

Addition

Continue **bridging and partitioning** from year 2 extending to larger numbers

Partitioning

$$\begin{aligned} 240 + 110 \\ = 200 + 100 + 40 + 10 \\ = 300 + 50 \\ = 350 \end{aligned}$$

Unitising

$$\begin{aligned} 240 + 110 \\ = 24 \text{ tens} + 11 \text{ tens} \\ = 35 \text{ tens} \\ = 350 \end{aligned}$$

Redistribution (move 1 addend to another)

$$\begin{aligned} 320 + 196 &= \\ -4 \downarrow &\quad \downarrow +4 \\ 316 + 200 &= 516 \end{aligned}$$

Compensation (change one number to make the calculation easier, then adjust back to keep the total correct.)

$$\begin{aligned} 22 + 29 &= 51 \\ +1 \downarrow &\quad \uparrow -1 \\ 22 + 30 &= 52 \end{aligned}$$

$$\begin{aligned} 320 + 290 &= 320 + 300 - 10 \\ &= 620 - 10 \\ &= 610 \end{aligned}$$

Column addition (4-digit numbers)

$$6,185 + 2,738 = 8,923$$

1000s	100s	10s	1s
6	1	8	5
+	2	7	3
8	9	2	3

1000s	100s	10s	1s
6	3	7	8
2	5	5	3
+	1	0	4
9	9	7	2

Subtraction

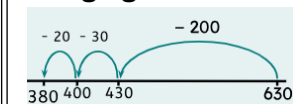
Partitioning

$$\begin{aligned} 630 - 250 &= 380 \\ 200 \quad 50 \end{aligned}$$

Unitising

$$\begin{aligned} 680 - 540 &= 140 \\ 68 \text{ tens} - 54 \text{ tens} &= 14 \text{ tens} \\ 50 \quad 4 \end{aligned}$$

Bridging



Difference (counting on or counting back)

$$430 - 290 = 140$$



$$510 - 380 = 130$$

Column subtraction (4-digits and money)

$$\begin{array}{r} \begin{array}{r} \overset{2}{\cancel{3}} \overset{6}{\cancel{7}} \overset{12}{\cancel{3}} \overset{12}{\cancel{2}} \\ - \quad 8 \quad 3 \quad 7 \\ \hline 2, 8 \quad 9 \quad 5 \end{array} \quad \begin{array}{r} \pounds \overset{0}{\cancel{1}} \overset{2}{\cancel{2}} \overset{5}{\cancel{5}} \overset{4}{\cancel{0}} \\ - \quad \pounds \quad 7 \quad . \quad 0 \quad 8 \\ \hline \pounds \quad 0 \quad 5 \quad . \quad 4 \quad 2 \end{array} \end{array}$$

Compensation- (both whole and part change by the same amount so difference remains the same)

1000s	100s	10s	1s		1000s	100s	10s	1s
6	0	0	0	-1	5	9	9	9
-2	3	4	8	-1	-2	3	4	7
					3	6	5	2

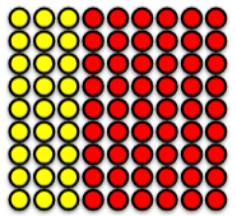
Multiplication

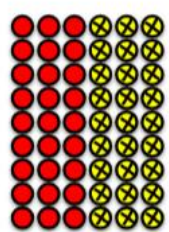
Distributive law (partitioning)

The **distributive law** says that multiplying a number by a group of numbers added together is the same as doing each multiplication separately. For example:

$$4 \times 3 = 2 \times 3 + 2 \times 3 = 12$$

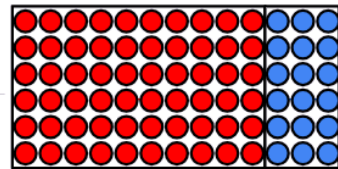
Looking for common factors

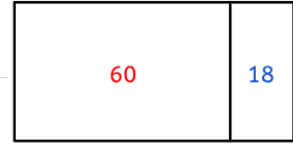
$9 \times 3 + 9 \times 6 = 81$

 $9 \times 9 = 81$

$9 \times 6 - 9 \times 3 = ?$

 $9 \times 3 = 27$

Distributive law 2 digit x 1 digit (partitioning)

$$6 \times 13 = 6 \times 10 + 6 \times 3 = 60 + 18 = 78$$

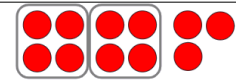
13
 $\swarrow \quad \searrow$
 $10 \quad 3$


13
 $\swarrow \quad \searrow$
 $10 \quad 3$

 $60 + 18 = 78$

Division

Division with remainders:

Using multiplication facts


 $11 = 2 \times 4 + 3$

11 represents the total number of counters. 2×4 represents the 2 groups of 4 counters. 3 represents a remainder of 3

24			
7	7	7	3

$24 = 3 \times 7 + 3$

Skip counting forwards or backwards:

Partitive division with remainder – skip counting to find the solution:

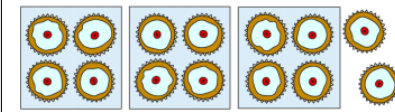


+3 +3 +3 +3 +3 +3

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

- 'One three is one each. That's three.'
- 'Two threes is two each. That's six...'
- '...Six threes is six each. That's eighteen.'
- 'There is one car left over.'

Quotative division with remainder – skip counting to find the solution:



4 4 4

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

- 'One box of four is four.'
- 'Two boxes of four are eight.'
- 'Three boxes of four are twelve.'
- 'There are two cakes left over.'

Sharing: $19 \div 3 = 6 \text{ r}1$

Known facts: $19 = 3 \times 6 + 1$

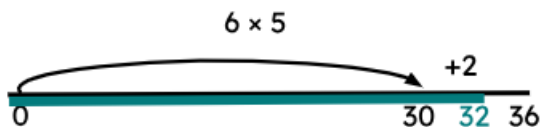
$32 \div 5 = 6 \text{ r}2$

Grouping: $14 \div 4 = 3 \text{ r}2$

$14 = 4 \times 3 + 2$

Six 6s are equal to 36, but we only have 32 pear drops, so we must choose the multiplication fact that is less than or equal to 32

$6 \times \square$ is less than or equal to 32



32


In Year 4, Oak expects pupils to record multiplication using partitioned and grid methods that make place value and partial products explicit, deliberately delaying short multiplication until Year 5.

Oak develops division through **multiplicative structures**, **partitioning**, and **remainders**, preparing pupils for short division in Year 5.