

Supporting your child with Maths at home

Key Stage 2

Year 3 to Year 6



Thomas Eaton Primary Academy

Supporting your child at home in Key Stage 2

Number and Place Value

- Ask the question: 'The answer is 10 (or any number), What is the question?' Possible responses: 8 plus 2; 1 million divided by one hundred thousand; 5×2 ; $25 - 15$; 2.5 times 4; the number before 11; 9999 subtract 9989; the square root of 100 etc. This is a great activity because: there's no failure; it stimulates thinking about and stretching knowledge of numbers and mathematical relationships; it's good fun.



- Look out for car number plates. What is the number on the plate? What is this to the nearest 10 or 100 or 1000? How many more would you need to reach the next multiple of 10, 100 or 1000?

- Decimal number plates - Each choose a car number plate with three digits. E.g. P645 CJM Choose two of the digits, e.g. 4 and 6. Make the smallest and largest numbers you can, each with 1 decimal place, e.g. 4.6 and 6.4. Now find the difference between the two decimal numbers, e.g. $6.4 - 4.6 = 1.8$. Whoever makes the biggest difference scores 10 points. The person with the most points wins. Play the game again, but this time score 10 points for the smallest difference, or 10 points for the biggest total.

- A good knowledge and quick recall of times tables is essential to children's mathematical progress. The children are taught up to 12×12 . The target is for all children to know their tables by the end of year four. It is very important that children practice their times tables daily at home. When learning their tables, children are taught to look for patterns such as odd and even number answers, or patterns made by adding together the separate digits in the answers. Children are also taught to recognise the reversible effect so that they know 6×2 is the same as 2×6 . They are also taught the relationship with division so that knowing $6 \times 2 = 12$ means they also know that $12 \div 2 = 6$ and $12 \div 6 = 2$. For each known times table fact, they also know three others: $6 \times 7 = 42$ so they know that $7 \times 6 = 42$; $42 \div 6 = 7$; $42 \div 7 = 6$.

- Times tables - Say together the six times table forwards, then backwards. Ask your child questions, such as: Nine sixes? How many sixes in 42? Six times four? Forty-eight divided by six? Three multiplied by six? Six times what equals sixty? Repeat with other times tables.

- To help children with their multiplication, one of the ways we use is to find all the factors that are used to make up a number. For example the factors of 18 are 1, 18, 2, 9, 6, and 3 because 18×1 , 1×18 , 3×6 , 6×3 , 9×2 , 2×9 all equal 18.

- Ask 'progressive' calculations, e.g. $7 + 6$, $17 + 6$, $27 + 6$, $47 + 6$, $147 + 6$; 5×2 , 50×2 , 500×2 , 500×20 .

- Working out 2-digit additions and subtractions, multiplying and dividing 2-digit numbers by 1 digit numbers mentally. Talk about how to make it easier, e.g. for $28 + 15$, call it 30 add 13 and that's easy; for 16×4 , double 16, then double 32.

- Open-ended activities, e.g. The answer's 25, what's the question? How can you use combinations of 3 and 6 to make different numbers? (Use each number as many times as you like with addition, subtraction, multiplication or division.)

- Four in a line - Draw a 6×7 grid. Fill it with numbers under 100. Take turns. Roll three dice, or roll one dice three times. Use all three numbers to make a number on the grid. You can add, subtract,

multiply or divide the numbers, e.g. if you roll 3, 4 and 5, you could make $3 \times 4 - 5 = 7$, $54 \div 3 = 18$, $(4 + 5) \times 3 = 27$, and so on. Cover the number you make with a coin or counter. The first to get four of their counters in a straight line wins

- Rhymes - Make up rhyme together to help your child to remember the harder times-tables facts, e.g. $6 \times 7 = 42$ phew! $7 \times 7 = 49$ fine! $6 \times 8 = 48$ great!

- Card game. Use a pack of playing cards. Take out the jacks, queens and kings. Take turns. Take a card and roll a dice. Multiply the two numbers. Write down the answer. Keep a running total. The first to go over 301 wins!



- Remainders. Draw a 6×6 grid. Choose the 7, 8 or 9 times table. Take turns. Roll a dice. Choose a number on the board, e.g. 59. Divide it by the tables number, e.g. 7. If the remainder for $59 \div 7$ is the same as the dice number, you can cover the board number with a counter or coin. The first to get four of their counters in a straight line wins!

- Doubles and trebles. Roll two dice. Multiply the two numbers to get your score. Roll one of the dice again. If it is an even number, double your score. If it is an odd number, treble your score. Keep a running total of your score. The first to get over 301 wins.

- Flowers. Take turns to think of a flower. Use an alphabet code, A = 1, B = 2, C = 3... up to Z = 26. Find the numbers for the first and last letters of your flower, e.g. for a ROSE, R = 18, and E = 5. Multiply the two numbers together, e.g. $18 \times 5 = 90$. The person with the biggest answer scores a point. The winner is the first to get 5 points. When you play again you could think of animals, or countries.

- Telephone challenges - Challenge your child to find numbers in the telephone directory where the digits add up to 42. Find as many as possible in 10 minutes. On another day, see if they can beat their previous total.



- Target 1000. Roll a dice 6 times. Use the six digits to make two three-digit numbers. Add the two numbers together. How close to 1000 can you get?

- Guess my number. Choose a number between 0 and 1 with one decimal place, e.g. 0.6. Challenge your child to ask you questions to guess your number. You may only answer 'Yes' or 'No'. For example, he/she could ask questions like 'Is it less than a half?' See if he/she can guess your number in fewer than 5 questions. Now let your child choose a mystery number for you to guess. Extend the game by choosing a number with one decimal place between 1 and 10, e.g. 3.6.



- Dicey division. For this game you need a 1-100 board (a snakes and ladders board will do), a dice and 20 coins or counters. Take turns. Choose a two-digit number. Roll a dice. If you roll 1, roll again. If your two-digit number divides exactly by the dice number, put a coin on your chosen two-digit number. Otherwise, miss that turn. The first to get 10 counters on the board wins.

- Line it up. You need a ruler marked in centimetres and millimetres. Use the ruler to draw 10 different straight lines on a piece of paper. Ask your child to estimate the length of each line and write the estimate on the line. Now give them the ruler and ask them to measure each line to the nearest millimetre. Ask them to write the measurement next to the estimate, and work out the difference. A difference of 5 millimetres or less scores 10 points. A difference of 1 centimetre or less scores 5 points. How close to 100 points can she get?

- Number game 1. You need about 20 counters or coins. Take turns. Roll two dice to make a two-digit number, e.g. if you roll a 4 and 1, this could be 41 or 14. Add these two numbers in your head. If you are right, you win a counter. Tell your partner how you worked out the sum. The first to get 10 counters wins. Now try subtracting the smaller number from the larger one.
- Number game 2. Put some dominoes face down. Shuffle them. Each choose a domino. Multiply the two numbers on your domino. Whoever has the biggest answer keeps the two dominoes. The winner is the person with the most dominoes when they have all been used.
- Number game 3. Use three dice. If you have only one dice, roll it 3 times. Make three-digit numbers, e.g. if you roll 2, 4 and 6, you could make 246, 264, 426, 462, 624 and 642. Ask your child to round the three-digit number to the nearest multiple of 10. Check whether it is correct, e.g. 76 to the nearest multiple of 10 is 80. 134 to the nearest multiple of 10 is 130. (A number ending in a 5 always rounds up.) Roll again. This time round three-digit numbers to the nearest 100.
- Dickey division (easier). You each need a piece of paper. Each of you should choose five numbers from the list and write them on your paper: 5 6 8 9 12 15 20 30 40 50 Take turns to roll a dice. If the number you roll divides exactly into one of your numbers, then cross it out, e.g. you roll a 4, it goes into 8, cross out 8. If you roll a 1, miss that go. If you roll a 6 have an extra go. The first to cross out all five of their numbers wins.
- Sum it up. Each player needs a dice. Say: Go! Then each rolls a dice at the same time. Add up all the numbers showing on your own dice, at the sides as well as at the top. Whoever has the highest total scores 1 point. The first to get 10 points wins.
- Out and about. Choose a three-digit car number, e.g. 569. Make a subtraction from this, e.g. $56 - 9$. Work it out in your head. Say the answer. If you are right, score a point. The first to get 10 points wins.
- Pairs to 100. This is a game for two players. Each draw 10 circles. Write a different two-digit number in each circle - but not a 'tens' number (10, 20, 30, 40...). In turn, choose one of the other player's numbers. The other player must then say what to add to that number to make 100, e.g. choose 64, add 36. If the other player is right, she crosses out the chosen number. The first to cross out 6 numbers wins.
- Dickey tens. For this game you need a 1-100 square (print one off the internet), 20 counters or coins, and a dice. Take turns. Choose a two-digit number on the board e.g. 24. Roll the dice. If you roll a 6, miss that turn. Multiply the dice number by 10, e.g. if you roll a 4, it becomes 40. Either add or subtract this number to or from your two-digit number on the board, e.g. $24 + 40 = 64$. If you are right, put a coin on the answer. The first to get 10 coins on the board wins.
- Left overs. Take turns to choose a two-digit number less than 50. Write it down. Now count up to it in fours. What number is left over? The number left is the number of points you score, e.g. Choose 27. Count: 4, 8, 12, 16, 20, 24. 3 left over to get to 27. So you score 3 points. The first person to get 12 or more points wins. Now try the same game counting in threes, or in fives. Can you spot which numbers will score you points?

Everyday situations

- How much? While shopping, point out an item costing less than £1. Ask your child to work out in their head the cost of 3 items. Ask them to guess first. See how close they come. If you see any items labelled, for example, '2 for £3.50', ask them to work out the cost of 1 item for you, and to explain how they got the answer.



- Weighing, measuring capacity and timing when cooking. Converting a recipe for 4 people to one for 6 people. (Scale a recipe up or down to feed the right amount of people.)

- Being involved with measuring and calculating how much curtain fabric is needed, how much wood for shelves, how many wall or floor tiles are needed, how much carpet etc.

- Mugs. You need a 1 litre measuring jug and a selection of different mugs, cups or beakers. Ask your child to fill a mug with water. Pour the water carefully into the jug. Read the measurement to the nearest 10 millilitres. Write the measurement on a piece of paper. Do this for each mug or cup. Now ask your child to write all the measurements in order.

- Talking about time, e.g. How long is it until lunch time? The journey takes $2\frac{1}{2}$ hours, when will we arrive? We need to be there at 2.00 pm, when do we need to leave home? Many children will still need practice with reading clock times, particularly minutes past and minutes to the hour.



- Car numbers. Try reading a car number as a measurement in centimetres, then converting it to metres, e.g. 456cm, which is 4.56m, or 4m and 56cm. Try this with car numbers that have zeros in them, e.g. 307cm, which is 3.07m or 3m and 7cm; 370cm, which is 3.7m, or 3m and 70cm.

- Choose a car number. You may add or subtract 10, 20, 30, 40, 50, 60, 70, 80 or 90. Try to get as close as possible to 555. Who can get closest during a week?

- Handling amounts of money when shopping, working out total costs, working out change, checking receipts. Working out prices of sale items, e.g. 20% off. Managing pocket money and saving for things.



- Working out distances and directions from maps.

- Use a bus or train timetable. Ask your child to work out how long a journey between two places should take. Go on the journey. Do you arrive earlier/later than expected? By how much?

- Choose a shape of the week. Look for this shape in the environment. Ask your child to describe the shape to you. Play 'guess my shape'. You think of shape. Your child asks questions to try to identify it but you can only answer 'yes' or 'no'. Hunt for right angles around your home. Can your child spot angles that are bigger or smaller than a right angle? Look for symmetrical objects. Help your child to paint or draw symmetrical pictures/patterns.

- Make a model using different boxes/containers of different sizes. Ask your child to describe their model.

- Practise measuring the lengths and heights of objects in metric measurements. Help your child use different rulers or tape measures correctly. Encourage them to estimate before measuring. Compare measurements in metric and imperial. Let your child help with the cooking. Help them to measure ingredients accurately. Talk about what each division on a scale represents.

- Choose some food items out of the cupboard. Try to put the objects in order of weight by feel alone. Then check by looking at the weights on the packets.
- Practise telling the time with your child. Use both digital and analogue clocks. Ask your child to be a 'timekeeper' - e.g. tell me when it is half past four because we are going swimming. Use a stop clock to time how long it takes to do everyday tasks -e.g. how long does it take to get dressed? Encourage your child to estimate first.
- Beat the calculator. In pairs, one with a calculator, one without, each works out the answer to a calculation aiming for the one without the calculator to say the answer first.
- Ask your child the cost of a favourite item of food. Ask them to work out what 7 of them would cost, or 8, or 9. How much change would there be from £50? Repeat with his / her least favourite food. What is the difference in cost between the two?
- Sale of the century. When you go shopping, or see a shop with a sale on, ask your child to work out what some items would cost with: 50% off; 25% off; 10% off; 5% off. Ask your child to explain how they worked it out.



- TV addicts - Use a TV guide. Ask your child to work out the length of their favourite programmes. Can they calculate how long they spend watching TV each day/week? Work out the average watching time for a day (that is, the total time divided by 7). Instead of watching TV, you could ask them to keep a record of time spent eating meals, or playing outdoors, or anything else they do each day. Then work out the daily average.
- Journeys. Use the chart in the front of a road atlas that tells you the distance between places. Find the nearest place to you. Ask your child to work out how long it would take to travel to some places in England if you travelled at an average of 60 miles per hour, i.e. 1 mile per minute, e.g. York to Preston: 90 miles 1 hour 30 minutes; York to Dover: 280 miles 4 hours 40 minutes. Encourage your child to count in 60s to work out the answers mentally.
- One million pounds. Assume you have £1 000 000 to spend or give away. Plan with your child what to do with it, down to the last penny.
- Recipes. Find a recipe for 4 people and rewrite it for 8 people, e.g. 4 people 125g flour 50g butter 75g sugar 30ml treacle 1 teaspoon ginger Can you rewrite it for 8 people? Or 5 people?
- Use a tape measure that shows centimetres. Take turns measuring lengths of different objects, e.g. the length of a sofa, the width of a table, the length of the bath, the height of a door. Record the measurement in centimetres, or metres and centimetres if it is more than a metre, e.g. if the bath is 165 cm long, you could say it is 1m 65cm (or 1.65m). Write all the measurements in order.

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Other ideas ...

Reading Numbers - Children need to be able to read and write whole numbers going into thousands. They also have to round numbers to the nearest 10, 100 or decimal place. Children also have to be able to read and interpret tables and charts. Newspaper and BBC Sport web pages are a good source of tables and charts.

- How many people watched Norwich play Manchester United?

- Where was the biggest crowd in the Premier League?
- How many goals were scored in the premiership altogether/before half time/in the second half?
- England beat Tonga at rugby 35 - 3. How many tries do you think were scored?
- For cricket fans, how many runs did the top 3 run scorers score? How much did the rest score?
- In darts, a player has 116 left. How will he score this to win with 3 darts?
- Snooker has a whole set of possibilities. After a break of 50, guess how many balls were potted? What is the most or least it could have been?
- In athletics/motor racing/skiing you have to read time to the decimal places. Good for ordering numbers!
- At the Olympics or at the athletics, how much higher and further did someone throw/jump than their nearest rival?

Playing Cards - There are many ways to use playing cards to help children to use their maths skills.

- Ordinary Playing Cards - Take out the picture cards. Play snap but you only have a snap if the total of the cards is 10. For older children, the number on the cards stands for how many tens there are in the number. Play snap but you only have a snap if the total of the cards is 100.
- You can also play a points game. When 2 cards of the same suit are put down, multiply/add the cards together (depending on their age). If you are correct, you score the number of points in the answer you gave. Choose a target e.g. 100 points. The first past the total is the winner. (This also involves addition and subtraction. How many more do we need to win? Which cards do you think would help?)
- Top Trumps - These are great games on their own and can support reading from a chart. They usually have a range of large and small numbers and a range of areas of interest.

Other Good Games to Play

- Uno - good game for recognising and matching numbers
- Dominoes - supports counting and associating patterns with numbers
- Snakes and Ladders - counting numbers up to 100/
- Scrabble - adding, multiplying (doubling, trebling) and good for vocabulary development and spelling.
- Monopoly - good for handling money, paying using notes, giving change.
- Yahtzee - a good game for adding, multiplying and probability.
- Chess/draughts; Darts; Bowling