kids activities Blog

MATH:

YOU SHOULD NOT only KNOW WHAT YOU ARE DOING. YOU SHOULD ALSO KNOW

WHY & HOW

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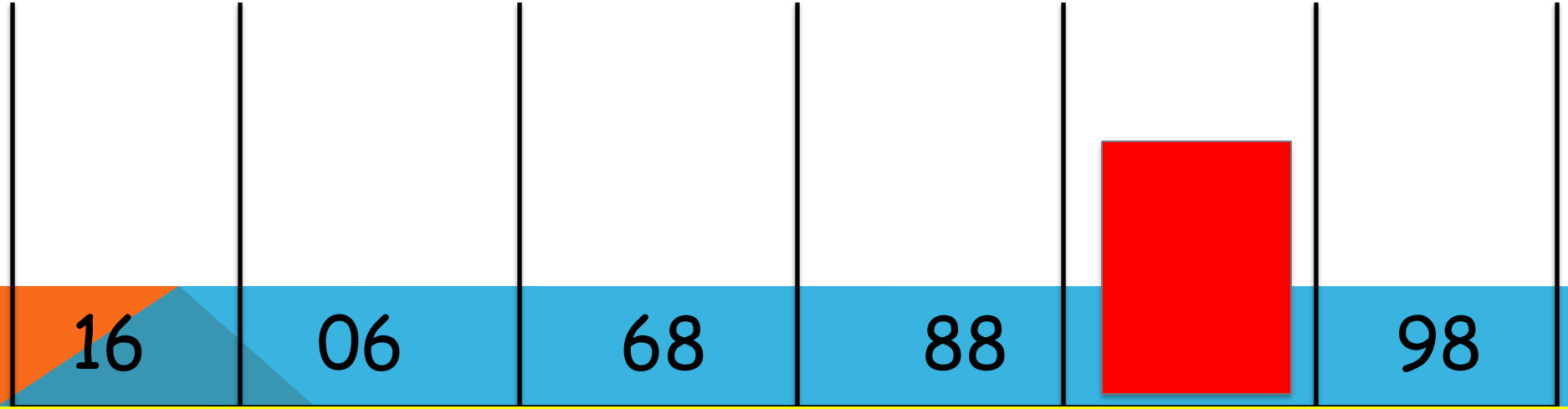
Langtoft Primary School

Maths Workshop 2023

Aims of the session

- To know what maths looks like at Langtoft Primary School from EYFS to Year 6.
- To know how maths is taught for the 4 operations - addition, subtraction, multiplication and division.
- To know how children can be best supported at home.

IN WHAT NUMBER PARKING SPOT IS THE RED CAR PARKED?

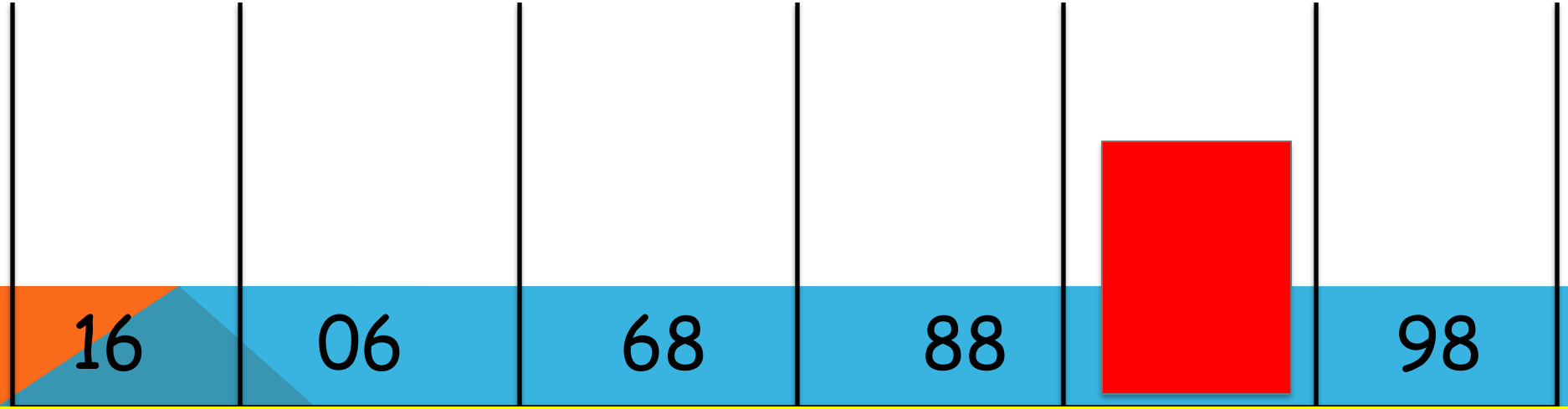


We want our children to become thinkers and collaborators.

IN WHAT NUMBER PARKING SPOT IS THE RED CAR PARKED?

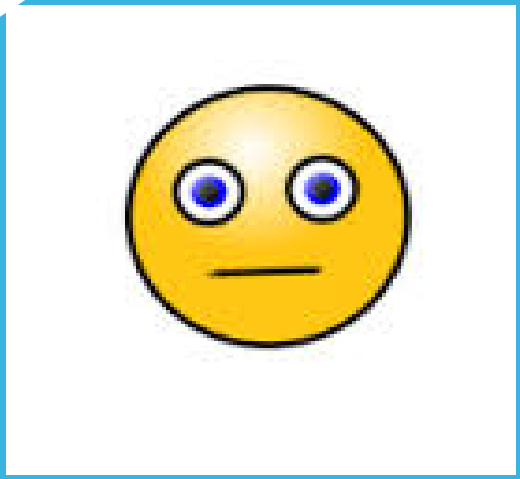
ANSWER: 87

(The number line is upside-down)



We want our children to become thinkers and collaborators.

On a scale of one to ten, how much do you honestly enjoy mathematics?



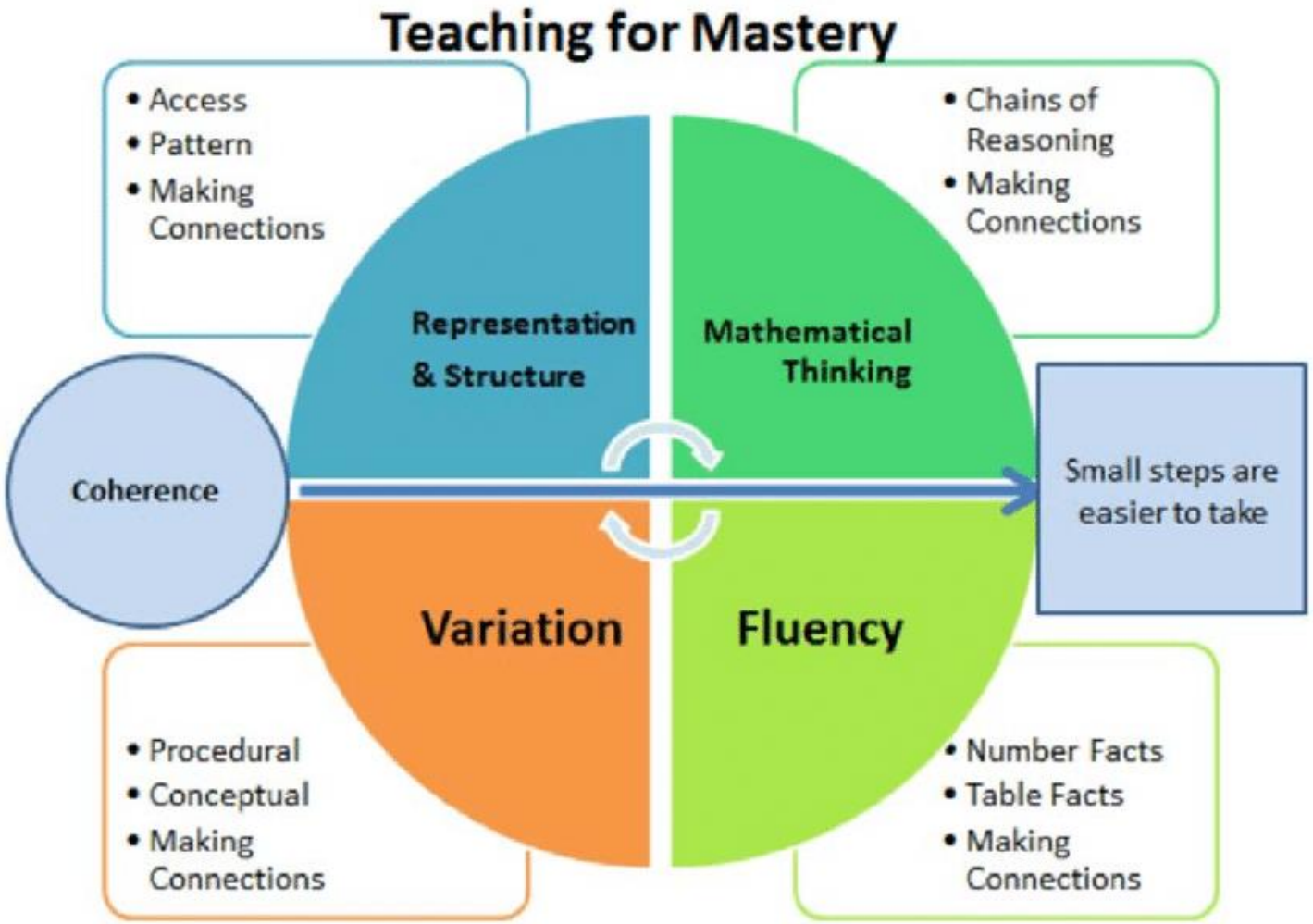
Research suggests that as many as 60% of adults would rather clean the toilet than work out a maths problem.

An even larger percentage say:

I was never any good at maths.

What does maths look like at Langtoft?

- Our curriculum is based on the national curriculum and White Rose Maths and other complementary materials that support the delivery of the curriculum.
- These include, NCETM, NRich, Primary Stars, Classroom Secrets – these are used across KS1 and KS2 allowing children to be exposed to a variety of different types of learning and to ensure coverage of fluency, problem solving and reasoning in different formats to ensure that our maths curriculum is rich and varied.

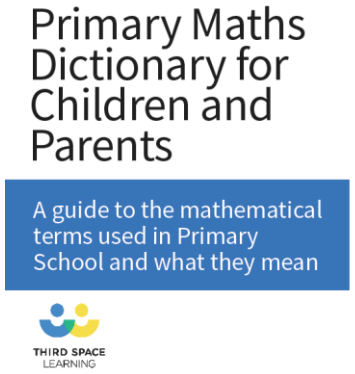


5 Big Ideas NCETM – Teaching for Mastery.

- Teaching is designed to enable a coherent learning progression through the curriculum, providing access for all pupils to develop a deep and connected understanding of mathematics that they can apply in a range of contexts.
- All learners can succeed.

Calculation Policy and CPA approach

- Our calculation policy is in line with the programmes of study taken from the National Curriculum for Mathematics (2014). It is designed to be challenging, focussing on essential core subject knowledge and skills. This document guides you through the appropriate calculation methods within each year group and the progression of skills throughout the school.
- The content of this document is set out in year group blocks under the following headings: addition, subtraction, multiplication and division.

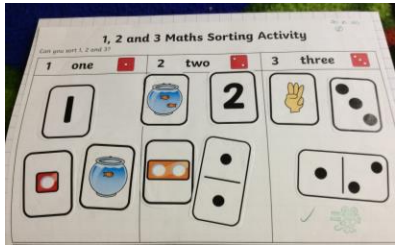


What is CPA?

C is for concrete. New concepts are introduced through the use of physical objects or practical equipment. These can be physically handled, enabling children to explore different mathematical concepts. These are sometimes referred to as maths manipulatives and can include ordinary household items such as straws or dice, or specific mathematical resources such as dienes or Numicon.

P is for pictorial. Once children are confident with a concept using concrete resources, they progress to pictorial representations. By doing this, they are no longer manipulating the physical resources, but still benefit from the visual support the resources provides.

A is for abstract. Once children have a secure understanding of the concept through the use of concrete resources and visual images, they are then able to move on to the abstract stage. Here, children are using symbols to solve problems. To be able to access this stage effectively, children need access to the previous two stages alongside it.

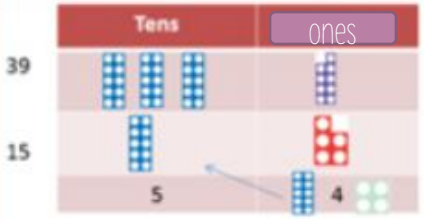


Maths in EYFS

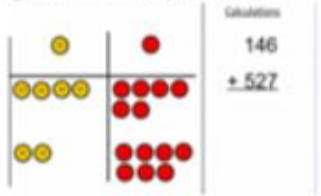
- Learning through play.
- Outdoor activities.
- Counting, counting and more counting!
- Pattern spotting
- Number recognition and ordering to 10.
- Learning numbers bond up to 10.
- Shape recognition, 2D and 3D.
- Addition and subtraction using single digit numbers.

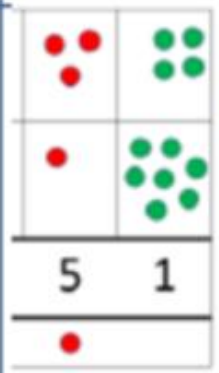
Methods for calculating – Addition and Subtraction

Column Addition with regrouping.



Exchange ten ones for a ten. Model using numicon and pv counters.





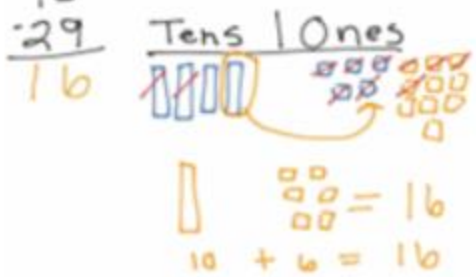
Children can draw a representation of the grid to further support their understanding, carrying the ten **underneath** the line

$$\begin{array}{rcr} 20 & + & 5 \\ \underline{40} & \underline{+} & \underline{8} \\ 60 & + & 13 \end{array} = 73$$

Start by partitioning the numbers before formal column to show the exchange.

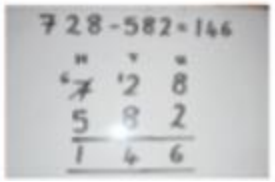
$$\begin{array}{r} 536 \\ \underline{+\ 85} \\ \underline{621} \\ 1\ 1 \end{array}$$

Begin with base 10 or Numicon. Move to pv counters, modelling the exchange of a ten into tten ones. Use the phrase 'take and make' for exchange.



Children may draw base ten or PV counters and cross off.

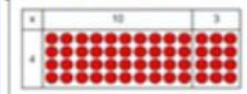
Begin by partitioning into pv columns



Then move to formal method.

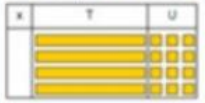
Methods for calculating – Multiplication and division

Show the links with arrays to first introduce the grid method.



4 rows of 10
4 rows of 3

Move onto base ten to move towards a more compact method.

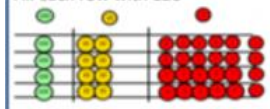


4 rows of 13

Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows

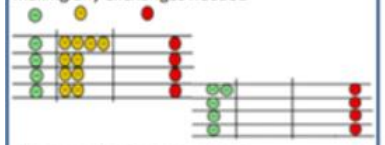
Calculations
4 x 126

Fill each row with 126



Calculations
4 x 126

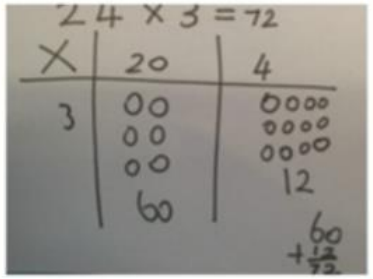
Add up each column, starting with the ones making any exchanges needed



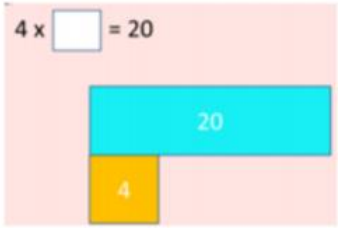
Then you have your answer.

Children can represent their work with place value counters in a way that they understand.

They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below.



Bar model are used to explore missing numbers



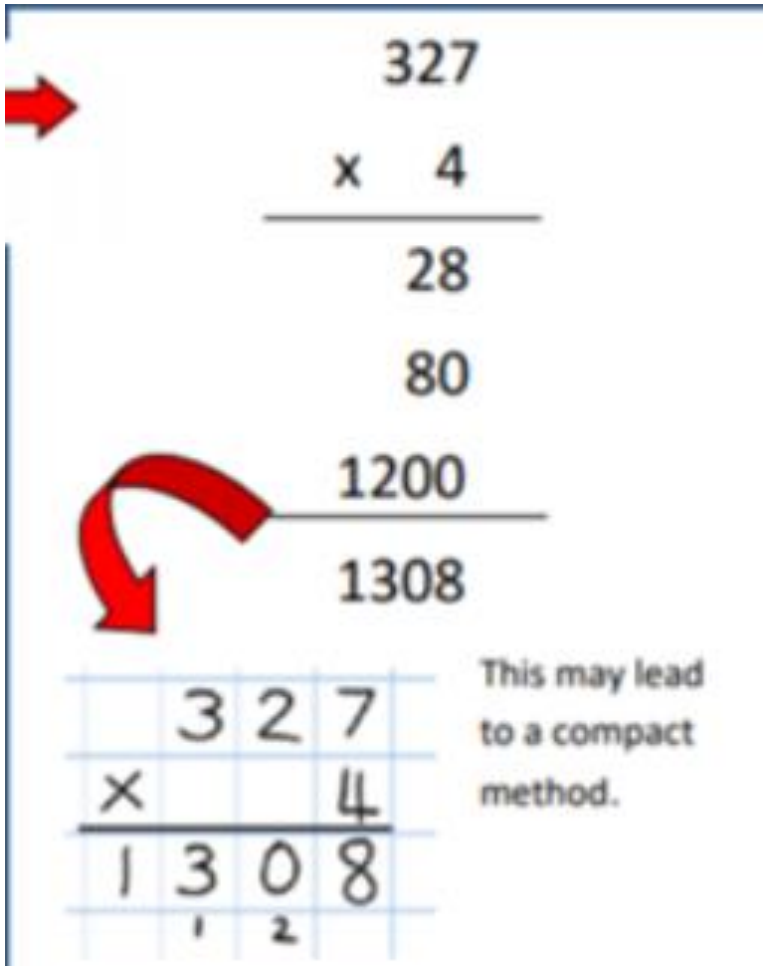
Start with multiplying by one digit numbers and showing the clear addition alongside the grid.

×	30	5
7	210	35

210 + 35 = 245

Moving forward, multiply by a 2 digit number showing the different rows within the grid method.

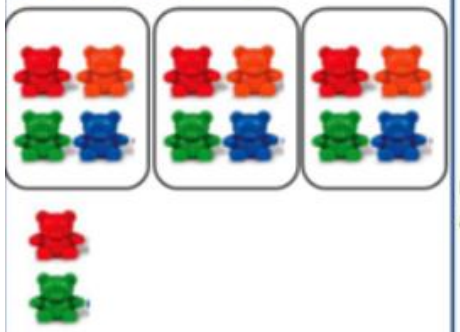
	10	8
10	100	80
3	30	24



Methods for calculating – Multiplication and division

14 ÷ 3 =

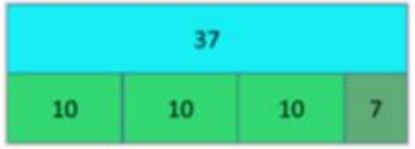
Divide objects between groups and see how much is left over



Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.

Draw dots and group them to divide an amount and clearly show a remainder.

Use bar models to show division with remainders.

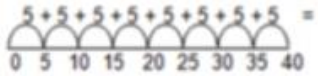


Complete written divisions and show the remainder using r.

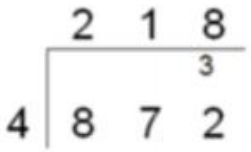
29 ÷ 8 = 3 REMAINDER 5

dividend divisor quotient remainder

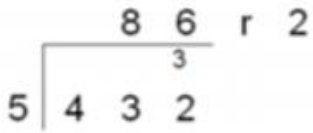
Example without remainder:
40 ÷ 5
Ask "How many 5s in 40?"



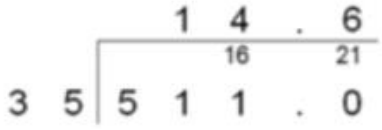
Begin with divisions that divide equally with no remainder.

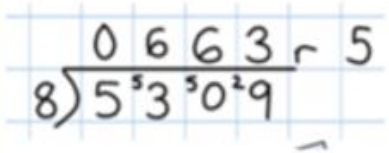


Move onto divisions with a remainder.



Finally move into decimal places to divide the total accurately.





Try it out!

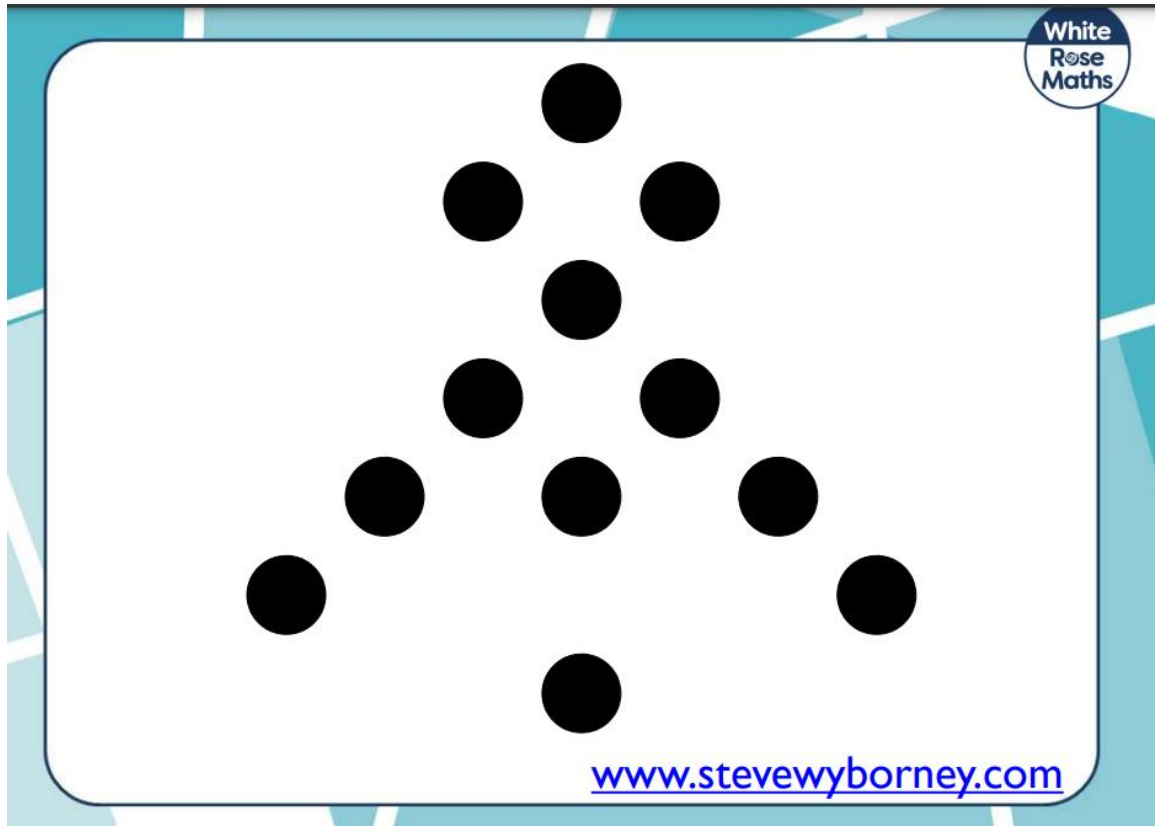
- Take a dice and create 2 numbers - Challenge yourself by having more digits!
- Choose a calculation method to follow.

White Rose Maths

'By giving our students practice in talking with others, we give them frames for thinking on their own.'

Vygotsky, L. (1978)

Questioning and talk
Your turn

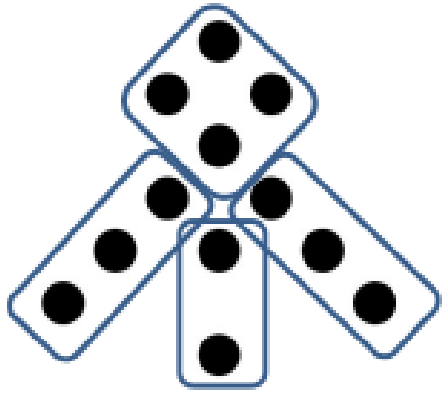


How many more number sentences can you make?

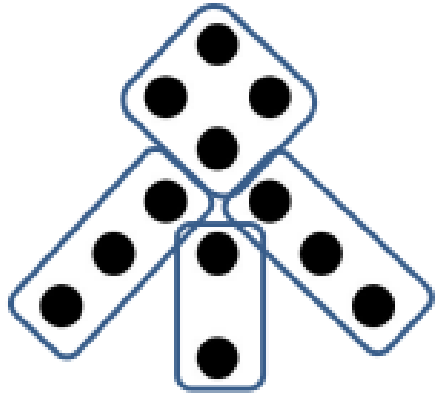
- Working with the person next to you can you make this formation and write a number sentence to go with the dotted formation?

Number Talks

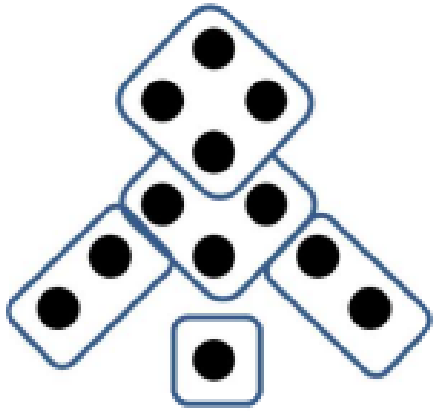
How many ways …?



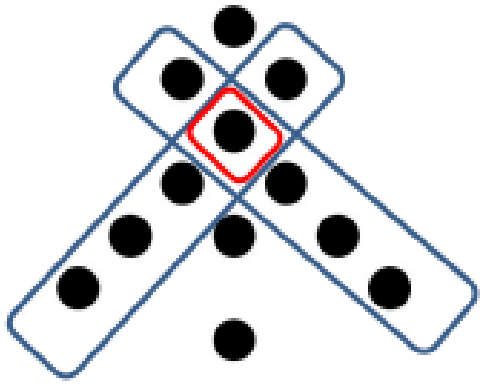
$4 + 3 + 3 + 2 = 12$



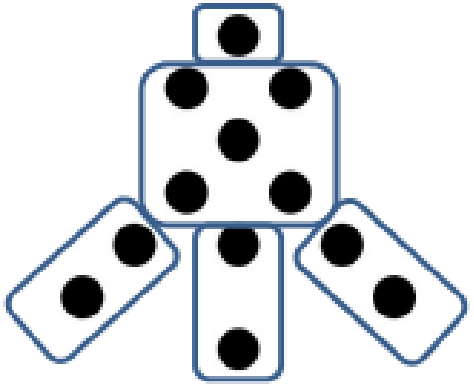
$4 + 3 + 2 + 3 = 12$



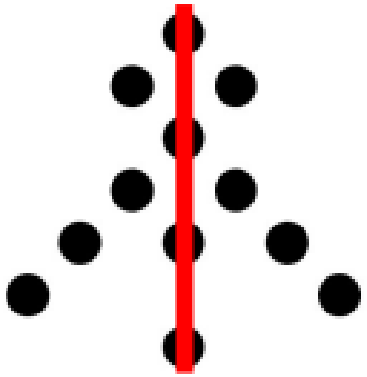
$4 + 3 + 2 + 2 + 1 = 12$



$5 + 5 + 3 - 1 = 12$



$1 + 5 + 2 + 2 + 2 = 12$



$6 + 6 = 12$

Problem solving and reasoning

Reasoning is the action of thinking about something in a logical and sensible way.

Is the statement true or false?

1 ten and 12 ones is greater than 2 tens.

How do you know?

Children need to experience problems with more than one answer.

- Some children find it difficult to work with problems that require more than one answer so we need to give them as many opportunities as we can to work in this way.

TOM HAS 38P IN HIS POCKET. HE HAS A 2P COIN AND A 1P COIN. THE OTHER COINS ARE SILVER. WHAT COINS COULD TOM HAVE IN HIS POCKET?
FIND ALL POSSIBLE ANSWERS.

20p + 10p + 5p

20p + 5p + 5p + 5p

10p + 10p + 10p + 5p.

10p + 10p + 5p + 5p + 5p

10p + 5p + 5p + 5p + 5p + 5p

5p + 5p + 5p + 5p + 5p + 5p + 5p

Expectation in Year 2.

We encourage children to work in a systematic way. Children could present this using coins.

Resources you can use at home

How can you help your child with Maths at home?

- Take away their fear.
- Reassure and praise whenever possible. Positive mindset…
- Let them see you using Maths in your everyday routines – portioning meals between the family, chopping vegetables into halves and quarters etc.
- Play with numbers and shapes through games.
- Seeing mistakes as an opportunity to learn and using them as a discussion point.
- Recognising the **importance** and value of Maths in our everyday lives e.g. managing money and telling the time.

Count - steps up the stairs, money into a money box etc

- Ask children to say how many without counting (5 or fewer)
- Play games using dice/dominoes and encourage child to say how many spots without counting.
- Ask children to set the table with enough knives, forks and plates for everyone.
- Spot numbers in the environment – on phones, microwaves, clocks, registration plates, doors.
- Ask children to think of their own representations for numbers eg one of them, two hands, three bears, four wheels on a car, five toes, six sides on a dice, seven dwarves, eight legs on an octopus etc
- Deliberately make mistakes. Children need to understand mistakes are normal and everyone makes them eg get mixed up when counting, muddle two numbers when ordering them.
- Watch Numberblocks on Cbeebies. This programme is written by maths specialists to model maths concepts and represents number brilliantly. Also, Numberjacks is excellent for solving problems.
- Hide numbers around the house or garden for children to find.
- Play outdoor maths games like hopscotch and skittles. Even better, let children make up their own games and decide how to score points.
- Read books with maths concepts eg The Very Hungry Caterpillar, One is a snail, ten is a crab, What's the time, Mr Wolf? The doorbell rang.
- Draw attention to more and less.

Alternatives to maths resources

Counters

or you could use……

Smarties

3D shapes

or you could use……

groceries

Counting Bears

or you could use……

anything you have a lot of!

You can use anything you have around the house

Pasta for counting

Cards for number recognition and counting

Chewits for counting

Magnetic numbers for number recognition

Toys to put in size order

Don’t Forget Outside

Numbers are all around us!

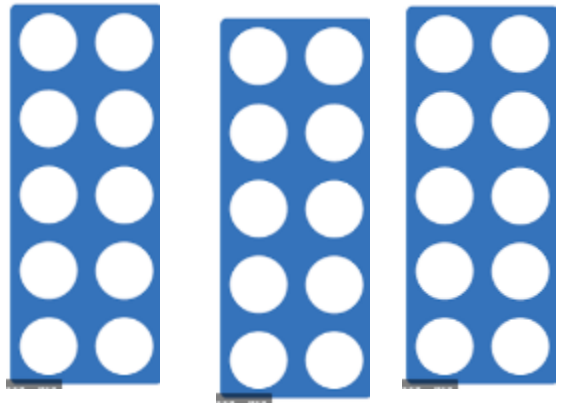
Counting in 2s and 10s

Numicon

or you could use……

socks

Numicon

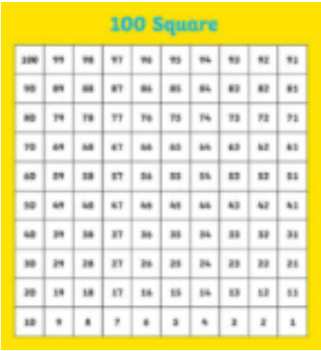


or you could use……

gloves

Numbers

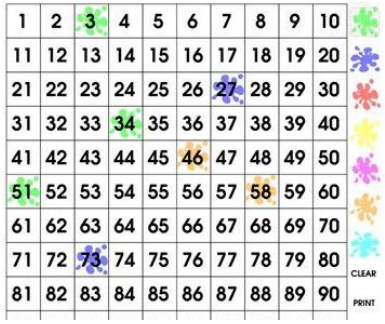
100 Square or you could use 100 square splat online game

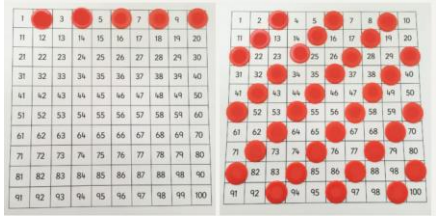


Games you could play:

Cover Up: Cover up one or more squares using counters. The child has to guess which numbers are hidden under the counter/s.

Patterns: Cover the multiples of 2, 3, 5 and 10 etc (one multiple at a time). Use the patterns to predict which numbers will be in the sequence.





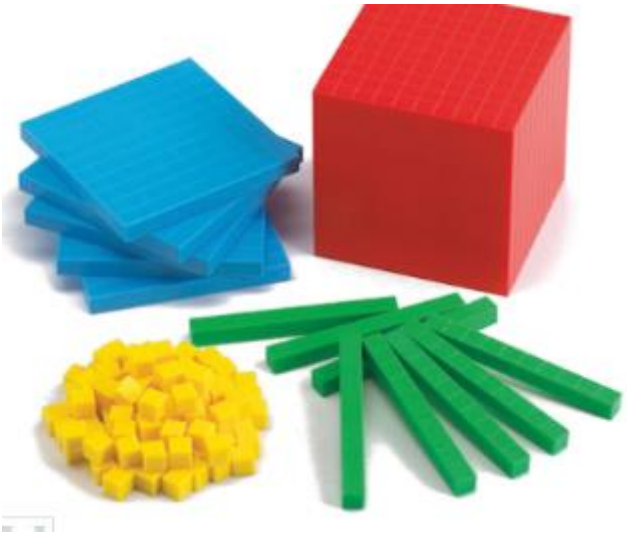
Dice or you could use an Online Dice

Games you could play:

Use dice to help your child recognise numbers at speed.

Knock Out: Each player chooses a "knock out number" – either 6, 7, 8, or 9. More than one player can choose the same number. Players take turns throwing both dice, once each turn. Add the number of both dice for the score. If a player throws a 6, 7, 8 or 9, they are knocked out of the game until the next round.

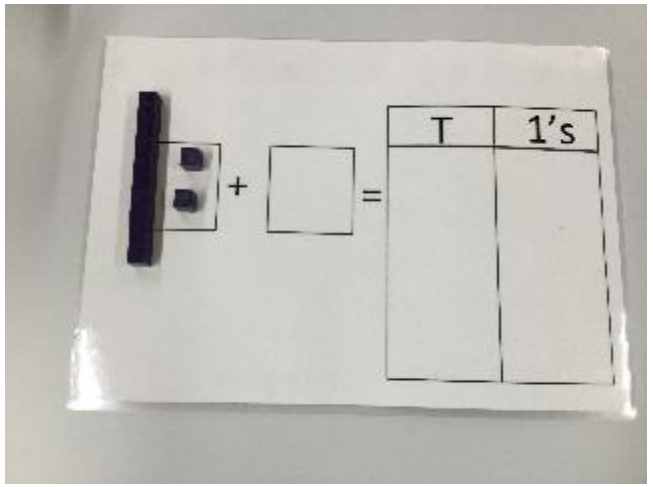
Addition/ Subtraction using sweets instead of dienes

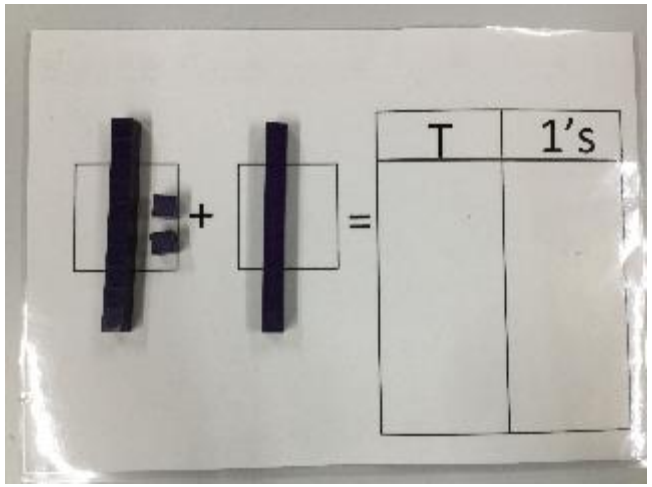


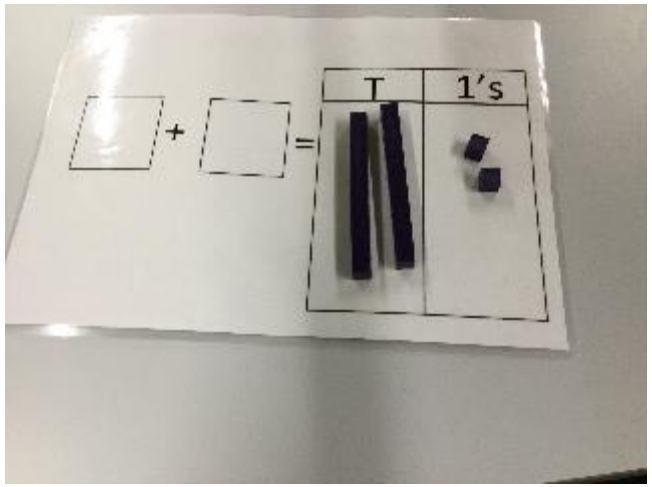
In Year 2 we use dienes for addition/ subtraction. Instead of tens and ones resource you could use sweets (such as Chewits). A whole pack of Chewits are the tens and individual Chewits are the ones. E.g. 18 = 1 tens and 8 ones

An example of an addition word problem being solved using dienes. This could be solved using sweets (e.g. Chewits)

Big skeleton goes to the shop to buy cakes. He buys 12 chocolate cakes and 10 cream cakes. How many does he buy altogether?

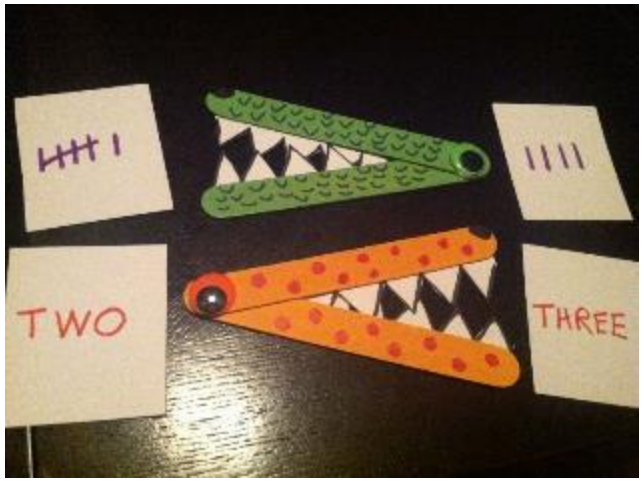






You could also use sticks as tens and stones as ones.

For greater or less than you could use…



For money work or problems you could use your own coins/ notes.

A quick guide to everyday Maths opportunities for your child

Practise spotting and recognising numbers in the environment. Add/multiply/subtract/divide door numbers, numbers on car registration plates, road signs and at the shop.

Flicking through the TV guide? Ask your child to calculate the length of their favourite programmes. How long is it until the next programme?

Use food packaging to discuss 2D and 3D shapes. What are the properties of these shapes e.g. how many faces, sides, vertices? Flatten the packaging out to find the net of the 3D shape too.

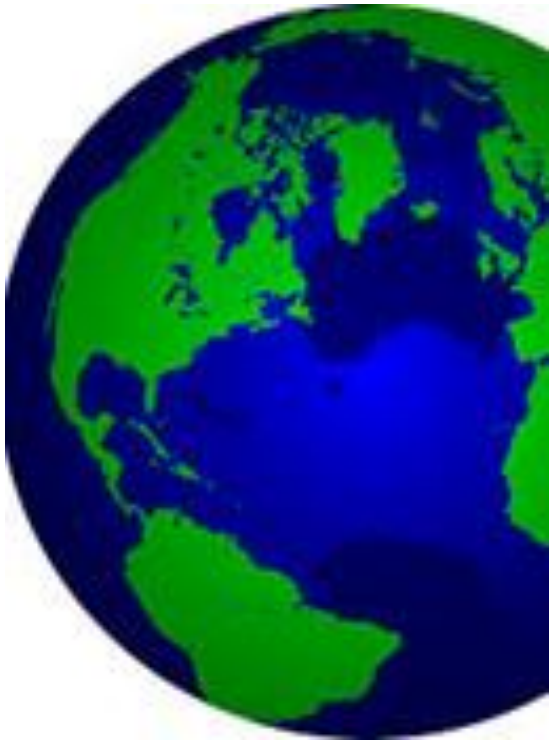
Measuring up for new furniture? Want to make sure the Christmas tree will fit in your living room? These are really good opportunities to encourage your child to see the value of careful measuring skills in everyday life.

Practise telling the time with your child. Can they read both the digital and analogue clock? Can they readily convert between the two and use the 24 hour clock? Can they also recognise Roman Numeral representations of the time too?

Board Games supply endless opportunities for Maths – Snakes and Ladders, Monopoly, Bingo, Connect Four, Battle Ships etc

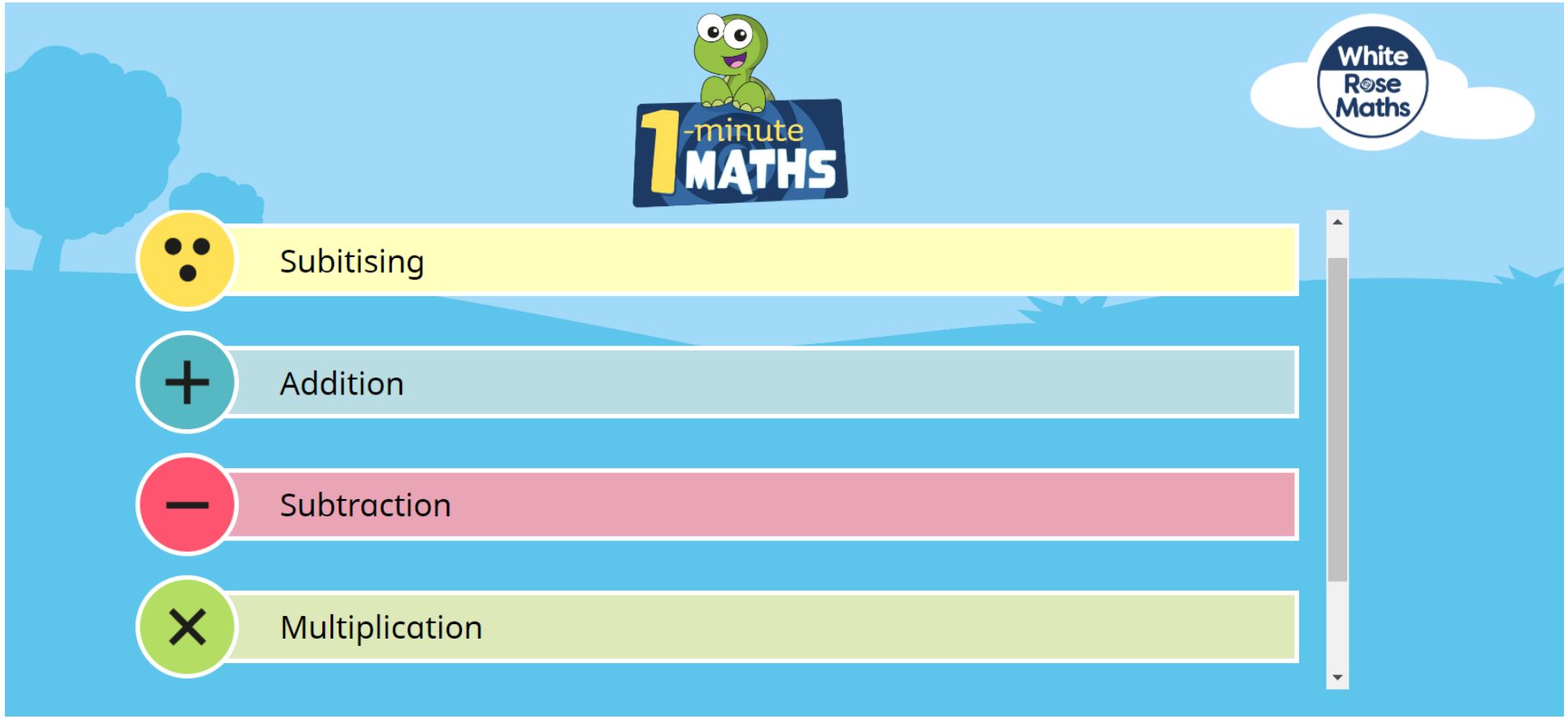
Websites to support children's Maths skills

- CBeebies have lots of fun and interactive games and activities to help get our younger children excited about Maths
- I See Maths – a useful site with a plethora of ideas for fun games that all the family
- Primary Games Arena – It is a free website that encourages children to play online maths games linked to their home learning. It breaks the games down into concepts which is really helpful.
- Hit the Button – children love this game as it helps to increase confidence through practising times tables and number bonds.
- Maths Zone – this site is jam-packed with fun ways to learn more about maths.
- BBC Bitesize – lots of information alongside short videos help to make the learning enjoyable and accessible for all children.



Math workshop

One way to support your children is by using



Math workshop

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Another way to support your children is by using

When it comes to times tables, speed AND accuracy are important — the more facts your child remembers, the easier it is for them to do harder calculations. Times Table Rock Stars is a fun and challenging programme designed to help students master the times tables. World Famous musicians need to practice and so do children with their tables!

Multiplication Grid

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

The red numbers indicate how many tables you know if you know 2s, 5s 10s and square numbers.

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

- Thank you for listening.
- We hope the workshop helps you understand how you can support your child at home.