# Mathematics in Lower Key Stage 2

What do we teach?
How do we teach it?
How can you help?

## Aim of meeting:

- To fully inform parents of the calculations methods we use at school so that they can support their child more confidently at home.

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*Turn your ear to wisdom and apply your heart to understanding.*

*Proverbs 2:2*

# The Maths Curriculum- the national curriculum

Fluency
Reasoning
Problem solving

## Aims

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.

The maths curriculum consists of these main areas in years 3 and 4:

- number
- measurement
- geometry
- statistics

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## Lower Key Stage 2 - Years 3 and 4

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

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

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word-reading knowledge and their knowledge of spelling.

# Year 3 Number - addition and subtraction

**Pupils should be taught to:**

•add and subtract numbers mentally, including:

•a three-digit number and 1s

•a three-digit number and 10s

•a three-digit number and 100s

•add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction

•estimate the answer to a calculation and use inverse operations to check answers

•solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

# Year 4 Number - addition and subtraction

**Pupils should be taught to:**

•add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate

•estimate and use inverse operations to check answers to a calculation

•solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

# Addition and Subtraction

789 + 642 becomes

$$\begin{array}{r} 7\ 8\ 9 \\ +\ 6\ 4\ 2 \\ \hline 1\ 4\ 3\ 1 \\ \hline \quad 1\ \ 1 \end{array}$$

Answer: 1431

932 – 457 becomes

$$\begin{array}{r} {\scriptstyle 8\ \ 12\ \ 1} \\ 9\ \not{3}\ \ 2 \\ -\ 4\ 5\ 7 \\ \hline 4\ 7\ 5 \\ \hline \end{array}$$

Answer: 475

In year 3, children move onto the new method of using column addition and subtraction with numbers up to 3 digits. In year 4, they will be learning to add and subtract 4 digit numbers using column methods.
This will include, regrouping (as in the example)

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# Addition and Subtraction

Scott cycles 204 miles in the first week of his summer holiday.

He cycles another 117 miles in the second week.

How many miles does he cycle in the first two weeks of his holiday?

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Is the statement true or false?

In this calculation, there will be no tens in the answer, because there are no tens in the numbers being added together.

| | | H | T | O | |
|---|---|---|---|---|---|
| | | 3 | 0 | 5 | |
| | + | 6 | 0 | 7 | |
| | | | | | |

Explain your answer.

# Year 3 Number - multiplication and division

**Pupils should be taught to:**

- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods

- solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

# Year 4 Number - multiplication and division

**Pupils should be taught to:**

•recall multiplication and division facts for multiplication tables up to 12 × 12

•use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers

•recognise and use factor pairs and commutativity in mental calculations

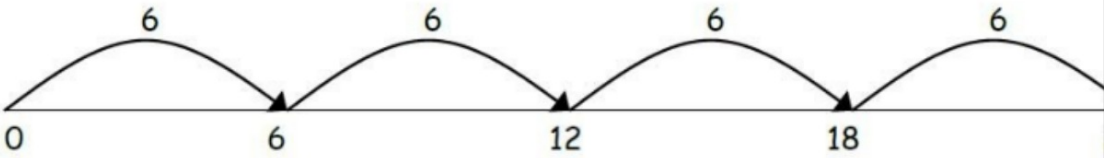
•multiply two-digit and three-digit numbers by a one-digit number using formal written layout

•solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

# Written Multiplication

## empty number line

4 times 6 is 6 + 6 + 6 + 6 = 24 or 4 lots of 6 or 6 x 4




## grid method

## expanded multiplication (ladder method)

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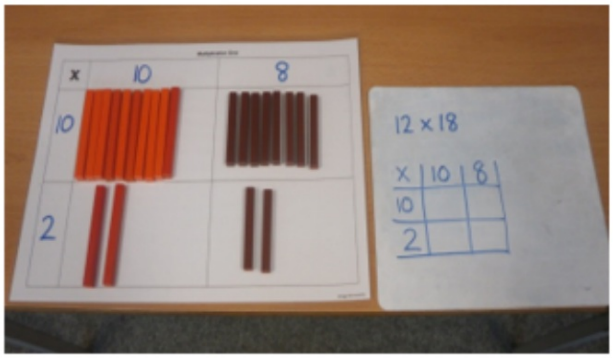
**TU x TU**

12 x 18 =




## grid method

| x | 10 | 8 |
|---|---|---|
| 10 | 100 | 80 |
| 2 | 20 | 16 |

100
80
20
+ 16
216

## expanded method

(ladder method)

30 + 8
x 7
56
210
266

(8 x 7 = 56)
(30 x 7 = 210)

38
x 7
56
210
266

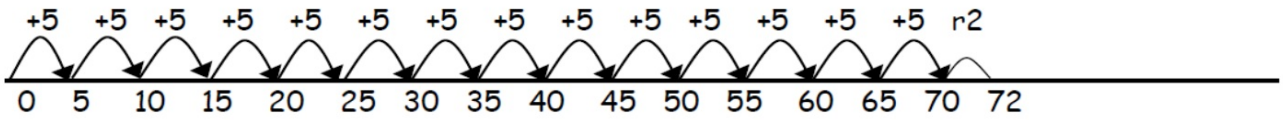
## short multiplication

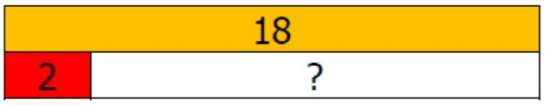
38
x 7
266
5

# Division

Empty Number lines

72 ÷ 5 =

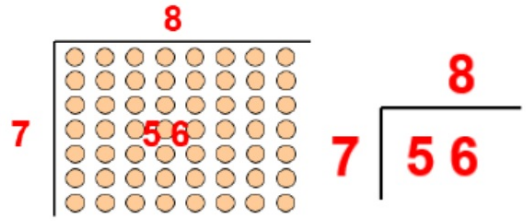



How many groups of 2 in 18?

Bar Model

How many 7's make 56?




Short division using resources

Short division

## multiples of 3

Bags of sweets cost £3

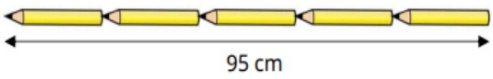
- Ron buys 3 bags.
- Dani buys 9 bags.
- Aisha buys 4 bags.

How much does each person spend?

How much more does Dani spend than Aisha?

How much do the children spend in total?

The length of 5 identical pencils is 95 cm.




What is the length of 1 pencil? _____

What is the length of 2 pencils? _____

Complete.

$3600 \div 10 = \square \times 10$

## multiplying and dividing by 9

Amir has 9 bags of 6 sweets.

Whitney has 6 bags of 9 sweets.


Amir

I have more sweets, because I have more bags.


I have more sweets, because I have more in each bag.

Whitney

Who is correct?

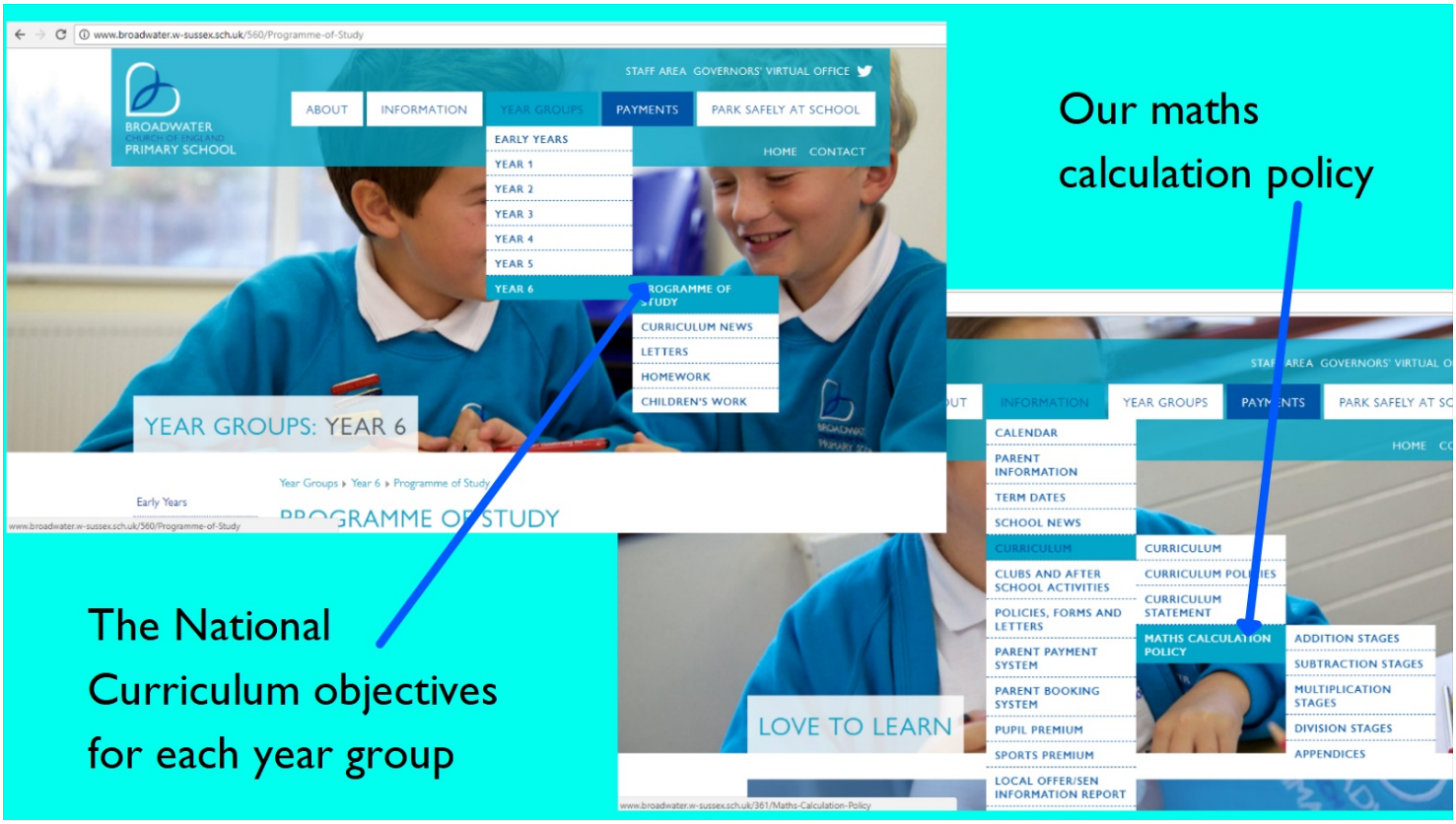
Explain your reasoning.

What else can you do to support your child?

- regular practising of times tables and number facts
- revising "key facts"
- supporting and encouraging homework
- talking maths opportunities
- Mymaths/ TTRockstars

MyMaths.co.uk
Bringing maths alive

TIMES TABLES ROCK STARS


Our maths calculation policy
www.broadwater.w-sussex.sch.uk/560/Programme-of-Study
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SUBTRACTION STAGES
MULTIPLICATION STAGES
DIVISION STAGES
APPENDICES
LOVE TO LEARN
www.broadwater.w-sussex.sch.uk/361/Maths-Calculation-Policy

## Over to you!

Please feel free to have a look at the equipment set up on the tables that we use to support children's understanding of the four operations.

We will be happy to answer your questions.

Please visit our website for more curriculum information.

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