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Primary

## Mental Maths

A guide for teachers  
and parents

## Mental Maths Matters!

**Get their attention!**  
**Get everyone involved!**  
**Make it competitive!**  
**Reward success!**  
**Practise for a short time only!**

Key Areas For Success in Mental Maths:

- Counting
- Place Value
- Calculating
- Tables Facts

## Counting

Counting is important so that children learn the order of numbers and where numbers are in relation to other numbers. Counting forwards and backwards sets a foundation for early addition and subtraction.

Counting in different steps sets a foundation for early multiplication and division.

Using a number track, number line or 100 square when counting, helps the children to see and recognise the number they are saying and also to see where that number appears in relation to the other numbers.

It's important for children to know how close 10 is to 7 and how far 10 is away from 97.

- Practise counting in ones forwards and backwards. Start from zero at first and then from different starting numbers.  
e.g. count forwards from 13  
count backwards from 56  
count backwards from 24  
count forwards from 5
- Practise counting forwards in twos, fives or tens from zero at first, then any number up to 20, then 30 or more (100 when counting in tens). Begin counting in threes and in fours when confident and quick.
- Practise counting backwards in twos or fives from numbers up to 50 and in tens from numbers up to 100. Again when confident and quick extend to over 100.

**If you don't count on counting, don't count on success!**

Counting on and counting back is also useful when children are adding or subtracting 10 or multiples of 10. Children gain a better understanding of what's happening to the numbers if at first they use a 100 square.

Using a 100 square, ask your child to add or subtract 10 to or from any number.

Can they tell you what's happening to the number each time? The ones (units) will stay the same and the tens will increase or decrease by 10.

After some practice children will be able to go down the columns to add 10 and up the columns to subtract 10.

**They need to find this out by counting along 10 at first.**

How can we use the 100 square to add 24 and 30?

Start at 24 and count on in tens (down the column) 34, 44, 54

What about 87 - 50?

Start at 87 and count back in tens (up the column) 77, 67, 57, 47, 37

Children can also use a number line to count on and back in multiples of 10.

The 100 square is also useful when learning to add or subtract 9,19,29... or 11,21,31...

Using a 100 square, ask your child to add or subtract 9 from different numbers.

Can they tell you what's happening to the numbers each time?

When adding 9 the tens increase by 10 and the ones (units) decrease 1. The opposite happens when subtracting 9.

Using the 100 square helps the child to recognise that adding or subtracting 9 is the same as adding or subtracting 10 and either taking off or adding on 1.

When children recognise this, they can then add or subtract 9 mentally because they can visualise what's happening.

Adding or subtracting 19, 29, 39 etc is similar in that children are adding or subtracting the nearest multiple of 10 and adjusting. They can see the pattern on the 100 square.

Similarly for adding and subtracting 11, 21, 31 etc.

Children need to see what's happening to the numbers before they can begin to visualise them mentally.

**The understanding of Place Value is vital to so many areas of numeracy!**

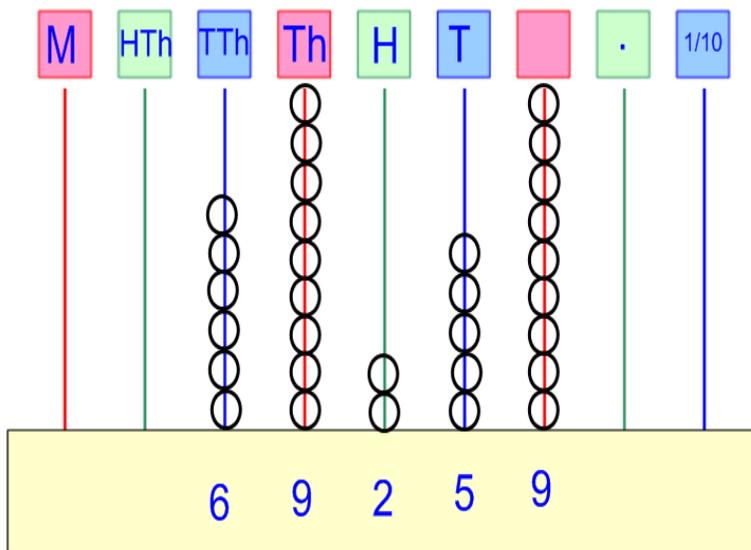
- subtraction by decomposition (exchanging tens)
- multiplying and dividing by 10 and 100
- decimals (measurement and money)
- negative numbers

Numbers can be said using their place value.

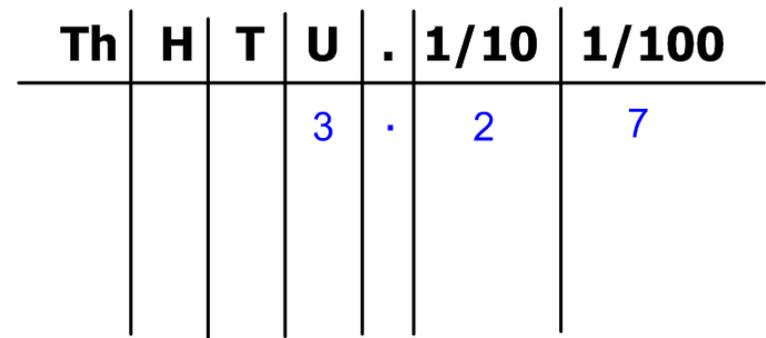
e.g.

- 45 is 4 tens (40) and 5 ones or units (5)
- 13 is 1 ten (10) and 3 ones or units (3)
- 259 is 2 hundreds (200), 5 tens (50) and 9 ones or units (9)
- 3.2 is 3 ones or units (3) and 2 tenths (2/10)

**Place value can be presented in different ways. The following pages demonstrate some of these.**



69,259 is 6 ten thousands (60,000), 9 thousands (9,000), 2 hundreds (200), 5 tens (50) and 9 ones or units (9)



3.27 is 3 ones or units (3), 2 tenths (2/10) and 7 hundredths (7/100)

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Place Value Chart									
1	2	3	4	5	6	7	8	9	😊
10	20	30	40	😊 50	60	70	80	90	
100	😊 200	300	400	500	600	700	800	900	
1 000	2 000	3 000	4 000	5 000	6 000	7 000	8 000	9 000	
10 000	20 000	30 000	40 000	50 000	60 000	70 000	80 000	90 000	
100 000	200 000	300 000	400 000	500 000	600 000	700 000	800 000	900 000	

259 is 2 hundreds (200), 5 tens (50) and 9 ones or units (9)

## Mental Calculation

Very early addition and subtraction begins with finding one more or one less than a number and then two more or two less than a number.

Children use the number track, number line or 100 square to do this.

- Ask the child to put their finger on a number on the number track, number line or 100 square, and then get them to point to the number that is:
  - one more than...
  - two more than...
  - one less than...
  - two less than...

Children can use this method of counting on and counting back to add and subtract other numbers.

At first children could be asked to use a number track to find examples such as:

- Make a hop of 5 spaces on the number track.  
Now hop 4 more.  
Start at 5 and count on 4.  
What number have you got to?
- Start at 10 on the number track and hop back 3.  
What number do you finish at?

Children then learn to read number sentences ( $15 + 3 =$ ) and use number lines and number squares to count on and count back to solve them.

$$15 + 3 =$$

Start at 15 and count on and mark on the number line 3 steps

0      5      10      15   18 20      25      30

The answer is 18.

$$15 + 3 = 18$$

$$18 - 6 =$$

Find 18 and mark it on the number line.

Start at 18 and count back 6

0      5      10 12   15   18 20      25      30

The answer is 12.

$$18 - 6 = 12$$

Some children will use number lines that will have **all** the numbers marked on.

Children will next begin to use empty number lines. An empty number line is simply a blank line where children can put the numbers on they are working with. It does not have to be drawn exactly with a ruler, just a rough line, as straight as possible. We can use an empty number line to work out

$$45 + 13 =$$

	$+10$	$+3$
0	45	55 58

Start by marking 45 on the number line.

Count on 10 and then count on 3.

The answer is 58.

$$45 + 13 = 58$$

We can use an empty number line for subtraction also.

$$22 - 7 =$$

	$-5$	$-2$
	15	20 22

Start by marking 22 on the number line.

It's easier for children to work around the multiples of 10 and 100 when calculating.

Encourage your child to count back to the nearest multiple of 10, which in this example is 20.

How many have you counted back? 2

How many more do you need to count back? 5.

Count back 5.

The answer is 15.

$$22 - 7 = 15$$

Another method of adding is to partition the numbers into parts, add the parts and then recombine to find the total.

$$45 + 13 =$$

Partition the numbers into tens and ones:

$$40 + 5 \quad + \quad 10 + 3$$

Add the tens together:

$$40 + 10 = 50$$

Add the ones together:

$$5 + 3 = 8$$

Recombine the numbers to give the total:

$$50 + 8 = 58$$

When calculating mentally addition and subtraction sentences are always presented **HORIZONTALLY**:

$$45 + 13 =$$

and **NOT** vertically

$$\begin{array}{r} 45 \\ + 13 \\ \hline \end{array}$$

## Tables Facts

Early multiplication skills begin with counting in different steps.

- Practise counting in twos and tens and then in fives and in threes.

Learning and recalling multiplication tables then begins. Children are still encouraged to count in twos, fives and tens, and also begin to count in threes and fours.

A strategy to help children learn multiplication tables facts from counting is to say or show the child a multiplication fact such as:

$$6 \times 2 =$$

Ask the child to put up six fingers and count across the six fingers in twos.

Six lots of 2 is 12

Also with  $7 \times 10 =$

Ask the child to put up seven fingers and count across the fingers in tens.

Seven lots of 10 is 70

It is important for children to know that  $10 \times 7$  will give the same answer as  $7 \times 10$ .

They can work out either of them in the same way by putting up 7 fingers as before and counting in tens.

Children are expected to learn multiplication facts in the two, fives and ten times tables first, before progressing to other tables when they are confident and quick.

Once children have had practice in finding multiplication facts using their fingers, we then want them to be able to remember these facts and recall them instantly.

Here are some activities to help children remember and recall multiplication facts.

- Chanting tables in different ways - as a rap, singing, different voices (deep, squeaky, whisper). Click fingers, clap, tap your toes, tap your knees to keep pace with your chanting.
- Having a fact of the day or fact of the week, e.g. all week ask the same fact(s). What's 5 times 2?  
At breakfast ask, What's 5 times 2?  
At bedtime ask, What's 5 times 2?  
At any time that's convenient ask What's 5 times 2?
- Make up actions to go with each tables fact. Make up tables aerobics routines - a different movement for each tables fact.
- Try and beat the calculator - can they say a tables fact before you can work it out on the calculator.

**Make it competitive!**  
**Reward success!**  
**Practise for a short time only!**

As with addition and subtraction, multiplication facts are always written **HORIZONTALLY**.