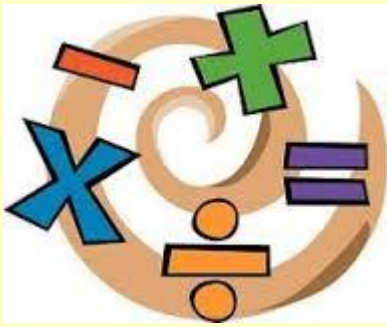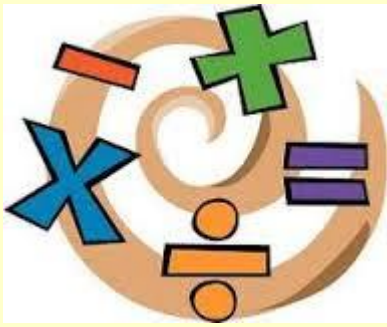# Lower KS2 Maths Workshop
How can you help at home?

Maths is integral to everyday life and we use it all the time, sometimes we don't even realise it!

Mental Maths and Times Tables are really important for our mathematical development. If you can help us with this at home, the rest will be a breeze!

Maths at Thorpedene

- The children at Thorpedene receive an hour long maths lesson every day.
- These are multi-part lessons that include a silent starter – a task to be getting on with as soon as they enter the room and a mental/oral starter such as times tables.
- http://www.transum.org/Software/SW/Starter_of_the_day/
- One session a week incorporates an arithmetic test and a session in the ICT suite for Times Tables Rock Stars.

Times Tables Rock Stars
You can use this at home!

An engaging way to learn and practise times tables.

Game Types

- There are 4 main game types that differ according to which times tables the questions come from and whether it's a single – or multi-player game.

Garage

- Times tables restricted by the teacher.
- Roughly 1 in 5 questions are division.
- Recommended as the default game as it's designed to help pupils get faster.
- After a few games, the TT Rock Star software engine starts to work out which number facts each pupil struggles with and then begins presenting those questions more frequently.
- Pupils get 10 coins per correct answer instead of 1. The focus, should be on competing against yourself.

Studio

- Times tables are unrestricted, questions from 1x1up to 12 x 12 are possible. Roughly 1 in 5 questions are division.
- The idea is for students to have a measure of their overall speed on all times tables. Much like being in a recording studio, this is where we want TT Rock Stars to record their best performances.
- The TT Rock Star engine works out their mean score over the last 10 games in the studio and that determines their rock status. Starting off as a Busker you get to Rock Star if your per question average is 3 seconds, Rock Legend if it's under 2 seconds or Rock Hero if your average speed is 1 second or less per question.

Studio

- In easier terms:
- If you answer 20 or more questions you're a ROCK STAR!
- If you answer 30 or more questions you're a ROCK LEGEND!
- If you answer 60 or more questions you're a ROCK HERO!

Arena

- Times tables are restricted to those set by the teacher. Roughly 1 in 5 are division.

- The Arena, like the Garage, is only for practising the times table that the teacher has set. The difference is that it's a multiplayer game for pupils to perform with other bandmates. Pupils join a game at the same time and compete to see who can answer the most questions.

Arena points to note

- A new Arena game starts every 15 seconds.

- There is no difference in Wembley, Millennium, etc. it just makes it easier for friends or the teacher to tell others which game they want others to play in.

- Pupils don't face the same questions as each other.

Festival

- Times tables are unrestricted, questions from 1x1up to 12 x 12 are possible. Roughly 1 in 5 questions are division.
- This is the multi-player version of the Studio – students face questions up to 12 x 12 while competing against players from around the world.
- As with Arena, the four different Festivals are to help you name the Festival you're joining. There is no difference in the format or type of questions.
- A new Festival game starts every 15 seconds and there is no limit to the number of players that each game will accept.

Stats Dashboard

▼ Display Chart Filters

Rock Name	ⓘ Baseline Speed	ⓘ Current Speed	Rock Status	ⓘ Lifetime Earnings	Maths Band	Pastoral Band	Year Group
King Dylan	2.47	2.13	Rock Star	28,707	4F Maths		Year 4
Mia-Belle Bullet	2.65	2.71	Rock Star	1,341	4F Maths		Year 4
Honey Sennett	3.02	2.24	Rock Star	25,367	4F Maths		Year 4
Clyde Cutler	3.64	2.51	Rock Star	7,733	4F Maths		Year 4
Ian Rocky McRockface	3.66	2.93	Rock Star	10,878	4F Maths		Year 4
Mia Farrell	4.00	3.30	Headliner	6,937	4F Maths		Year 4

Times Tables Rock Stars

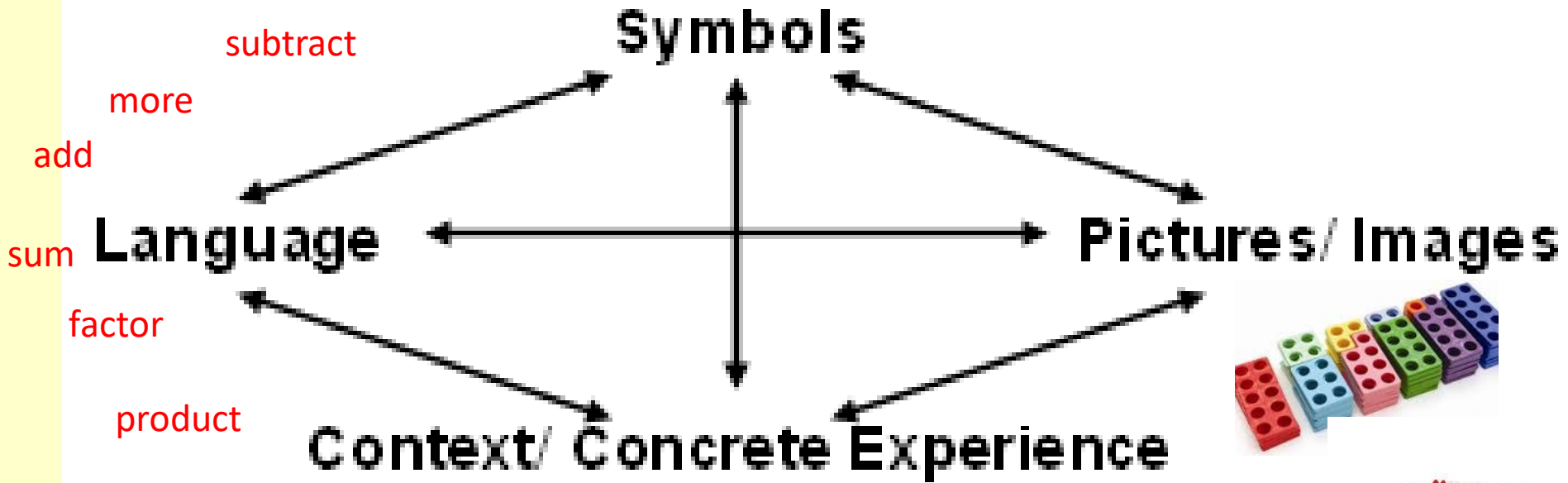- Available on the internet and as an app on Android and Apple.

Maths at Thorpedene

- The rest of the lesson is broken down into a series of activities that focus on the children doing rather than sitting and listening for a prolonged period of time.
- Homework is set using <u>MyMaths</u>. The children are expected to complete this weekly.
- Year 3 will continue to set real-life uses of maths in their half-termly challenge sheets.
- We also subscribe to <u>Purple Mash.</u>

Maths at Thorpedene

$$= \quad + \quad X \quad \%$$

Symbols

subtract

more

add

sum

factor

product

Language

Pictures/Images

Context/Concrete Experience

Here is a receipt for some shopping. How much did I spend? How much change did I get from £20?

The Maths Curriculum

Children should:

- 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.

- **Solve problems** by applying their mathematics to a variety of problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Year 3 Curriculum Overview

Year 3 Maths Assessment Framework

1: WTS, 2: EXS, 3: GDS

Number – number and place value							
To count from 0 in multiples of 4 and 8, 50 and 100.							
To find 10 or 100 more or less than a given number							
To recognise the place value of each digit in a three-digit number (hundreds, tens, ones)							
To compare and order numbers up to 1000							
To identify, represent and estimate numbers using different representations							
To read and write numbers up to 1000 in numerals and in words							
Number – addition and subtraction							
To add and subtract numbers mentally, including:	a three-digit number and ones						
	a three-digit number and tens						
	a three-digit number and hundreds						
To solve number problems and practical problems involving these ideas.							
To add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction							
To estimate the answer to a calculation and use inverse operations to check answers							
To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.							
Number – multiplication and division							
To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables							
To 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							
To 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 3 Curriculum Overview

Number - fractions						
To count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10						
To recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions with small denominators						
To recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators						
To recognise and show, using diagrams, equivalent fractions with small denominators						
To add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7]						
To compare and order unit fractions, and fractions with the same denominators						
To solve problems that involve all of the above.						
Measurement						
To measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)						
To measure the perimeter of simple 2-D shapes						
To add and subtract amounts of money to give change, using both £ and p in practical contexts						
To tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks						
To estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight						
To know the number of seconds in a minute and the number of days in each month, year and leap year						
To compare durations of events [for example to calculate the time taken by particular events or tasks].						

Year 3 Curriculum Overview

events or tasks].

Geometry – properties of shapes						
To draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them						
To recognise angles as a property of shape or a description of a turn						
To identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle						
To identify horizontal and vertical lines and pairs of perpendicular and parallel lines.						

Statistics						
To interpret and present data using bar charts, pictograms and tables						
To solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.						

Year 4 Curriculum Overview

Year 4 Maths Assessment Framework

1: WTS, 2: EXS, 3: GDS

Number – number and place value							
To count in multiples of 6, 7, 9, 25 and 1000							
To find 1000 more or less than a given number							
To count backwards through zero to include negative numbers							
To recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)							
To order and compare numbers beyond 1000							
solve number and practical problems that involve all of the above and with increasingly large positive numbers							
To read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.							
Number – addition and subtraction							
To add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate							
To estimate and use inverse operations to check answers to a calculation							
To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.							
Number – multiplication and division							
To recall multiplication and division facts for multiplication tables up to 12 × 12							
To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers							
To recognise and use factor pairs and commutativity in mental calculations							
To multiply two-digit and three-digit numbers by a one-digit number using formal written layout							
To solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.							

Year 4 Curriculum Overview

Number – fractions (including decimals)						
To recognise and show, using diagrams, families of common equivalent fractions						
To count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.						
To solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number						
To add and subtract fractions with the same denominator						
To recognise and write decimal equivalents of any number of tenths or hundredths						
To recognise and write decimal equivalents to ¼, ½ , ¾						
To find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths						
To round decimals with one decimal place to the nearest whole number						
To compare numbers with the same number of decimal places up to two decimal places						
To solve simple measure and money problems involving fractions and decimals to two decimal places.						
Measurement						
To convert between different units of measure [for example, kilometre to metre; hour to minute]						
To measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres						
To find the area of rectilinear shapes by counting squares						
To estimate, compare and calculate different measures, including money in pounds and pence						
To read, write and convert time between analogue and digital 12- and 24-hour clocks						
To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.						

Year 4 Curriculum Overview

to months; weeks to days.							
Geometry – properties of shapes							
To compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes							
To identify acute and obtuse angles and compare and order angles up to two right angles by size							
To identify lines of symmetry in 2-D shapes presented in different orientations							
To complete a simple symmetric figure with respect to a specific line of symmetry.							

Geometry – position and direction							
To describe positions on a 2-D grid as coordinates in the first quadrant							
To describe movements between positions as translations of a given unit to the left/right and up/down							
To plot specified points and draw sides to complete a given polygon.							
Statistics							
To interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.							
To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.							

Number Sense!

Children need to understand our number system, starting with counting numbers, building an understanding of how our numbers work and fit together. This includes exploring place value and comparing and ordering n applying this understand in different contexts.

Recalling Facts

- It is important that children recognise number bonds, different pairs of numbers with the same total.

6 + 2

3 + 2

7 + 3

5 + 3

8

5

10

1 + 4

6 + 4

6 + 1

6 + 3

7

3 + 4

5 + 4

9

6

3 + 3
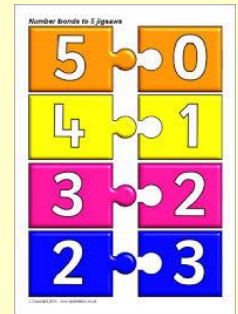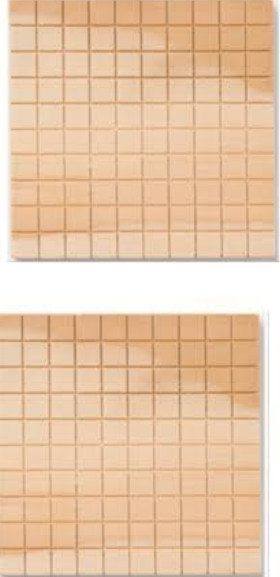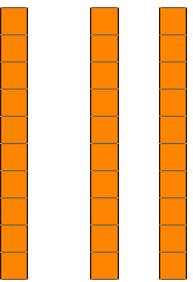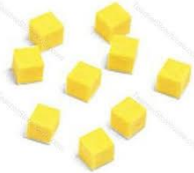
Place Value

- Place value is at the heart of the number system. All digits have a value and a secure understanding of this will enable children to use and understand different calculation methods

thousands	hundreds	tens	ones
1	2	3	9

| 100 | 10 | 1 |

Partitioning

432 + 325
400 + 300 = 700
 30 + 20 = 50
  2 +   5 =   7

700 + 50 + 7 = 757

757 – 432
700 – 400 = 300
 50 - 30 = 20
  7 -   2 =   5

300 + 20 + 5 = 325

72 x 8
70 x 8 = 560
 2 x 8 =   16

560 + 16 = 576

Column Methods

- Children with a secure understanding of place value will better understand the column method for addition and subtraction.

$$
\begin{array}{r}
342 \\
+ \ 77 \\
\hline
419 \\
\hline
1
\end{array}
$$

$$
\begin{array}{r}
948 \\
-263 \\
\hline
685 \\
\hline
\end{array}
$$

- Understanding place value will help children see the relationship between the columns.

Multiplication – Compact Method

```
        3  6
  x        7
  ─────────────
        4  2        Expanded column written method,
  ─────────────     progressing to the compact column
  2  1  0               written method
  ─────────────
  2  5  2
```

```
        3  6
  x        7
  ─────────────
  2  5  2
        4
```

By the end of Year 4, children will be able to show their understanding as:

Compact column written
method for multiplication

```
     3  4  2
  x        7
  ─────────────
  2  3  9  4
        2  1
```

Times Tables Toolbox

X	4
1	4
2	8
3	12
4	16
5	20
6	24
7	28
8	32
9	36
10	40
11	44
12	48

Short Division

Songs

- Learning songs is a great way to learn maths information.

- Just search for the mathematics your child is learning on YouTube and see what results you get.

- NumberRock, HaveFunTeaching, laughalongandlearn, Mr. DeMaio, Powerdot math, AdamUp Maths – to name just a few!
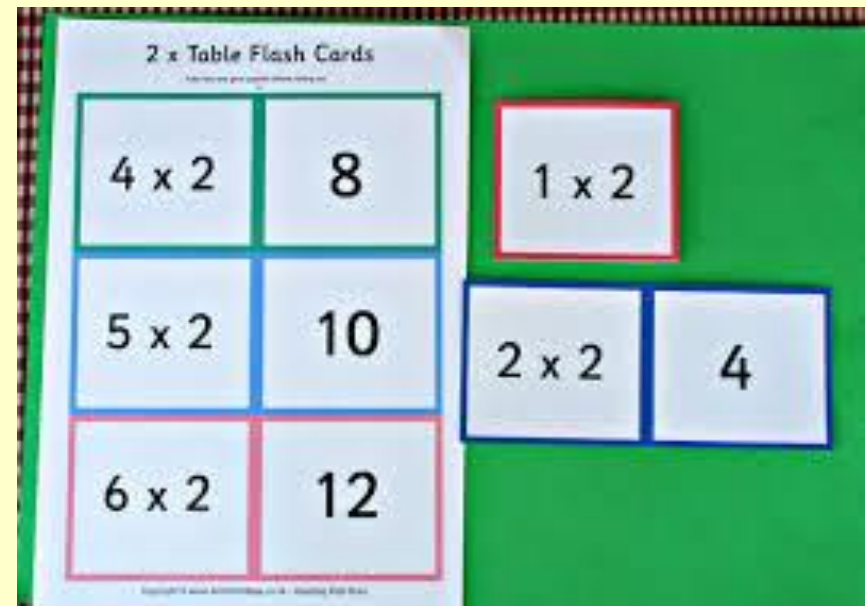
Life!

- Adding up shopping at you put things in your basket.
- Working out how much change you will get.
- Telling the time using an analogue and digital clock or watch.
- Baking – working out ingredients.
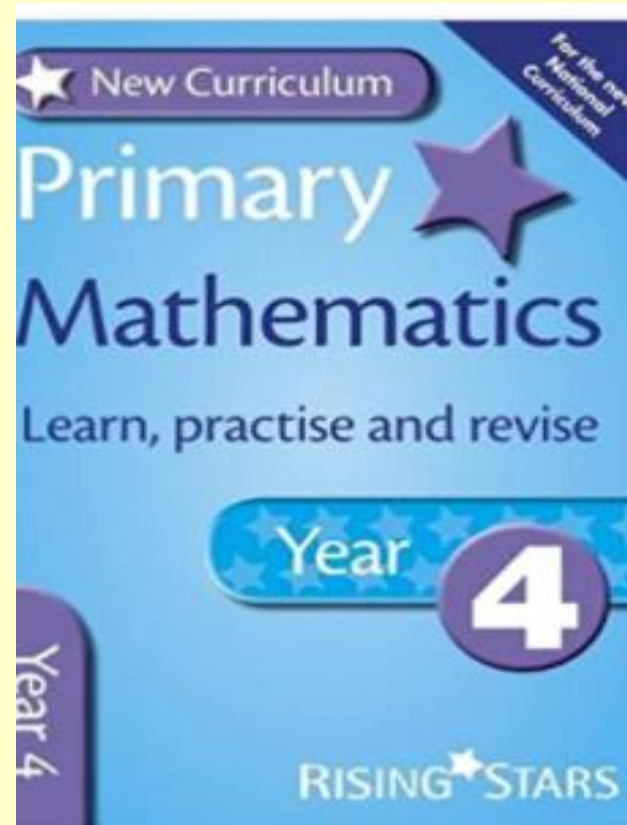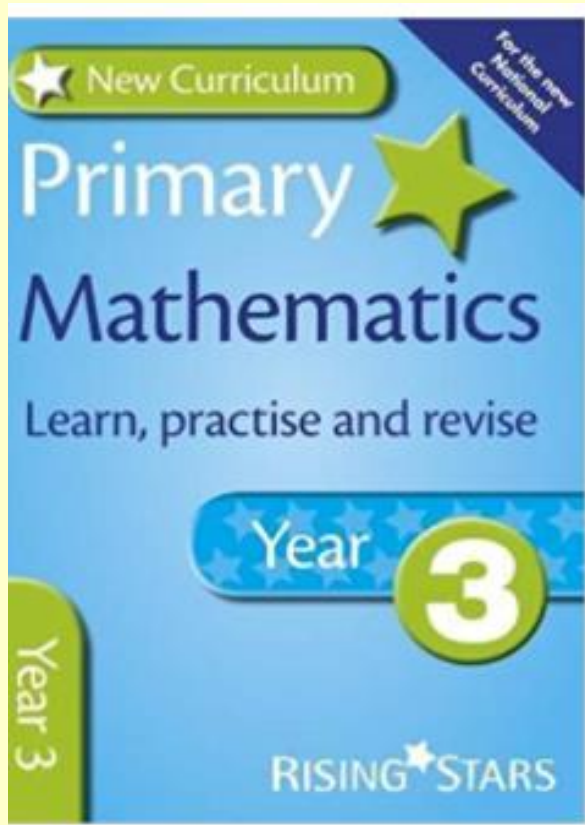- Cooking – working out timings.

Practise Times Tables!

- Good old fashioned singing times tables over and over again is the only way to learn them for life!

Useful Resources

- Available from Amazon, WH smith and Waterstones.

Homework!

- Finally … please, please, please support your child with their homework!