STRATEGIES AND METHODS OF MENTAL DIVISION

INSPIRE our children to succeed
CREATE excitement for learning
ACHIEVE EXCELLENCE

YEAR 3

Using number facts

Know half of even numbers to 40

Know half of multiples of 10 to 200

e.g. *half of 170 is 85*

Know ×2, ×3, ×4, ×5, ×8, ×10 division facts

YEAR 4

Using number facts

Know times-tables up to 12 × 12 and all related division facts

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	11	24
3	3	6	9	12	15	18	21	24	27	30	22	36
4	4	8	12	16	20	24	28	32	36	40	33	48
5	5	10	15	20	25	30	35	40	45	50	44	60
6	6	12	18	24	30	36	42	48	54	60	55	72
7	7	14	21	28	35	42	49	56	63	70	66	84
8	8	16	24	32	40	48	56	64	72	80	77	96
9	9	18	27	36	45	54	63	72	81	90	88	108
10	10	20	30	40	50	60	70	80	90	100	99	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

STRATEGIES AND METHODS OF WRITTEN DIVISION

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YEAR 3

Perform divisions just above the 10th multiple using written jottings, understanding how to give a remainder as a whole number

Use division facts to find unit and simple non-unit fractions of amounts within the times-tables

- e.g. *3/4 of 48 is 3 × (48 ÷ 4) = 36*

YEAR 4

Use a written version of a mental method to divide 2- and 3-digit numbers by 1-digit numbers

e.g. *86 ÷ 3 as 20 × 3 (60) and 8 × 3 (24), remainder 2*

86 ÷ 3 = ☐

```
3 | 86
  -60   ← 20 x 3
   26
   24   ← 8 x 3
    2      28
```

= 28 r2

Use division facts to find unit and non-unit fractions of amounts within the times-tables

- e.g. *7/8 of 56 is 7 × (56 ÷ 8) = 48*

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YEAR 5

Doubling and halving

Halve amounts of money using partitioning

e.g. *half of £14·84 is half of £14 (£7) plus half of 84p (42p)*

£14·84
£7 42p
£7·42

Use doubling and halving as a strategy in dividing by 2, 4, 8, 5 and 20

e.g. *115 ÷ 5 as double 115 (230) ÷ 10 = 23*

Grouping

Divide numbers by 10, 100, 1000 to obtain decimal answers with up to 3 decimal places

e.g. *340 ÷ 100 = 3·4*

Use the 10th, 20th, 30th … multiple of the divisor to divide 'friendly' 2- and 3-digit numbers by 1-digit numbers

e.g. *186 ÷ 6 as 30 × 6 (180) and 1 × 6 (6)*

1 8 6 ÷ 6 = ☐

```
     3 1
6 | 1 8 6
  - 1 8 0
      6
```

YEAR 6

Doubling and halving

Halve decimal numbers with up to 2 places using partitioning

e.g. *half of 36·86 is half of 36 (18) plus half of 0·86 (0·43)*

36·86
18 0·43
18·43

Use doubling and halving as strategies in mental division

Grouping

Use the 10th, 20th, 30th, … or 100th, 200th, 300th … multiples of the divisor to divide large numbers

e.g. *378 ÷ 9 as 40 × 9 (360) and 2 × 9 (18), remainder 2*

3 7 8 ÷ 9 = ☐

```
     4 2
9 | 3 7 8
    3 6 0
      1 8
      1 8
        0
```

```
     4 2
9 | 3 7¹8
```

Use tests for divisibility

e.g. *135 divides by 3, as 1 + 3 + 5 = 9 and 9 is in the ×3 table*

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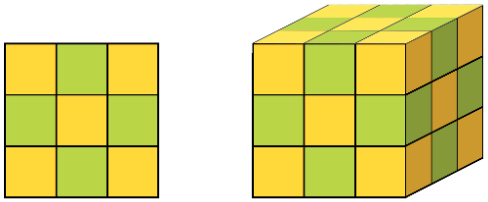
YEAR 5

Using number facts

Use division facts from the times-tables up to 12 × 12 to divide multiples of powers of 10 of the divisor

e.g. *3600 ÷ 9 using 36 ÷ 9*

Know square numbers and cube numbers



YEAR 6

Using number facts

Use division facts from the times-tables up to 12 × 12 to divide decimal numbers by 1-digit numbers

e.g. *1·17 ÷ 3 is 1/100 of 117 ÷ 3 (39)*

Know tests of divisibility for numbers divisible by 2, 3, 4, 5, 9, 10 and 25

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YEAR 5

Use a written version of a mental strategy to divide 3-digit numbers by 1-digit numbers

e.g. *326 ÷ 6 as 50 × 6 (300) and 4 × 6 (24), remainder 2*

3 2 6 ÷ 6 = ☐

```
      5 4 r 2
6 | 3 2 1 6
```

YEAR 6

Short division of 3- and 4-digit numbers by 1-digit numbers

e.g. *139 ÷ 3*

```
      4 6 r 1
3 | 1 3 19
```

Long division of 3- and 4-digit numbers by 2-digit numbers

e.g. *4176 ÷ 13*

4176 ÷ 13 = 321 r 3

```
13 | 4 1 7 6
     3 9 0 0        3 0 0 x 1 3
     -------
       2 7 6
       2 6 0        2 0 x 1 3
       -------
         1 6
         1 3        1 x 3
         -------    -------
           3        3 2 1 r 3
```

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YEAR 5

Short division of 3- and 4-digit numbers by 1-digit numbers
e.g. *139 ÷ 3*

```
      4 6 r 1
3 | 1 3 19
```

Give remainders as whole numbers or as fractions
Find unit and non-unit fractions of large amounts
- e.g. *3/5 of 265 is 3 × (265 ÷ 5) = 159*

Turn improper fractions into mixed numbers and vice versa

YEAR 6

Give remainders as whole numbers, fractions or decimals
Use place value to divide 1- and 2-place decimals by numbers ≤ 12
e.g. *3.65 ÷ 5 as (365 ÷ 5) ÷ 100 = 0·73*
Divide proper fractions by whole numbers