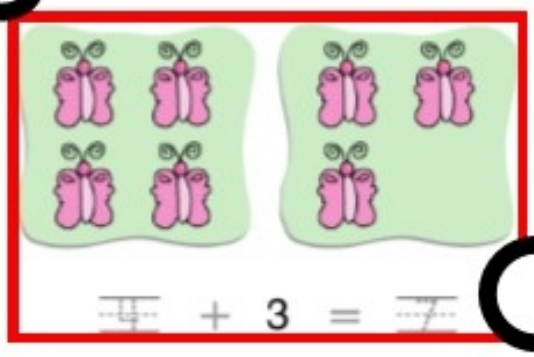
UNDERGROUND

Addition (often signified by the plus symbol "+") is one of the four basic operations of arithmetic.



Progression in Addition Written Calculations

EYFS

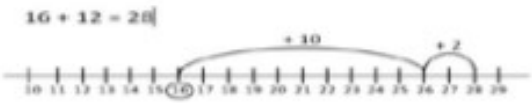
Number Tracks: 4 + 2 = 6

Prepared Number Line: 4 + 3 = 7

Key Stage 1 (Yr 1/2)

Prepared Number Line: 4 + 3 = 7

Prepared Number Line:



Unnumbered Number Line: 23 + 13 = 36

Vocabulary

+

Add

Addition

Plus

And

Count on

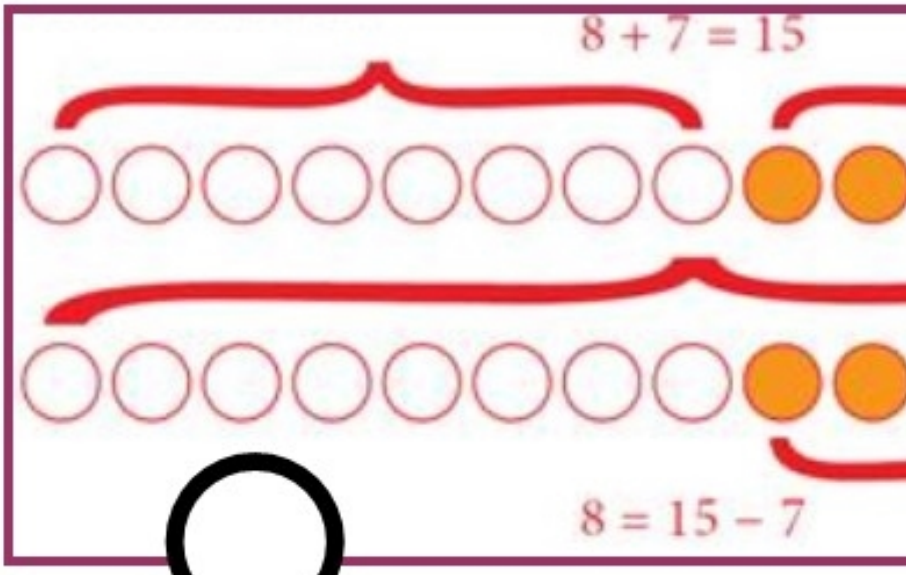
More

Sum

Total

Altogether

Increase



Inverse

Subtractio

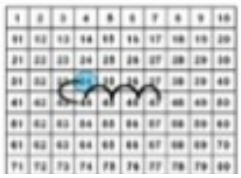
that repres

objects fro

the minus

1/2)

Hundred Square:
34 + 13 =
34 + 10 + 3 = 47



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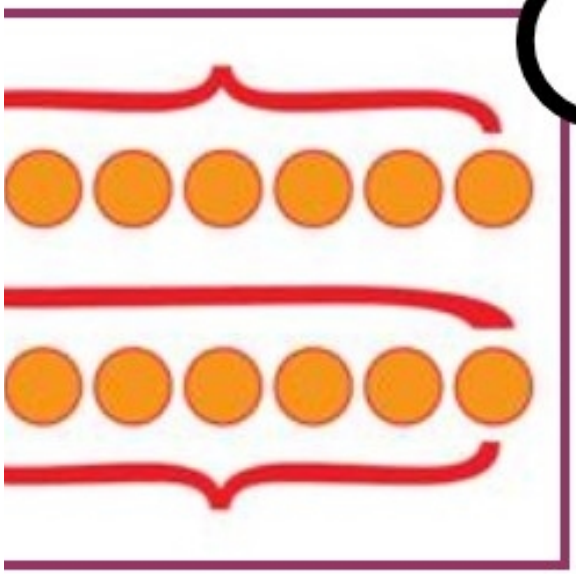


Vocabulary

-

Subtract

Take Away

Minus

Less

Fewer

Difference

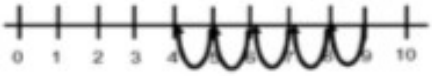
tion is a mathematical operation
resents the operation of removing
from a collection. It is signified by
us sign (–)

Progression in Subtraction Written Calculations

EYFS

Number Tracks: 10 – 5 = 5

Prepared Number Line: 9 – 5 = 4



Key Stage 1 (Yr 1/2)

Prepared Line to take away: 9 – 5 = 4

On a hundred square:

Prepared Number Line to subtract: 25 – 13 = 12

Prepared number line to find the difference (counting on):
25 – 13 = 12

Lower Key Stage 2 (Yr 3/4)

Expanded column method, starting with least significant digits (in preparation for formal method), paying attention to place value of each digit. By the end of Year 3, pupils should move onto the formal method with three digits and by the end of Year 4, the formal method with four digits.

567 – 276:

H	T	U
400	160	
~~500~~	~~60~~	7
- 200	70	6
200	90	1 = 291

Th	H	T	U
4~~5~~	13	6~~5~~	10
- 4	5	5	3
0	8	1	7

For column methods of subtraction, the subtraction sign will be positioned on the left.

Where exchanging takes place, this will be recorded above the starting number.

Upper Key Stage 2 (Yr 5/6)

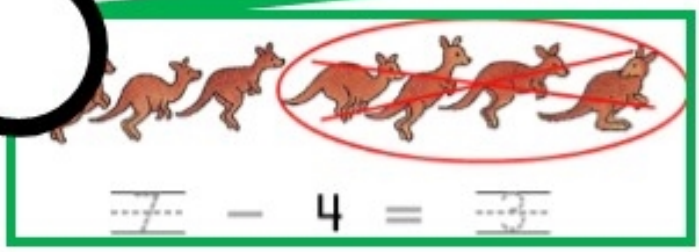
Subtracting whole numbers with more than four digits as well as decimal numbers to the thousandths:

	5	12	9	
7	~~6~~	~~5~~	~~6~~	15
- 4	5	5	3	7
3	0	7	6	8

For column methods of subtraction, the subtraction sign will be positioned on the left.

Where exchanging takes place, this will be recorded above the starting number.

7	15	9	9		14	
~~6~~	~~5~~	~~6~~	~~6~~	.	~~6~~14	7
- 2	7	6	2	.	8	5 3
5	8	3	7	.	6	9 4



Vocabulary

X

Lots of

Groups of

Times

Multiply

Prepared Number Line: 4 + 3 = 7

Unnumbered Number Line: 23 + 13 = 36

Lower Key Stage 2 (Y3/4)

Expanded column method, starting with least significant digits (in preparation for formal method), paying attention to place value of each digit.
Moving on to formal method, carrying numbers below the line.

```
  H T U
  1 3 5
+   4 4
  -----
      9
    7 0
  1 0 0
  -----
  1 7 9
```

```
   Th H T U
    3596
+   1874
  ------
      10
     160
    1300
    4000
   -----
    5470
```

```
   Th H T U
    3596
+   1874
  ------
    5470
    1 1 1
```

Upper Key Stage 2 (Yr 5

Adding whole numbers with more than four digits
numbers to the thousandths:

```
  4 2 6 9 4
+ 5 5 5 0 6
-----------
  9 8 2 0 0
    1 1 1
```

```
  5 1 2 7 . 3 4 6
+ 2 7 6 2 . 8 2 3
-----------------
  7 8 9 0 . 1 6 9
    1 1
```

For column methods of
addition sign will be posi
left and carries will be re
bottom of the full colum

Progression in Division Written Calculations

EYFS

Not appropriate for the year group.

Key Stage 1 (Yr 1/2)

Written numberline used for repeated subtraction:

15 ÷ 5 = 3

Blank numberline used for repeated subtraction:

24 ÷ 3 = 8

Start at the biggest number (the dividend), subtract groups of divisor.

75 ÷ 5 = 15

Lower Key Stage 2 (Yr 3/4)

Number Line:
Use 'coin card' method - find multiples of 1,2,5,10.

1 × 5 = 5
2 × 5 = 10
5 × 5 = 25
10 × 5 = 50

Start at the biggest number (the dividend), subtract groups of divisor.

75 ÷ 5 = 15

Short Division:

```
      1 4
     ------
  7 | 9 8
      2
```

Upper Key Stage 2 (Yr 5/6)

In Year 5 and 6 children should calculate division with remainders. Remainders should be expressed as whole number remainders, decimals and fractions as appropriate to the context.

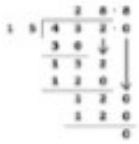
Short division:

```
      8 6 r2
     ------
  5 | 4 3 2
      3
```

```
      4 5 r1
     ------
  1 1 | 4 9 6
      5
```

Answer: 45 $\frac{1}{11}$

Long division:

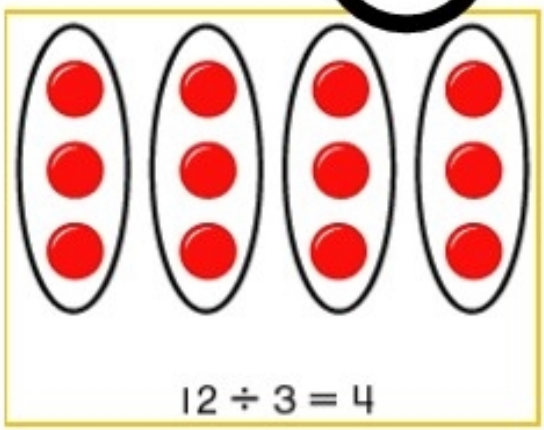


Answer: 28.8

(Yr 5/6)

digits as well as decimal

ods of addition, the
be positioned on the
ill be recorded at the
l column.



Division is splitting into equal parts or groups. It is the result of "fair sharing".

We use the ÷ symbol, or sometimes the / symbol to mean divide

Vocabulary

÷

Lots of

Groups of

Share

Group

Jumps

Numberline

Equal

Halve

Divide

Division

Divided by

Remainder

Factor

Decimal

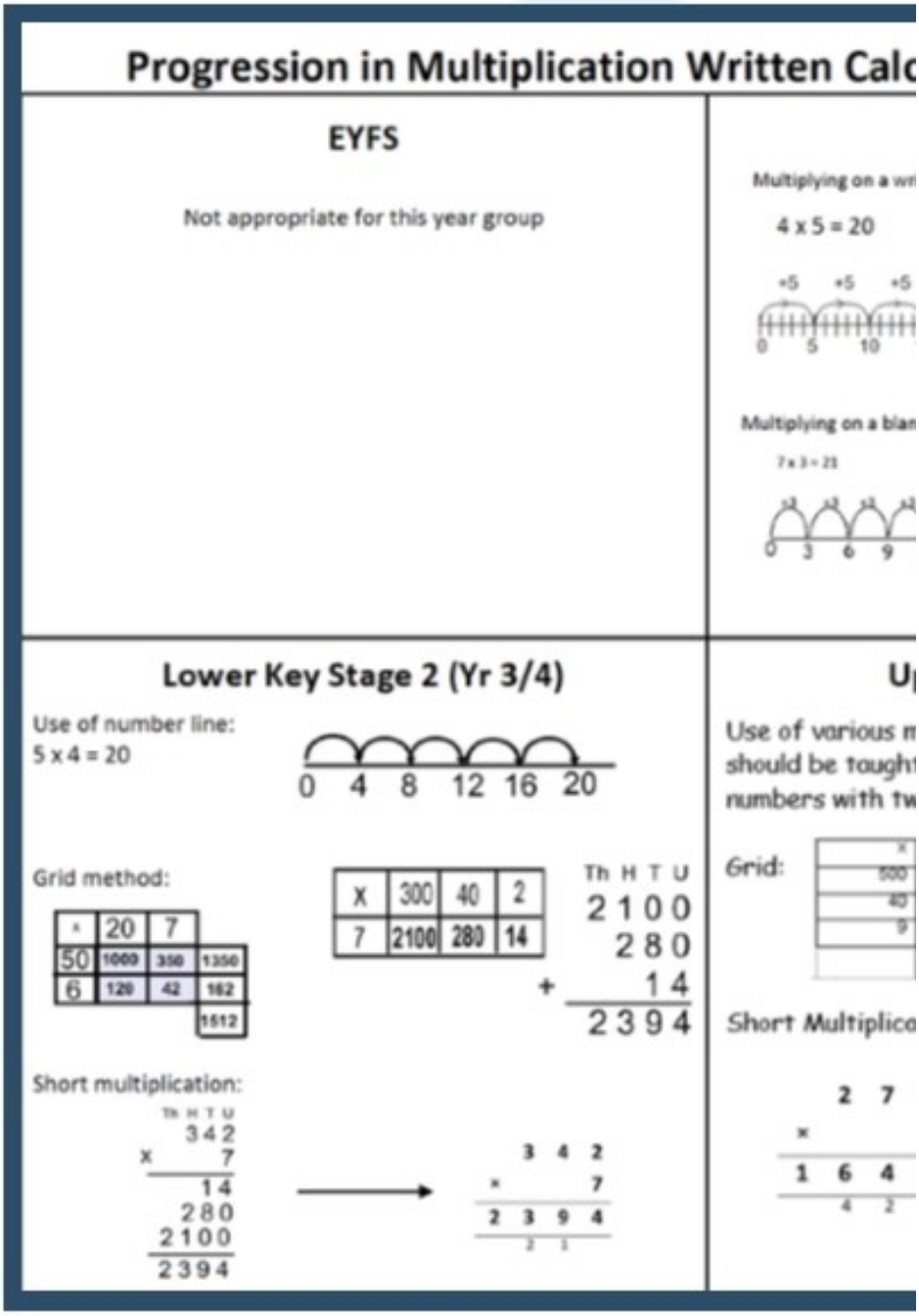
Decimal place

Divisible

Multiplication is repeated add

For example: 5 × 3 = 5 + 5 + 5

It is signified by the symbol X



Progression in Multiplication Written Calc

EYFS

Not appropriate for this year group

Multiplying on a wr

4 x 5 = 20

+5 +5 +5

0 5 10

Multiplying on a blan

7 x 3 = 21

x3 x3 x3 x3

0 3 6 9

Lower Key Stage 2 (Yr 3/4)

Use of number line:
5 x 4 = 20

0 4 8 12 16 20

Grid method:

×	20	7	
50	1000	350	1350
6	120	42	162
			1512

X	300	40	2
7	2100	280	14

Th H T U
2 1 0 0
2 8 0
+ 1 4
2 3 9 4

Short multiplication:

Th H T U
3 4 2
x 7
1 4
2 8 0
2 1 0 0
2 3 9 4

3 4 2
x 7
2 3 9 4
2 1

U

Use of various m
should be taught
numbers with tw

Grid:

Short Multiplica

2 7
x
1 6 4
4 2

addition.

+ 5 = 15

ol X

Calculations

Key Stage 1 (Yr 1/2)

on a written number line:

20

5 +5 +5

10 15 20

on a blank number line:

6 9 12 15 18 21

Children need to understand that multiplication can be done in any order, and read multiplication sentences in **both** ways:

4 x 5 = 4 groups/lots of 5
i.e. 5 + 5 + 5 + 5.

4 x 5 = 4 multiplied 5 times
i.e. 4 + 4 + 4 + 4 + 4

13 x 3 = 39

30 9

0 30 39

Upper Key Stage 2 (Yr 5/6)

ious methods: grid, short and long multiplication taught where up to 4 digits are being multiplied by ith two digits:

×	6
500	3000
40	240
9	54
	3294

tiplication:

7	4	1	
		6	
4	4	6	

Long Multiplication:

	1	2	
	1	2	4
×		2	6
	7	4	4
2	4	8	0
3	2	2	4
1	1		

Multiply

Multiplication

Jumps

Multiple

Numberline

Product

Twice

Three times

Array

Row

Column

Double