

The background of the slide is a light orange grid. Overlaid on the grid are several faint, repeating mathematical problems in a light orange color. These include the addition problem $2 + 3 = 5$, the subtraction problem $5 - 4 = 1$, and the multiplication problem $2 \times 3 = 6$.

Number Knowledge Parent Workshop Lower Key Stage 2

Thursday 3rd March 2016

Aims for this session

- Gain a greater understanding of what 'Number knowledge' is and what children are expected to know and by when;
- Make links to the Maths Update from the Autumn Term, the new NC, the school website and the calculation policy;
- Leave with a bank of ideas, activities and games which can be used and adapted at home and when out and about;
- Be given the opportunity to share ideas and ask questions.

Number Knowledge

Number knowledge incorporates the key concepts which children need to know, as they underpin most areas of Mathematics!

These include:

- Number bonds to 10, 20, 100 etc.;
- Counting in multiples- forwards and backwards;
- Times Tables and corresponding division facts;
- Place value- the value of each digit, \times and \div by 10 and 100.

Number bonds

Firstly, the children need to be able to recall the number needed to make the complement to 10, as base 10 is used in mental and written calculations.

In terms of the new NC, it states that by the end of ...

- **Year 2-** recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- **Year 3-** add and subtract numbers mentally, including:
 - a three-digit number and ones
 - a three-digit number and tens
 - a three-digit number and hundreds

Counting in multiples

Children need to be able to count forwards and backwards from any starting point, in jumps of a given number.

In terms of the new NC, it states that by the end of ...

- **Year 2-** count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward
- **Year 3-** count from 0 in multiples of 4, 8, 50 and 100
- **Year 4-** count in multiples of 6, 7, 9, 25 and 1000
- count backwards through zero to include negative numbers
- **Year 5-** count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
- count forwards and backwards with positive and negative whole numbers, including through zero

Times Tables

Children need to be able to know and recall at speed, all of the times tables and associated division facts, as these are fundamental to all multiplication and division work!

In terms of the new NC, it states that by the end of ...

- **Year 2**- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables
- **Year 3**- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- **Year 4**- recall multiplication and division facts for multiplication tables up to 12×12

Place Value

Children need to be able to recognise the value of each digit and what it is worth. This knowledge will assist them, in understanding the more formal, written calculation methods.

In terms of the new NC, it states that by the end of ...

- **Year 2-** recognise the place value of each digit in a two-digit number (tens, ones)
- compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs
- **Year 3-** recognise the place value of each digit in a three-digit number (hundreds, tens, ones)
- compare and order numbers up to 1000
- **Year 4-** recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
- order and compare numbers beyond 1000

Activities

- As these concepts are mainly facts that the children need to learn and be able to recall at speed, then the rote learning of them, needs to be made a bit more fun, interesting and therefore engaging!
- There are a variety of activities and games which you can use and do to help them learn them. Plus, the majority of these can be adapted and extended, to any concept or area of maths!

Reciting and chanting activities

- Counting up or down in multiples from a given number- could do to a set rhythm or tune
- There are several times table songs on the Internet/CDs readily available
- Repeat counting/chanting but say alternately with a partner
- Quick fire questions- ask fact and child responds with answer, could gain a point if they get it correct

Fizz Buzz- chanting activity

- Fizz Buzz- with a partner say consecutive numbers and if the number is in the given times table, then say Buzz.
- E.g. if multiples of 3 then... 1, 2, Buzz, 4, 5, Buzz, 7, 8, Buzz, 10, 11, Buzz ...
- Repeat with two different times tables. For example with multiples of 3 say Buzz and Fizz for multiples of 5 and FizzBuzz for multiples of both 3 and 5.
- E.g. 1, 2, Buzz, 4, Fizz, Buzz, 7, 8, Fizz, Buzz, 11, Buzz, 13, 14, Fizz Buzz, 16, 17, Fizz, 19, Buzz ...

Ping Pong- chanting activities

- Ping Pong- You need one person being the caller and then another child/children being the responder(s)
- Decide on a times table, for example, the 4 x table. The caller would call out a number, such as 3, and the child would respond with the product (answer to the multiplication) so 12 as $3 \times 4 = 12$. If they said 7, then their partner would reply with 28
- If the caller said Ping, then their partner would respond with Pong. Similarly, if they said Pong, then the responder would reply with Ping or if they called Ping Pong, then they would respond with Pong Ping.
- The caller would keep calling out numbers, with Ping, Pong and Ping Pong mixed in, for a specified time

Competitive games

- Completing blank Times table grids or partially filled ones (see blue handout) Time them and then see if they can beat their previous time
- Shoot the sheriff- 2 children stand back to back and adult/child calls out the multiplication fact or question. They then spin round and pretend to point/shoot at the person and say the answer. If a bigger group, then winner stays on and they want to be the 'last child standing' but if just between 2, then point goes to the quickest person to answer correctly

Bingo- competitive games

- Bingo- children split paper or whiteboard into a grid of 6 or 9 (see yellow game board)
- Choose times table to focus on- say $\times 5$
- They write a different multiple of 5 into each rectangle on their grid, up to $12 \times$ the number, so 60
- Adult/caller calls out a number from 1-12 and if the child has the product (answer when 2 numbers are multiplied together) on their game board, then they cross it out
- In class, I tend to do first to get all 4 corners, top row, bottom row and then a full house!
- Repeat with a different times table or by caller giving the product and the child having the numbers 1-12 written on their grids
- This can also be used for number bonds and different properties of number, such as squared numbers

Card games- competitive games

- There are a variety of games you can play with a normal pack of playing cards:
- Snap- decide on the chosen times table and when 2 cards are placed on top of each other which are a multiple of that number then say snap
- Snap- with number bonds to 10 or 20, so say snap when the 2 cards add up to make 10, such as 8 and 2
- Memory games- place the cards out in rows and take it in turns to reveal 2 cards. If they add up to make 10 or 20, then keep them, but if not then turn back over.
- Memory game- choose a times table to focus on and if the 2 cards you pick, when multiplied together, give a multiple of the given x table, then keep them. But if not, then turn back over.

Dice games- competitive games

There are a variety of games you can play with a normal 6 sided dice or a 10 sided dice:

- Product- they could roll the dice twice and then multiply the 2 numbers together and say the answer
- 4 in a row- they could roll the dice twice and then multiply the 2 numbers, but this time they cover up or cross out the product, on their times table grid. The winner is the first person to get 4 numbers covered up in a row
- Total- roll the dice once and then call out the complement needed to make the target number- so to 10 or 20
- Target number- roll the dice twice, with the first number being the tens (T) and the second number the units (U) and then say the complement number needed to make the target number. This could be to 50, 100 or any given number

Target wheel- competitive games

- Using a target wheel- decide on the times table to focus on and write that in the middle. The second ring has the numbers 1-12 and they write the product of the x table in the 3rd ring (See green hand out)
- In class, I get them to raise their hand once they have finished and they get given their finishing number with 1 being the first person to finish. Once all have finished then first to finish calls out all the answers in order and if they have them all correct, they keep their score but for any errors, they gain a point. Repeat with a different x table and each time they keep their score. The winner is the person with the lowest score at the end
- Can be repeated with number bonds using the blank target board/dart board on the revers of the sheet

When out and about ...

- Relate these key concepts- number bonds, multiples, times tables and general place value at every opportunity, so the children can relate it to real life situations
- How much would it cost, if I brought 4 apples/5 bars of chocolate etc.?
- I need to buy enough party bags for 18 children and they come in packs of 6- how many will I need to buy?
- If I wanted to buy 2 footballs and 3 pens, then how much money would I need? How much change would I get from ...?

Online ...

- There are lots of activities/interactive games on the school website, under 'Extended Learning'- 'Maths Website Links', 'Key Skills & Mental Maths'
[http://wendover.eschools.co.uk/website/key_skills_mental_maths - number bonds and times tables/158341](http://wendover.eschools.co.uk/website/key_skills_mental_maths_-_number_bonds_and_times_tables/158341) as well as 'Ordering and Sequencing Numbers' and 'Number and Place Value'
- In addition, there are a variety of other games you can encourage your child/children to play online, which will help them to improve the rapid recall of these number facts
- The main thing is to hook them in, by linking it to something they are interested in and to make it fun and exciting, as then they won't realise they are learning!!

Any other ideas ...

- There are lots of time table colouring sheets and activity books, available to download online or purchase from shops
- Do you have any other ideas of ways to learn these key facts or games/activities which you use?

To finish ...

- Remember to make the learning of these key facts/concepts fun and exciting and try to drop it in, when you can!
- Any questions?
- Please can you take a minute, to complete my review sheet- outline any positives from the workshop, even better if ... as well as any ideas for the next Maths workshop in the Summer Term- such as word problems and how to break them down and solve them?