Moorgate Calculation

Year 6

Help at Home

ADDITION

In Year 5, your child was developed in confidence to use column addition and this is extended to use larger numbers and decimals too.

Column addition

58 + 87 **457 + 76** **538 + 286**

58	Then	457	Then	538	
+ 87		+ 76		+ 286	
145		533		824	
1 1		1 1		1 1	

Try and spend time with your child practising this as it will secure number facts

Once confident, use with larger whole numbers and decimals.

2467 + 785 **4824 + 2369** **46.73 + 78.6**

2467	4824	46.73
+ 785	+ 2369	78.60
3252	7193	125.33
111	1 1	111

Use the words 'carry ten' and 'carry hundred', not 'carry one'

SUBTRACTION

During Year 5, your child has been encouraged to make his/her own choices, and develop knowledge of decompostion

Expanded method

854 - 286

800 50 4
- 200 80 6

700 140 1
~~800~~ ~~50~~ 4
- 200 80 6
500 60 8

605 - 328

600 0 5
- 300 20 8

500 ~~100~~ 90 ~~0~~ 1
~~600~~ ~~0~~ 5
- 300 20 8
200 70 7

Decomposition

854 - 286

7 14 1
~~8~~ ~~5~~ 4
- 2 8 6
5 6 8

Remember to say 50 instead of 5 when it is in the tens column

605 - 328

9
5 ~~1~~ 1
~~6~~ 0 5
- 3 2 8
2 7 7

These methods are also used for larger numbers and decimals:

Decomposition

8146 - 4729

7 1 3 1
~~8~~ 1 ~~4~~ 6
- 4 7 2 9
3 4 1 7

83.6 - 47.9

7 12 1
~~8~~ ~~3~~ . 6
- 4 7 . 9
3 5 . 7

By the end of Year 5, most children prefer to use decomposition

Number line (count up)

8146 - 4729

+71 +200 +3000 +146

4729 4800 5000 8000 8146

83.6 - 47.9

+2.1 +30 +3.6 = 35.7

47.9 50 80 83.6

Some children still use this method

MULTIPLICATION

Throughout Years 4 and 5, your child was shown how to use the Grid method, and introduced to Vertical multiplication. Please practise these with your child.

Grid method

4 x 67

	60	7
4	240	28

It can be used for more complex calculations:

7 x 89

	80	9
7	560	63

4 x 378

	300	70	8
4	1200	280	32

= 1512

It is important that the child chooses their method

Vertical multiplication

4 x 67

6 7
x 4
2 8
2 4 0
2 6 8

6 7
x 4
2 6 8
2

Place the 'carry' digit below the line

7 x 89

3

8 9
x 7
6 3
5 6 0
6 2 3

8 9
x 7
6 2 3

4 x 378

3 3

3 7 8
x 4
3 2
2 8 0
1 2 0 0
1 5 1 2

3 7 8
x 4
1 5 1 2

Most children continue to use the Grid method through Year 5 and Year 6

MULTIPLICATION continued...

In Years 5 and 6, your child will be shown the grid method to multiply larger numbers, and decimals.

Grid method

It helps for your child to estimate the answer first, by rounding the numbers:

38 × 57

38 × 57 is approximately 40 × 60 = 2400.

×	50	7
30	1500	210
8	400	56
	1900	266

Then, add these sums for the overall product

```
  1 9 0 0
+   2 6 6
  2 1 6 6
  1
```

16.5 × 5

×	10	6	0.5
5	50	30	2.5

Remember to reinforce place value. A common mistake is that 0.5 x 5 = 0.25

```
  5 0
  3 0
+  2.5
  8 2.5
```

DIVISION

During Years 4 and 5, your child will have moved on from using a number line to use 'chunking' (short division).

Chunking

When chunking we repeatedly take away multiples or 'chunks' of the starting number.

51 ÷ 3 = 17

```
  5 1
- 3 0   10 x 3   →
  2 1
- 2 1    7 x 3
       17
```

87 ÷ 3 = 29

```
  8 7
- 3 0   10 x 3
  5 7
- 3 0   10 x 3
  2 7
- 1 5    5 x 3
  1 2
- 1 2    4 x 3
       29
```

OR

```
  8 7
- 6 0   20 x 3
  2 7
- 2 7    9 x 3
       29
```

DIVISION continued...

This then progresses to using hundreds and decimals, sometimes with remainders

Chunking

222 ÷ 6 = 37

222	
- 60	10 x 6
162	
- 60	10 x 6
102	
- 60	10 x 6
42	
- 30	5 x 6
12	
- 12	2 x 6
	37

These are inefficient. Try to find the largest possible chunks to shorten it!

222	
- 180	30 x 6
42	
- 42	7 x 6
	37

Short division is introduced, but not as the main method

373 ÷ 7 = 53 r 2

3 7 3	
- 3 5 0	50 x 7
2 3	
2 1	3 x 7
2	**37**

Long multiplication methods are introduced to those secure with place value and an understanding of short multiplication.

24 × 16 becomes	124 × 26 becomes	124 × 26 becomes
2 2 4 × 1 6 2 4 0 1 4 4 3 8 4	1 2 1 2 4 × 2 6 2 4 8 0 7 4 4 3 2 2 4 1 1	1 2 1 2 4 × 2 6 7 4 4 2 4 8 0 3 2 2 4 1 1
Answer: 384	Answer: 3224	Answer: 3224

Long division methods are introduced to those secure with place value and an understanding of short division.

432 ÷ 15 becomes	432 ÷ 15 becomes	432 ÷ 15 becomes
2 8 r 12 1 5 | 4 3 2 3 0 0 1 3 2 1 2 0 1 2	2 8 1 5 | 4 3 2 3 0 0 (15×20) 1 3 2 1 2 0 (15×8) 1 2 $\frac{12}{15} = \frac{4}{5}$	2 8 · 8 1 5 | 4 3 2 · 0 3 0 ↓ 1 3 2 1 2 0 ↓ 1 2 0 1 2 0 0
Answer: 28 remainder 12	Answer: $28\frac{4}{5}$	Answer: 28·8

The methods included in this booklet are taken from Moorgate Calculation Procedure.

Staff use these as guidance, so you will be supporting your child in the same ways.

All children learn at different paces. Some will be using strategies from lower in school, and others will progress to the next ones. This booklet is provided as a guide only, but if you would like a copy of the years below/ above your child's school year, please come and see your class teacher. They will be happy to discuss this with you.