# Overview of Strategies and Methods - Addition (Draft)

## Year 1

### Mental Addition

#### Using place value
- Count in 1s
  - e.g. $45 + 1$
- Count in 10s
  - e.g. $45 + 10$ without counting on in 1s

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<thead>
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#### Add 10 to any given 2-digit number

#### Counting on
- Count on in 1s
  - e.g. $8 + 3$ as 8, 9, 10, 11

Add, putting the larger number first
- Count on in 10s
  - e.g. $45 + 20$ as 45, 55, 65

## Year 2

### Using place value
- Know 1 more or 10 more than any number
  - e.g. 1 more than 67
  - e.g. 10 more than 85

#### Partitioning
- e.g. $55 + 37$ as 50 + 30 and 5 + 7, then finally combine the two totals: 80 + 12

#### Counting on
- Add 10 and multiples of 10 to a given 1- or 2-digit number
  - e.g. 76 + 20 as 76, 86, 96 or in one hop: $76 + 20 = 96$

- Add two 2-digit numbers by counting on in 10s, then in 1s
  - e.g. $55 + 37$ as $55 + 30$ (85) + 7 = 92

- Add near multiples of 10
  - e.g. $46 + 19$
  - e.g. $63 + 21$
<table>
<thead>
<tr>
<th>Mental Addition</th>
<th>Year 1</th>
<th>Year 2</th>
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</thead>
</table>
| **Using number facts** | 'Story' of 4, 5, 6, 7, 8 and 9  
  e.g. 7 = 7 + 0, 6 + 1, 5 + 2, 4 + 3  
  Number bonds to 10  
  e.g. 5 + 5, 6 + 2, 7 + 3, 8 + 2, 9 + 1, 10 + 0 | **Using number facts**  
  Know pairs of numbers which make the numbers up to and including 12  
  e.g. 8 = 4 + 4, 3 + 5, 2 + 6, 1 + 7, 0 + 8  
  e.g. 10 = 5 + 5, 4 + 6, 3 + 7, 2 + 8, 1 + 9, 0 + 10 |  
| 4 + 6 = 10 |  
| Use patterns based on known facts when adding  
  e.g. 4 + 3 = 7 so we know 24 + 3, 44 + 3, 74 + 3 | Use patterns based on known facts when adding  
  e.g. 6 + 3 = 9, so we know 36 + 3 = 39, 66 + 3 = 69, 56 + 3 = 59 |  
| Bridging 10 |  
  e.g. 57 + 5 = 57 + 3 (60) + 2 = 62 | Add three or more 1-digit numbers, spotting bonds to 10 or doubles  
  e.g. 3 + 5 + 3 = 6 + 5 = 11  
  e.g. 8 + 2 + 4 = 10 + 4 = 14 |
## Overview of Strategies and Methods – Subtraction (Draft)

### Year 1

#### Using place value
- Count back in 1s
  - e.g. Know 53 – I
- Count back in 10s
  - e.g. Know 53 – 10 without counting back in 1s

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<td>32</td>
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<td>52</td>
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#### Taking away
- Count back in 1s
  - e.g. 11 – 3 as 11, 10, 9, 8
  - e.g. 14 – 3 as 14, 13, 12, 11

#### Count back in 10s
- e.g. 53 – 20 as 53, 43, 33

### Year 2

#### Using place value
- Know 1 less or 10 less than any number
  - e.g. 1 less than 74
  - e.g. 10 less than 82
- Partitioning
  - e.g. 55 – 32 as 50 – 30 and 5 – 2 and combine the answers: 20 + 3

#### Taking away
- Subtract 10 and multiples of 10
  - e.g. 76 – 20 as 76, 66, 56 or in one hop: 76 – 20 = 56
- Subtract two 2-digit numbers by counting back in 10s, then in 1s
  - e.g. 67 – 34 as 67 subtract 30 (37) then count back 4 (33)

#### Subtract near multiples of 10
- e.g. 74 – 21
- e.g. 57 – 19
### Year 1

<table>
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<tr>
<th>Mental Subtraction</th>
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<tr>
<td><strong>Using number facts</strong></td>
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</table>
| ‘Story’ of 4, 5, 6, 7, 8 and 9  
  e.g. ‘Story’ of 7 is 7 – 1 = 6, 7 – 2 = 5, 7 – 3 = 4  
  Number bonds to 10  
  e.g. 10 – 1 = 9, 10 – 2 = 8, 10 – 3 = 7 |
| Subtract using patterns of known facts  
  e.g. 7 – 3 = 4 so we know 27 – 3 = 24, 47 – 3 = 44, 77 – 3 = 74 |

### Year 2

<table>
<thead>
<tr>
<th><strong>Using number facts</strong></th>
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</table>
| Know pairs of numbers which make the numbers up to and including 12 and derive related subtraction facts  
  e.g. 10 – 6 = 4, 8 – 3 = 5, 5 – 2 = 3 |
| Subtract using patterns of known facts  
  e.g. 9 – 3 = 6, so we know 39 – 3 = 36, 69 – 3 = 66, 89 – 3 = 86 |

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<tr>
<th><strong>Bridging 10</strong></th>
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<td>e.g. 52 – 6 as 52 – 2 (50) – 4 = 46</td>
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<th><strong>Counting up</strong></th>
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| Find a difference between two numbers on a line where the numbers are close together  
  e.g. 51 – 47 |
Overview of Strategies and Methods - Multiplication (Draft)

**Year 1**

**Counting in steps (‘clever’ counting)**

- Count in 2s
  - 0 10 20

- Count in 10s
  - 0 10 20 30 40 50 60 70 80 90 100

**Mental Multiplication**

**Year 2**

**Counting in steps (‘clever’ counting)**

- Count in 2s, 5s and 10s

- Begin to count in 3s

**Doubling and halving**

- Begin to know doubles of multiples of 5 to 100
  - e.g. double 35 is 70

- Begin to double 2-digit numbers less than 50 with 1s digits of 1, 2, 3, 4 or 5
### Overview of Strategies and Methods - Multiplication (Draft)

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<tr>
<td><strong>Doubling and halving</strong></td>
<td>Find doubles to double 5 using fingers</td>
<td><strong>Grouping</strong></td>
</tr>
<tr>
<td>e.g. <em>double 3</em></td>
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<td>e.g. 3 × 4 as three lots of four things</td>
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<td>e.g. 6 × 5 as six steps in the 5s count as well as six lots of five</td>
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#### Year 1
- **Doubling and halving**
  - Find doubles to double 5 using fingers
  - e.g. *double 3*

#### Year 2
- **Grouping**
  - Use arrays to find answers to multiplication and relate to ‘clever’ counting
  - e.g. 3 × 4 as three lots of four things
  - e.g. 6 × 5 as six steps in the 5s count as well as six lots of five

![Diagram of arrays](image)

Understand that 5 × 3 can be worked out as three 5s or five 3s
### Overview of Strategies and Methods – Multiplication (Draft)

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<tr>
<td><strong>Grouping</strong></td>
<td>Begin to use visual and concrete arrays and sets of objects to find the answers to ‘three lots of four’ or ‘two lots of five’ e.g. <em>three lots of four</em></td>
<td><strong>Using number facts</strong></td>
</tr>
</tbody>
</table>

- **Year 1**
  - Using number facts
  - Start learning $\times 2$, $\times 5$, $\times 10$ tables, relating these to ‘clever’ counting in 2s, 5s, and 10s
  - e.g. $5 \times 10 = 50$, and five steps in the 10s count = 10, 20, 30, 40, 50

- **Year 2**
  - Using number facts
  - Know doubles to double 20 e.g. *double 7 is 14*
Overview of Strategies and Methods - Division (Draft)

**Year 1**

**Counting in steps ('clever' counting)**
- Count in 2s
  
  ![Count in 2s](image)

- Count in 10s
  
  ![Count in 10s](image)

**Doubling and halving**
- Find half of even numbers up to 12, including realising that it is hard to halve an odd number
  
  ![Doubling and halving](image)

**Year 2**

**Counting in steps ('clever' counting)**
- Count in 2s, 5s and 10s
  
  ![Count in 2s, 5s and 10s](image)

**Doubling and halving**
- Find half of numbers up to 40, including realising that half of an odd number gives a remainder of 1 or an answer containing a half
  
  e.g. \( \frac{1}{2} \) of 31 = 15 \( \frac{1}{2} \)

- Begin to know half of multiples of 10 to 100
  
  e.g. half of 70 is 35
### Year 1

#### Grouping
Begin to use visual and concrete arrays and ‘sets of’ objects to find the answers to questions such as ‘How many towers of three can I make with twelve cubes?’

#### Sharing
Begin to find half of a quantity using sharing
- e.g. find half of 16 cubes by giving one each repeatedly to two children

### Year 2

#### Grouping
Relate division to multiplication by using arrays or towers of cubes to find answers to division
- e.g. ‘How many towers of five cubes can I make from twenty cubes?’ as \( \_ \times 5 = 20 \) and also as \( 20 \div 5 = \_ \)

Relate division to ‘clever’ counting and hence to multiplication
- e.g. ‘How many fives do I count to get to twenty?’

#### Sharing
Begin to find half or a quarter of a quantity using sharing
- e.g. find a quarter of 16 cubes by sorting the cubes into four piles

Find \( \frac{1}{2}, \frac{1}{3}, \frac{3}{4} \) of small quantities

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#### Using number facts
Know half of even numbers to 24
Know \( \times 2, \times 5 \) and \( \times 10 \) division facts
Begin to know \( \times 3 \) division facts