

## YEAR 4

## Multiplication (up to $12 \times 12$ )

Vocabulary: repeated addition, product, lots of, groups of, times, factor, multiple, prime; multiplicand - a quantity which is to be multiplied by another (the multiplier)  $\times$  multiplier = product;

### Concrete

**X10, X100 and x1000:**

(see Year 3 for multiplying whole numbers by 10 and 100)

**Place value counters:**

$3.4 \times 10$

| Tens  | Ones | Tenths  |
|-------|------|---------|
|       | 1 1  | 0.1 0.1 |
|       | 1    | 0.1 0.1 |
| 10 10 | 1 1  |         |
| 10    | 1 1  |         |

Also  $\times 1000$

Understand that  $\times 1000 = 10 \times 10 \times 10$

**2 digit and 3 digit numbers  $\times$  1 digit:**

(no exchanging) (for 2 digit  $\times$  1 digit see year 3)

$122 \times 4 = 488$

| H   | T     | O   |
|-----|-------|-----|
| 100 | 10 10 | 1 1 |
| 100 | 10 10 | 1 1 |
| 100 | 10 10 | 1 1 |
| 100 | 10 10 | 1 1 |

### Pictorial

**X10, X100 and x1000:**

$3.4 \times 10$

| Tens | Ones | Tenths |
|------|------|--------|
|      | 3    | 4      |
| 3    | 4    |        |

**2 digit and 3 digit numbers  $\times$  1 digit:**

(no exchanging) (for 2 digit  $\times$  1 digit see year 3)

$122 \times 4 = 488$

| H | T | O   |
|---|---|-----|
| □ |   | ○ ○ |
| □ |   | ○ ○ |
| □ |   | ○ ○ |
| □ |   | ○ ○ |

### Abstract

**X10, X100 and x1000:**

No written method - leads to a mental method.

**Written - leading to a mental method.**

**2 digit and 3 digit numbers  $\times$  1 digit:**

(no exchanging) (for 2 digit  $\times$  1 digit see year 3)

$122 \times 4 = 488$

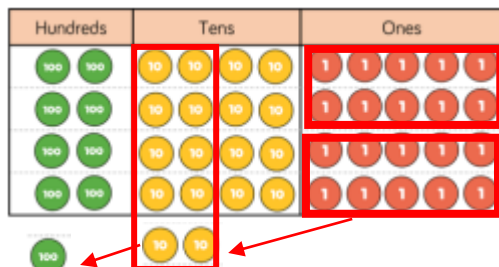
$100 \times 4 = 400$

$20 \times 4 = 80$

$2 \times 4 = 8$

$400 + 80 + 8 = 488$

**2 digit and 3 digit numbers × 1 digit:**  
**(exchanging)** (for 2 digit × 1 digit see year 3)  
 $245 \times 4 = 980$



9 hundreds 8 tens 0 ones

**2 digit and 3 digit numbers × 1 digit:**  
**(exchanging)** (for 2 digit × 1 digit see year 3)  
 $245 \times 4 = 980$

| H                                                 | T | O    |
|---------------------------------------------------|---|------|
| <input type="checkbox"/> <input type="checkbox"/> |   | ○○○○ |
| <input type="checkbox"/> <input type="checkbox"/> |   | ○○○○ |
| <input type="checkbox"/> <input type="checkbox"/> |   | ○○○○ |
| <input type="checkbox"/> <input type="checkbox"/> |   | ○○○○ |

**2 digit and 3 digit numbers × 1 digit:**  
**(exchanging)** (for 2 digit × 1 digit see year 3)  
 $245 \times 4 =$

**Expanded** leading to **Compacted**

| H | T | O           |
|---|---|-------------|
| 2 | 4 | 5           |
| X |   | 4           |
|   | 2 | 0 (5 × 4)   |
| 1 | 6 | 0 (40 × 4)  |
| + | 8 | 0 (200 × 4) |
| 9 | 8 | 0           |

| H | T | O |
|---|---|---|
| 2 | 4 | 5 |
| X |   | 4 |
|   | 9 | 8 |
| 1 | 2 |   |

**Alternative grid method (if needed)**

$$127 \times 6 = 762$$

| x | 100 | 20  | 7  |
|---|-----|-----|----|
| 6 | 600 | 120 | 42 |

$$600 + 120 + 42 = 762 \text{ (add the partial products)}$$

## Mental Methods

### Number facts:

Count in multiples of 6, 7, 9, 25 and 1000  
 Instantly recall the multiplication tables up to  $12 \times 12$ .

Multiply mentally using place value, known and derived facts, including: multiplying by 0 and 1

### X10, × 100 and ×1000:

$$10 \times 5 = 50$$

$$10 \times 34 = 340$$

### Doubling:

Derive doubles of multiples of 50 to 1000 and multiples of 1000

$35 \times 8$  (double, double and double again)  
 Double 35 is 70, double 70 is 140, double 140 is 280.

### Using known facts and place value:

Multiply by 10 and then halve to × 5:

### Using factors

Recognise factor pairs.

$$15 \times 6 = 15 \times 3 \times 2$$

$$15 \times 3 = 45$$

$$45 \times 2 = 90$$

**Continue to understand the inverse relationship between multiplication and division**

Write the related number sentences

|                                                                                                                                                                                      |                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $100 \times 3 = 300$<br>$1000 \times 5 = 5000$<br><br><u>Partitioning: (using distributive law)</u><br>$53 \times 6$<br>$50 \times 6 = 300$<br>$3 \times 6 = 18$<br>$300 + 18 = 318$ | $73 \times 10 = 730$<br>So $73 \times 5 = \text{Half of } 730 = \mathbf{365}$<br><br>$24 \times 10 = 240$<br>So $24 \times 9 = \mathbf{216}$ (by subtracting 24 from 240)<br><br>$800 \times 6$<br>$8 \times 6 = 48$ So $800 \times 6 = \mathbf{4800}$ | $6 \times 7 = 42$ $7 \times 6 = 42$<br>$42 \div 7 = 6$ $42 \div 6 = 7$<br><br>Use this knowledge to solve missing number problems involving multiplication.<br><br>$3 \times \underline{\hspace{1cm}} = 15$ $25 + 10 = 5 \times \underline{\hspace{1cm}}$<br>$15 < \underline{\hspace{1cm}} \times 2$ $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} > 20$ |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|