

Maths

Parent workshop KS2

Belleville School Aims

- All children are excellent learners
- All children have excellent social and emotional skills
- All children fulfill their potential

Aims of the Hour

- To inform you of the contents of the mathematics curriculum
- Highlight end goals
- To share strategies you may want to use when supporting your child at home

Current curriculum

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Current curriculum

- Focus on mastering essential arithmetic at an early stage
- New emphasis on **problem solving**, **practice** and **fluency**
- Number bonds to 20 by year 2
- Multiplication tables (up to 12x12) by end of year 4
- Arithmetic, numbers, fractions, decimals and percentages at the heart

Years Three and Four

- Pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value.
- Pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

Years Three and Four

- Pupils should develop their ability to solve a range of problems, including simple fractions and decimal place value.
- Pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them.
- Pupils can use measuring instruments with accuracy and make connections between measure and number.

Years Three and Four

- By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table
- Show precision and fluency in work.
- Read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Years Five and Six

- Pupils extend their understanding of the number system and place value to include larger integers.
- Develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

Years Five and Six

- Pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation.
- With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems.

Years Five and Six

- Work in geometry and measures should consolidate and extend knowledge developed in number.
- Pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.
- By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Spoken language

The national curriculum for mathematics reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically.

The quality and variety of language that pupils hear and speak are key factors in developing their **mathematical vocabulary** and presenting a **mathematical justification, argument or proof**.

They must be assisted in **making their thinking clear** to themselves as well as others and teachers should ensure that pupils **build secure foundations** by using **discussion** to **probe** and **remedy** their **misconceptions**.

Current curriculum

- One set of mathematical concepts and big ideas for all.
- **All** pupils need access to these concepts and ideas and to the rich connections between them.
- There is a need for **all** pupils to master the curriculum and for some to gain greater depth of proficiency and understanding.
- Challenge is provided by going deeper rather than accelerating into new mathematical content.
- Mathematics is mathematics and the key ideas and building blocks are important for everyone.

Current curriculum

- Mastery is not just being able to memorise key facts and procedures and answer test questions accurately and quickly.
- It involves knowing 'why' as well as knowing 'that' and knowing 'how'. It means being able to use one's knowledge appropriately, flexibly and creatively and to apply it in new and unfamiliar situations.

Belleville Research

- The review of the curriculum looked at the curricular of **high performing countries** in mathematics - those which regularly out-perform us in international tests
- Visits to Shanghai, Singapore and Finland by senior leaders and the maths team
- Mini trial of use of textbooks in Year 4 during Spring 2014
- Trial in Year 1 class, across Year 1, Years 2 and 3 in 2014/15
- Use of textbooks adopted by Years 1 to 6 in 2015/16

Training

- Over 18 videos totaling 600 minutes watched
- Teachers and senior leaders visited Singapore and Shanghai
- Singapore and Shanghai visitors to Belleville
- Staff have professional learning communities

Challenge

- Curriculum content is more challenging
- Development **of deep** mathematical knowledge through concepts and reasoning.

To Master Ideas

- I know how to do it
- It becomes automatic and I don't need to think about it
- I'm really good at doing it
- I can show someone else how to do it.

To Master Ideas-Number

- 674 is made of 6 hundreds, 7 tens and 4 ones.
- 674 is also made of 67 tens and 4 ones.
- 674 is also made of 6 hundreds and 74 ones.
- Find different ways of expressing:
- 630
- 704
- 867

5000 years ago Egyptians carved number symbols on their tombs:

| = 1

∩ = 10

@ = 100

What is the value of these Egyptian numbers?

@nnlll

@nnlll + @nnllll

@@ennllll + @@nnnnllllllll

To Master Ideas

Addition and Subtraction

- Jasmine and Kamal have been asked to work out $5748 + 893$ and $5748 - 893$.
- Jasmine says, '893 is 7 less than 900, and 900 is 100 less than 1000, so I can work out the addition by adding on 1000 and then taking away 100 and then taking away 7.'
- What answer does Jasmine get, and is she correct?
- Kamal says, '893 is 7 less than 900, and 900 is 100 less than 1000, so I can work out the subtraction by taking away 1000 and then taking away 100 and then taking away 7.'

What answer does Kamal get, and is he correct?

If you disagree with either Jasmine or Kamal, can you correct their reasoning?

To Master Ideas Multiplication and Division

- Year 2: 2, 5, 10
- Year 3: 3, 4, 8
- Year 4: 6, 7, 9

If children have learnt these securely, they will know 11 and 12 times tables automatically

To Master Ideas

Multiplication and Division

is a multiple of and a factor of

Which calculation is the odd one out?

753×1.8

$(75 \cdot 3 \times 3) \times 6$

$753 + 753 \div 5 \times 4$

7.53×1800

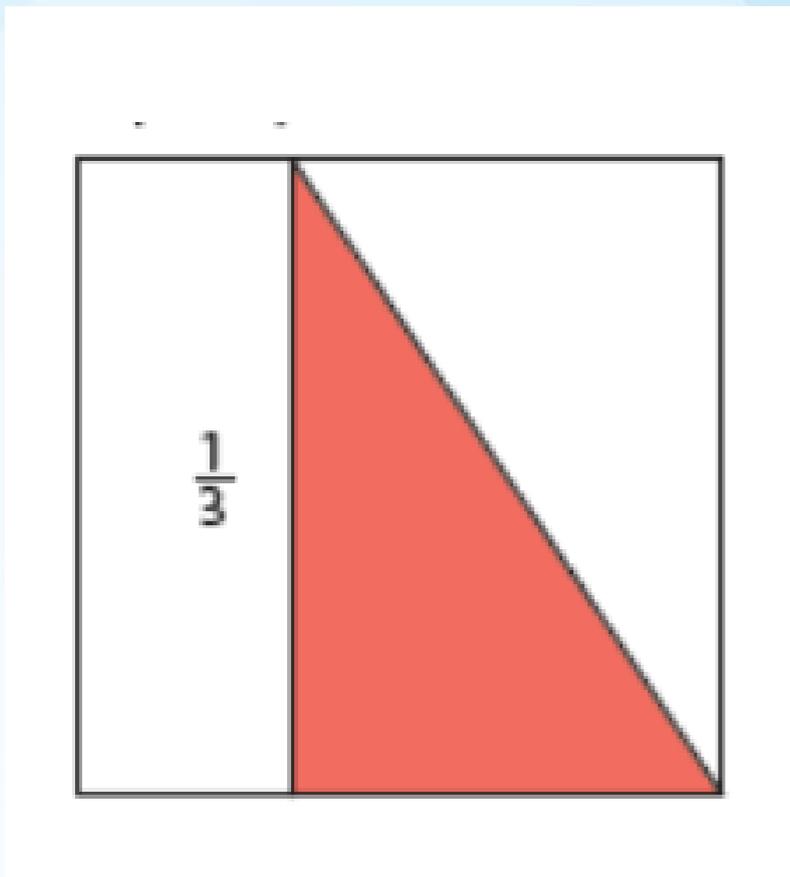
$753 \times 2 - 753 \times 0.2$

$750 \times 1.8 + 3 \times 1.8$

Explain your reasoning

To Master Ideas-Fractions

What fraction of the square is shaded?
Explain your reasoning.



Peter wrote down two fractions. He subtracted the smaller fraction from the larger and got an eighth as the answer.

Write down two fractions that Peter could have subtracted. Can you find another pair?

To Master Ideas

Money



Using coins, find 3 ways to make £1.

Sophie has five coins in her pocket. How much money might she have?

What is the greatest amount she can have?

What is the least amount she can have?

If all the coins are different:

What is the greatest amount she can have?

What is the least amount she can have?

Which would you rather have, $3 \times 50p$ coins or $7 \times 20p$ coins?

Explain your reasoning.

To Master Ideas Measurement

Sarah is 0.2 m taller than Jack.

Ella is 15 cm taller than Sarah.

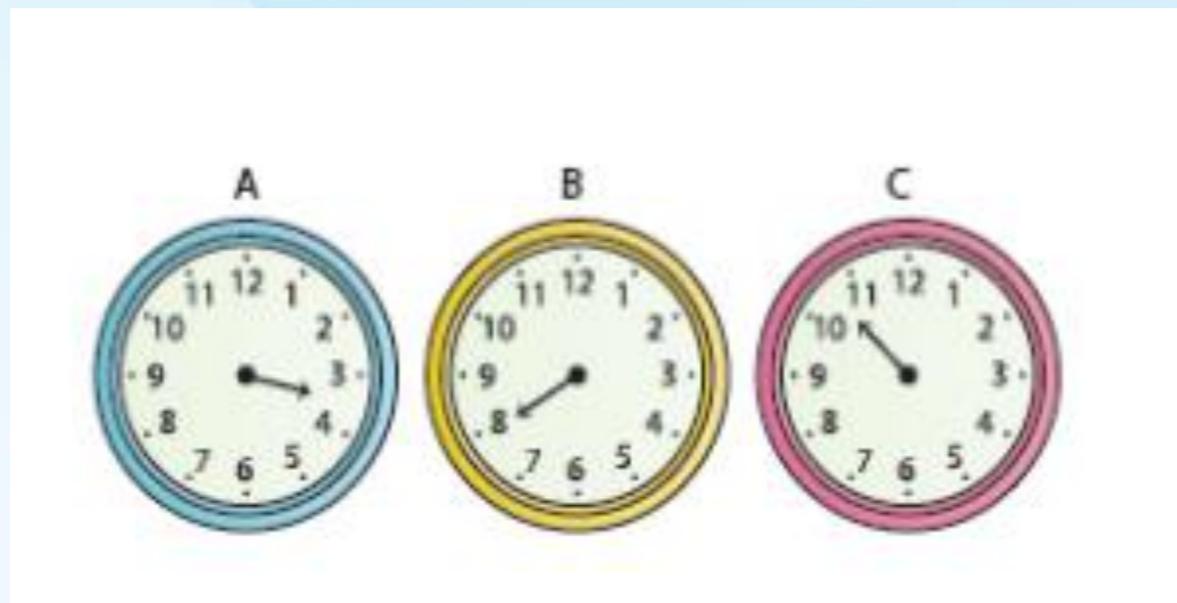
Who is the tallest person?

What is the difference in height between the tallest and the shortest person?

A football weighs 0.4 kg.
Three footballs weigh the same as eight cricket balls.
How many grams does a cricket ball weigh?

To Master Ideas-Time

These clocks have only one hand, but can you suggest a time that each could be showing?



Explain your reasoning.

To Master Ideas-Statistics

Here is a table of the average temperature for each month of last year:

Month	1	2	3	4	5	6	7	8	9	10	11	12
Average Temp (°C)	6	7	10	12	16	18	21	22	18	14	10	7

Write the word 'true', 'false' or 'unknown' next to each statement, giving an explanation for each response.

- I would need to wear my coat outside in January.
- The hottest day of the year was in August.
- A temperature of -2 was recorded in January.

Choose two other ways to represent the data.