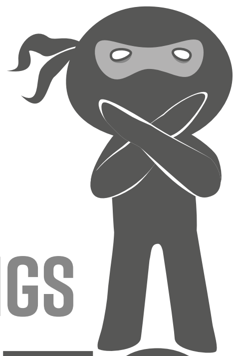

SARAH FARRELL WITH ANDREW JENNINGS

TIMES TABLES NINJA

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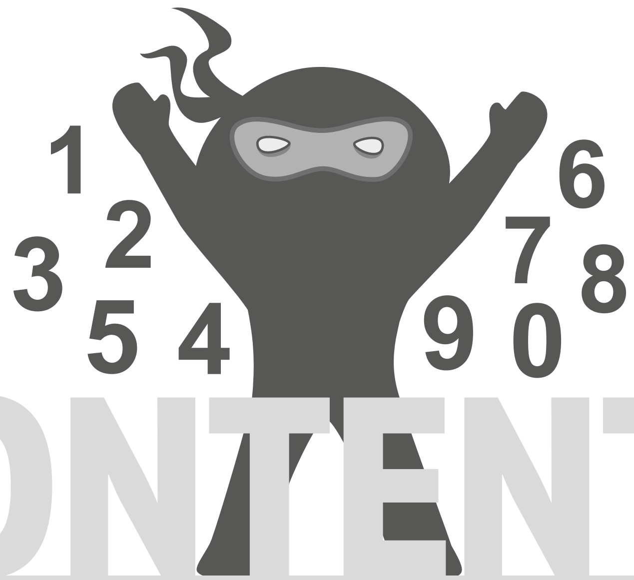
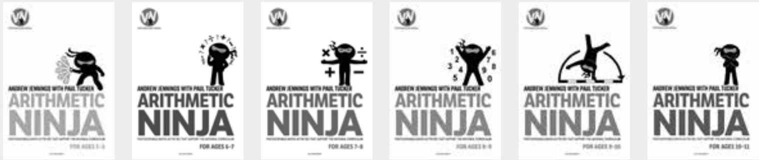


CONTENTS

OTHER NINJA RESOURCES FOR TEACHERS



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ANDREW JENNINGS WITH SARAH FARRELL AND PAUL TUCKER

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ALSO BY ANDREW JENNINGS

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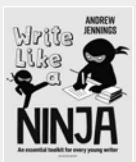
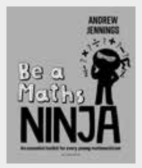
FOR CHILDREN





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.

FURTHER RESOURCES FOR SCHOOLS, TEACHERS AND CHILDREN ONLINE

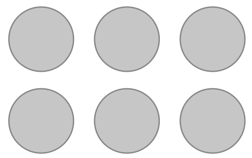
Head to www.vocabularyninja.co.uk and follow @VocabularyNinja on Twitter for more teaching and learning resources to support the teaching of vocabulary, reading, writing and the wider primary curriculum.

INTRODUCTION

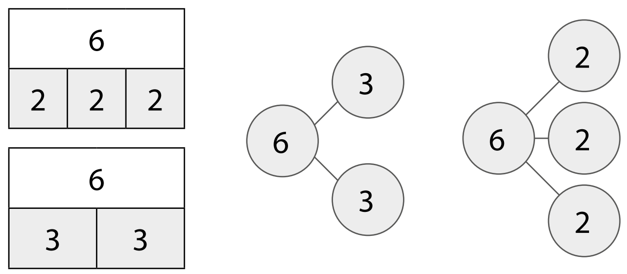
Times tables knowledge underpins almost every concept in the maths curriculum. With a strong understanding of the multiplication and division facts in the times tables to 12, pupils will be in a much better position to tackle concepts such as equivalent fractions and long multiplication. *Times Tables Ninja* has been designed to be an essential resource for building and developing understanding of the times tables and how they relate to the maths objectives set out by the National Curriculum.

Introducing pupils to times tables

The most important element of learning multiplication facts is to know that they are commutative (a x b = b x a). Pupils should be exposed to various different concrete, pictorial and abstract representations to build the understanding of this concept and be able to then apply it to other mathematical concepts. To start with, multiplication facts should be introduced through concrete manipulatives, such as counters, to form arrays. For example, the multiplication fact 2 x 3 = 6 could be represented by two rows of three counters or three rows of two counters. Appropriate vocabulary at this point could be 'two lots of three is equal to six', or 'six is equal to three lots of two'.



After the concrete representations, the multiplication facts can be explored through pictorial methods. This could begin with a non-concrete visual of an array, before moving on to part-whole models. These help to build the understanding that the multiplication facts are commutative, so 2 x 3 = 3 x 2.



After this, the multiplication fact can be discussed in more abstract terms, e.g. 2 x 3 = 6. This fact can then be extrapolated to include place value knowledge, such as 20 x 3 = 60 or 200 x 3 = 600. It is also important that pupils become used to seeing the facts represented in different ways. For example:

- 2 x 3 = 6
- 3 x 2 = 6
- 6 = 2 x 3
- 6 = 3 x 2
- 6 ÷ 3 = 2
- 6 ÷ 2 = 3
- 2 = 6 ÷ 3
- 3 = 6 ÷ 2

How to use the book

This book contains a chapter on each of the times tables from 2 to 12 and then a chapter covering mixed multiplication facts from all the tables. Each chapter focuses on fluency and rapid recall in the multiplication and division facts, before moving onto applying that knowledge to other areas of maths, such as shape, scale factors and fractions, which enables pupils to see how the multiplication facts relate to the big concepts that they are learning. This is a versatile resource: it could be used in maths lessons as a worksheet, as part of homework to learn times tables or as a small-group times-table-focused intervention.

There are two certificates included in the book which you can use to celebrate times table achievements. The certificate on page 151 can be filled in with a child's name after each times table chapter has been completed. The certificate on page 152 can be used on completion of the book to certify that the child has mastered every table and is now officially a Times Tables Ninja!

Vocabulary to use with times tables

Array: An array is a visual representation of multiplication and division. It is shown using columns and rows.

Digit: Digits are used to form numerals. There are only ten digits (0, 1, 2, 3, 4, 5, 6, 7, 8, 9). The numeral 456 is made up of the digits 4, 5 and 6.

Factor: A factor is a number that divides into another number without leaving a remainder. For example, 5 is a factor of 25 because 25 can be divided by 5 exactly.

Lots of/Groups of/Sets of: Children will often be introduced to multiplication and division using this vocabulary before using the multiplication and division symbols, e.g. 12 is equal to 3 lots of 4, or 4 groups of 3 is equal to 12.

Multiple: A multiple is a number that is found in the times table of another number, e.g. 12 is a multiple of 3.

Product: The product is the result of multiplying two or more number together. For example, the product of 5 and 3 is 15.

Repeated addition: Repeated addition is a way of showing multiplication, e.g. 3 x 4 = 3 + 3 + 3 + 3.

Repeated subtraction: Repeated subtraction is a way of showing division, e.g. 12 ÷ 4 can be found by subtracting 4 from 12 until there is no remainder. In this example, it can be subtracted three times.

Times table hints

1 times table

Multiplying any number by 1 does not change it, e.g. 5 x 1 = 5.

2 times table

Multiplying a number by two doubles it, e.g. 5 x 2 = 10; double 5 is equal to 10.

3 times table

The digits of numbers in the 3 times table add up to multiples of 3. In the number 24, the digits 2 and 4 add up to 6, which is a multiple of 3.

4 times table

The 4 times table is double the 2 times table, e.g. 3 x 2 = 6 and 3 x 4 = 12.

5 times table

All multiples of 5 end in either a 5 or a 0. If an odd number is multiplied by 5, the product will end in 5. If an even number is multiplied by 5, the product will end in 0.

6 times table

The 6 times table is double the 3 times table, e.g. 4 x 3 = 12 and 8 x 3 = 24.

7 times table

Numbers in the 7 times table can be found by combining numbers in the 5 times table and in the 2 times table.

7 x 8 = 56 ⟶ 5 x 8 = 40 and 2 x 8 = 16.
The sum of 40 and 16 is 56.

7 x 9 = 63 ⟶ 5 x 9 = 45 and 2 x 9 = 18.
The sum of 45 and 18 is 63.

8 times table

The 8 times table is double the 4 times table, e.g. 3 x 4 = 12 and 3 x 8 = 24.

Adding 8 to a number mentally can be done more easily by adding 10 and then subtracting 2.

9 times table

The digits in all multiples of 9 add up to 9:

5 x 9 = 45 4 + 5 = 9

10 times table

All multiples of 10 end in 0.

11 times table

All the multiples of 11 less than one hundred have the same tens digit and ones digit:

5 x 11 = 55 6 x 11 = 66

12 times table

Numbers in the 12 times table can be found by combining numbers in the 10 times table and in the 2 times table:

12 x 7 = 84 ⟶ 10 x 7 = 70 and 2 x 7 = 14.
The sum of 70 and 14 is 84.

12 x 9 = 108 ⟶ 10 x 9 = 90 and 2 x 9 = 18.
The sum of 90 and 18 is 108.

Adding 12 to a number mentally can be done more easily by adding 10 and then adding 2.

2 TIMES TABLE

1 **Shade in or circle the multiples of 2 up to 100.**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

2 **Find and circle the 2 times table in this number search.**

2	x	2	=	4	2	5	x	2	=	10	16	3
12	13	x	2	x	3	10	9	2	x	2	x	9
10	x	2	4	2	=	4	x	x	3	=	2	3
x	14	=	2	=	8	x	2	4	x	20	=	x
2	x	2	=	8	x	2	=	16	2	22	8	2
=	6	4	6	16	6	12	18	x	=	14	6	=
20	11	x	4	x	2	x	6	=	7	22	24	6
6	1	x	2	=	2	6	2	11	x	=	7	x
8	x	2	=	20	4	=	2	=	8	2	x	2
12	x	2	=	24	18	x	12	3	9	x	6	16
10	x	2	7	x	2	=	14	x	=	11	24	2

2

Fill in the missing numbers.

Set 1

3	x	2	=	
	x	2	=	12
	x	2	=	14
	x	2	=	20
2	÷	2	=	
	÷	2	=	5
11	x	2	=	
12	x	2	=	
	÷	2	=	6
14	÷	2	=	

Set 2

	÷	2	=	4
	x	2	=	8
5	x	2	=	
8	x	2	=	
	x	2	=	18
	÷	2	=	8
18	÷	2	=	
	÷	2	=	10
22	÷	2	=	
24	÷	2	=	

Set 3

	x	2	=	18
16	÷	2	=	
18	÷	2	=	
	÷	2	=	10
	÷	2	=	11
24	÷	2	=	
	÷	2	=	2
	÷	2	=	3
1	x	2	=	
2	x	2	=	

Set 4

4	÷	2	=	
	÷	2	=	3
1	x	2	=	
10	x	2	=	
	÷	2	=	1
	x	2	=	4
16	÷	2	=	
18	÷	2	=	
	÷	2	=	10
10	÷	2	=	

Set 5

11	x	2	=	
12	x	2	=	
	÷	2	=	6
	÷	2	=	11
	÷	2	=	12
3	x	2	=	
6	x	2	=	
	x	2	=	14
14	÷	2	=	
8	÷	2	=	

Set 6

	÷	2	=	8
18	÷	2	=	
	÷	2	=	10
10	÷	2	=	
	=	4	÷	2
3	=		÷	2
	=	8	÷	2
24	÷	2	=	
	x	2	=	6
6	x	2	=	

Set 7

	÷	2	=	11
16	=		x	2
	=	9	x	2
	=	10	x	2
22	=		x	2
4	x	2	=	
	=	4	x	2
10	=		x	2
	=	6	x	2
14	=		x	2

Set 8

	=	16	÷	2
9	=		÷	2
10	=		÷	2
11	=		÷	2
	x	2	=	22
24	=		x	2
	x	2	=	10
8	x	2	=	
	x	2	=	18
2	=		x	2

Set 9

	=	2	x	2
6	=		x	2
1	=		÷	2
7	x		=	14
	÷	2	=	7
	=	10	÷	2
	=	12	÷	2
7	=		÷	2
	÷	2	=	4
12	=		÷	2

3

1 Complete the maze by drawing a line through multiples of 2. Watch out for dead ends!

START HERE

2	1	5	7	23	15	17	24	26	27	25	24	21
8	9	8	7	13	12	19	21	22	24	23	21	28
6	10	12	21	23	5	7	1	2	7	3	6	8
1	3	20	6	11	16	13	21	9	19	15	22	12
17	15	22	25	23	1	7	11	24	1	3	17	10
19	12	24	15	17	19	21	14	18	24	22	18	23
13	11	2	16	18	5	7	12	21	13	3	14	3
15	18	21	11	14	12	8	10	17	1	2	12	5
12	22	25	15	17	21	22	17	19	5	22	16	13
17	4	5	7	19	13	10	16	17	21	23	2	15
2	6	12	13	4	17	23	19	8	1	5	4	EXIT

2 Fill in the gaps in the table.

a	2 + 2 + 2 + 2 + 2 + 2	6 x 2	12
b		1 x 2	2
c	2 + 2 + 2 + 2 + 2	5 x 2	
d	2 + 2		4
e		11 x 2	22
f	2 + 2 + 2 + 2 + 2 + 2 + 2 + 2		16
g	2 + 2 + 2 + 2	4 x 2	
h	2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2	12 x 2	
i		10 x 2	20
j	2 + 2 + 2		6
k	2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2	9 x 2	
l	2 + 2 + 2 + 2 + 2 + 2 + 2		14

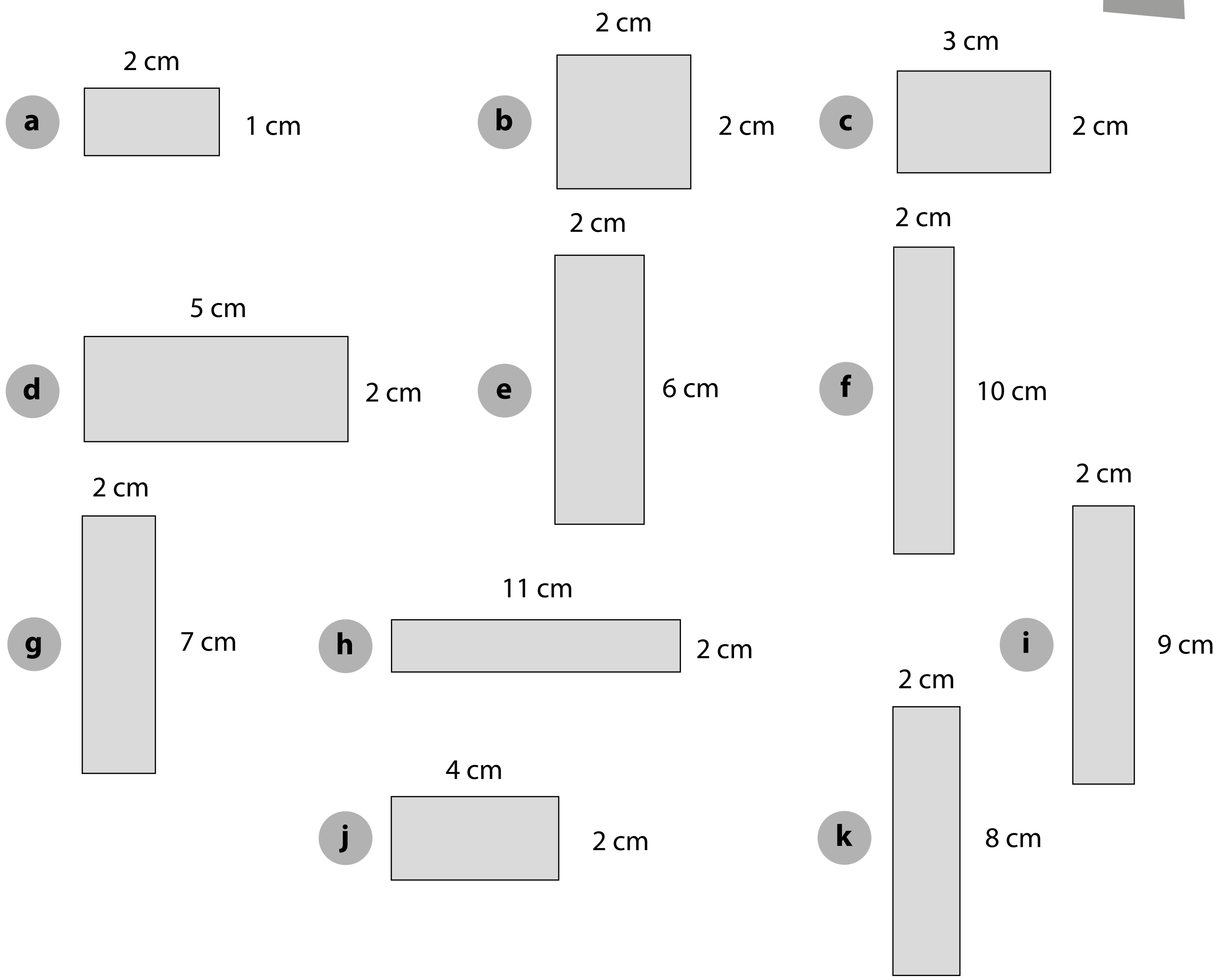
1 Calculate the area of each of these rectangles (not drawn to scale).

Example

12 cm

24 cm² 2 cm

12 cm x 2 cm = 24 cm²



2 Find the area of rectangles with these measurements.

a	50 cm long and 2 cm wide	
b	2 cm long and 300 cm wide	
c	2 cm long and 20 cm wide	

Ninja Challenge

1 Use the known multiplication facts to answer these questions.

Example	1 x 2 =	2
	10 x 2 =	20
	100 x 2 =	200
a	2 x 2 =	
	20 x 2 =	
	200 x 2 =	
b	3 x 2 =	
	30 x 2 =	
	300 x 2 =	
c	4 x 2 =	
	40 x 2 =	
	400 x 2 =	
d	5 x 2 =	
	50 x 2 =	
	500 x 2 =	
e	6 x 2 =	
	60 x 2 =	
	600 x 2 =	
f	7 x 2 =	
	70 x 2 =	
	700 x 2 =	
g	8 x 2 =	
	80 x 2 =	
	800 x 2 =	
h	9 x 2 =	
	90 x 2 =	
	900 x 2 =	
i	10 x 2 =	
	100 x 2 =	
	1,000 x 2 =	
j	11 x 2 =	
	110 x 2 =	
	1,100 x 2 =	
k	12 x 2 =	
	120 x 2 =	
	1,200 x 2 =	

2 Use the known multiplication facts to answer these questions.

Example	36 x 2	
	30 x 2	60
	6 x 2	12
	Total:	72

a	28 x 2	
	20 x 2	
	8 x 2	
	Total:	

b	75 x 2	
	70 x 2	
	5 x 2	
	Total:	

c	39 x 2	
	30 x 2	
	9 x 2	
	Total:	

d	57 x 2	
	50 x 2	
	7 x 2	
	Total:	

e	48 x 2	
	40 x 2	
	8 x 2	
	Total:	

f	284 x 2	
	200 x 2	
	80 x 2	
	4 x 2	
	Total:	

g	472 x 2	
	400 x 2	
	70 x 2	
	2 x 2	
	Total:	

h	395 x 2	
	300 x 2	
	90 x 2	
	5 x 2	
	Total:	