

# TIMES TABLES

---

HOW WE TEACH TIMES TABLES AND HOW YOU CAN HELP



# WHY ARE TIMES TABLES IMPORTANT?

- New from 2019: all children in year 4 will sit an online times table test.
- Times Tables knowledge and recall underpin so many different areas of maths - not just long multiplication or division!

## Greatest Common Factor

- Compare the two strings of factors and find the largest common factor:

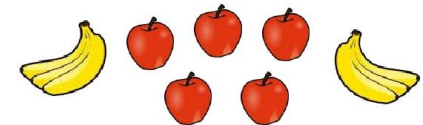
75 = 1, 3, 5, 15, 25, 75

30 = 1, 2, 3, 5, 6, 10, 15, 30

The Greatest Common Factor is 15

$$\frac{6}{8} = \frac{3}{4}$$

What is the Ratio of Apples to Bananas ?



There are 5 apples and 6 bananas, so the ratio is 5 to 6.

The Ratio is Apples : Bananas = 5 : 6

# HOW DO WE TEACH TIMES TABLES?

---

## **Progression: Learning Times Tables**

From the 2019-20 academic year, all year 4 children will be expected to complete an online, national times table test. This is in line with the expectation in the national curriculum that all children should be able to rapidly recall times tables facts to 12 x 12, along with the associated division facts.

In the trials carried out in 2018, children had 7 seconds to answer each question and type it into the computer – very rapid recall indeed!

In order for children to fully and expertly understand their times tables, the Hampshire Maths team recommend following a concrete, pictorial and abstract progression. This should start in KS1 and continue into KS2.

## Progression:

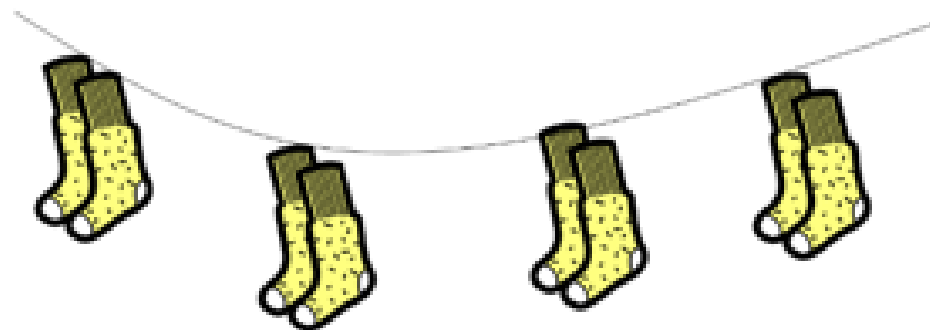
1. Concrete: using 'lots of' to reinforce the ideas of groups. i.e. how many socks in 4 pairs? How many wheels on 3 cars? If 4 children each have 2 pencils, how many pencils are there in total?

The idea of multiplication being repeated addition is important.

Representing the multiplication in many ways is important. Eg.

- Numicon is a good resource to show the 'groups' or 'lots of'.
- Can make groups of items with hoops and beanbags, or multi-link eg.

How many socks on the line?



$$4 \times 2 = 2 + 2 + 2 + 2 = 8$$





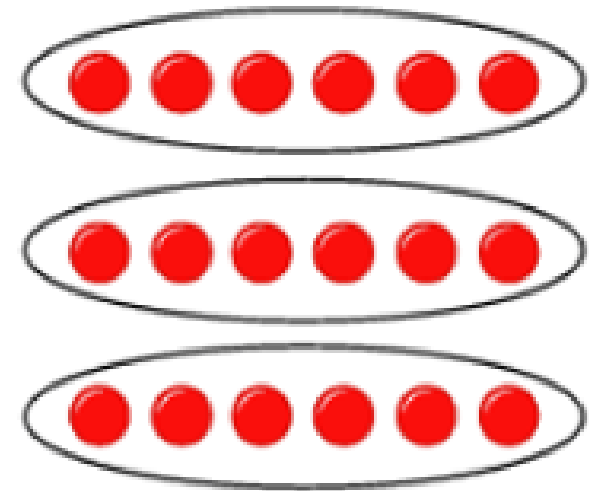
$$3 \times 4 = 4 + 4 + 4 = 12$$



$$4 \times 3 = 3 + 3 + 3 + 3 = 12$$

2. Pictorial: drawing diagrams of the concrete groups you have made is an excellent start to moving away from using manipulatives such as those shown in step 1 above.

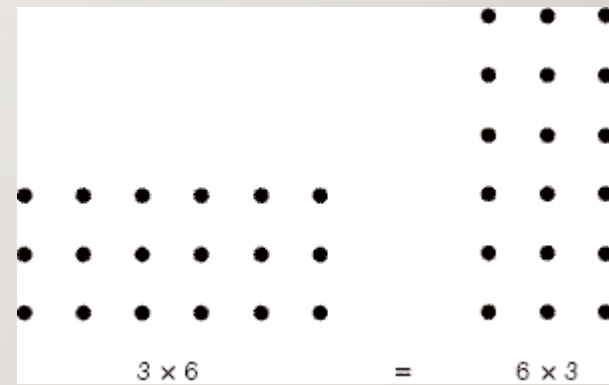
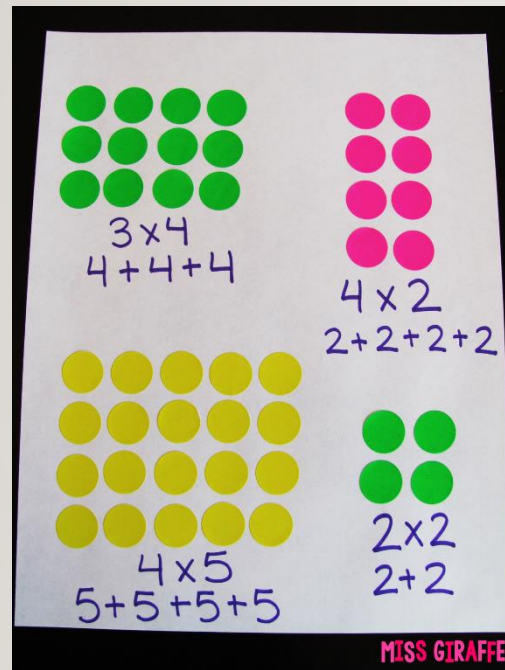
$$3 \times 6 = 18$$



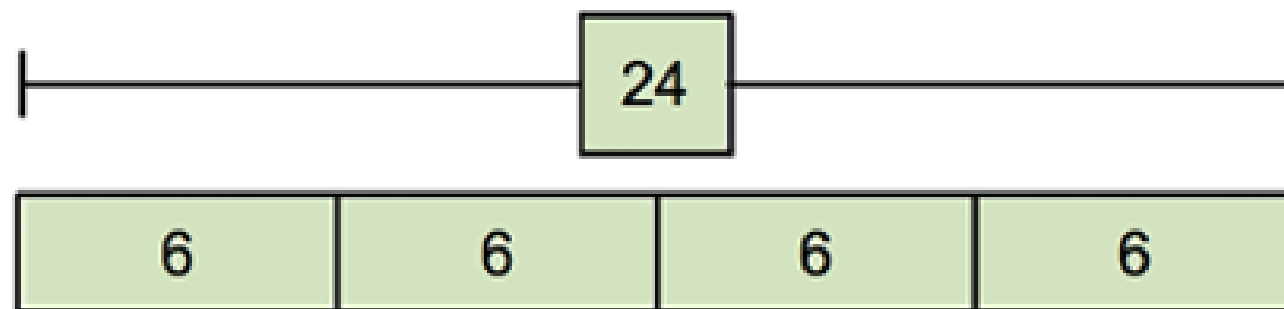
Moving on from drawing groups to arrays is the next step: it is an excellent way to show the relationship between multiplication and division, and to explain the commutative law (that  $5 \times 3 = 3 \times 5$  eg.)

# EXAMPLES OF ARRAYS

---



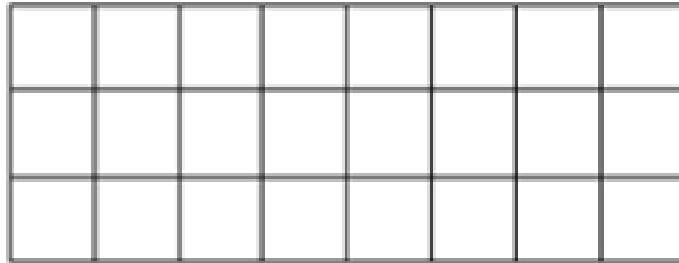
Bar models can also be used as a way to draw multiplication questions, as can repeated jumps on a numberline.



**Important note:** by the end of year 3, children should be moving away from drawing **arrays with dots/circles** and onto drawing **arrays using the squares** in their books. This will be important as they progress through the school.



**Important note: by the end of year 3, children should be moving away from drawing arrays with dots/circles and onto drawing arrays using the squares in their books. This will be important as they progress through the school.**



$$3 \times 8 = 24$$

This allows the children to reason more deeply and obtain a deeper understanding of number. It again reinforces the commutative and associative law.



$$3 \times 5 = 15,$$

$$\text{or } 3 \times 3 + 2 \times 3 = 15$$

Again, with all arrays, it is easy to highlight the relationship between multiplication and division.

3. Abstract: once children understand times tables through the representations detailed above, they will be able to 'figure out' times tables by themselves. This will lead into the 'rapid recall' of all multiplication and division facts 😊

This is where you can help practise at home with TT  
Rockstars/quick fire quizzes!



No dinner for you until you tell me your 7 times table!

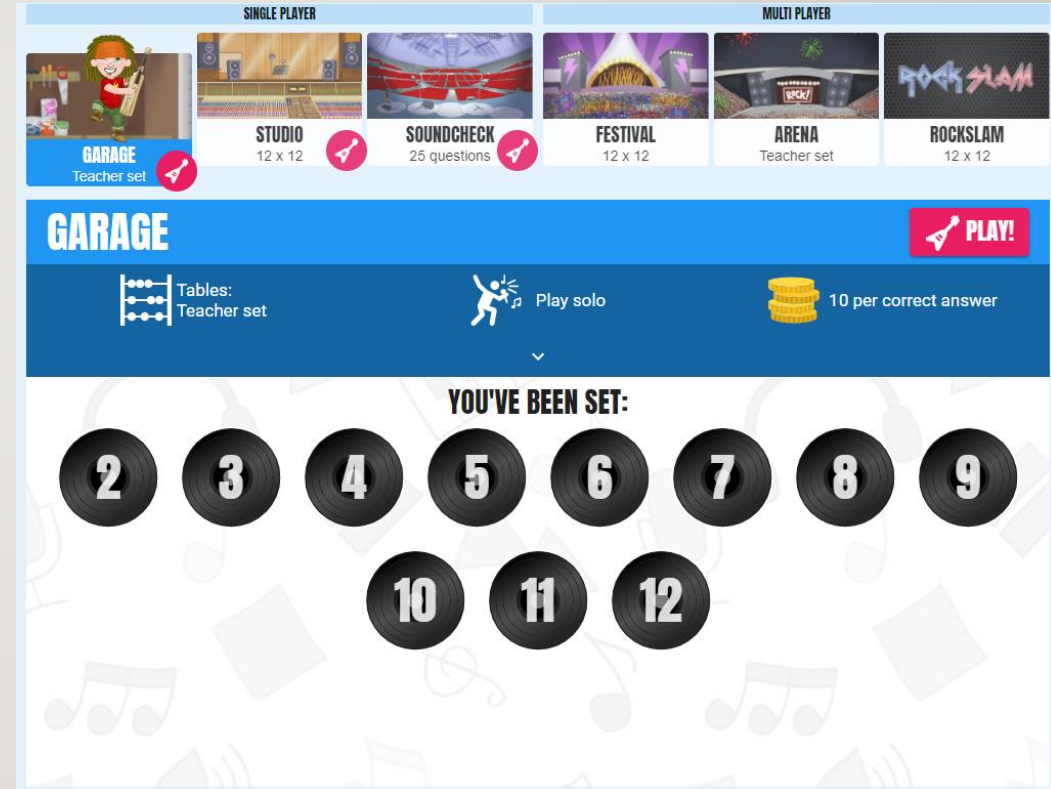
# HOW DO WE PRACTICE TIMES TABLES RECALL?

---

And how can you help at home 😊

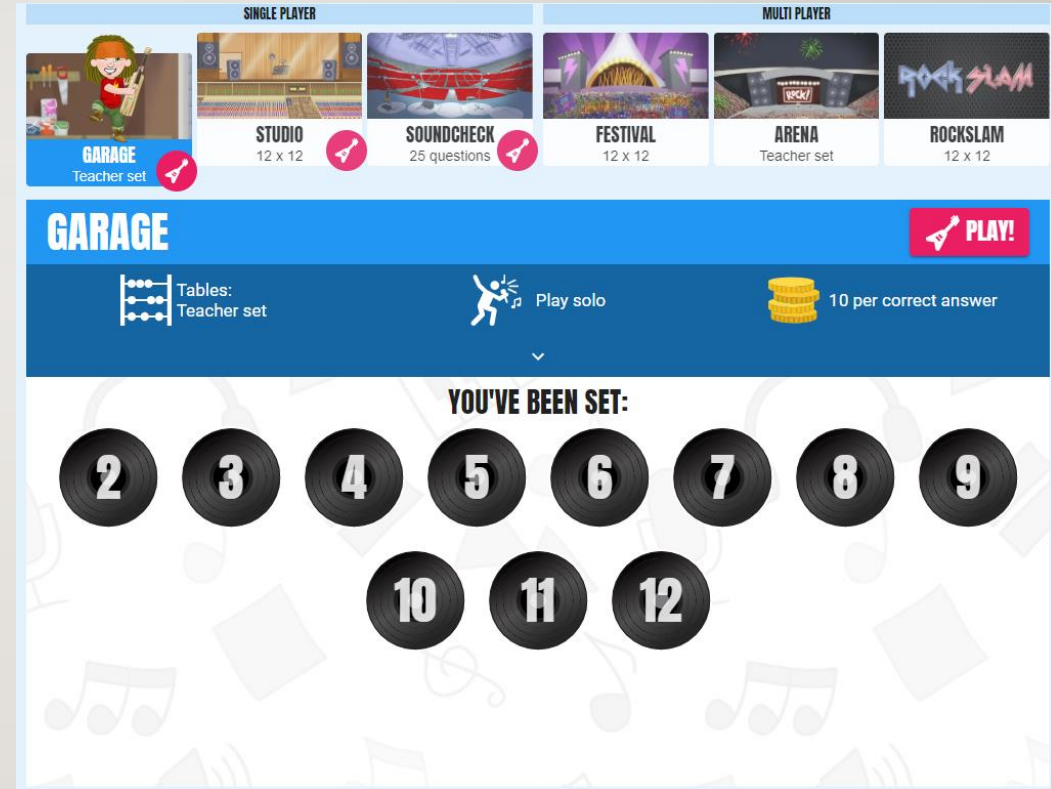
## TIMES TABLE ROCKSTARS!

- Your children have been provided with log-ins (if they have not reached home, we can send home another copy!)
- TTRockstars is available as a free-app and available online @ <https://ttrackstars.com/org>



# TIMES TABLE ROCKSTARS!

- TTRockstar Clubs are held on Monday, Tuesday and Wednesday lunchtimes.
- Groups of children play throughout the week during registration time.
- TTRockstars is used in class in maths lessons on a Friday.
- TTRockstars is celebrated in Friday assemblies.

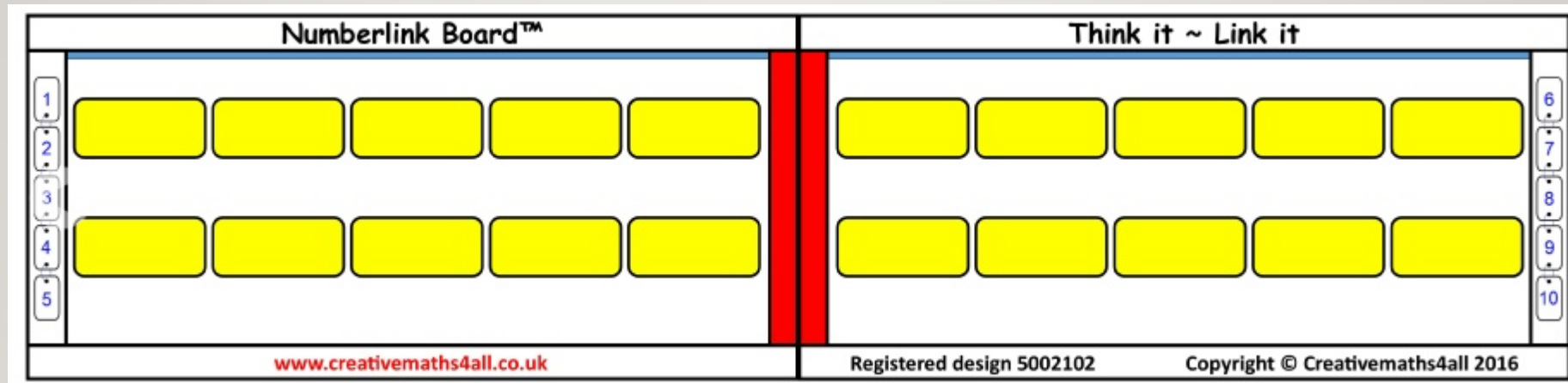




# NUMBERLINK BOARDS

---

One... 10... five... derive!



## Step 1

# Write in the multiplicands

Write the multiplicands in the top row of yellow boxes. This reminds the children of this structure of multiplication as repeated addition.

Numberlink Board™					Think it ~ Link it					
1	8	8	8	8	8	8	8	8	8	6
2										7
3										8
4										9
5										10

[www.creativemaths4all.co.uk](http://www.creativemaths4all.co.uk) Registered design 5002102 Copyright © Creativemaths4all 2016

## Step 2

# Write in the key facts

Fill in the products in the order **x1**, then **x10** then **x 5**. The **products** should be written in the **white space** below the multiplicands. Children will then have key facts to support the connection of other multiples. This is a key feature of the Numberlink Board™.

Numberlink Board™					Think it ~ Link it				
1	8	8	8	8	8	8	8	8	8
2	8				8				80
3									
4									
5									

www.creativemaths4all.co.uk      Registered design 5002102      Copyright © Creativemaths4all 2016

# Use the key facts to derive other facts

Numberlink Board™					Think it ~ Link it				
1	8	8	8	8	8	8	8	8	8
2									
3	8								80
4									
5									

www.creativemaths4all.co.uk      Registered design 5002102      Copyright © Creativemaths4all 2016

If  $8 \times 5$  is 40 what is  $8 \times 6$ ?

If  $8 \times 10$  is 80 what is  $8 \times 9$ ? Use what you know.



# Use the distributive law to derive facts

Numberlink Board™					Think it ~ Link it				
1	8	8	8	8	8	8	8	8	8
2	8	16	24	32	40	48	56	64	72
3									
4									
5									
www.creativemaths4all.co.uk					Registered design 5002102 Copyright © Creativemaths4all 2016				

$$8 \times 8 = 8 \times 5 + 8 \times 3$$

or

$$8 \times 8 = 8 \times 10 - 8 \times 2$$

$8 \times 7 = 56$  convince me

Numberlink Board™					Think it ~ Link it				
8	8	8	8	8	8	8	8	8	8
8	16			40	56				
www.creativemaths4all.co.uk					Registered design 5002102 Copyright © Creativemaths4all 2016				

$$8 \times 7 = 8 \times 5 + 8 \times 2$$



# Turntable - a game for two or more players

This game is really good for becoming more fluent with a multiplication table that you have already begun to learn.

You will need:

A Numberlink Board™ and pen

A ten sided dice

1. Each player chooses the times table they would like to practise. The players can choose different times table to practise if they want.
2. Each player writes their multiplicands on, but none of their products.
3. The first player rolls the dice. The dice shows the multiplier, eg. if you roll a 6 find 6 times the multiplicand. The first player writes that product in the correct place on their board. (For the purpose of this game, use 0 as 10.)
4. The second player has a turn and writes their product on the board.
5. Take it in turns to roll the dice. If a number is rolled twice, the product is rubbed off the board. If a number is rolled again, the product can be written back on.
6. The winner can be:
  - the first person to write all the products on the board, or
  - the person who has the most products on when the time set for the game is up.

# Wipe Out! A game for two or more players

You will need:

A Numberlink Board™ and pen

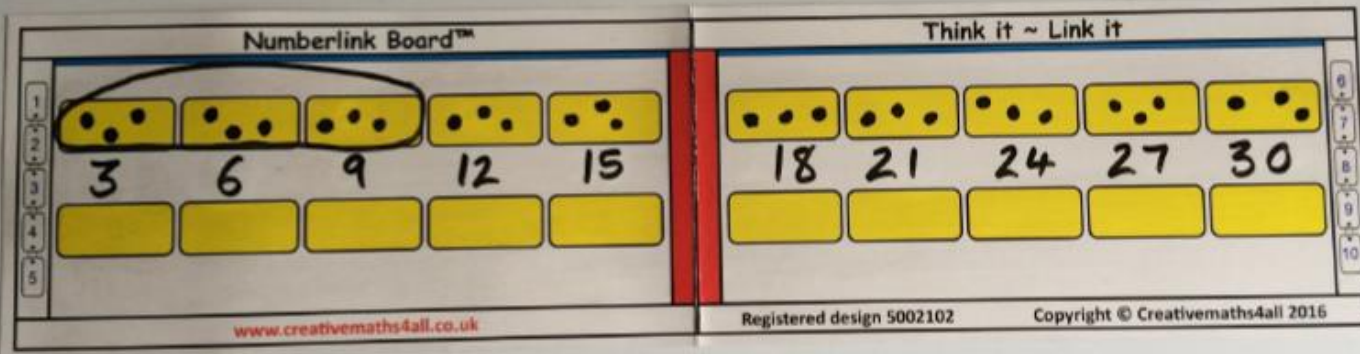
A pack of playing cards

Choose whether to play:

- to a time limit - eg. 3 minutes
- with 30 cards
- with the whole pack

1. Each player decides on a multiplication table they are going to work on and writes the multiplicands in the yellow boxes (like for Turntable game).
2. Each player takes it in turns to turn over a card, which acts as the multiplier, and then writes the product on their board.
3. If a player turns over a picture card they can rub a product off their opponent's board!
4. If their opponent's board is already empty they have to write a product **in!**
5. Play until all the cards are finished or the time is up. The winner is the player with the most products on their board.

$$3 \times 3 = 9$$



If children need support working out multiples initially, they can draw dots to show the **cardinality** of the number and count the dots.



Other resources, such as coins or Numicon™, can also be used to show **cardinality**.



Use the double row to make connections  
using place value

Numberlink Board™					Think it ~ Link it				
1	7	7	7	7	7	7	7	7	7
2	7	14	21	28	35	42	49	56	63
3	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
4	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3
5	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3
www.creativemaths4all.co.uk					Registered design 5002102 Copyright © Creativemaths4all 2016				



Use the double row to make connections  
with close multiplicands

Numberlink Board™					Think it ~ Link it				
1	80	80	80	80	80	80	80	80	80
2	80	160	240	320	400	480	560	640	720
3	80	160	240	320	400	480	560	640	720
4	79	79	79	79	79	79	79	79	79
5	79	158	237	316	395	474	553	632	711
6									
7									
8									
9									
10									
www.creativemaths4all.co.uk					Registered design 5002102 Copyright © Creativemaths4all 2016				

# RAISING THE PROFILE OF MATHS (AND TIMES TABLES) AT DROXFORD

Rock Name	Speed	Speed	Rock Status	Earnings	Band	Band	Group
Nate O'Mahony	1.50	1.04	Rock Legend	5,337			
Matt Rockmuller	3.03	1.08	Rock Legend	262,944	Soberton		Year 5
Danger Gaines	2.03	1.09	Rock Legend	225,305	Newtown		Year 6
Axel Hogan	5.88	1.52	Rock Legend	95,829	Hambledon		Year 3
C.C. One	2.18	1.56	Rock Legend	58,245	Newtown		Year 6
Riki Jamison	3.80	1.57	Rock Legend	37,604	Soberton		Year 6
Hayley Night	1.61	1.73	Rock Legend	16,457	Soberton		Year 5
Del Popson	1.83	1.74	Rock Legend	3,438	Hambledon		Year 4
David Jagger	4.08	2.10	Rock Star	28,567	Soberton		Year 5
Dennis Burns	4.88	2.32	Rock Star	72,930	Exton		Year 5

- Maths Display
- TT Rockstars certificates in celebration assemblies
- TT Rockstars Club
- Maths ambassadors