100 ways to make maths homework easier

The following are examples of activities promoted by the NSW Department of Education and Communities for helping children to reinforce their understanding of maths.

You may need to make a judgement about whether individual activities are appropriate for your child's level of development. If you need additional guidance on the developmental appropriateness of any activity, consult with your child's teacher or refer to the Syllabus Stage Statements.

Suggested Activities to Enjoy With Your Child

Working Mathematically
Working Mathematically includes: asking questions; using a range of strategies to solve problems; using appropriate language and symbols to describe and represent mathematical ideas; exploring relationships as well as checking and justifying solutions; and reflecting on learning and making connections between mathematical ideas. The following activities will help to encourage development of these important processes.

•**Discuss how mathematics is used every day**. The applications of mathematics and technology are numerous. In the kitchen, for example, ingredients are measured and digital timers and clocks are used on microwave ovens. Supermarkets now list the price of goods per 100 grams and discounts of 5% and 10% are offered to loyal customers. Why not encourage your children to work out which deal offers the best value? These everyday situations offer great opportunities to talk about and explain mathematical concepts with your kids!

•**Play games together** (eg cards, board games, computer games), and discuss how mathematical ideas can be used to play, as well as to develop successful strategies. Don't forget, games involving money and time are great way to build skills.

•**Encourage your child to try different strategies when solving everyday problems**. Encourage your child to find all possible solutions, as many problems have more than one answer. They should also be encouraged to justify their solutions. Many internet sites have suitable problems and investigations for primary school students. Another source of mathematical problems is children's magazines and puzzle books.

•**Provide opportunities for your child to use technology to investigate mathematical ideas.** Apps and websites offer a new world of maths discovery for kids. They're a terrific incentive to reward work that has been well done, too!

•**Discuss the mathematics your child is learning at school**. Ask your children to explain what they have learnt in mathematics lessons this week, and how they can use these ideas. If they express concern about what they are doing, this gives you an opportunity to look at their work and help them if appropriate, or to encourage them to seek extra guidance from their teacher.

•**Watch television programs about mathematics with your child.** There are some great junior maths and science shows on TV these days. Discuss the contents of the programs and how it relates to the mathematics taught at school.

Number

Number includes: counting forward and backwards and understanding place value; using the four operations (addition, subtraction, multiplication and division); interpreting and doing simple calculations with fractions, decimals and percentages; and understanding the language used in chance. The following activities will help to encourage the development of Number concepts.

•**Count with your child whenever possible.** Play counting games while travelling in the car and sing counting rhymes. Remember to count forward and backwards starting from different numbers.

•**Look for numbers in your local area** (eg house numbers, prices, speed signs, Roman numerals) and discuss how the numbers are used.

•**Play board games as a family** and discuss the chance of throwing a particular number on a die in order to win the game.

•**Encourage your child to use money**. Support your child's efforts to calculate change. Help them to work out their canteen order so that they will get the best value for their money. Let them handle coins and notes when you are purchase items and encourage them to check that the change they've been given is correct.

•**Play oral games** such as Race to 10. Starting at 0 take turns and add either 1 or 2 to the last number said. The player who gets to 10 first wins.

Eg	'A' says	'B' says
	1	3
	4	6
	7	8
	10	

'A' wins this game. Note the game has a winning strategy. Discuss mental strategies for working these out quickly. You can play to any number depending on your child's ability.

•**Play number plates games in the car**. When your car pulls up behind the car in front, you might have a competition to see how many different answers children can make using the numbers from the car number plate. For example, if the number plate is ABC 152 the children might say

1 x 5 + 2 = 7, or 1 + 5 + 2 = 8, or (1 + 5) x 2 = 12.

•**Teach your kids how to play cards.** A pack of playing cards can be used to play mathematical games that involve the recall of number facts. For example, rummy teaches chidlren about number sequences and '21' reinforces addition skills. Another idea is Addition, Subtraction or Multiplication Snap. This involves turning over two cards from the top of the pack with the first person to say the sum/difference/product of the cards scoring one point. The game continues until all of the cards in the pack have been used. The winner is the player who has scored the most points.

The game can be made easier by including only some numbers from the pack (eg 2, 3, 4, 5, and a picture card to represent 10), or it can be made more challenging by turning over more than two cards.

• **Develop mental computation strategies** with your child by doing calculations in your head. Share your strategies and think of different ways of calculating the answer. For example, Use the SPLIT STRATEGY to calculate 75 – 32, you can do 75 – 30 = 45 and then 45 – 2 = 43.

Another possibility is to do 70 – 30 = 40 and then 5 – 2 = 3, so the answer is 40 + 3 = 43.

Now consider 75 – 38.
Using the COMPENSATION STRATEGY this can be done as 75 – 40 = 35 and then 35 + 2 = 37.

Another possibility is 75 – 30 = 45, 45 – 5 = 40, and then 40 – 3 = 37.

There are often many different ways to do calculations mentally. Children need to experience different ways so that they can develop a range of mental strategies.

•**Discuss fractions as part of a whole when cutting up fruit or a cake.**
As your kids 'How many pieces will we need? … they might answer 'Four" ...Using mathematical terminology you can reply "Therefore each piece should be one quarter." If your child plays sport, discuss fractions of the playing surface eg two halves of a soccer field, three thirds of a netball court.

•**Discuss fractions as part of a collection of objects**.
For example, share a packet of sweets between 4 children. If there are 20 sweets, then they will each receive one quarter, which is the same as five twentieths of the packet of sweets.

•**Let your child help plan a family holiday.** They can plan the route, determine the overall distance, suggest the number of kilometres to drive each day, and work out the amount of time it will take. They could help calculate an appropriate budget for the holiday to include expenses like souvenirs, accommodation, meals and petrol. If you have a computer, they could record the expenses on a spreadsheet.

•Ask your older children to work out how much longer you will be travelling if you are driving at 80 kilometres per hour with 130 kilometres to go. Ask your kids to explain how they solved the problem. Share with your children the methods you used to solve this problem.

•**Visit local shops and discuss prices for similar products**. Determine the best value. Estimate weekly shopping costs. You can also use on-line supermarket sites to encourage these skills.

•**Discuss the use of percentages in the media**. Advertising often refers to deals of 10% off or "half price today only" encourage your kids to work out how much they would pay for a product if they applied these kinds of discounts.

•**Discuss the use of the language associated with chance in everyday situations** eg 'no chance', 'fifty fifty', 'pigs might fly', 'it's a possibility'...what do these things mean" make sure your kids know!

Patterns and Algebra

Patterns and Algebra includes the investigation of repeating patterns, number patterns, and relationships between numbers.

In their school classrooms, tudents are encouraged to continue patterns, to find a missing element in a pattern, to describe how a pattern has been created and to create their own patterns.

Number relationships involve writing number sentences that connect number facts.

For example, if a student knows that 2 + 4 = 6, then they should also know that 4 + 2 = 6 and also that 6 – 4 = 2 and 6 – 2 = 4.

The same relationships can be created for multiplication and division facts.

Students also learn to find missing values in number sentences e.g. find the missing number in 50 – ■ = 31.

The following activities will help to develop your children's understanding of concepts in Patterns and Algebra.

- **Practice repeating patterns with your children.** Repeating patterns are explored in Early Stage 1 (K – Year 1) and can be created using numbers, letters, shapes, sounds and actions. For example, encourage your child to see patterns like:

  A, B, C, A, B, C …
  1, 2, 1, 2 …
  ■, ■, ●, ■, ■, ●, …
  Clap hands, touch shoulders, clap hands, touch shoulders, and so on.

Number patterns can increase or decrease (eg 2, 4, 6, …; 25, 20, 15, …) and they can include fractions and decimals eg, , , …; 1.0, 1.2, 1.4, …

- **Use a calculator** to count by ones, twos, threes, and so on.

Press the keys '0' '+' '1' '=' and the display will show 1. If you continue to press '=', the calculator will count by ones. This can be repeated, replacing '1' by '2' for counting by twos.

- **Encourage your child to predict.** After counting for a while, ask your child to predict the number that will come up next, and then press the '=' key to verify the prediction. Try other numbers.

Encourage your child to write down the numbers that are displayed on the calculator and to describe the pattern to you.

- **Play games where patterns are repeated.** From a collection of buttons, ask your child to create a repeating pattern and to describe the pattern to you. You could create a repeating pattern with the buttons that includes one button that is misplaced. Ask your child to find the error in the pattern and to correct it.

•**Make up mathematical games with your child** and join in as they experiment with different rules eg create number sentences from the digits on car number plates. For example, if the number plate on a car was ABC 123, this could lead to the sentence 1 + 2 = 3, 2 + 1 = 3, 3 – 1 = 2, 3 – 2 = 1.

•**Play 'guess my rule' games.** This involves listing a set of numbers that form a pattern and asking your child to describe the 'rule' used to make the pattern. Encourage your child to create a number pattern for you to find the 'rule' eg 2, 4, 7, 11, ...

•**Create number sentences with a missing number** and encourage your child to find the missing number eg 17 + ■ = 30.

•Ask questions like 'What is the missing number?', 'How did you find it?', 'How do you know you are correct?', 'I think the answer is 23. Am I correct? How can we check this?'

Similar questions like this can be created in words eg 'I am thinking of a number so that when I double it the answer is 5. What is the number?'

Data

This strand includes collecting, organising and analysing data as well as interpreting data when it is presented in a variety of forms including picture, column, line and pie graphs. Students also learn to create graphs. The following activities will help to develop concepts in Data.

•**Create a graph of your child's growth over time**.

•**Use tally marks** to score in a game, or count days to a special event.

•**Help your kids to know what 'average' means**. Explain information presented in the media that uses the term 'average' eg 'the average temperature in December was 24 degrees'.

- **Expose your children to timetables and schedules.** Get them to work out when buses and trains will arrive and how long they take to travel between stops. A family schedule that details each members activities for the week in a visual manner is also a great way to help children interpret data.

Measurement

Measurement includes length, area, volume and capacity, mass and time. The following activities will help to develop your child's understanding of concepts in Measurement.

• **Help your kids to understand the concept of size**. Collect small jars and containers of different sizes and shapes. Ask your children to sort them from smallest to largest capacity. Check by filling the 'smallest' with uncooked rice. If it really is the smallest, the rice should fit into the next container. If so, add more rice and pour it into the next container. Continue this process to check the ordering of the containers. Discuss why the tallest container may not hold the most.

•**Encourage your child to measure everyday things.** Join your child in working out measurements for cooking, building, craft or sewing.

Source: NSW DEC
Compiled by Kids First Children's Services 2014

•**Build estimation skills.** Encourage your children to estimate how long it will take to perform a common task (eg tying their shoe laces, saying the alphabet, making a tower from 30 coins). Time the task to check and review estimates.

•Estimate how many times your child can complete an action in 10 seconds, 30 seconds, or 1 minute eg bouncing a ball, skipping with a rope, running around the backyard.

•**Get your child used to reading numbers for information.** Read and interpret timetables with your child e.g. train, bus, TV guides. Pose questions like 'Which bus would we need to take to the station to catch the 9:15 train?' 'What time is your favourite TV show on? How long does it go for?'

• **Help kids to make comparisons.** Discuss the sporting achievements of athletes in competitions like the Olympic and Commonwealth Games eg long jump distances, high jump and pole vault heights, running and swimming race times. Measure long jump distances on the ground and high jump heights on a wall.

• **Familiarise your children with ideas like volume and area**. When painting the house let your child help to work out how much paint will be needed to cover the area, how much the paint will cost, and how long the painting will take.

•**Look for angles in everyday life.** Visit local parks regularly and discuss the angles and heights of slippery dips and swings, the mass and balance on a see saw, the area and length of a football field or netball court, and how many laps of the pool equals 1 kilometre.

Space and Geometry
In Space and Geometry, students learn about two-dimensional shapes (eg squares, rectangles, circles, triangles), three-dimensional objects (eg cubes, prisms, pyramids), and position. The following activities will help to develop your child's understanding of Space and Geometry.

•**Encourage your child to find shapes and objects used in their environment** Shapes and objects are everywhere! Look for them in buildings, parks, schools, shops, as well as in your home. Discuss why some shapes and objects are used more than others.

•**Discuss three-dimensional objects** with your child using their geometric names eg cone, cylinder (drink can), cube, sphere (ball), rectangular prism (tissue box). Let your child go on a hunt for these shapes and point them out by name. Ask questions like 'Which ones do you see most often?' 'Why?'

•**Solve Tangram Puzzles** - a tangram consists of seven pieces cut from a square. See if you and your child can use all, or some of the pieces to make a square, triangle, parallelogram and pentagon. Templates for tangrams can be easily found on the internet.

•**Identify symmetry in the environment.** Sort leaves and flowers on the basis of symmetry.

•**Find examples of tessellating shapes** in the community e.g. pavements, buildings.