • Add and subtract three-digit numbers (246 – __ = 132 / 456 = __ + 321) • Derive related facts to 1,000 • Two-digit times one-digit numbers (45 x 3 / 45 x 4)	• Three-digit numbers subtract hundreds (456 – 200 / – 300 / – 400) • Derive related facts to 1,000 • Divide one-digit numbers by ten (40 / 10 then 4 / 10) • Non-unit fraction of number (e.g.) relating to times tables
Year 4 (for ages 8-9)	• 10 / 100 more / less • Mixed times tables (2, 5, 10, 3, 4, 8, including double, half, quarter, etc.) • Multiply three numbers • Add and subtract fractions (same denominators)	• 10 / 100 / 1,000 more / less • Partition four-digit numbers in different ways (3,005 + 340 / 3,300 + 45) • Derive related facts to 10,000 (e.g. 60 x 2) • Unit fractions of numbers	• Add and subtract four-digit numbers (4564 + 2323 = __ / __ = 4564 + 2323) • Derive related facts to 10,000 (e.g. 600 x 2) • Three-digit times one-digit numbers • Non-unit fractions of numbers	• Add and subtract four-digit numbers (4564 + 2323 = __ / 5737 = __ – 1234) • Derive related facts to 10,000 (including fractions of numbers) • Three-digit times one-digit numbers • Divide a one- or two-digit number by 10 and 100	• Add and subtract decimals (tenths) • Derive related facts to 10,000 (e.g. 600 x 2) • Two-digit numbers divided by one-digit numbers • Add and subtract fractions (same denominators; answers bigger than 1)	• Add and subtract decimals (hundredths) • Derive related facts to 10,000 (including fractions of numbers) • Three-digit numbers divided by one-digit numbers
Year 5 (for ages 9-10)	• 10 / 100 / 1000 more / less • Partition numbers in different ways • Add and subtract decimals (complements of 1, e.g. 100 – 76 = __ / 1 – 0.76 =__) • All times tables, including deriving related facts	• Powers of 10 more / less • Square / square root • Short multiplication • Derive related facts to 10,000 (including fractions) • Add and subtract fractions with the same denominator (answers bigger than 1)	• Add and subtract more than four-digit numbers (84,564 + 12,323 = __ / __ = 84,564 + 12,323) • Multiply and divide by 10, 100 and 1000 • Derive related facts to 100,000 (including fractions) • Add and subtract fractions where the denominators are multiples of same number (answers bigger than 1)	• Add and subtract more than four-digit numbers (84,564 + 12,323 = __ / 45,737 = __ – 31,234) • Long multiplication • Short division (no remainders) • Non-unit fractions of whole numbers • Add and subtract mixed numbers	• Add and subtract decimals (up to hundredths / mix of whole and decimal) • Short division • Multiply simple fractions by whole numbers	• Add and subtract decimals (up to hundredths / different number of places) • Find 100%, 10%, 1% • Find 50%, 20%, 25% • Cube / cube root • Find whole from unit fraction • Multiply mixed numbers by whole numbers
Year 6 (for ages 10-11)	• Mixed whole number addition and subtraction • Derive related facts to 100,000 • Multiply and divide by 10, 100 and 1,000 • Add and subtract fractions with denominators that are multiples of the same number	• Mixed decimal addition and subtraction • Derive related facts to 1,000,000 • Add and subtract fractions with different denominators • Fraction of number	• Square and cube numbers • BODMAS • Long multiplication • Multiply pairs of fractions • Find whole from fraction • Percentage of number	• Short division • Long division • Divide fractions by whole numbers • Mixed fractions and percentages of numbers • Fractions to decimals	• Decimal long multiplication • Multiply mixed pairs of fractions	• Decimal division • Divide mixed number by whole number

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WEEK 1

Monday					
1.	245	+	132	=	
2.	86	–	32	=	
3.	7	x	8	=	
4.	36	÷	6	=	
5.	101	add	100	=	
6.	102	subtract	70	=	
7.	81	divided by	9	=	
8.	6	multiplied by	7	=	
9.	half	of	50	=	
10.	double		60	=	

Tuesday					
1.	173	+	98	=	
2.	121	–	54	=	
3.	6	x	5	=	
4.	42	÷	6	=	
5.	151	add	51	=	
6.	99	subtract	18	=	
7.	48	divided by	6	=	
8.	6	multiplied by	9	=	
9.	half	of	30	=	
10.	double		25	=	

Wednesday					
1.	231	+	126	=	
2.	153	–	67	=	
3.	8	x	4	=	
4.	32	÷	8	=	
5.	99	add	49	=	
6.	101	subtract	10	=	
7.	54	divided by	9	=	
8.	4	multiplied by	9	=	
9.	half	of	40	=	
10.	double		60	=	

Thursday					
1.	324	+	97	=	
2.	89	–	42	=	
3.	7	x	4	=	
4.	25	÷	5	=	
5.	98	add	27	=	
6.	101	subtract	9	=	
7.	49	divided by	7	=	
8.	5	multiplied by	9	=	
9.	half	of	100	=	
10.	double		50	=	

Friday					
1.	298	+	132	=	
2.	201	–	109	=	
3.	12	x	4	=	
4.	48	÷	12	=	
5.	101	add	99	=	
6.	101	subtract	19	=	
7.	64	divided by	8	=	
8.	7	multiplied by	9	=	
9.	half	of	80	=	
10.	double		30	=	

Ninja challenge

Cho has 783 marbles. Tom says he has 640 marbles **fewer** than Cho. **How many** marbles does Tom have?

WEEK 1

Monday				
1.	35	÷	10	=
2.	35	÷	100	=
3.	45	÷	10	=
4.	124	÷	10	=
5.	124	÷	100	=
6.	10%	of	45	=
7.	1%	of	45	=
8.	9	x	9	=
9.	9	x	0.9	=
10.	18	x	9	=

Tuesday				
1.	97	÷	10	=
2.	97	÷	100	=
3.	123	÷	10	=
4.	9	÷	10	=
5.	1,234	÷	1,000	=
6.	10%	of	90	=
7.	20%	of	90	=
8.	7	x	7	=
9.	7	x	0.7	=
10.	7	x	14	=

Wednesday				
1.	9	x	1	=
2.	9	x	0.1	=
3.	9	x	$\frac{1}{10}$	=
4.	$\frac{1}{10}$	of	9	=
5.	$\frac{2}{10}$	of	9	=
6.	10%	of	9	=
7.	20%	of	9	=
8.	8	x	8	=
9.	8	x	0.8	=
10.	8	x	80	=

Thursday				
1.	8	x	2	=
2.	8	x	0.2	=
3.	8	x	$\frac{2}{10}$	=
4.	$\frac{1}{10}$	of	80	=
5.	$\frac{2}{10}$	of	80	=
6.	10%	of	80	=
7.	20%	of	80	=
8.	9	x	8	=
9.	9	x	0.8	=
10.	9	x	16	=

Friday				
1.	9	x	3	=
2.	9	x	0.3	=
3.	9	x	$\frac{3}{10}$	=
4.	$\frac{1}{10}$	of	90	=
5.	$\frac{3}{10}$	of	90	=
6.	10%	of	90	=
7.	30%	of	90	=
8.	30%	of	900	=
9.	30%	of	9	=
10.	3%	of	90	=

Ninja challenge

Tom says that 7 **groups** of 500 is **equal** to 3,500. Is Tom correct? Explain why.

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WEEK 1

Monday				
1.	12,405	+	1,506	=
2.	34,917	–	4,682	=
3.	105	x	4	=
4.	432	÷	5	=
5.	9	–	1.14	=
6.	0.9	÷	10	=
7.	720	÷	9	=
8.	12%	of	240	=
9.	39	x	13	=
10.	1,035	÷	23	=

Tuesday				
1.	32,529	+	7,603	=
2.	15,739	–	9,909	=
3.	76	x	5	=
4.	324	÷	6	=
5.	8	–	3.56	=
6.	1.7	÷	100	=
7.	1,440	÷	12	=
8.	11%	of	145	=
9.	42	x	26	=
10.	2,108	÷	34	=

Wednesday				
1.	19,767	+	10,757	=
2.	20,802	–	11,719	=
3.	85	x	3	=
4.	286	÷	4	=
5.	4	–	1.07	=
6.	0.9	÷	100	=
7.	1,320	÷	11	=
8.	12%	of	97	=
9.	53	x	17	=
10.	1,628	÷	37	=

Thursday				
1.	24,090	+	9,726	=
2.	40,000	–	12,405	=
3.	132	x	6	=
4.	572	÷	4	=
5.	10	–	2.56	=
6.	1.8	÷	10	=
7.	810	÷	9	=
8.	11%	of	101	=
9.	46	x	21	=
10.	2,106	÷	39	=

Friday				
1.	37,109	+	589	=
2.	25,785	–	6,528	=
3.	209	x	5	=
4.	427	÷	7	=
5.	12	–	1.075	=
6.	3.2	÷	100	=
7.	540	÷	6	=
8.	12%	of	244	=
9.	32	x	19	=
10.	504	÷	14	=

Ninja challenge

Cho says that 123,463 is 24,500 **more than** 98,463. Is Cho correct? Explain why.

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