

Calculation Policy

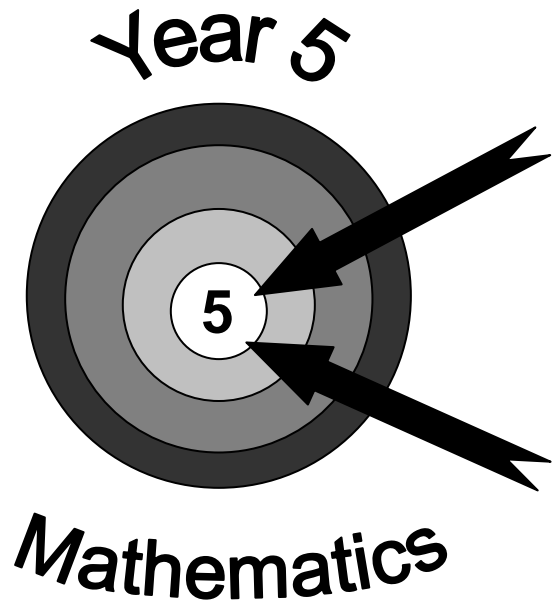
This BSAK primary calculation policy contains the key pencil and paper procedures that are taught within our school and can be accessed through our parent portal.

It is important to recognise that the ability to calculate mentally lies at the heart of mathematical fluency. Early practical, oral and mental work lays the foundations by providing children with a good understanding of how the four operations build on efficient counting strategies and a secure knowledge of place value and number facts. Later learning and skill development must ensure that children recognise how the operations relate to one another and how the rules and laws of arithmetic are to be used and applied. Ongoing oral and mental mathematics learning provides practice and consolidation of these ideas. It must give children the opportunity to apply what they have learned to particular cases, exemplifying how the rules and laws work and to general cases where children make decisions and choices for themselves.

What is important when learning Maths?

- Most importantly make maths fun, enjoyable and make it REAL
- Learn the basic number facts and have NUMBER SENSE – everything stems from this
- Understand the mathematical concepts rather than rote learning methods and procedures
- Procedural understanding vs. conceptual understanding (how vs. why). The latter is the most important!
- Encourage your children to write neatly – 25% of all errors are down to careless recording
- Know the vocabulary of maths – do you know 5 different alternatives to ‘multiply’?
- Make maths part of daily life for children
- Remind children that it is not always about the answer, it is about how you get there and the journey along the way

Supporting your child at home



A booklet for parents

Regular Learning at Home

We all know that it is a good idea to read to your child every night, but the importance of talking about mathematical situations with your children every day is also valuable. It's important to show how we use maths skills in our everyday lives and to involve your child in this. The goal should be to make maths "real" and meaningful. Identifying problems and solving them can also help your child develop maths skills. If you see him or her puzzling over something, talk about the problem and try to work out the solution together.

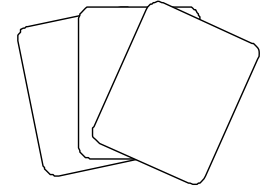
With so many facts and figures to memorise and apply to maths problems, children soon realise that maths is a subject that requires work. That doesn't mean that it can't be fun; keep the pleasure in maths by playing games with your children. With countless websites, computer games and phone apps, parents have endless options, but don't forget about the non-digital games you loved as a child. The classics that require manipulating cards and game pieces, calculating along the way, may have the same appeal for your children as they did for you.

Developing a Growth Mindset

Attitude is vital for learning and developing a strong growth mindset early in your child's education is key to successful learning. To help develop a positive attitude to maths, encourage your child as much as possible. Young children are eager to learn. Think about babies learning to walk or talk. It is difficult to learn to talk or walk but they don't care, they just push themselves over their limits. We want your children to come at maths with that same attitude. Avoid talking negatively about maths, even if you have no need for trigonometry in your daily life. A lot of people will joke that they cannot do maths or announce publicly, 'I'm not a maths person;' but when a parent does that in front of a child, it might suggest that maths is not important; accidentally reinforcing a child's belief that they too are not a maths person.

Card Tables

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 x 6 grid like this and fill in numbers under 100.

82	33	60	11	73	22
65	12	74	28	93	51
37	94	57	13	66	38
19	67	76	41	75	85
86	29	68	58	20	46
50	69	30	78	59	10

- ◆ 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 three of their counters in a straight line wins!

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 1-12 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.

Measuring

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 1.65m.
- ◆ Can you convert the measurements to millimetres, kilometres etc..

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 s/he worked it out.

By the end of year 5, children should be able to confidently:

- Locate 5 and 6 digit numbers on a landmarked line; use this to compare/order numbers.
- Round to ten, a hundred, a thousand or ten thousand.
- Begin to read scales of different types
- Understand a one-place decimal number as a number of tenths and a two-place decimal number as a number of hundredths.
- Understand the effect of multiplying and dividing by 10 and 100 to give 1-place and 2-place decimal answers. E.g. $4.5 \times 10 = 45$, and $678 \div 100 = 6.78$ etc.
- Add or subtract 0.1 or 0.01 to/from any decimal number with confidence, e.g. $5.83 + 0.01$ or $4.83 - 0.1$
- Add and subtract mentally with confidence – where the numbers are less than 100 or the calculation relies upon simple addition/subtraction and place value. Examples include: $6,723 - 400$, $78 + 46$, $72 - 46$, $8020 + 910$, $100 - 64$, $5000 + 12,000$, etc.
- Confidently add 3- and 4-digit numbers together using a secure written method
- Subtract larger numbers using expanded column subtraction or by counting up (Frog).
- Begin to subtract decimal numbers using counting up: $6.2 - 3.5$
- Know and recite **all** times tables including division facts.
- Multiply 2- and 3-digit numbers by numbers ≤ 12 using grid method; multiply 2-digit by 2-digit numbers using grid method.
- Scale up or down by a factor of 2, 5 or 10

- Perform divisions mentally within the range of tables facts using remainders and fractions and decimal equivalences, e.g. $68 \div 8 = 8 \text{ r}4$ or $8\frac{1}{2}$ or 8.5
- Divide 2-digit and 3-digit numbers by one-digit numbers above the range of tables using efficient chunking.
- Reduce fractions to their simplest form, including tenths to fifths and hundredths to tenths, e.g. $40/100 = 4/10 = 2/5$ which is also 0.4
- Identify simple fraction and decimal equivalents: $\frac{1}{2} \equiv 0.5$, $0.25 \equiv \frac{1}{4}$ and $0.75 \equiv \frac{3}{4}$.
- Measure and compare capacities, weights and lengths, including perimeters using SI units; understand the concept of area and count squares to find areas.
- Understand the properties of triangles; find unknown angles in triangles and rectangles.

About the Statements

These statements show some of the things your child should be able to do by the end of Year 5.

A statement may be harder than it seems, e.g. a child may subtract 3994 from 9007 by using a formal written method, without realising it is quicker to count on from 3994 up to 9007 in his / her head.

Decimal number plates

- ◆ Choose 2 digits from a car registration plate.

FD56 UPN

- ◆ Make the smallest and largest numbers you can, each with 1 decimal place, e.g. 5.6 and 6.5.
- ◆ Now find the difference between the two decimal numbers, e.g. $6.5 - 5.6 = 0.9$.
- ◆ 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.(If you add the numbers)

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 could ask questions like 'Is it less than a half?'
- ◆ See if he 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. You may need more questions

War!

Take a pack of regular playing cards. Remove the J, Q, K and Ace.

How to Play Basic War—Each player turns one card face up. The player with the greatest number wins the round, placing his own and all captured cards into his prisoner pile. Whenever there is a tie for greatest card, all the players battle: each player lays three cards face down, then a new card face up. The greatest of these new cards will capture everything on the table. Because all players join in, someone who had a low card in the initial round may ultimately win the battle. If there is no greatest card this time, repeat the 3-down-1-up battle pattern until someone breaks the tie. The player who wins the battle captures all the cards played in that turn. **End of the game** - When the players have fought their way through the entire deck, count the prisoners. Whoever has captured the most cards wins the game.

Variations - For most variations, the basic 3-down-1-up battle pattern becomes 2-down-2-up.

Addition War—Turn up four cards for each round and add them together.

Multi-Digit Subtraction War—Turn up four cards. Make them into two 2-digit numbers, then subtract them. Example: Suppose you turn up 3,4, 8 and 5 you could arrange them as 83-54.

Advanced Product War—Turn up three (or four) cards and multiply.

Improper Fraction War—Turn up two cards and make a fraction, using the larger card as the numerator. Greatest fraction wins.

Wild War—Players turn up three cards and may do whatever math manipulation they wish with the numbers. The greatest answer wins the round.

Integer Addition War—Black cards are positive numbers; red cards are negative. The greatest sum wins. Remember that -2 is greater than -7.

Mathematics at home

Talk together and have fun with numbers and patterns

Help your child to:

- count forwards and backwards (starting with numbers like 10,098, 10,099, 10,100, 10,101 then back again)
- find and read large numbers in your environment eg nineteen thousand, three hundred and twenty-three
- learn number pairs to 1000 eg 810 and what equals 1000?
- look at the car's odometer to see how far you've gone. Convert to metres
- play card and board games that use guessing and checking
- do complicated jigsaw puzzles
- plan for a special event on a budget; eg afternoon tea for a grandparent, teacher or family friend

Involve your child in:

- helping at the supermarket – choose items to weigh. Look for the best buy between different brands of the same items (breakfast cereal, spreads like jam or honey)
- practising times tables and quick recall of number facts— check with your child or their teacher which times tables you could help your child with

- telling the time e.g., 5 past, 10 past, 20 past, $\frac{1}{4}$ to, 25 to and convert digital to analogue and 24hour clock. Read time tables and work out length of journeys
- deciding how much money you will need to put into the parking meter and what time you will need to be back before the meter expires
- thinking about how many telephone numbers they can remember – talk about what they do to help them remember the series of numbers
- baking – follow a simple recipe and adjust the quantity.

Here's a tip - the way your child is learning to solve mathematics problems may be different to when you were at school. Get them to show you how they do it and support them in their learning.

Ideas for helping at home

Finding areas and perimeters

Perimeter = distance around the edge of a shape
Area of a rectangle = length x breadth
(width)

- ◆ Collect 5 or 6 used envelopes of different sizes.
- ◆ Ask your child to estimate the perimeter of each one to the nearest centimetre. Write the estimate on the back.
- ◆ Now measure. Write the estimate next to the measurement.
- ◆ How close did your child get?
- ◆ Now choose 5 or 6 adverts from newspapers or magazines.

You could do something similar using an old newspaper, e.g.

- ◆ Ask your child to estimate the area of each advert to the nearest centimetre squared – write these down.
- ◆ Now measure and calculate
- ◆ How close did your child get

Target 1000

- ◆ Roll a dice 8 times.
- ◆ Use the eight digits to make two four-digit numbers.
- ◆ Add the two numbers together.
- ◆ How close to 10,000 can you get?