Parents as Partners

Dear Parents,

This leaflet aims to give you guidance on what your child is doing in Mental Mathematics at school and ways in which you can support their learning.

At TEMIS we focus on developing students' mental methods and understanding before teaching written algorithms. Written algorithms should be viewed simply as an efficient way to record processes of which students already have a thorough understanding, rather than a rote method. This approach is supported by research conducted in a range of countries. See www.temis.iea.ac.pg for more information.

The daily Mathematics lesson in all grades involves a short mental starter, giving students the opportunity to develop and practise mental skills. Often the mental starter will involve games and discussion, with recording done informally on mini-whiteboards.

The ideas within this leaflet will help support the work which is already occurring in school. We recommend that you try to keep the sessions short (no more than 10 minutes) and most importantly FUN!

Should you have any questions, please don't hesitate to contact your child's teacher.

The TEMIS Team

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Grade 5

- Multiply and divide any positive integer up to 10 000 by 10 or 100
- Count in steps of 25 to 1000 and back
- Count in decimal steps
- Round a number with one or two decimal places to the nearest whole number
- Derive decimals that total 1 or 10 from known facts
- Find differences by counting up eg 8006-2993
- Partition in 100s, 10s and units and add the most significant digits first
- Identify near doubles eg 1.5 + 1.6
- Find all pairs of factors of numbers to 100
- Derive division facts corresponding to tables
- To multiply by 25 multiply by 100 and divide by 4
- Use factors eg 8x12 is the same as 8x4x3
- Develop 12 times tables from the 10s and 2s
- Partition eg 47 x 6 = 40x6 + 7x6
- Express half, quarter, three quarters tenths and hundredths as percentages
- Convert larger to smaller units km to m, m to cm or mm; kg to g, L to ml
- Use 24 hour clock
- Sort shapes according to a range of properties
- Explain how a problem was solved
- Choose the correct operation to use in a range of problems
- Know squares of numbers to at least 10x10
- Know all multiplication facts to 10

Grade 6

- Multiply and divide decimals mentally by 10 or 100 and integers by 1000
- Consolidate rounding to the nearest 10, 100 or 1000
- Round decimals to the nearest whole number, tenth, 1 or 2 decimal places
- Consolidate all previous strategies including:
- Use the relationship between addition and subtraction
- Can add and subtract simple decimals (one and two places)
- Recognise prime numbers to 20
- Find prime factors of numbers to 100
- Derive division facts corresponding to tables.
- Double one number and halve the other number eg 25x8 = 50x4
- Use factors eg 18 x 35 = 35 x 6 x3
- Partition with whole numbers and decimals
- Round decimals to the nearest whole number, tenth, 1 or 2 decimal places
- Recognise equivalence between decimal and fraction forms of one half, one quarter, three quarters, one eighth, tenths, hundredths and thousandths.
- Calculate simple percentages of a quantity
- Solve a problem by extracting and interpreting data in table, graphs, charts
- Classify 2D and 3D shapes according to their properties – vertices, edges, faces, angles
- Read and plot co-ordinates in all 4 quadrants

Activities which improve mathematical thinking

- Card games. Most card games require collecting totals, matching or remembering numbers that have gone before. They are excellent practice for mental arithmetic.

- Dice games.

- Board games. Again these are excellent, the buying of items or giving of money often helps with understanding larger amounts, up to millions! There are also many simple two-player games of strategy, which involve logical thinking and working out a winning strategy – all good maths!!

- Battleships' is a fun way to use graphs.

- Talk about pocket money with your child. Help him/her add it up week by week, and work out whether s/he can afford a particular toy or treat. Shop using money and calculate change.

- Think about time. Look at clocks, both digital and analogue. Estimate how long a certain activity will take to do and see if you are right! Work out how long it is until the next mealtime.

- Think about calendars and dates too. Make a timeline that includes the birthdays of each member of the family and work out how far apart each one is. Use different units: months, weeks and days, even hours, minutes and seconds. Add other important events, such as a family holiday, and encourage your child to count down to the big day.

- Cooking is great for helping your child get to know simple weights and measures. It is a good way to introduce the idea of ratios and proportions, too. Bear in mind that your child will be learning the metric system at school, so try to measure amounts in grams and kilograms.

Remember ...

Mathematical Talk

Throughout all grades, students are encouraged to learn and use the language of mathematics. It should be remembered that many words have a different meaning in mathematics to every day situations; eg odd, take away. Asking children to explain their ideas and talk about maths has many benefits:

- Helps students to develop their understanding and clarify their thoughts
- Encourages reflection and recall
- Builds students' confidence
- Develops a sense of ownership
- Reveals how much children understand

Attitude Counts

Your feelings will have an impact on how your child thinks about mathematics and themselves as mathematicians. Positive attitudes about maths are important for your child's success.

Problems can be solved in different ways

Some problems may have only one answer but there are often many different ways to get to it. Your child may solve a problem differently to you. For example
12 + 14 can be solved by saying 12 + 4 = 16 and 10 more is 26 or by saying 12 + 10 = 22 and 4 more is 26. Both methods reach the correct answer. Ask your child to explain their method. Be prepared to share your method in a positive way.

Wrong answers can help

Wrong answers help show you which ideas your child is not sure of. Talking through these problems give you the opportunity to explain the ideas or practise the skill.

Mental Maths

A guide for
Upper Primary
Parents
(Grades 5 and 6)