

Hi everyone. We hope that your third school term has started well.
Derek, Gill and Joe have all spent time out of the country since the last newsletter so haven't been unable to follow up on some of our planned contributors. Hopefully by next month we will have contributions from a number of others. In the meantime Gill has put together some information about the English and Welsh Numeracy Strategy.

## $\operatorname{IN} \mathcal{N} \mathcal{E} X$

- What's new on nzmaths.co.nz
- Statistics on the site
- Diary dates
- News from the UK
- The July Solution
- Problem of the month
$\mathcal{W H A T} \mathcal{S} \mathcal{N E W} O \mathcal{N} \mathcal{T H E} \mathcal{N}(Z \mathcal{M A T H S}$ SITE $\mathcal{T H I S} \mathcal{M O N T H}$ ?
$\mathcal{N u m b e r}$ Strand
As promised we have added more material to the two threads or aspects of the number site.

1. Number Facts

- Pocket facts
- Don't knows


## 2. Operating with Numbers

- Near doubles
- Make a ten
- The numbers get larger

Links
We have added links to another ten websites. Four of these are designed for use by students and the remaining six have lesson or activity ideas for teachers. The following table provides an overview of the links added.

| Site Link | Level | Strand(s) | Summary |
| :---: | :---: | :---: | :---: |
| http://balancedassessmen t.gse.harvard.edu/search. html | 1-4 | Number, Algebra \& Geometry | A searchable library of 300 pen and paper assessment tasks. Tasks are original, clearly worded and written in contexts students will be familiar with. |
| http://www.ex.ac.uk/cim t/data/datalist.htm | 3-4 | Statistics | This site provides sets of raw data suitable for students to use in data display and analysis. A number of different data sets are listed, with emphasis on Athletic World Records and Olympic results. |
| www.funwithspot.com | 1 | Student | This site is the home page of popular children's book character Spot the Dog. It includes several interactive mathematics games for young children that focus on reading, writing and sequencing numbers to 10 . |
| www.footee.net | 2-3 | Student | Students compete in an on-line interactive football league, completing maths, science and English educational tasks to enable them to buy better players for their team. Short animated movies explain the concepts behind the tasks. The site includes number, statistics and algebra. |
| http://www.bbc.co.uk/ed ucation/desertchallenge/i ndex.shtml | 4 | Student | Students navigate their way across a desert to retrieve treasure. Skills covered include measuring angles and distances and using decimal notation and ratios. The site includes number, measurement and geometry. |
| http://www.primaryresou rces.co.uk/maths/maths.h tm | 2-3 | Number, Measurement \& Statistics | A variety of lesson plans, worksheets and activity ideas for primary school teachers. The maths activities include a very useful series of class games, each based on a different group of number facts. |
| http://www.bbc.co.uk/ed ucation/dynamo/den/den. htm | 1-2 | Student | On-line, interactive, numeracy games, ideal for independent use. Two useful games involve money, using UK currency instead of dollars and cents. The site includes number, and measurement. |
| http://www.ginn.co.uk/m aths/register/index.htm | 1-2 | Number \& Statistics | A range of activity ideas. Most are suitable for using in a group situation, either as quick starters to develop number skills or as a more structured part of a teaching session. |
| http://www.mathgym.co m.au/htdocs/mathgym.ht m | 3-8 | Student | This site contains sets of problems to solve, structured as a tutorial with hints and strategies to use. It aims to train students of years $7-13$ to be successful problem solvers. A small fee is payable to view all problem sets. The site includes number and problem solving. |


| $\underline{\text { http://www.ex.ac.uk/cim }}$ | $3-6$ | Number, <br> Problem <br> solving $\&$ <br> logic | A variety of resources including games and puzzles <br> to develop logic and number skills. Useful basics to <br> print off such as graph paper of different sizes and <br> number lines. |
| :--- | :--- | :--- | :--- |

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There are hundreds of possible ways to look at the site usage. The most common is to look at the overall site statistics. This includes groupings such as:

- Total sessions served: 16460 - This is how many users connected to the site this month.
- Total hits made on server: 753967 - this is the number of parts of a page downloaded.
- Total page view hits: 121264 - This is the total number of web pages viewed this month.
- Average page views per session: 7.37 - So on average each user looks at 7.37 pages.

Another way to view the site statistics is to select an area of interest and look at in more depth. For example we may wish to know at which point the majority of users are entering the site. The graph shows the five most common points of entry into the NZMaths web site. The vast majority of people still access via the homepage (www.nzmaths.co.nz) shown in the key below as " $/ "$. However, there is a considerable number going directly to their areas of interest most notable the number area of the site shown in the key below as "/number/".


13 August to 17 August: Mathematics Week (information can be found on www.nzamt.org.nz ).
$\mathcal{N E W S} \mathcal{F R O} \mathcal{M} \mathcal{T H E} \mathcal{U K}$
Gill spent time at the Open University (UK) in Milton Keynes. As part of the visit she worked with members of the maths education department. Of particular interest wee the discussion around England's National Numeracy Strategy. What follows is just a small taste of what Gill gleaned. If you want to fin out more about the strategy follow the website link referenced below.
$\mathcal{A}$ Brief Overview
The National Numeracy Strategy was launched in September 1999, an initiative in England and Wales to raise standards in mathematic s. AT the core of the strategy is the Numeracy Framework that helps teachers raise numeracy standards nationwide by providing them with a set of yearly teaching programmes, key objectives and a planning grid. The Numeracy Framework illustrates the intended range and balance of work in primary mathematics to make sure that pupils become properly numerate. It is intended mainly for day-to-day reference by class teachers and has tested extensively and successfully in schools of different types and sizes. Its purpose is to help primary and middle schools, and special schools with primary-age pupils, to set appropriately high expectations for their pupils and understand how pupils should progress through the primary years.

The $\mathcal{N a t i o n a l} \mathcal{N}$ umeracy Strategy
(source: www.standards.dfes.gov.uk/numeracy)

## 1. What is the government's National Numeracy target?

The National Numeracy target is that by 2002, $75 \%$ of all 11 year olds will reach the standard expected for their age in Mathematics, i.e. level 4 in the Key Stage 2 National Curriculum tests.

## 2. What happens in the daily mathematics lesson?

Most schools now teach a daily mathematics lesson which uses a three-part structure, starting with oral work and mental calculation using whole class teaching. The main part of the lesson can be used for teaching new topics or consolidating previous work, making clear what will be learned and how long it will take. Finally, the plenary plays an important role, allowing teachers to draw together what has been learned.

## 3. What are the characteristics of a good daily mathematics lesson?

Lessons focus on whole class teaching with a strong emphasis on mental calculation. Good, interactive, whole class teaching is characterised by genuine communication about mathematics. Pupils are given the opportunity to explain their answers and suggest new ways of tackling problems.

## 4. Why is the National Numeracy Strategy (NNS) needed?

In 1997, the government decided that if standards in Numeracy are to rise among our primaryaged pupils, the development of a national strategy to bring about rapid and sustained improvements was needed. Previous performance figures show that standards were unacceptably low. In 1995, level 4 Mathematics (the expected standard for 11 year olds) was achieved by only $45 \%$. These figures highlight the urgent need for change.

Numeracy is a vital skill which every child must learn properly. Without having the basic foundations laid at an early age, they will struggle in later life to have full access to other areas of learning, to find a job or even to cope with everyday tasks.

## 5. Do all schools, even those doing very well already, have to implement the daily mathematics lesson?

The Strategy is not statutory but it was expected that the vast majority of schools would implement the daily mathematics lesson. In fact almost all primary and special schools have done so. The Strategy has been built on the most successful practice in primary schools and is designed to help teachers extend and improve their skills. It is backed by substantial resources and assumes an entitlement to a programme of professional development for teachers.

If a school chooses not to participate in the NNS there should be close consultation with its LEA which should be confident that the school's approach ensures effective teaching of Numeracy in terms of planning, the range of texts covered, continuity, teaching strategies, management and monitoring.

## 6. What should numerate primary pupils be able to do?

Numerate pupils are deal with numbers and measures confidently and with competence. They understand the number system. They have a repertoire of computational skills and an inclination and ability to solve number problems in a variety of contexts. They also possess a practical understanding of the ways in which information is gathered by counting and measuring, and is presented in graphs, diagrams, charts and tables.

## 7. What support is available for schools?

## Funding

The National Numeracy Strategy (NNS) has brought with it a substantial amount of additional funding for primary schools through the Standards Fund. This has included specific grants for the purchase of books and equipment, for professional development of teachers and teaching assistants and for the development and running of Summer Numeracy Schools.

A comprehensive package of support and training has been made available for the NNS in primary schools each year since 1998. In 2000-2001, this totalled $£ 100 \mathrm{~m}$. Between 1999 and 2002 the government expects to make available a total of $£ 350$ million to recruit and train the equivalent of 20,000 new teaching assistants and to support further training opportunities for more experienced assistants.

## Professional Development

The NNS guarantees every primary teacher the opportunity to learn about the most effective methods to teach mathematics. Introductory training for all head teachers, mathematics coordinators, special needs coordinators and governors was provided in 1999. Distance learning materials have been provided for every school to support training days when all the staff study together. 375 local Numeracy consultants organise programmes of training and provide direct support for primary schools. In each local authority, leading mathematics teachers have also been appointed and trained to offer guidance and support to colleagues, to help run training sessions and to extend the impact of numeracy consultants in local schools.

## Intensive support

Some schools need greater support. This may be because they are serving areas of social disadvantage where pupils' attainment is low, or because their performance is poor in relation to other schools in similar circumstances. The proportion of schools needing greater support is estimated to be between $40-50 \%$. Therefore, schools are selected by their LEA to be either an intensive or non-intensive school. For one year intensive schools follow a more structured programme of training and in-school support and are entitled to more of the Numeracy consultants' time. So far, over $25 \%$ of schools have received intensive Numeracy support.

## 8. How much progress has been made so far?

The implementation of the National Numeracy Strategy (NNS) began in primary schools in September 1999. It is already beginning to have an impact on standards. In the 2000 Key Stage tests $72 \%$ of 11 year olds reached the expected level for their age group - an improvement of $3 \%$ points on last year and $13 \%$ points since 1998 .

At Key Stage 1, the percentage of pupils reaching Level 2 and above in mathematics rose by $3 \%$ to $90 \%$. Performance was even more encouraging at the higher Level 2B and above, where there was a $9 \%$ increase to $73 \%$.

This is a significant step towards the government's target of $75 \%$ by 2002. The majority of primary schools has welcomed and implemented the Strategy. In a recent independent telephone survey of over 500 primary head teachers, $97 \%$ said that they supported the principles of the NNS. $90 \%$ reported that they had received good support from their LEA in implementing the Strategy.

## 9. What are the priorities for NNS in 2000-2001?

For teachers, the priorities for the NNS in 2000-2001 are to shift the focus in demonstration lessons to the main part and plenary and providing training to address gaps in their subject knowledge. In particular:

- the progression from mental methods to increasingly more formal approaches to standard written methods;
- problem solving techniques and skills;
- fractions, decimals, percentages, ratio and proportion;
- how and when to use calculators;
- establishing and supporting Springboard 5.

Priorities for heads and co-ordinators are:

- developing skills in observing and evaluating teaching with feedback focusing on quality of teaching;
- improving use of key objectives and performance information to set targets;
- increasing the effectiveness of demonstration lessons.

THE g ULy SOLUTION - "The Census Takers Problem"

Last month we asked the following question.
A census taker approaches a house and asks the woman who answers the door "How many children do you have, and what are their ages?" Woman: "I have three children, the product of their ages are 36, the sum of their ages are equal to the address of the house next door." The census taker walks next door, comes back and says "I need more information."
The woman replies, "I have to go, my oldest child is sleeping upstairs." Census taker: "Thank you, I have everything I need."
Question: What are the ages of each of the three children?
We received the winning answer from Leigh who will receive a petrol voucher for his entry. Well done Leigh and thank you for your contribution.

The ages of each of the three children are 2,2 and 9. I worked this out by finding the three factors of 36 that added up to the same number $(1+6+6=13$ and $2+2+9=13)$ I then knew that the answer was 2,2,9 as the oldest child was sleeping upstairs and the other combination of ages the oldest were twins.
$\mathcal{P R O \mathcal { B L E M }} O \mathcal{F} \mathcal{T H E} \mathcal{M O} \mathcal{N} \mathcal{I H}$
Suppose that you wrote all the numbers out in order. 1234567891011121314 ... Here the eleventh digit is 0 . What is the 2001st digit? And just so you didn't stay up all night and write them all out, can you give a reason why the digit you say is the 2001st is really?

Each month we give a petrol voucher to one of the correct entries and as we haven't been inundated with replies, if you enter you are in with a good chance. Please send your solutions to derek@nzmaths.co.nz and remember to include a postal address so that we can send the voucher if you are the winner.

All the best for your teaching.

Gill, $\operatorname{Derek}$ and $\operatorname{Ioo}$.

