

YEAR 6

Multiplication

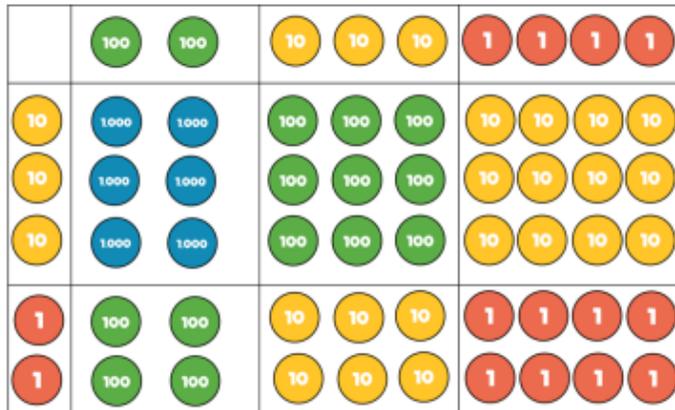
Vocabulary: multiply, multiplication, factor, product, multiple, times, groups, inverse, squared, cubed, multiplier, multiplicand, scaling (see previous years)

Concrete

Multiply up to 4-digit numbers by a 2-digit number

(It can be helpful to compare the concrete/pictorial stages to the abstract stage)

$$234 \times 32 = 7,488$$



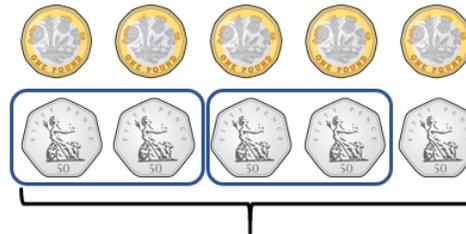
Pictorial

Multiply up to 4-digit numbers by a 2-digit number

Multiplying decimals involving measures

Exchange 50p to £1

$$\begin{aligned} \text{£}1.50 \times 5 &= \text{£}7.50 \\ (\text{£}1 \times 5) + (\text{£}0.50 \times 5) \end{aligned}$$



$$\text{£}0.50 \times 5 = \text{£}2.50$$

Abstract

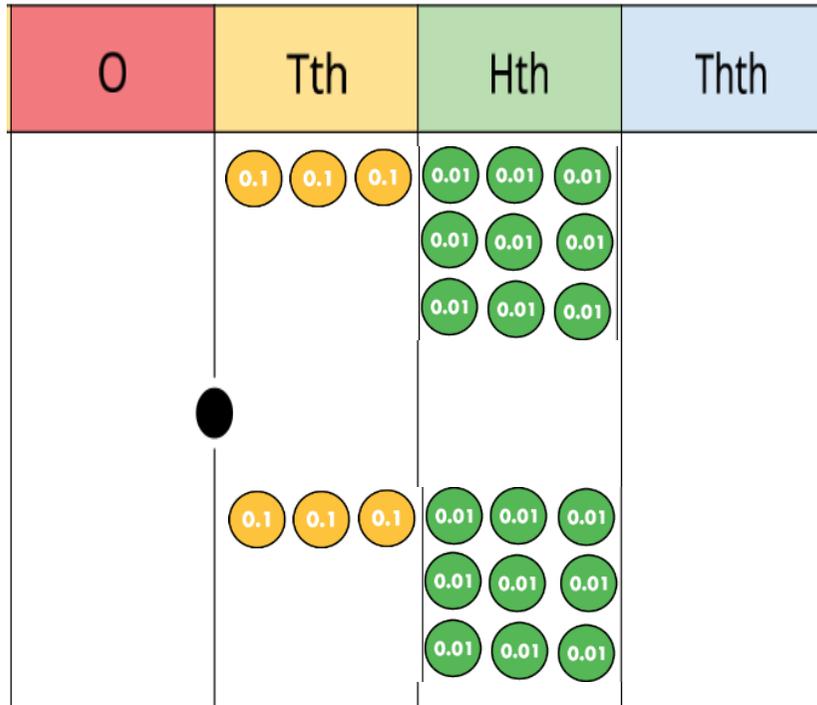
Multiply up to 4-digit numbers by a 2-digit number

	Th	H	T	O
	1	8	2	6
x				3
	5	4	7	8
	2		1	

	TTh	Th	H	T	O
		2	7	3	9
x				2	8
	2	1	9	1	2
	2	5	3	7	
	5	4	7	8	0
	1		1		
	7	6	6	9	2
					1

Multiplying decimals

$$0.39 \times 2 = 0.78$$



	2	1	.	3
×				4
	8	5	.	2
		1		

Inverse and missing number problems should continue in year 6

Mental Methods

Number facts:

Continue to recall multiplication facts for multiplication tables up to 12×12 .

Derive and use related facts

700 groups of 8

multiply 135 by 9 ($9 \times 10 = 90$; $9 \times 5 = 45$)

the product of 80 and 40

0.35 multiplied by 40

$\times 10$, $\times 100$ and $\times 1000$: Multiply whole and decimal numbers by 10, 100 and 1000 where the answers are up to 3 decimal places.

Doubling:

Derive doubles of decimals (to two decimal place) using knowledge of place value

Double $0.425 = 0.850$

$0.753 \times 2 =$

Double $3.75 =$

$5.675 + 5.675 =$

3.255×4 (double and double again)

176×50 (multiply by 100 and halve)

$176 \times 100 = 17600$

Half of 17600 is 8800

Using factors

$25 \times 12 = 25 \times 2 \times 6$

$25 \times 2 = 50$

$50 \times 6 = 300$

$400 \times 0.5 = 0.5 \times 100 \times 4$

Partitioning:

$1.25 \times 7 = 8.75$

$1 \times 7 = 7$

$0.2 \times 7 = 1.4$

$0.05 \times 7 = 0.35$

$7 + 1.4 + 0.35 = 8.75$

$3.234 \times 7 = 22.638$

$3 \times 7 = 21$

$0.2 \times 7 = 1.4$

$0.03 \times 7 = 0.21$

$0.004 \times 7 = 0.028$

$21 + 1.4 + 0.21 + 0.028 = 22.638$

Estimating and checking:

Check 86×9 by using and equivalent calculation.

Multiply by 10 and adjust ($860 - 86$) or partition (80×9 added to 6×9)