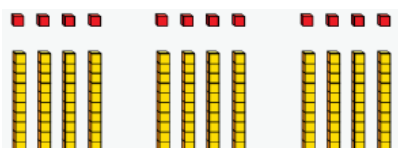


KS2 (3&4) Multiplication

The first formal method pupils will come across for multiplication is the grid method in Year 3. This links well with their experience in using arrays and applies their knowledge of place value in order to accurately multiply. It is expected that in Year 4, pupils will learn the efficient formal method for multiplication. Year 4 will start by learning the expanded method whereby no exchanging of place value is required. By the end of year 4 children progress to the compact layout with a multiplier of 1 digit. By the end of Year 4 children will be fluent in all times tables facts up to 12×12 and this will allow them to solve the individual steps involved quickly.

Concrete



Base 10 for repeated addition



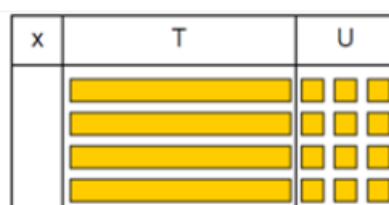
Base 10 for formal multiplication

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

Times tables grids to support the working out

Pictorial

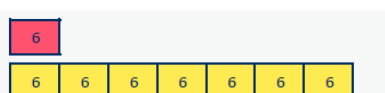
$$13 \times 4 =$$



Tens and ones drawn in the grid method

x	40	3
5	10 10 10 10 10 10 10 10 10 10	1 1 1 1 1 1 1 1 1 1

Grid method with counters drawn into books



A red ribbon is 6 cm.
A yellow ribbon is 7 times as long.

Bar models drawn into books

Abstract

$$13 \times 4 = 52$$

	10	3
4	40	12

Grid method with just the digits

		H	T	O
		3	4	
x			5	
		2	0	
		1	5	0
		1	7	0

(4 x 5)
(30 x 5)

Formal multiplication using the expanded method

		H	T	O
		3	4	
x			5	
		1	7	0
		1	2	

Formal multiplication (carry underneath the equals)

Key language

I notice that, I can see that...

4 ones and 7 ones is equal to 11 ones. I need to exchange with for one ten and one one.

Fifteen more than two hundred is two hundred and fifteen.

I know that $3 \times 5 = 15$. So $30 \times 5 = 150$. And $300 \times 5 = 1500$.

Emphasise the place value of digits, particularly when adding using columnar addition.