Maths at Bromley Heath Junior School

Aims

- Develop children's understanding of mathematical concepts in all the different domains of maths
- Preparing them for the next stage in their education – secondary school, college and university – and as preparation for their adult lives, including potential careers.
- Every child to be confident in maths and to enjoy the challenges that the subject presents – given that they are likely to use mathematics, in some way, every day of their lives.
- Develop fluency and reasoning skills to solve increasingly complex problems and use their mathematical skills in a range of different contexts.
- Make connections between the different domains and with other subjects.
- Celebrate the work of mathematicians and mathematics in real life.
- Importance of parents and carers in supporting their children to develop fluent numerical skills and encourage the use of 'TT Rockstars' at home.
- Ultimately, we aim to develop children's curiosity about the subject, as well as an appreciation of the beauty and power of Mathematics.

Implementation (how we do it!)

- **One hour and 20 minutes of maths daily**
  - **20 minute arithmetic session (Y5&6)**
  - **10 minutes arithmetic session/10 minutes number facts practice (Y3&4)**
  - **1 hour maths lesson**

+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9	2+10
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9	3+10
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9	4+10
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9	5+10
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9	6+10
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9	7+10
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9	8+10
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9	9+10
10	10+0	10+1	10+2	10+3	10+4	10+5	10+6	10+7	10+8	10+9	10+10

Fill in sheet for specific times table being worked on. 2 minutes	Mark together – chanting questions and answers as marked – correct mistakes as go along. 3 minutes	Practice this week's 'super maths facts' with flash cards – targeted support where necessary. 2 minutes	Singing/chanting and/or counting in steps PowerPoint 3 minutes

2 x 2 = 4							
3 x 2 = 6	3 x 3 = 9						
4 x 2 = 8	4 x 3 = 12	4 x 4 = 16					
5 x 2 = 10	5 x 3 = 15	5 x 4 = 20	5 x 5 = 25				
6 x 2 = 12	6 x 3 = 18	6 x 4 = 24	6 x 5 = 30	6 x 6 = 36			
7 x 2 = 14	7 x 3 = 21	7 x 4 = 28	7 x 5 = 35	7 x 6 = 42	7 x 7 = 49		
8 x 2 = 16	8 x 3 = 24	8 x 4 = 32	8 x 5 = 40	8 x 6 = 48	8 x 7 = 56	8 x 8 = 64	
9 x 2 = 18	9 x 3 = 27	9 x 4 = 36	9 x 5 = 45	9 x 6 = 54	9 x 7 = 63	9 x 8 = 72	9 x 9 = 81

Arithmetic

- **Arithmetic** is a type of Maths which deals with the properties of numbers, and manipulates them using the four operations.

  The four operations are addition, subtraction, multiplication and division.

  It includes mental and formal written methods of calculation.

  Numbers include positive and negative numbers; whole numbers and fractions, decimals and percentages

- **4/5 times a week**

- **Same questions every day for week - different numbers and an extension for those that finish**

Arithmetic - Monday 4th April

1. $68 \overline{)2\ 5\ 1\ 6}$

2. 28% of 850 =

3. $\begin{array}{r} 1\ 5\ 9\ 2 \\ \times\quad 9\ 6 \\ \hline \end{array}$

4. 35% of 560 =

5. $\frac{1}{7} + \frac{3}{4} =$

6. 6 - 3.75 =

7. 70% of 5,000 =

8. 20 x (40 - 32) =

9. 903 - = 896

10. 909 x 0 =

11. 3.19 + 2.267 =

12. 592 = 500 + + 2

Extension: Find 2 ways to solve numbers 2 Challenge

1 Henry buys 2.5 kg of potatoes.

He uses $\frac{4}{5}$ kg to make some mash.

What is the mass of potatoes he has left?

2 What is the mean perimeter of the shapes below?

3 A rectangle is cut into two pieces.

The area of A is $\frac{5}{8}$ of the area of the rectangle.

The area of A is 28 cm^2 greater than the area of B.

What is the area of the rectangle?

White Rose Maths

Maths | Year 5 (v3)

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number **Place value** FREE TRIAL VIEW			Number **Addition and subtraction** VIEW		Number **Multiplication and division A** VIEW			Number **Fractions A** VIEW			
Spring term	Number **Multiplication and division B** VIEW			Number **Fractions B** VIEW		Number **Decimals and percentages** VIEW			Measurement **Perimeter and area** VIEW		Statistics VIEW	
Summer term	Geometry **Shape** VIEW			Geometry **Position and direction** VIEW		Number **Decimals** VIEW			Number **Negative numbers** VIEW	Measurement **Converting units** VIEW		Measurement **Volume** VIEW

- Step 1 Roman numerals to 12
- Step 2 Tell the time to 5 minutes
- Step 3 Tell the time to the minute
- Step 4 Read time on a digital clock
- Step 5 Use a.m. and p.m.
- Step 6 Years, months and days
- Step 7 Days and hours
- Step 8 Hours and minutes – use start and end times
- Step 9 Hours and minutes – use durations
- Step 10 Minutes and seconds
- Step 11 Units of time
- Step 12 Solve problems with time

- Step 1 Years, months, weeks and days
- Step 2 Hours, minutes and seconds
- Step 3 Convert between analogue and digital times
- Step 4 Convert to the 24 hour clock
- Step 5 Convert from the 24 hour clock

Lesson Structure

- Starter - gap filling, consolidation, times tables/number bonds, reminders, open ended to encourage using 'what we know'
- All start together (most of time unless continuation of previous lesson)
- I do ★ teacher model example - explaining thinking, including some examples of problem solving
- We do ★ children in pairs with support as necessary
- Repeat this sequence for different examples/contexts, building up skills INCLUDING PROBLEM SOLVING.
- Hinge question - where appropriate - multi-choice option based on common misconceptions
- You do ★ INDEPENDENT (send can be children off throughout above stages as they appear confident).

You do

- Fluency with reasoning questions separated into Step 1 and step 2.
  Step 1 - pure fluency with pictures etc where apprpriate to aid.
  Step 2 - more reasoning involved e.g. single step problems, spot the mistake (intelligent practice). Most children start here.
  Step 3 - Problem solving and reasoning RANGE - include some that draw on other areas of maths too
- Sequence may be one day or several depending on objective.
- Deepening activities for those who complete and extra fluency (step 1) available for those that need it (may need to start at last years objective).
- Use intervention/Visual aids so all can access.

LO: To revise decimal place value to 2dp

Fluency with reasoning

Step 1

1. a) What number is represented on the place value chart?

Ones	Tenths	Hundredths
0	2	3

Complete the sentences.

There are ☐ ones, ☐ tenths and ☐ hundredths.

The number is ☐.

b) Which number is represented on the place value chart?

Ones	Tenths	Hundredths
0	1	2

There are ___ ones, ___ tenths and ___ hundredths.

The number is ___

2. Represent the numbers on a place value chart and complete the stem sentences.

0.28 | 0.65 | 0.07 | 1.26

Step 2

1. Complete the sentences.

a) 0.56
There are ☐ ones, ☐ tenths and ☐ hundredths.

b) 0.08
There are ☐ ones, ☐ tenths and ☐ hundredths.

c) 1.48
There is ☐ one, ☐ tenths and ☐ hundredths.

d) 2.07
There are ☐ ones, ☐ tenths and ☐ hundredths.

2. What is the value of the digit 4 in each of these numbers?

a) 14.8 _____ d) 42.03 _____

b) 13.74 _____ e) 106.48 _____

c) 8.04 _____ f) 176.4 _____

3. Complete the calculations.

a) 0.64 = 0.6 + ☐ c) 0.3 + 0.05 = ☐

b) 0.53 = 0.5 + ☐ d) 0.06 + 0.8 = ☐

Problem solving and reasoning

Step 3

1. a) Circle two numbers that add together to equal **0.25**

0.05 0.23 0.2 0.5

b) Circle **two** numbers which **add** to make **0.12**

0.1 0.5 0.05 0.7 0.07 0.2

2. Write in the missing number.

8.5 + 14.7 = 10.2 + ☐

3. Match each description to the correct number.

My number has the same amount of tens and tenths. — Teddy

My number has one decimal place. — Amir

My number has two hundredths. — Rosie

My number has six tenths. — Eva

46.2 | 2.64 | 46.02 | 40.46

4. Alex is thinking of a number.

My number has 3 digits, is greater than 1 but less than 2 and has 3 tenths.

a) What number could Alex be thinking of?
Talk about it with a partner.

b) Write all the possible numbers Alex could be thinking of.

_____

_____

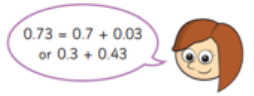
c) Write another clue that would mean Alex's number is 1.34

_____

5. Circle two decimals that have a difference of 0.5

0.2 0.25 0.4 0.45 0.6 0.75

6. Rosie is finding different ways to partition 0.73



In what other ways can 0.73 be partitioned?

List as many ways as you can.

Ones	Tenths	Hundredths
0	7	3

7. Annie has three digit cards.

0	2	5

Are the statements true or false? Explain your answers.

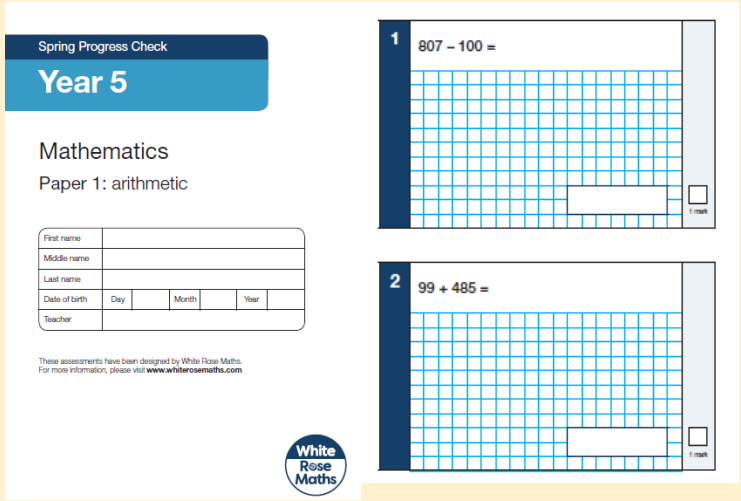
a) The largest number Annie can make is 5.02

b) The smallest number Annie can make is 0.25

c) Annie can make six different numbers.

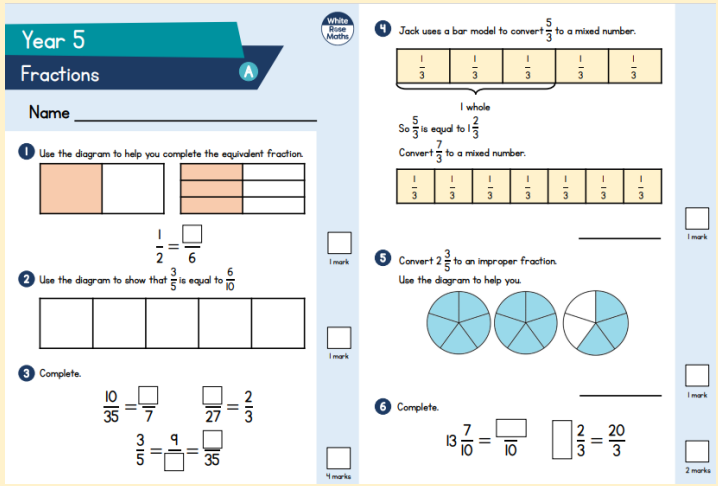
Assessment in maths

-Formative assessment – on-going process of evaluating children's knowledge as they learn (through different means e.g. questioning, discussion and low stakes quizzing)



-Summative assessment – White Rose Arithmetic Paper & White Rose Reasoning Paper (Autumn, Spring and Summer for year 3 – 5). Year 6 complete previous SATS papers Arithmetic and 2 x Reasoning termly

-End of Unit White Rose Tests



Parental support

By the end of Year 4 we would expect children to have learnt their times tables up to 12 x 12 with rapid recall.

What is homework set and what is expected?

	Spelling/Phonics	Reading	Times Tables Rock Stars/ Mental Arithmetic	Topic based
Year 3	3 x 5min each week (Set termly and tested on a Friday)	5 x 10 min each week	5 x 5 min each week	Choose 2 tasks from the 'Home Learning Menu' on Google Classroom to complete anytime during the term. This learning can be uploaded, along with any photos or videos, to Google Classroom. The learning will be looked at by the class teacher during the **last week of each term** and shared with the class where possible.
Year 4				
Year 5		5 x 20 min each week	5 x 10 min each week	
Year 6 *				

Parental support

- Knowing key facts by rote is essential to free up working memory as maths becomes more complex.
- As adults we can underestimate the importance of overlearning; children should practise these facts regularly – we are aiming for them to find it impossible to get it wrong. If we allow children to stop practising as soon as they have been successful, their recall of these facts lessens.

Number Bond Grid

Adding 1 | Bonds to 10 | Adding 10 | Bridging/ compensating | Y1 facts, Y2 facts

Adding 2 | Adding 0 | Doubles | Near doubles

+	0	1	2	3	4	5	6	7	8	9	10
0	0 + 0	0 + 1	0 + 2	0 + 3	0 + 4	0 + 5	0 + 6	0 + 7	0 + 8	0 + 9	0 + 10
1	1 + 0	1 + 1	1 + 2	1 + 3	1 + 4	1 + 5	1 + 6	1 + 7	1 + 8	1 + 9	1 + 10
2	2 + 0	2 + 1	2 + 2	2 + 3	2 + 4	2 + 5	2 + 6	2 + 7	2 + 8	2 + 9	2 + 10
3	3 + 0	3 + 1	3 + 2	3 + 3	3 + 4	3 + 5	3 + 6	3 + 7	3 + 8	3 + 9	3 + 10
4	4 + 0	4 + 1	4 + 2	4 + 3	4 + 4	4 + 5	4 + 6	4 + 7	4 + 8	4 + 9	4 + 10
5	5 + 0	5 + 1	5 + 2	5 + 3	5 + 4	5 + 5	5 + 6	5 + 7	5 + 8	5 + 9	5 + 10
6	6 + 0	6 + 1	6 + 2	6 + 3	6 + 4	6 + 5	6 + 6	6 + 7	6 + 8	6 + 9	6 + 10
7	7 + 0	7 + 1	7 + 2	7 + 3	7 + 4	7 + 5	7 + 6	7 + 7	7 + 8	7 + 9	7 + 10
8	8 + 0	8 + 1	8 + 2	8 + 3	8 + 4	8 + 5	8 + 6	8 + 7	8 + 8	8 + 9	8 + 10
9	9 + 0	9 + 1	9 + 2	9 + 3	9 + 4	9 + 5	9 + 6	9 + 7	9 + 8	9 + 9	9 + 10
10	10 + 0	10 + 1	10 + 2	10 + 3	10 + 4	10 + 5	10 + 6	10 + 7	10 + 8	10 + 9	10 + 10

Parent Guide

We recommend a "little and often" approach; 3 minutes practice a day, 4 or 5 times a week is a good target.

What are the different Game Modes?

Single Player

Garage 10 coins per correct answer	Players answer the tables selected by their teacher or by TTRS' Auto trainer. **Important**: if you feel your child is overwhelmed by the number of tables they're practising, please speak to their teacher. We suggest to teachers to select one table per week with small combinations every third or fourth week. If your child is on Auto, they will practise the one table chosen for them* in small chunks of 4 questions at a time. Our algorithm selects the table after a Gig game.
Gig 10 coins per correct answer	If your child is on Auto training they will periodically play Gig games to assess which table is best for them to practise in the Garage. **Important**: players must give each Gig performance their full concentration to demonstrate their tables skills. They may be returned to an earlier table if not.
Jamming 4 or 8 coins/correct answer	The only game mode without a timer, your child choses the table and the operation (× or ÷ or both) they want to practise. Answer 10, 20 or 30 questions.
Studio 1 coin per correct answer	Here your child earns their Rock Status, which is based on their Studio Speed. The faster they are the better their status. Studio Speed is the average of their most recent 10 Studio games. Suitable for confident players.
Soundcheck 5 coins per correct answer	Soundcheck games ask 25 multiplication questions (up to 12×12), allowing 6 seconds for each question. Suitable for confident players.

Multi Player	
Festival 1 coin per correct answer	Children compete against others from around the world, with their identities protected behind their rock names. Suitable for confident players.
Arena 1 coin per correct answer	Children race against other members of their class who are logged in and choose the same arena name at the same time. Like Garage, Arena games ask questions that are either set by the teacher or by TTRS' Auto trainer.
Rock Slam 1 coin per correct answer	Players challenge their classmates or teachers to answer as many questions as they can in 60 seconds, setting a score for the challengee to beat. Pupils don't need to be online at the same time.
Tournaments	Battle of the Bands – groups of children within the same school (usually classes, year groups or teams) compete to have the highest average score per player. **Important**: Each correct answer (in any game mode) earns 1 point towards the team's total in addition to the coins earned. For example, in Garage games each correct answer is worth 1 point for the team and 10 coins for the player.
	Top of the Rocks – think of this as a Battle of the Bands *between* schools. The winning class or school is the one with the most correct answers per person. Players' identities are always protected behind their "Rock Names."

How can I hide the timer?	Start a game and press ⚙ > Hide Practice Clock. You could also play a game in Jamming.
How can I increase the length of Garage games?	Single player > Garage > press the little arrow below “play solo” > choose 1, 2 or 3 minutes.
The tables are too hard	Make sure your child is playing in Garage or Arena game modes. If this does not resolve the issue, please speak to your child’s teacher. Remember that Jamming mode allows the child to choose the tables themselves.
My child gets anxious	Try the three above plus: setting mini goals (e.g. complete 2 minutes today, get 1 more point in the next game, pass 1 level); having a break from online play (come back in a couple of days); and reminding them of Baz’s words: “A good rock star stays chillaxed by accepting they make mistakes.”

Ways to help

- Positive mindset – use positive language when talking about maths
- Use maths talk in everyday life
- Play games
- Learn the maths methods used in school
- Practise reading the time on analogue clocks
- Use fractions in daily life
- Involve in problem solving – which is best deal etc.?
- Use technology – online games in short bursts
- If you need a challenge - NRICH (http:// nrich.maths.org/) or Transum (http://www.transum.org/).

Websites

- https://ttrockstars.com/home
- https://www.transum.org/
- https://nrich.maths.org/
- https://www.topmarks.co.uk/
- https://www.topmarks.co.uk/maths-games/hit-the-button
- https://thirdspacelearning.com/blog/home-learning-resources/
- https://www.bbc.co.uk/bitesize/subjects/z826n39
- http://primarygamesarena.com/Subjects/Maths
- https://www.mathsisfun.com/worksheets/index.php
- http://www.primaryresources.co.uk/maths/maths.htm
- https://mathszone.co.uk/
- https://www.ashcott.somerset.sch.uk/classes/maths-homework/homework
- https://corbettmathsprimary.com/content/