

MULTIPLICATION - YEAR 1

VOCABULARY: equal groups, groups of..., equal rows, altogether, lots of..., double

Mental calculation/recall of Multiplication facts:

*doubles of all numbers to 10, counting in 2s/10s

*making equal groups



*equal groups, counting up in...



There are 5 bundles.

5 bundles of 3 =

5 groups of =

threes =


There are  altogether.



*arrays by making equal rows



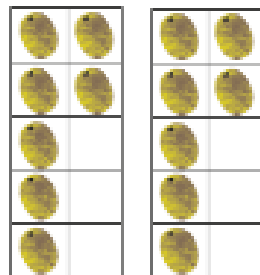
rows

5  in one row

fives =

There are  altogether.

*doubling



Double 7 = sevens

=

MULTIPLICATION - YEAR 2

VOCABULARY: X, times, groups of..., lots of..., times table, arrays, multiple

Mental calculation/recall of Multiplication facts:

*times tables: 2,3,4,5,10, counting in 5s

[Y1: doubles of all numbers to 10, counting in 2s/10s]

*repeated addition

$$3 + 3 + 3 + 3 = 12$$

$$4 \text{ threes} = 12$$

$$4 \text{ groups of } 3 = 12$$

$$4 \times 3 = 12$$



*2,3,4,5,10 times table, counting up

1 stick has 2 sausages.



1 group of 2
 $1 \times 2 = 2$

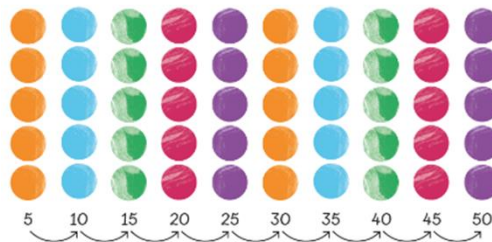


2 groups of 2
 $2 \times 2 = 4$



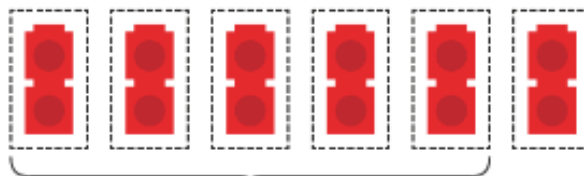
3 groups of 2
 $3 \times 2 = 6$

*array images



*using a times table fact to work out 1 more/less lot of...

$$6 \times 2 = \square$$



$$5 \times 2 = 10$$

$$6 \times 2 = 10 + 2 = 12$$

6 x 2 is 2 more than 10.

*commutative law, using array



$$5 \times 2 = 10$$



$$2 \times 5 = 10$$

5 x 2 is equal to 2 x 5.

MULTIPLICATION - YEAR 3

VOCABULARY: product, twice, ...times as many..., partition, recombine

Mental calculation/recall of Multiplication facts:

*times tables: 6,8

[Y2: times tables: 2,3,4,5,10, doubles of all numbers to 10, counting in 2s/5s/10s]

*doubling for 4,8 times table

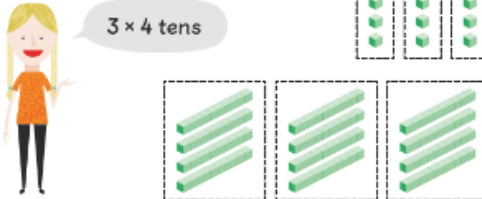
	$1 \times 4 = 4$	$1 \times 8 = 8$
	$2 \times 4 = 8$	$2 \times 8 = \square$
	$3 \times 4 = 12$	$3 \times 8 = \square$
	$4 \times 4 = 16$	$4 \times 8 = \square$

*distributive law

$$7 \times 8 = (5 \times 8) + (2 \times 8)$$

*X by a multiple of 10

$3 \times 4 = \square$
 $3 \times 40 = \square$



*X 10

$$23 \times 10$$

H	T	U
2	3	0
	2	3

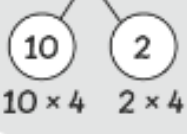
X10

Each digit moves one column to the left
(up the PV chart)

Fill in any gaps with 0

*2-dig X 1-dig
partition the 2-digit
number, recombine

$12 \times 4 = 48$



*2-dig X 1-dig, using
the expanded method

	t	o		t	o
	2	3		2	3
x		2		x	4
<hr/>			<hr/>		
		6		1	2
+	4	0	+	8	0
<hr/>			<hr/>		
	4	6		9	2
<hr/>			<hr/>		

*2-dig X 1-dig, using
the formal method

		2	3	$3 \times 8 = 24$
		2	3	
x			8	
<hr/>				
	1	8	4	
<hr/>				

$2 \times 8 = 16, 16 + 2 = 18$

MULTIPLICATION - YEAR 4

VOCABULARY: brackets

Mental calculation/recall of Multiplication facts:

*times tables: 7,9,11,12, counting in 25s/50s

[Y3: times tables: 2,3,4,5,6,8,10, doubles of all numbers to 10, counting in 2s/5s/10s]

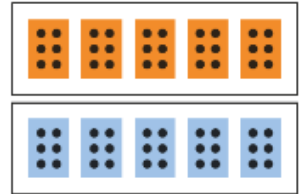
* X 0, 1



*associative law
 $a \times (b \times c)$
 $= (a \times b) \times c$

Introduce brackets, show multiplication can be done in any order

$(2 \times 5) \times 6 = 10 \times 6 = 60$
 $2 \times (5 \times 6) = 2 \times 30 = 60$ etc



$2 \times 5 \times 6$

*X by multiple of 10/100, using associative law

$9 \times 30 = 9 \times 3 \times 10$
 $= 9 \times 3 \times 10$
 $= 27 \times 10$
 $= 27 \text{ tens}$
 $= 270$

$7 \times 300 = 7 \times 3 \times 100$
 $= 7 \times 3 \times 100$
 $= 21 \times 100$
 $= 21 \text{ hundreds}$
 $= 2100$

*X 100

$4 \cdot 7 \times 100$

Th	H	T	U	•	t	h
	4	7	0	•		
		4	7	•		
			4	•	7	

Each digit moves two columns to the left (up the PV chart)

Fill in any gaps with 0

*3-digit X 1-digit, using expanded method

	5	1	2	
x			8	
		1	6	multiply the ones
		8	0	multiply the tens
+	4	0	0	multiply the hundreds
	4	0	9	6

*3-digit X 1-digit, using formal method

	2	1	3
	4	7	3
x			4
	1	8	9
	1	8	9
	1	8	9

$3 \times 4 = 12$

$7 \times 4 = 28, 28 + 1 = 29$

$4 \times 4 = 16, 16 + 2 = 18$

MULTIPLICATION - YEAR 5

VOCABULARY: factors, factor pairs, prime numbers, non-primes, composite numbers, prime factors, common factors, lowest common factor, square numbers, formal written method, long multiplication

Mental calculation/recall of Multiplication facts:

*using times tables to multiply a number by a multiple of a power of 10,

eg 7×400

[Y4: all times table up to 12×12 , doubles of all numbers to 10, counting in 2s/5s/10s/25s/50s]

*1-digit X decimal number with only one significant digit

$$\begin{aligned} 4 \times 0.7 &= 4 \times (7 \div 10) \\ &= (4 \times 7) \div 10 \\ &= 28 \div 10 \\ &= 2.8 \end{aligned}$$

*X 1000

$$0.25 \times 1000$$

Th	H	T	U	t	h	th
	2	5	0	.		
		2	5	.		
			2	.	5	
			0	.	2	5

$\begin{matrix} \text{X10} \\ \text{X10} \\ \text{X10} \end{matrix}$

Each digit moves three columns to the left (up the PV chart)

Fill in any gaps with 0

*expanded method
4-dig X 1-dig

$$\begin{array}{r} 1144 \\ \times \quad 8 \\ \hline 32 \quad \rightarrow \text{multiply by ones} \\ 320 \quad \rightarrow \text{multiply by tens} \\ 800 \quad \rightarrow \text{multiply by hundreds} \\ + 8000 \quad \rightarrow \text{multiply by thousands} \\ \hline 9152 \end{array}$$

*formal method
4-dig X 1-dig

$$\begin{array}{r} 222 \\ 4769 \\ \times \quad 3 \\ \hline 14307 \end{array}$$

*2-dig X 2-dig, long multiplication method

$$\begin{array}{r} 28 \\ \times 26 \\ \hline 168 \\ 4 \quad \\ 560 \\ | \\ \hline 728 \\ | \end{array}$$

$$6 \times 8 = 48$$

$$6 \times 2 = 12, 12 + 4 = 16$$

Write 0 in units column

$$2 \times 8 = 16$$

$$2 \times 2 = 4, 4 + 1 = 5$$

168 + 560 using column addition method

