

## USING THE RELATIONSHIP BETWEEN ADDITION AND SUBTRACTION

Help your child to make links between adding and subtracting:

- For example:
- ◆ Six and how many more make 10, 10 take away 6 equals 4.
  - ◆ A lolly costs 6p, how much change from 10p?

## ESTIMATING NUMBERS

It is important that children get a "feel" for number and quantities.

- ◆ Show your child 5 spoons for a few seconds. Then cover the spoons and ask 'were there 5 spoons or 9 spoons?'
- ◆ Show your child different objects then hide them and guess how many there were.
- ◆ Guess how many clothes pegs you could lift in your hand.
- ◆ Guess how many pieces of fruit in a fruit bowl. After guessing, get your child to count to find out how many objects there are

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## OTHER IDEAS

Throw 2 dice and find the total or the difference. Write a number sentence about the dice.



$$4 + 2 = 6$$
$$4 - 2 = 2$$

Who got the highest/lowest score?

- ◆ Visit local library and choose books which have numbers in the stories:
  - Goldilocks and the three Bears
  - Snow White and the seven Dwarfs
  - Six Dinner Sid
- ◆ Use dominoes to match numbers and find totals: e.g. can you find 2 dominoes that have 8 spots
- ◆ Make Bingo games. Call out 2 + 3 and cover 5

## USEFUL LANGUAGE

<b>add</b>	<b>subtract</b>	<b>difference</b>
<b>makes</b>	<b>equals</b>	<b>more than</b>
<b>take away</b>	<b>same as</b>	<b>less than</b>
<b>bigger/smaller</b>	<b>how many</b>	<b>total</b>
<b>count back</b>	<b>number before</b>	<b>number after</b>
<b>number between</b>	<b>doubles</b>	<b>near doubles</b>
	<b>guess</b>	

# HELP YOUR CHILD WITH MENTAL MATHS

## Foundation Stage

### Primary 1 and Primary 2

By the end of Foundation Stage children will have developed an understanding of number to 20.

They will also have engaged in counting activities beyond 20.

They will have started to add and subtract within 20.

They will recognise coins in everyday use and work with coins up to 20p.

## MENTAL MATHS STRATEGIES WE USE

- ◆ Counting on/counting back
- ◆ Use the relationship between addition and subtraction
- ◆ Re-ordering numbers to make the calculation easier  
e.g.  $7 + 1$  putting the bigger number first is the same as  $1 + 7$
- ◆ Understanding the importance of 10  
e.g. 17 is 10 and 7 more  
14 is 10 and 4 more



## COUNTING ACTIVITIES

- ◆ Practise chanting the number names. Encourage your child to join in with you. When they are confident, try starting from different numbers e.g. 4, 5, 6... also try counting backwards.
- ◆ Sing number rhymes together (see separate sheet)
- ◆ Give your child the opportunity to count objects (coins, clothes pegs, lego bricks, cutlery etc.) Encourage them to move each object as they count them.
- ◆ Count things you cannot touch - jumps, claps, fruit in a bag, people in a queue.
- ◆ Play games that involve counting: e.g. snakes and ladders, dice games.
- ◆ Look for numbers in the environment: e.g. car number plates, sign posts, door numbers, prices in a supermarket.
- ◆ Make mistakes when chanting, counting or ordering numbers. Can your child spot what you have done wrong?
- ◆ Choose a number of the week: e.g. 5. Practise counting in 5's, up to 5, on from 5, collect groups of 5 items.

## QUICK RECALL

During the Foundation Stage we work towards the children being able to use their knowledge of numbers to 20 to answer questions quickly. For example:

- ◆ Number before, after, between
- ◆ Add 0 or 1 to a given number
- ◆ Add 2 to a given number
- ◆ Know doubles up to  $5 + 5$
- ◆ Know number stories to 5  
e.g.  $0 + 5$   
 $1 + 4$   
 $2 + 3$   
 $3 + 2$   
 $4 + 1$   
 $5 + 0$
- ◆ Subtract 0 or 1 from a number
- ◆ Addition and subtract within 10
- ◆ One more/one less within 20
- ◆ Know "near doubles" within 10  
e.g.  $3 + 3 = 6$  so  
 $3 + 4 = 7$
- ◆ Know doubles up to  $10 + 10$
- ◆ Subtraction within 5 and later 10



When faced with a calculation problem, encourage your child to ask.....

- ◆ Can I do this in my head?
- ◆ Could I do this in my head using drawings or jottings to help me?
- ◆ Do I need to use a written method?
- ◆ Should I use a calculator?









Also help your child to estimate and then answer.

Encourage them to ask.....  
Is the answer sensible?

In Bloomfield Primary School we refer to characters for each mental maths strategy.

Your child should recognise these:

	<b>Counting Colin</b> ←	<b>Inverse Iris</b> →	
	<b>Factors Fred</b> ←	<b>Partitioning Pete</b> →	
	<b>Re-ordering Rob</b> ←	<b>Rounding Rosie</b> →	

# HELP YOUR CHILD WITH MENTAL MATHS



Key Stage One

## Primary 3 and Primary 4

By the end of Key Stage 1 (P4) children will have developed an understanding of number to 999.

They will be able to add and subtract within 999 and will begin to understand the concepts of multiplication and division.

They will have an understanding of fractions particularly halves and quarters.

They will work with money and shopping within £10; paying for goods and finding change.

## MENTAL MATHS STRATEGIES WE USE

- ◆ Counting on/counting back  
 e.g. Counting in 2's, 5's, 10's  
 Counting in 100's etc from any 2 or 3 digit number
- ◆ Re-ordering numbers of make the calculation easier  
 e.g.  $7 + 9 + 3 + 9 + 2$   
 Look for doubles  $\rightarrow 9 + 9$   
 Look for numbers which make 10  $\rightarrow 7 + 3$   
 so  $9 + 9 = 18$       $7 + 3 = 10$   
                                     $\swarrow$       $\searrow$   
                                     $18 + 10 + 2 = 40$
- ◆ Rounding and adjusting  
 This strategy is useful when adding or subtracting numbers that are close to a multiple of 10 or 100:  
 e.g.  $27 + 9$  is  $27 + 10 - 1$   
 (9 is rounded to 10 and then adjusted by subtracting 1)  
 e.g. 4 packets of cornflakes @ £1.99 = £7.96  
       = £1.99  $\times$  4 = £2  $\times$  4 - 4p

- ◆ Partitioning  
 This strategy involves splitting a number into tens and units:  
 e.g.  $46 + 23 =$   
        $46 + 20 = 66 + 3 = 69$   
 Sometimes your child may find it easier to partition both numbers and then put them together again:  
 e.g.  $46 + 23 =$   
        $40 + 20 = 60$   
        $6 + 3 = 9$      so      $60 + 9 = 69$

Talk to your child about how you work things out

Ask your child to explain their thinking.



## USEFUL LANGUAGE

multiply	divide	recall
partition	round and adjust	split
halves	quarters	strategy
product	times	lots of
groups of	share	sets of
factors	inverse operation	group

## QUICK RECALL

During KS1 children work to develop quick recall of number facts which include:

- ◆ Addition and subtraction of all numbers to at least 20
- ◆ All pairs of multiples of 10 with a total of 100 (P3)  
e.g.  $70 + 30 = 100$ ,  $20 + 80 = 100$
- ◆ All pairs of multiples of 100 with a total of 1000  
e.g.  $400 + 600 = 1000$ ,  $700 + 300 = 1000$
- ◆ Doubles of all numbers to 10 (P3) and to 20 (P4) and corresponding halves  
e.g. Double  $13 = 26$   
Half of  $26 = 13$
- ◆ Multiplication facts for 2, 3, 4, 5 and 10 times tables and corresponding division facts (P4)  
e.g.  $3 \times 5 = 15$   
 $5 \times 3 = 15$   
 $15 \div 3 = 5$   
 $15 \div 5 = 3$

## ROUNDING AND ESTIMATING

It is important that children get a "feel" for number and quantities.

- ◆ Estimate the number of biscuits in a packet, beans on a plate, sweets in a jar, sweets in a packet.  
Check by counting.
- ◆ Round numbers to the nearest 10 and 100 to help make sensible estimates for calculations:

e.g.  $62 - 31$   
is roughly  $60 - 30$

e.g.  $79p \times 2$   
is nearly  $80p \times 2$

If I have £1 and crisps cost 29p would I have enough to buy 4 packets?

$29p \xrightarrow{\text{round to}} 30p$

$30p \times 4 = 120p$  so I don't have enough money.

## OTHER IDEAS

- ◆ Throw 2 or 3 dice. Find the total, difference or product.
- ◆ Throw 3 dice. Can you combine the numbers with different operations to make a target number?  
e.g. Target 28  $(6 + 1) \times 4$
- ◆ Talking about numbers  
Give your child clues about a number and see if they can work out the number:  
e.g. My number is 20 less than 73
- ◆ Choose 3 different numbers from 1 to 9:  
e.g. 7 4 2

How many different calculations can you find to fit this sum

$$\square\square + \square =$$

e.g.  $72 + 4, 47 + 2, \text{etc.}$

Extend to choosing 4 numbers and for this calculation

$$\square\square + \square\square \text{ or } \square\square\square + \square$$

$$\square\square\square - \square$$

- ◆ Give your child the answer to a calculation:

e.g. 13

Ask them to write 6 calculations with 13 as the answer.

This strategy can also be used with subtraction and multiplication:

e.g.  $74 - 15 =$   
 $74 - 10 - 5 = 64 - 5 = 59$   
 $37 \times 2 = 30 \times 2 = 60$   
 $7 \times 2 = 14$   
 $60 + 14 = 74$

### ◆ Using Inverse Operations

This strategy involves using the relationship between addition and subtraction and also the relationship between multiplication and division:

e.g.  $16 - 12 \rightarrow 12 + \square = 16$   
 $3 \times 4 = 12 \text{ so } 12 \div 3 = 4$

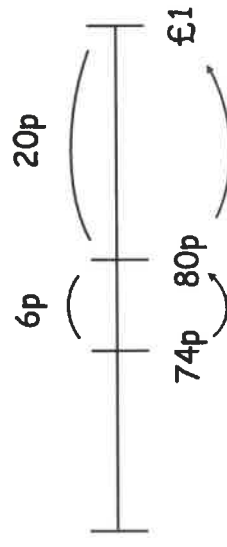
This strategy is also very useful in money calculations where finding change can be worked out by counting on:

e.g. I buy an ice-cream at 74p

How much change do I get from £1?

$$74\text{p} + \boxed{6\text{p}} = 80\text{p}$$

$$80\text{p} + \boxed{20\text{p}} = \text{£}1$$



Up to next  
multiple of 10p  
Up to £1

When faced with a calculation problem, encourage your child to ask.....

- ◆ Can I do this in my head?
- ◆ Could I do this in my head using drawings or jottings to help me?
- ◆ Do I need to use a written method?
- ◆ Should I use a calculator?



Also help your child to estimate and then answer.  
Encourage them to ask.....

Is the answer sensible?

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In Bloomfield Primary School we refer to characters for each mental maths strategy.

Your child should recognise these:

	Counting Colin		Partitioning Pete
	Factors Fred		Equivalence Emma
	Re-ordering Rob		Rounding Rosie
	Inverse Iris		

## HELP YOUR CHILD WITH MENTAL MATHS



### Primary 5, Primary 6 and Primary 7

By the end of Key Stage 2 children will have developed understanding of numbers up to 1 million.

They will be able to add and subtract whole numbers of any size.

They will be able to multiply whole numbers by any number up to 99 and divide whole numbers by a single digit.

They will have an understanding of fractions, decimals and percentages and their equivalences.

They will understand different types of numbers such as square, cube, triangular, prime and negative numbers.

They will be able to calculate shopping bills, change and % discount.

## MENTAL MATHS STRATEGIES WE USE

- ◆ Counting on/counting back including counting in decimals, fractions and below zero
- ◆ Re-ordering numbers to make the calculations easier
  - when adding several numbers  
 $9 + 14 + 9 + 6$
- ◆ Look for numbers which make multiples of 10 "  $14 + 6 = 20$   
Look for doubles "  $9 + 9 = 18$  so  $20 + 18 = 38$ 
  - When multiplying  
 $5 \times 18$  is the same as  $18 \times 5$
- ◆ *Rounding and adjusting*

This strategy is useful when adding or subtracting numbers that are close to a multiple of 10, 100 or 1000:

e.g.  $870 + 190$  is the same as  $870 + 200 - 10$   
(190 is rounded to 200 and then adjusted by subtracting 10)

This strategy is also useful when multiplying:

e.g. 7 packets of biscuits @ £1.95

This can be calculated by rounding £1.95 to £2 multiplying by 7 ( $£2 \times 7 = £14$ ) and then adjust the answer by taking away 35p ( $7 \times 5p$ )  
so  $£14 - 35p = £13.65$
- ◆ *Partitioning*

This strategy involves splitting a number into hundreds, tens and units:

e.g.  $470 + 220$  is the same as  $470 + 200 + 20$   
 $520 - 150$  is the same as  $520 - 100 - 50$

In these calculations we keep the first number as it is and partition the second number. Sometimes it can be helpful to partition both numbers:

e.g.  $460 + 260$  is the same as  $400 + 200 + 60 + 60$

Partitioning is also very useful when multiplying:

e.g.  $76 \times 3$  is the same as  $(70 \times 3) + (6 \times 3)$

Talk to your child about how you work things out.

Ask your child to explain their thinking.



## USEFUL LANGUAGE

percentage	negative	decimal
equivalences	remainder	quotient
mixed number	simplify	improper fraction
numerator	square	prime
denominator	tenth	cube
hundredth		triangular



## QUICK RECALL

During KS2 children work to develop quick recall of number facts which include:

- ◆ Multiplication facts for all times tables from 2 to 10 (P5)
- ◆ Division facts corresponding to tables of times 2 up to times 10 (P5)
- ◆ Fraction/decimal/percentage equivalences (P6/7)

e.g.  $\frac{1}{4} = 0.25\% = 25\%$   
 $\frac{2}{5} = 0.4 = 40\%$

- ◆ Square numbers up to  $12^2$

e.g.  $7^2 = 7 \times 7 = 49$  (P6/7)

- ◆ Cubes of numbers 1 - 5 and 10 (P6/7)

e.g.  $5^3 = 5 \times 5 \times 5 = 125$

Children also need to be able to use their multiplication to help them work out division facts with remainders:

e.g.  $27 \div 4$

Knowing  $4 \times 6 = 24$  helps them work out that  $27 \div 4 = 6$  rem 3

It is also important that children can use facts that are Quick Recall to work out new facts:

e.g.  $8 \times 3 = 24$  so  $80 \times 3 = 240$   
 $9 \times 7 = 63$  so  $90 \times 7 = 6300$   
 $6 \times 8 = 48$  so  $0.6 \times 8 = 4.8$

## ROUNDING AND ESTIMATING

- ◆ Using Inverse Operations

This strategy involves using the relationship between addition and subtraction and also the relationship between multiplication and division:

e.g.  $2.0 - 1.7 = 1.7 + 0 = 2.0$   
 $41 \div 7 = 7 \times 5 + 0 = 41$

So  $41 \div 7 = 5$  rem 6

It is important that children can use rounding appropriately in order to estimate the answer to a calculation.

- ◆ Round numbers to the nearest:

- 10
- 100
- 1000

to help make sensible estimates for calculations

- ◆ Round decimal numbers to the nearest whole number:

e.g. 17.6 " 18

- ◆ Examples of estimated calculations:

$4982 + 3017$  "  $5000 + 3000$  (8000)

$61 \times 88$  "  $60 \times 90$  (5400)

$12.9 \times 2.9$  "  $13 \times 3$  (39)

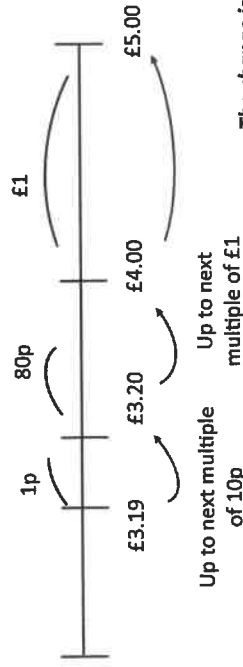
How many boxes of chocolates costing £3.99 can be bought with £20?

$£20 \div £4$  (5 boxes)

## OTHER IDEAS

- ◆ Look at timetables
    - Ask your child to work out how long the journey between two places will take.
    - Use a TV Guide and work out how long a programme lasts.
  - ◆ Shopping
    - Look at offers:
      - e.g. If packets of biscuits in a "3 for 2" offer costs £1.20 per packet how much will a packet actually cost if you use this offer?
    - Biscuits cost £1.80. The cost is reduced by 25%. How much do the biscuits cost.
- This strategy is also very useful in money calculations where finding change can be worked out by counting on:
- e.g. I buy a sandwich at £3.19. How much change do I get from £5?

$$\begin{array}{r} \boxed{1\text{p}} \\ \text{£3.19} + \quad = \quad \text{£3.20} \\ \boxed{80\text{p}} \\ \text{£3.20} + \quad = \quad \text{£4.00} \\ \boxed{£1} \\ \text{£4.00} + \quad = \quad \text{£5.00} \end{array}$$



## ◆ Target Number

- Choose 4 numbers e.g. 2 7 5 4  
Can you use these numbers to make a target number?  
e.g.  $24 = (7 + 5) \div 2 \times 4$
- Use mental strategies for keeping scores in a game of darts.

## ◆ Using Factors

When multiplying knowing how to double and halve numbers can be very useful to help with mental calculations:

e.g.  $33 \times 4$  is the same as  $33 \times 2 \times 2$  or  $66 \times 2 = 132$

Using multiples of 10 as a factor of one of the numbers is also useful.

$70 \times 9$  is the same as  $7 \times 10 \times 9$  or  $63 \times 10 = 630$

## ◆ Using Equivalence

This strategy involves knowing the most suitable form of fractions, decimals or percentages to use for a calculation:

e.g. 25% of £2.40 is the same as  $\frac{1}{4}$  of £2.40 which can be calculated by halving and halving again

$\frac{1}{2}$  of £2.40 = £1.20  $\frac{1}{2}$  of £1.20 = 60p so  $\frac{1}{4}$  of £2.40 is 60p

When working with percentages near the end of P6 and during P7 we encourage pupils to use mental strategies such as halving and dividing by 10:

e.g. to find:

10% " divide by 10

5% " divide by 10 and halve the answer

75% " halve the number (50%), halve it again (25%) and add the two answers together (50% + 25%)

90% " find 10% and subtract answer from original amount (100% - 10%)