'Shine like a lantern in the presence of the Lord.'


# YEAR 1 AND 2 MATHEMATICS CALCULATION METHODS 

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Always think:
Can I do it mentally?
Can I do it with jottings?
Do I need a written method (vertical layout)?
Do I need a calculator?
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## ADDITION GUIDELINES

## Based on Practical Experiences \& Mental Calculation Strategies (supported by jottings)

Counting numbers to 20

(using familiar / practical resources)
Place numbers to 20 in order (KF)
Bonds up to 10 and to make 10 (KF)

$5+3=8$

1 more than a number (KF)


Addition as combining, up to three, groups (including spotting doubles or bonds to 10)


Addition as counting on in ones and tens from any 1 or 2 digit number (KF) (supported by practical apparatus)


## Year 1

Doubling numbers within 20 (KF)
(e.g. $7+7=14,12+12=24$ )
peowcoce0

Number bonds to 20 (KF)
(2)

Relate addition facts to 10 to add multiples of 10 up to a total of 100 e.g. if $3+4$ is 7 then $30+$ 40 is 70 ( $\mathbf{K F}$ )

## $\|\|\|\|$

Use familiar objects to recognise the place value of 2 digit numbers. (KF)

$$
24
$$

Recognise and explain 24 is ' 2 tens and 4 ones' (KF)

```
20
4
```


## + / = signs and missing numbers

Children need to understand the concept of equality before using the ' $=$ ' sign. Calculations should be written either side of the ' $=$ ' sign so that the sign is not just interpreted as 'the answer'
$2=1+1$
$2+3=4+1$
$3=3$
$2+2+2=4+2$

$\quad=33+2$
$\quad=35$
Model this on a number line or bead string starting at 23 and jumping 10 (J10) to make 33 and then add 2 in one jump.


Add three of more 1-digit numbers, spotting bonds to 10 or doubles.
e.g. $3+5+3=6+5=11$
e.g. $8+2+4=10+4=14$

## Based on Practical Experiences \& Mental Calculation Strategies

## (supported by iottings)

## Using place value

Count back in 1 s
Counting back from 20. (KF) A labelled number line can be used to support this.

Find one less than a given number
(KF)
e.g. Know 53-1 (hundred square can be used to support)

Count back in 10 s
e.g. Know $53-10$ without counting back in 1 s

| 32 | 33 | 34 |
| :---: | :---: | :---: |
| 42 | 43 | 44 |
| 52 | 枪关 | 54 |

## Taking away

Progress to taking away without the support of practical apparatus.

Count back in 1 s
e.g. $11-3$ as $11,10,9,8$
e.g. $14-3$ as $14,13,12,11$

## ADDITION GUIDELINES

## SUBTRACTION GUIDELINES

## Year 2

## Year 1

Use practical and informal written methods to support the subtraction of a 1-digit number from a 1-digit or 2-digit number and a multiple of 10 from a two-digit number.

I have 11 toy cars. I lost 5 of them. How many are left?
Start with bead strings / bars and move onto number lines below.


Use the vocabulary related to subtraction and symbols to describe and record subtraction number sentences (for the example above it would be $11-5=6$ ),
Recording by drawing jumps on prepared lines / tracks.

Use practical resources to find the difference between two small numbers e.g. 6 and 7


## Using number facts (KF)

Number bonds to 10 (KF)
e.g. $10-1=9,10-2=8,10-3=7$

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

Subtract using patterns of known facts (KF)
e.g. $7-3=4$ so we know $27-3=24,47-3=44,77-3=74$

Count on from smallest to largest number to find the difference where numbers are close in value. (e.g.9-7)

## SUBTRACTION GUIDELINES

## Year 2

## Based on Practical Experiences \& Mental Calculation Strategies

 (supported by iottings)
## Using place value (KF)

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 (as counting back)

Subtract 10 and multiples of 10 (J10 method). For example

$$
\begin{aligned}
37-12 & =37-10-2 \\
& =27-2 \\
& =25
\end{aligned}
$$



Or
$76-20$ as $76,66,56$ or in one jump: $76-20=56$
Or
$67-34=67-30-4$

## Year 2

## Using number facts / Knowledge of Bonds (KF

Initially children should be supported in applying this knowledge using bead strings, number lines and other practical apparatus.

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 $39-3=36,69-3=66,89-3=86$


Using knowledge of number bonds to subtract mentally from multiples of 10 s e.g. $10-4=6$ so we know $20-4=16,30-4=26,60-4=56$

Using knowledge of number bonds to subtract mentally multiples of 10 from multiples of 10 e.g. if $7-4=3$ then $70-40=30$

## Bridging Ten (T10)

## This method involves

partitioning and bridging
e.g. $52-6=52-2$

$$
=50-4
$$

$=46$
targeting the next multiple of 10 through a multiple of 10 .

| $\begin{aligned} & =37-4 \\ & =33 \end{aligned}$ | Counting up <br> Find a difference between two numbers on a line where the numbers are close together e.g. $38-23=$ |
| :---: | :---: |

## MULTIPLICATION GUIDELINES

## Year 1

Based on Practical Experiences \& Mental Calculation Strategies (supported by iottings)

## Counting in steps ('clever' counting)

Count in 2s


Count in 10 s and 5 s


## Year 1

## Doubling and halving (KF

Multiplication is linked to known facts, including doubling and counting groups of the same size.
Children should be given opportunities to do this with practical items such as dominoes, dice, groups of cars, groups of dolls, etc.

Find doubles to double 5 using fingers or objects e.g. double 3


## Grouping

Begin to use visual and concrete arrays and sets of objects to find the answers to questions such as: 'three lots of two' or 'three lots of four' or 'two lots of five' e.g. three lots of four


| Children should experience counting using a range of different practical resources such as: <br> Numicon, bead strings, fingers on gloves, pairs of socks, animal legs, etc. | multi-link <br> e.g. three lots of two |
| :---: | :---: |
| MULTIPLICATION GUIDELINES |  |
| Year 2 | Year 2 |
| Based on Practical Experiences \& Mental Calculation Strategies (supported by iottings) <br> Counting in steps ('clever' counting) <br> Count in 2 s , 5 s and 10 s <br> Begin to count in 3s <br> Doubling and halving <br> Begin to know doubles of multiples of 5 to 100 <br> e.g. double 35 is 70 | Grouping <br> Use arrays to find answers to multiplication and relate to 'clever' counting e.g. $3 \times 4$ as three lots of four things <br> e.g. $6 \times 5$ as six steps in the 5 s count as well as six lots of five <br> or <br> Understand that $5 \times 3$ can be worked out as three 5 s or five 3 s <br> Using number facts (KF) <br> Know doubles to <br> double 20 e.g. double 7 is 14 |

Start learning $\times 2, \times 5, \times 10$ tables, relating these to 'clever' counting in $2 \mathrm{~s}, 5 \mathrm{~s}$, and 10 s e.g. $5 \times 10=50$, and five steps in the 10 s count $=10,20,30,40,50$

## DIVISION GUIDELINES

## Year 1

Based on Practical Experiences \& Mental Calculation Strategies (supported by iottings)

## Counting in steps ('clever' counting)

Count in 2s (KF)


Count in 10s (KF)


Doubling and halving (KF)

## Grouping

Begin to use visual and concrete arrays and 'sets of' objects to find the answers to questions such as:
'There are 10 seeds. Plant 5 in each pot. How many pots are there?'
'Jo has 10 Lego wheels. How many bicycles can she make?'
'There are 6 sweets. How many people can have 2 sweets each?'


## 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 e.g. 6 sweets are shared between 2 people. How many do they have each?

or


| DIVISION GUIDELINES |  |
| :---: | :---: |
| Year 2 | Year 2 |
| Based on Practical Experiences \& Mental Calculation Strategies (supported by jottings) <br> Counting in steps ('clever' counting) <br> Count in 2s, 5 s and 10s (KF) <br> Begin to count in 3s (KF) <br> Doubling and halving <br> 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 $1 / 2$. (KF) <br> e.g. $1 / 2$ of $11=51 / 2$ | Grouping <br> Relate division to multiplication by using arrays or towers of cubes to find answers to division. (KF) <br> e.g. 'How many towers of five cubes can I make from twenty cubes?' as _ $\times 5=20$ and also as $20 \div 5=$ <br> Include practical grouping, such as: <br> In PE 12 children get into teams of 4 to play a game. How many teams are there? <br> Relate division to 'clever' counting and hence to multiplication. (KF) <br> e.g. 'How many fives do I count to get to twenty?' <br> Sharing <br> 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 |



Begin to know half of multiples of 10 to 100 e.g. half of 70 is 35

Find $1 / 4,1 / 2,3 / 4$ of small quantities (KF)

| $\frac{1}{2}$ |  | $\frac{1}{2}$ |  |
| :---: | :---: | :---: | :---: |
| $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ |

## Using number facts (KF)

Know half of even numbers to 24
Know $\times 2, \times 5$ and $\times 10$ division facts
Begin to know $\times 3$ division facts

