

## Overview of Strategies and Methods (Subtraction)

### Stage 1-Mental Subtraction


#### Using place value

Count back in 1s

*e.g. know  $53 - 1$*

Count back in 10s

*e.g. know  $53 - 10$  without counting back in 1s.*

32	33	34
42	43	44
52		54

#### 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*

### Stage 1-Mental Subtraction

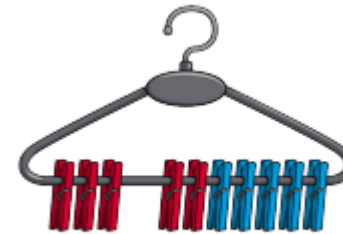
#### Using number facts

'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.  $10 - 1 = 9$ ,  $10 - 2 = 8$ ,  $10 - 3 = 7$*



$$10 - 7 = 3$$

Subtract using patterns of known facts

*e.g.  $7 - 3 = 4$  so we know  $27 - 3 = 24$ ,  $47 - 3 = 44$ ,  $77 - 3 = 74$*

## Overview of Strategies and Methods (Subtraction)

### Stage 2-Mental Subtraction

#### Using place value

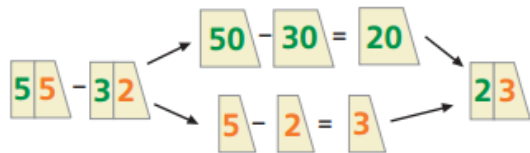
Know 1 less or 10 less than any number

*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:  
 $20 + 3$*



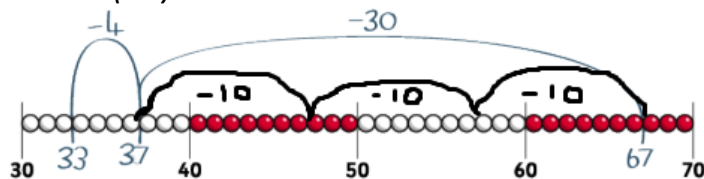
#### Taking Away

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 or 3 lots of 10 (37) then count back 4 (33)*



Subtract near multiples of 10

*e.g.  $74 - 21$*

*e.g.  $57 - 19$*

### Stage 2-Mental Subtraction

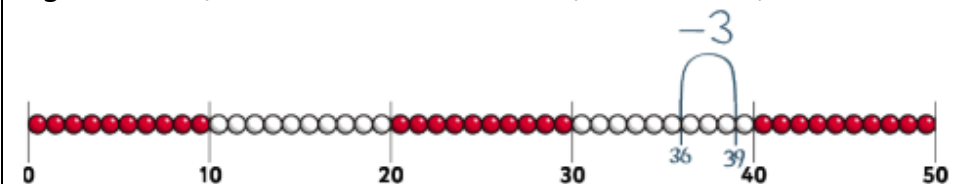
#### Using number facts

Know pairs of numbers which make the numbers up to and including 12 and derive related subtraction facts

*e.g.  $10 - 6 = 4$ ,  $8 - 3 = 5$ ,  $5 - 2 = 3$*

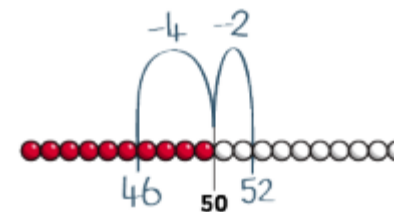
Subtract using patterns of known facts

*e.g.  $9 - 3 = 6$ , so we know  $39 - 3 = 36$ ,  $69 - 3 = 66$ ,  $89 - 3 = 86$*



Bridging 10

*e.g.  $52 - 6$  as  $52 - 2 (50) - 4 = 46$*



#### Counting Up

Find a difference between two numbers on a line where the numbers are close together

*e.g.  $51 - 47$*

## Overview of Strategies and Methods (Subtraction)

### Stage 3-Mental Subtraction

#### Taking Away

Use place value to subtract

e.g.  $348 - 300$

e.g.  $348 - 40$

e.g.  $348 - 8$



Take away multiples of 10, 100 and £1

e.g.  $476 - 40 = 436$

e.g.  $476 - 300 = 176$

e.g.  $£4.76 - £2 = £2.76$

Partitioning

e.g.  $68 - 42$  as  $60 - 40$  and  $8 - 2$

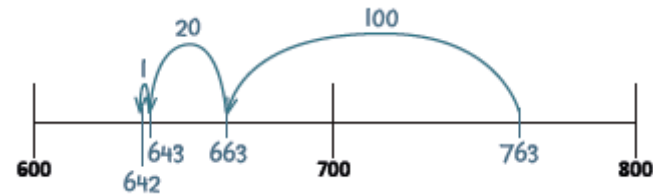
e.g.  $£6.84 - £2.40$  as  $£6 - £2$  and  $80p - 40p$



### Stage 3-Mental Subtraction

Count back in 100s, 10s then 1s

e.g.  $763 - 121$  as  $763 - 100$  ( $663$ )  $- 20$  ( $643$ )  $- 1 = 642$



Subtract near multiples of 10 and 100

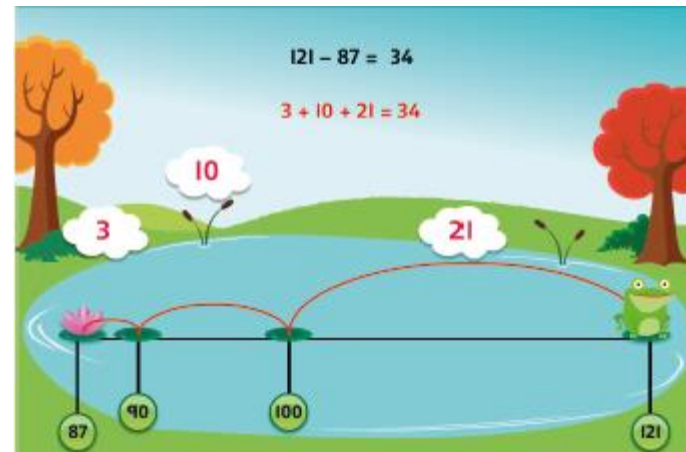
e.g.  $648 - 199$

e.g.  $86 - 39$

#### Counting up

Find a difference between two numbers by counting up from the smaller to the larger

e.g.  $121 - 87$



## Overview of Strategies and Methods (Subtraction)

### Stage 3-Mental Subtraction

#### Using number facts

Know pairs which total each number to 20

*e.g.*  $20 - 14 = 6$

Number bonds to 100

*e.g.*  $100 - 48 = 52$

*e.g.*  $100 - 35 = 65$



Subtract using number facts to bridge back through a 10

*e.g.*  $42 - 5 = 42 - 2 (40) - 3 = 37$

## Overview of Strategies and Methods (Subtraction)

### Stage 4- Mental Subtraction

#### Taking away

Use place value to subtract

e.g.  $4748 - 4000$

e.g.  $4748 - 8$



Take away multiples of 10, 100, 1000, £1, 10p or 0.1

e.g.  $8392 - 50$

e.g.  $6723 - 3000$

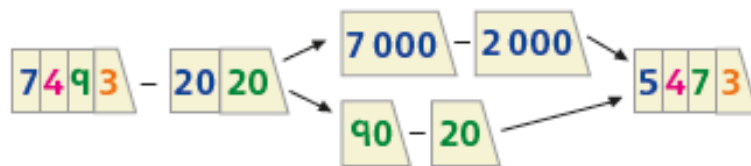
e.g.  $£3.74 - 30p$

e.g.  $5.6 - 0.2$

Partitioning

e.g.  $£5.87 - £3.04$  as  $£5 - £3$  and  $7p - 4p$

e.g.  $7493 - 2020$  as  $7000 - 2000$  and  $90 - 20$



Count back

e.g.  $6482 - 1301$  as  $6482 - 1000 (5482) - 300 (5182) - 1 = 5181$

Subtract near multiples of 10, 100, 1000 or £1

e.g.  $3522 - 1999$

e.g.  $£34.86 - £19.99$

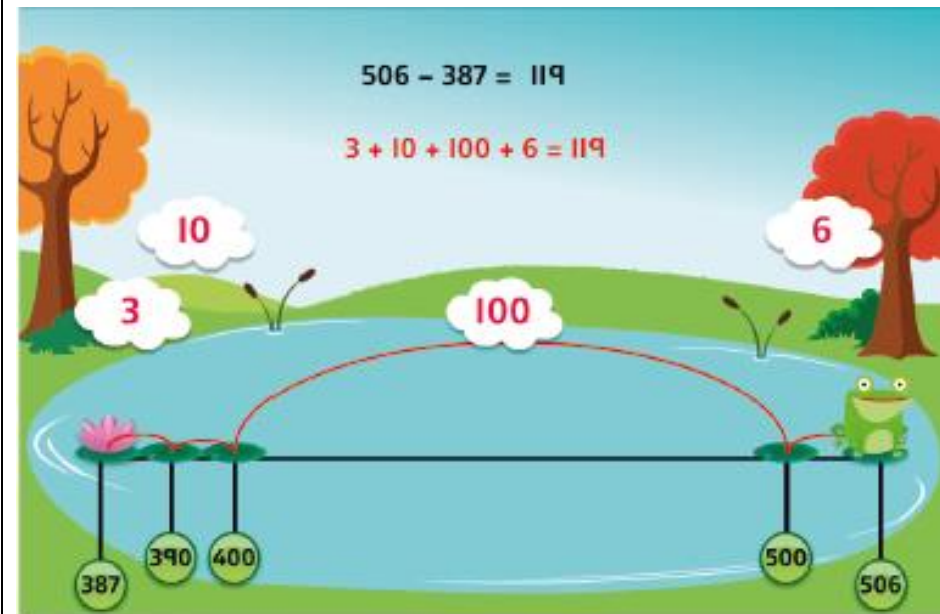
### Stage 4 - Mental Subtraction

#### Counting up

Find a difference between two numbers by counting up from the smaller to the larger

e.g.  $506 - 387$

e.g.  $4000 - 2693$



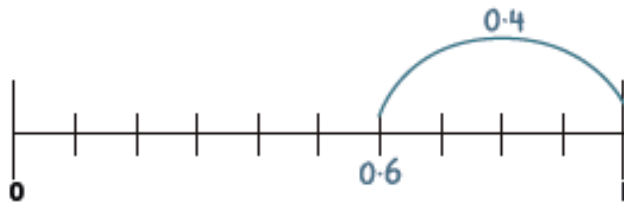
Stage 4 - Mental Subtraction

Using number facts

Number bonds to 10 and 100 and derived facts

*e.g.*  $100 - 76 = 24$

*e.g.*  $1 - 0.6 = 0.4$



Number bonds to £1 and £10

*e.g.*  $£1.00 - 86p = 14p$

*e.g.*  $£10.00 - £3.40 = £6.60$

## Overview of Strategies and Methods (Subtraction)

### Stage 5 - Mental Subtraction

#### Taking away

Use place value to subtract decimals

e.g.  $4.58 - 0.08$

e.g.  $6.26 - 0.2$

Take away multiples of powers of 10

e.g.  $15\ 672 - 300$

e.g.  $4.82 - 2$

e.g.  $2.71 - 0.5$

e.g.  $4.68 - 0.02$

Partitioning or counting back

e.g.  $3964 - 1051$

e.g.  $5.72 - 2.01$

Subtract near multiples of 1, 10, 100, 1000, 10 000 or £1

e.g.  $86\ 456 - 9999$

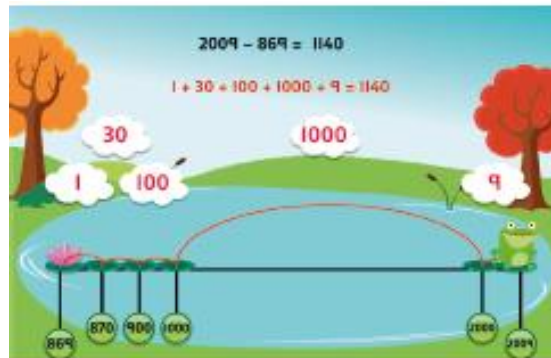
e.g.  $3.58 - 1.99$

#### Counting up

Find a difference between two numbers by counting up from the smaller to the larger

e.g.  $£12.05 - £9.59$

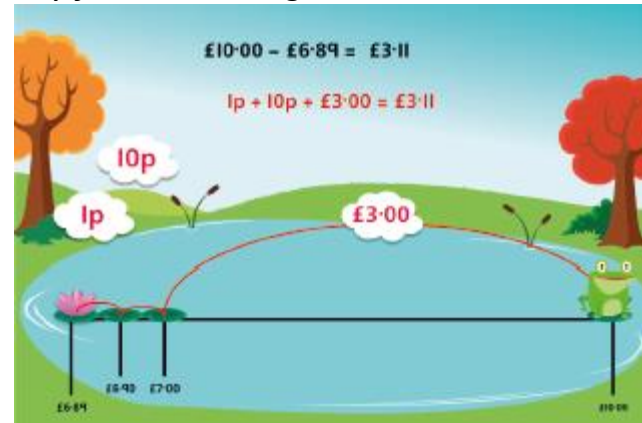
e.g.  $2009 - 869$



### Stage 5 - Mental Subtraction

Find change using shopkeepers' addition

e.g. Buy a toy for £6.89 using £10.00



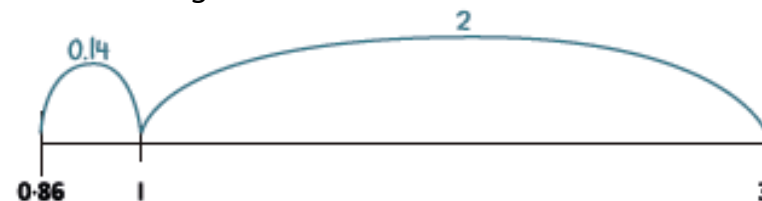
Find a difference between two amounts of money by counting up

#### Using number facts

Derived facts from number bonds to 10 and 100

e.g.  $2 - 0.45$  using  $45 + 55 = 100$

e.g.  $3 - 0.86$  using  $86 + 14 = 100$



Number bonds to £1, £10 and £100

e.g.  $£4.00 - £3.86$

e.g.  $£100 - £66$  using  $66 + 34 = 100$

## Overview of Strategies and Methods (Subtraction)

### Stage 6 - Mental Subtraction

#### Taking away

Use place value to subtract decimals

*e.g.*  $7.782 - 0.08$

*e.g.*  $16.263 - 0.2$

Take away multiples of powers of 10

*e.g.*  $132\,956 - 400$

*e.g.*  $686\,109 - 40\,000$

*e.g.*  $7.823 - 0.5$

Partitioning or counting back

*e.g.*  $3964 - 1051$

*e.g.*  $5.72 - 2.01$

Subtract near multiples of powers of 10

*e.g.*  $360\,078 - 99\,998$

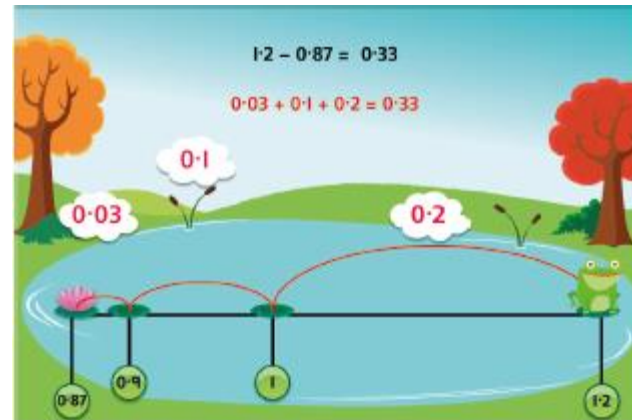
*e.g.*  $12.831 - 0.99$

### Stage 6 - Mental Subtraction

#### Counting up

Find a difference between two decimal numbers by counting up from the smaller to the larger

*e.g.*  $1.2 - 0.87$

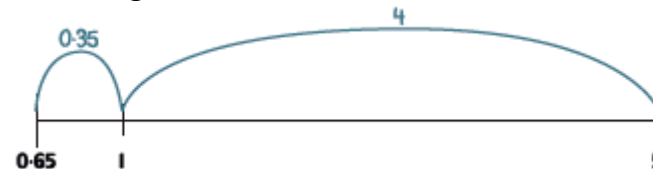


#### Using number facts

Derived facts from number bonds to 10 and 100

*e.g.*  $0.1 - 0.075$  using  $75 + 25 = 100$

*e.g.*  $5 - 0.65$  using  $65 + 35 = 100$



Number bonds to £1, £10 and £100

*e.g.*  $£7.00 - £4.37$

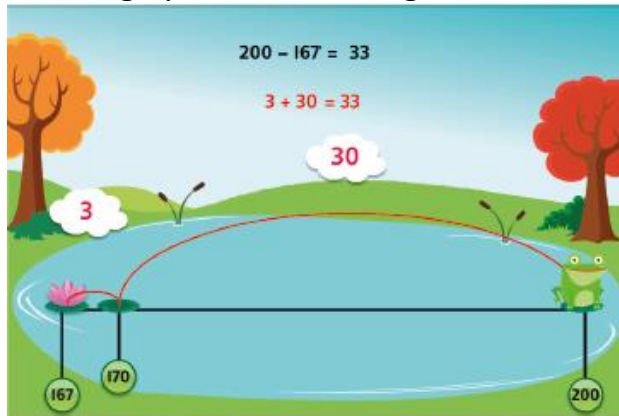
*e.g.*  $£100 - £66.20$  using  $20p + 80p = £1$  and  $£67 + £33 = £100$



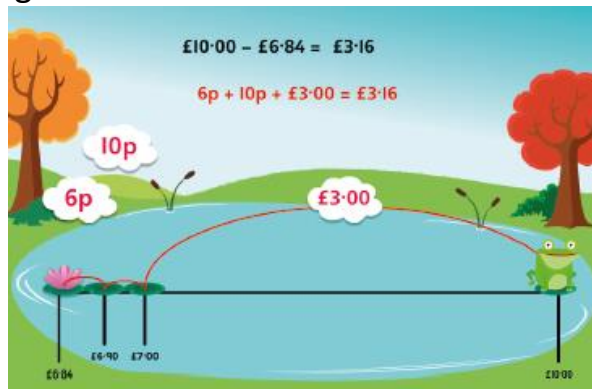
## Overview of Strategies and Methods (Subtraction)

### Stage 1 - Written Subtraction

Develop counting up subtraction e.g.  $200 - 167$



Use counting up subtraction to find change from £1, £5 and £10 e.g.  $£10.00 - £6.84$



Recognise complements of any fraction to 1

e.g.  $1 - \frac{1}{4} = \frac{3}{4}$

e.g.  $1 - \frac{1}{5} = \frac{4}{5}$

### Stage 2 - Written Subtraction

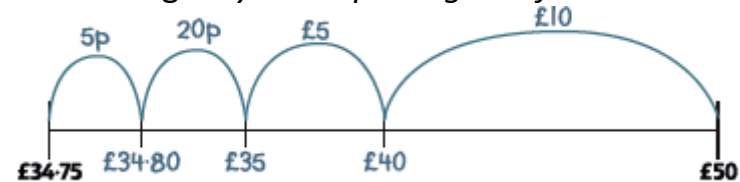
Expanded column subtraction with 3- and 4-digit numbers e.g.  $726 - 358$

$$\begin{array}{r}
 600 \quad 110 \quad 16 \\
 \cancel{700} \quad \cancel{20} \quad \cancel{8} \\
 - 300 \quad 50 \quad 8 \\
 \hline
 300 \quad 60 \quad 8
 \end{array}$$

Begin to develop compact column subtraction e.g.  $726 - 358$

$$\begin{array}{r}
 6 \quad 11 \quad 16 \\
 \cancel{7} \quad \cancel{2} \quad \cancel{8} \\
 - 3 \quad 5 \quad 8 \\
 \hline
 3 \quad 6 \quad 8
 \end{array}$$

Use counting up subtraction to find change from £10, £20, £50 and £100 e.g. Buy a computer game for £34.75 using £50



Subtract like fractions

e.g.  $\frac{3}{8} - \frac{1}{8} = \frac{2}{8}$

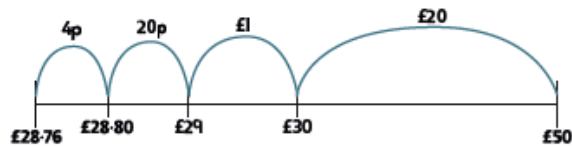
## Overview of Strategies and Methods (Subtraction)

### Stage 3 – Written Subtraction

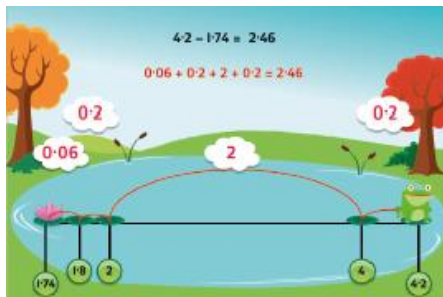
Compact column subtraction for numbers with up to 5 digits e.g.  $16\,324 - 8516$

$$\begin{array}{r}
 0\ 15\ 13\ 1\ 14 \\
 \cancel{1}\ \cancel{6}\ \cancel{3}\ \cancel{2}\ \cancel{4} \\
 -\ 8\ 5\ 1\ 6 \\
 \hline
 7\ 8\ 0\ 8
 \end{array}$$

Continue to use counting up subtraction for subtractions involving money, including finding change e.g.  $£50 - £28.76$



Use counting up subtraction to subtract decimal numbers e.g.  $4.2 - 1.74$



Subtract related fractions

e.g.  $\frac{3}{4} - \frac{1}{8} = \frac{5}{8}$

**NB Counting up subtraction provides a default method for ALL children**

### Stage 4 – Written Subtraction

Compact column subtraction for large numbers e.g.  $34\,685 - 16\,458$

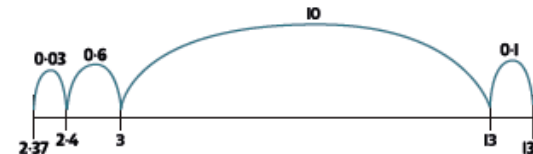
$$\begin{array}{r}
 2\ 14\ 7\ 15 \\
 \cancel{3}\ \cancel{4}\ \cancel{6}\ \cancel{8}\ \cancel{5} \\
 -\ 1\ 6\ 4\ 5\ 8 \\
 \hline
 1\ 8\ 2\ 2\ 7
 \end{array}$$

Use counting up for subtractions where the larger number is a multiple or near multiple of 1000 or 10 000

Use counting up subtraction when dealing with money e.g.  $£100 - £78.56$  e.g.  $£45.23 - £27.57$



Use counting up subtraction to subtract decimal numbers e.g.  $13.1 - 2.37$



Subtract unlike fractions, including mixed numbers

e.g.  $\frac{3}{4} - \frac{1}{3} = \frac{5}{12}$

e.g.  $2\frac{3}{4} - 1\frac{1}{3} = 1\frac{5}{12}$

**NB Counting up subtraction provides a default method for ALL children**

## Overview of Strategies and Methods (Subtraction)

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