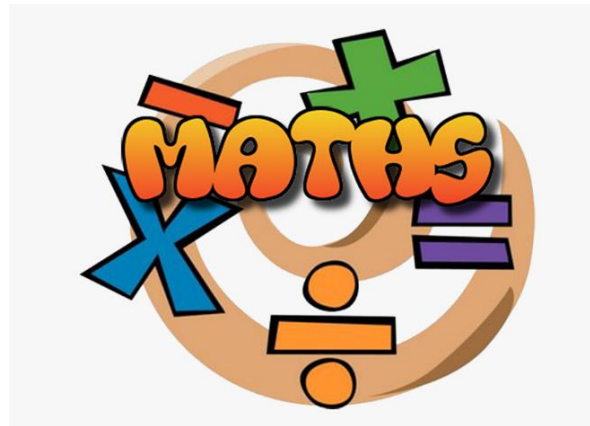


Maths at Bolton Primary School

How to support Maths at Home



This presentation aims to empower you to further support your children with their Maths learning at home.

When do you use maths on a 'daily' basis?

TASK: Grab some paper and a pencil and list as many examples of when you use maths throughout the day.

Mathematical Vocabulary

Vocabulary is not something that some people would usually associate with the maths classroom. Here at BPS, we are continually promoting the importance of using the correct terminology in this subject.

Why? Because vocabulary matters - and it matters as much in maths as it does in “wordier” subjects. Mathematical concepts lend themselves to confusion and misconception among pupils, and the same goes for mathematical vocabulary.

Exposure is key here. Adults - do not shy away from using accurate language like vertices, and instead use them consistently and encourage your child to do the same.

Pupils are praised for use and supported to use more accurate language.

Encouraging your child to ‘say it like a mathematician’ can really give them confidence to use these words!

What is 'Maths Fluency'?

Fluency in maths is about developing number sense and being able to choose the most appropriate method for the task at hand; to be able to apply a skill to multiple contexts.


The National Curriculum states that pupils should become fluent in the fundamentals of mathematics through varied and frequent practice. While a part of this is about knowing key mathematical facts and recalling them efficiently, fluency means so much more than this, as it allows pupils to delve much deeper.


Maths Fluency - Fluent in 5


Year 3

Maths Fluency

 A. $588 - 192 =$

 B. $46 + 21 =$


 C. $72 \div 3 =$


 D. $15 \div 3 =$


Challenge: A. $13 \times 4 = ?$ B. $78 + ? = 100$ C. $? = 55 + 205$


Year 4


Maths Fluency

 A. $7473 - 4097 =$

 B. $57 \times 4 =$

 C. $72 \div 9 =$

 D. $\frac{1}{5}$ of $120 =$

 E. $78 + 25 =$

Challenge: A $4180 + 2876 = ?$ B $3/10$ of $90 = ?$ C $64,819 < \sigma > 64,918$

Maths Fluency - Year 5

Extension: choose a question and write a maths story to go with it.

Write the full fact family for D and list some related facts.



Year 5

Week 6 – Day 1

$$A. \frac{10}{12} - \frac{1}{12} =$$

$$B. 87,431 - ? = 84,843$$

$$C. 901 + 901 =$$

$$D. 120 \div 20 =$$

$$E. 1,518 \div 6 =$$

Answers

1. $60 \times 120 = \mathbf{7,200}$ (M)
2. $16,483 + 74,435 = \mathbf{90,918}$ (W)
3. $81 + 30 = \mathbf{111}$ (M)
4. $86,940 - 82,991 = \mathbf{3,949}$ (W)
5. $8407 \div 100 = \mathbf{84.07}$ (M)
6. $563 \times 14 = \mathbf{7,882}$ (W)
7. $7 \times 7 + 3 \times 3 = \mathbf{58}$ (M)
8. $\frac{3}{4}$ of 2,000 = $\mathbf{1,500}$ (M)

In Class, we model ones that many children have found challenging. We also discuss the different methods that have been used.

Children are asked to complete a traffic light assessment and to identify any that they are having difficulties with. If children are not getting them after modelling, we'll suggest clinic .

“While being fluent with math facts doesn't make word problems easy, it does reduce the number of cognitive resources needed to tackle the computation portion of the process, allowing those resources to be allocated to other components of the process.”

Why is learning your Times Tables 'off by heart' so important?

We cannot stress enough about the importance of children 'knowing' their times-tables. Having a secure understanding of the times tables facts and related division calculations up to 12×12 aids children in their mathematical learning within a wide range of different concepts.

It makes mental maths much easier. It will boost your child's confidence in their maths lessons at school, but it's also a skill they'll use all the time in the world outside school. When children know their times tables, mental arithmetic becomes easier. Practising times tables also helps children to understand number and number relationships, and to see patterns in numbers. These skills will help them to master key concepts and move quickly through more complex maths problems with confidence. A thorough knowledge of multiplication and division facts will help children succeed in their tests at the end of primary school and set them up for success at secondary school. Knowing your times tables is an important life skill that will help with lots of everyday activities like shopping, budgeting, decorating and cooking.

Year Group:	Expectation:
Year 1 (age 5/6)	Count in multiples of 2, 5 and 10. Recall and use doubles to 10 and corresponding halves. (For example, knowing that 4 is half of 8, and that 6 is double 3.)
Year 2 (age 6/7)	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. (In other words - as an example - your child should be able to tell you that 15 is an odd number and that $15 \div 5 = 3$)
Year 3 (age 7/8)	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. (So, your child should be able to tell you that $8 \times 9 = 72$ and that $28 \div 4 = 7$, as examples.)
Year 4 (age 8/9)	Recall and use multiplication and division facts for multiplication tables up to 12×12 - knowing that $1 \times 1 = 1$ up to being able to recall that $144 \div 12 = 12$. (Beginning in the 2019/2020 school year all children in academies, free schools and maintained state schools will sit the Year 4 Multiplication Tables Check in June - more information is available on our blog.)
Year 5 (age 9/10)	Revision of all times tables and division facts up to 12×12 .
Year 6 (age 10/11)	Revision of all times tables and division facts up to 12×12 .



What are the Expectations?

TASK: Counting stick!



Times Tables Rock Stars

All Year 4 children will take a statutory 'Multiplication Tables Check' (MTC) in June.

TASK: Get a piece of paper and have a go at an MTC or complete it online -

www.urbrainy.com

Times Table Rock Stars is an exciting game which helps children to learn and practise their times tables. Through a "little and often" approach, children secure their times table knowledge whilst having fun! We recommend approximately 5 minutes practice a day, 4 or 5 times a week. You can download the app from the app store or play on the Times Table Rock Stars game on their website.



What are the different Game Modes?

Single Player

Jamming

4 or 8 coins/correct answer

The only game mode without a timer, players chose the table and operation (\times or \div or both) they want to practise. Answer 10, 20 or 30 questions.

Gig

10 coins per correct answer

Gig games last 5 minutes and contain up to 100 questions, which come in 'waves', starting with the 10s, then the 2s, 5s, 3s, 4s, 8s, 6s, 7s, 9s, 11s and 12s. Novices are not expected to get past the 5s. Gigs provide the child (and their teacher) with a simple measure of their current skills, which is why learners should concentrate fully for the whole Gig as they won't get another try until next month.

Garage

10 coins per correct answer

Players are given a personalised set of 6 multiplication questions (and their matching division questions) in each round. The questions they get keep adjusting to provide the best fit for every learner's needs. This is probably the best game made for improving their recall while they're still learning.

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.

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



What are the different game modes?

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. Arena games use the same smart question algorithm as Garage games.
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 <u>challenger</u> 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 <i>average</i> score per player. Top of the Rocks – like a Battle of the Bands <i>between</i> schools. The winning class or school is the one with the most correct answers per person. 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.



Times Tables Rock Stars

Learners with different needs

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.”
My child has visual impairments; what settings are available?	Head to the Profile page where you can: change the colour scheme; reduce the visual stimuli with Declutter mode; increase the font size or switch to a dyslexia-friendly font called Lexie. play.ttrockstars.com is also screen reader compatible.
Can I turn off division?	Yes in Jamming mode but not in the other games. The reason for that is that practising multiplication and division at the same time supports the recall of both and is the most successful approach. If your child is finding division confusing, please speak to their teacher about starting with the 10s only and for advice on how to help at home.

How Does Mathematical Fluency Fit with Reasoning and Problem Solving?

The mastery curriculum for primary schools places problem solving at the heart of mathematics with the main aim that every child can learn to solve sophisticated multi-step word problems in an unfamiliar context.

To enable them to achieve this, pupils must develop their conceptual understanding, mathematical thinking and use of mathematical language. This is where fluency and reasoning come in.

What is Reasoning?

Reasoning asks you to find out which operators to use and how to solve that problem USING maths.

Whereas mathematics is the knowledge of mathematical concepts.

Reasoning in maths is the exciting bridge that allows students to come up with a reasonable strategy to solve a problem, and explain how and why they have worked the way they have.

good understanding + fluency = reasoning skills.

Spot the mistake / Which is correct?

True or false?

What comes next?

Do, then explain

Make up an example / Write more statements / Create a question / Another and another

Possible answers / Other possibilities

What do you notice?

Continue the pattern

Missing numbers / Missing symbols / Missing information/Connected calculations

Working backwards / Use the inverse / Undoing / Unpicking

Hard and easy questions

What else do you know? / Use a fact

Fact families

Convince me / Prove it / Generalising / Explain thinking

Make an estimate / Size of an answer

Always, sometimes, never

Making links / Application

Can you find?

What's the same, what's different?

Odd one out

Complete the pattern / Continue the pattern

Another and another

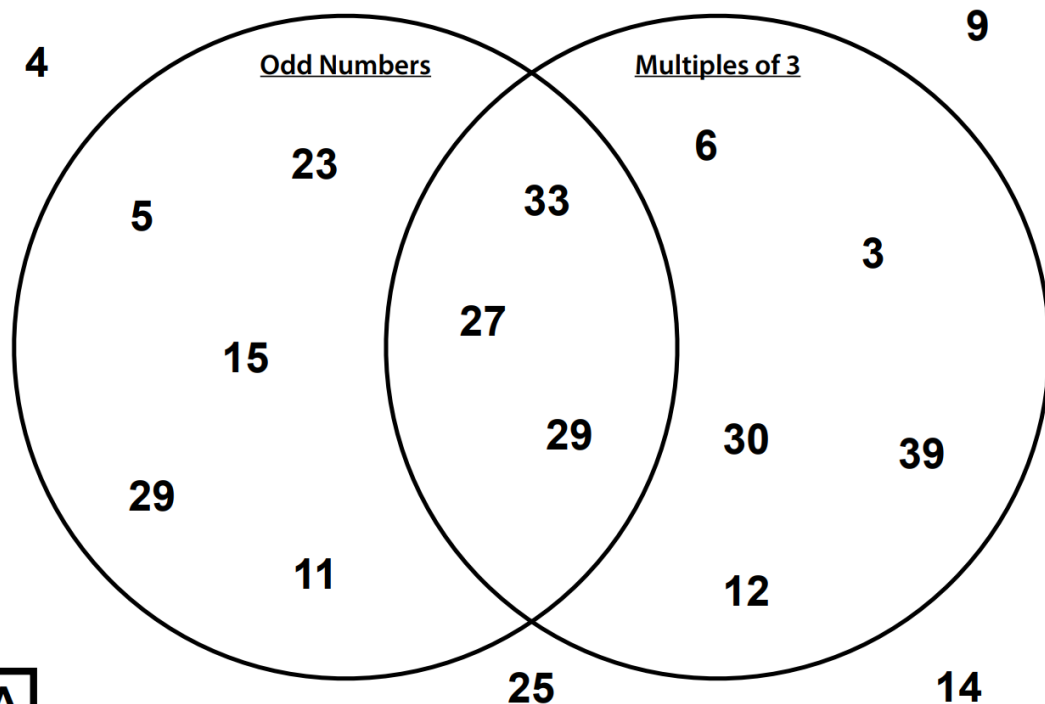
Ordering

The answer is...

These strategies are a very powerful way of developing pupils' reasoning skills and can be used flexibly. Many are transferable to different areas of mathematics and can be differentiated through the choice of different numbers and examples.

Task:

What are the mistakes?



A



How many ways?

I spend 70p at the shop.
I pay with exactly 5 coins.

Which coins do I use?

Level 1: I can find a way

Level 2: I can find different ways

Level 3: I know how many ways there are

Different answers

I have less than 50p.

You need at least 5 coins to make
this amount of money.

How much money do I have?

Level 1: I can find a possible amount

Level 2: I can find different possible amounts

Level 3: I have found all the possible amounts

Real life word maths

A good maths exercise is to help your children create and devise real life maths with one, two or three steps.

- ▶ Worded maths scenarios to solve are another example of reasoning.

Think about what maths skills are required to answer these Qs.

4

The population of a city is 532 912. There are 322 789 adults and 276 453 males, of which 162 341 are male adults. How many female children are there in the city?

5

A stationery shop has 398 boxes of 12 pencils and 184 boxes of 24 pencils. How many pencils does the shop have altogether?

7

A farmer produces 2 378 litres of milk. He fills 970 bottles, each containing 2 litres. How much milk is left over?

What does Maths learning look like at Bolton Primary School?

On the next few slides, you will see an example of a child's piece of learning who is working at age related expectations within each KS2 year group.

You will also notice a selection of the key focus areas within each year group around the outside of piece of work. These are not a full list of objectives but just a few key elements crucial to the year group's Maths curriculum.

We feel it's important to share this with you so you have a clear understanding of the expectations your child will be working to achieve within each year group in Maths.



What does Maths look like in Year 3?

Consistently use the correct number formation (0-9).

To recognise the place value of each digit in a three-digit number (hundreds, tens and ones).

To read and write numbers up to 1,000

To add and subtract mentally and scaling these by 10 e.g. $6 + 3 = 9$, $60 + 30 = 90$.

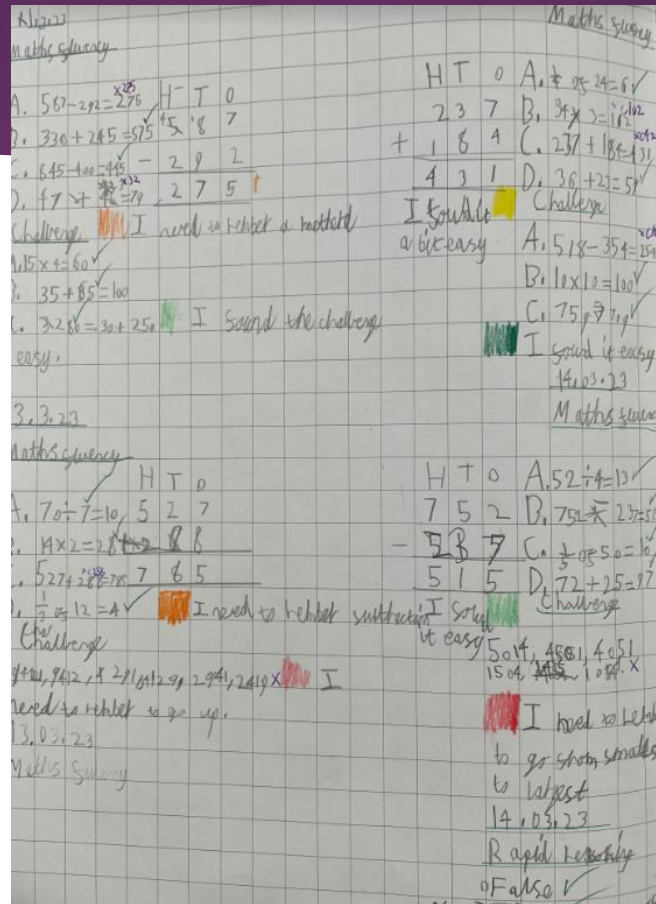
To understand the inverse relationship between addition and subtraction

To solve number and practical problems, including reasoning using my number knowledge.

To use choose strategies to help me answer questions such as partitioning, number lines, counting on, counting back, bar models and eventually formal methods such as the column method.

To identify angles greater than or less than a right angle

To recall my 2, 5, 10s, 3, 4 and 8 times tables and related division facts.



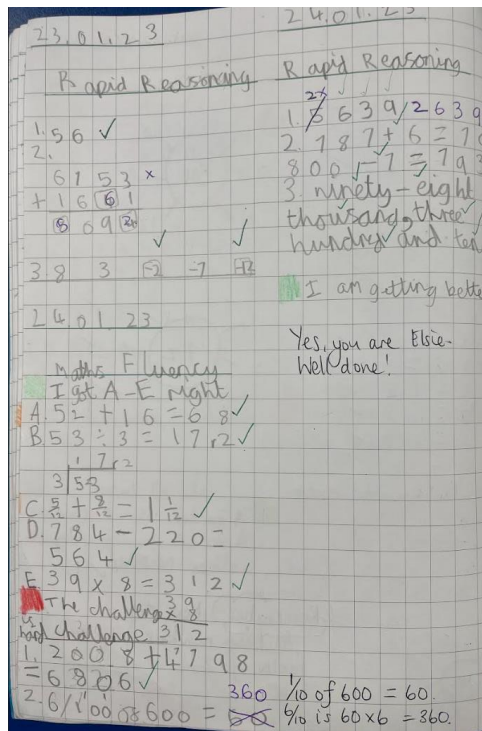
What does Maths look like in Year 4?

Find the perimeter of regular and irregular polygons

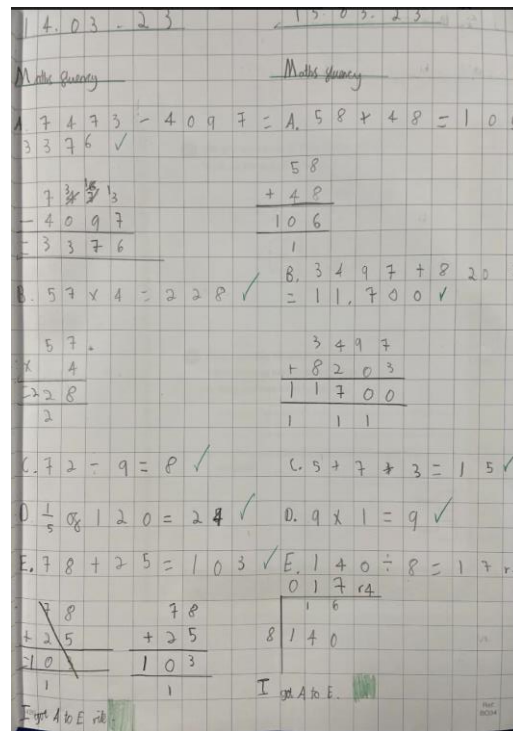
Begin to use expanded formal methods for addition and subtraction.

Recognise common groups of equivalent fractions and finding the corresponding decimal.

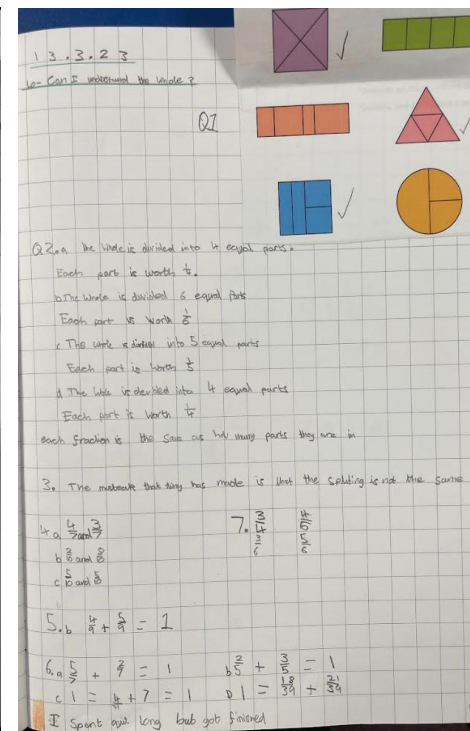
To solve practical and number problems using reasoning to justify answers.



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



Convert mixed numbers to improper fractions and vice versa



Solve addition and subtraction two-step deciding which operations and methods to use and why

Have a secure understanding of number: confidently identifying the value of each digit in a 4 digit number E.g. 2378 the 3 represents 300.

To confidently and securely know times tables facts, including the inverse up to 12x12

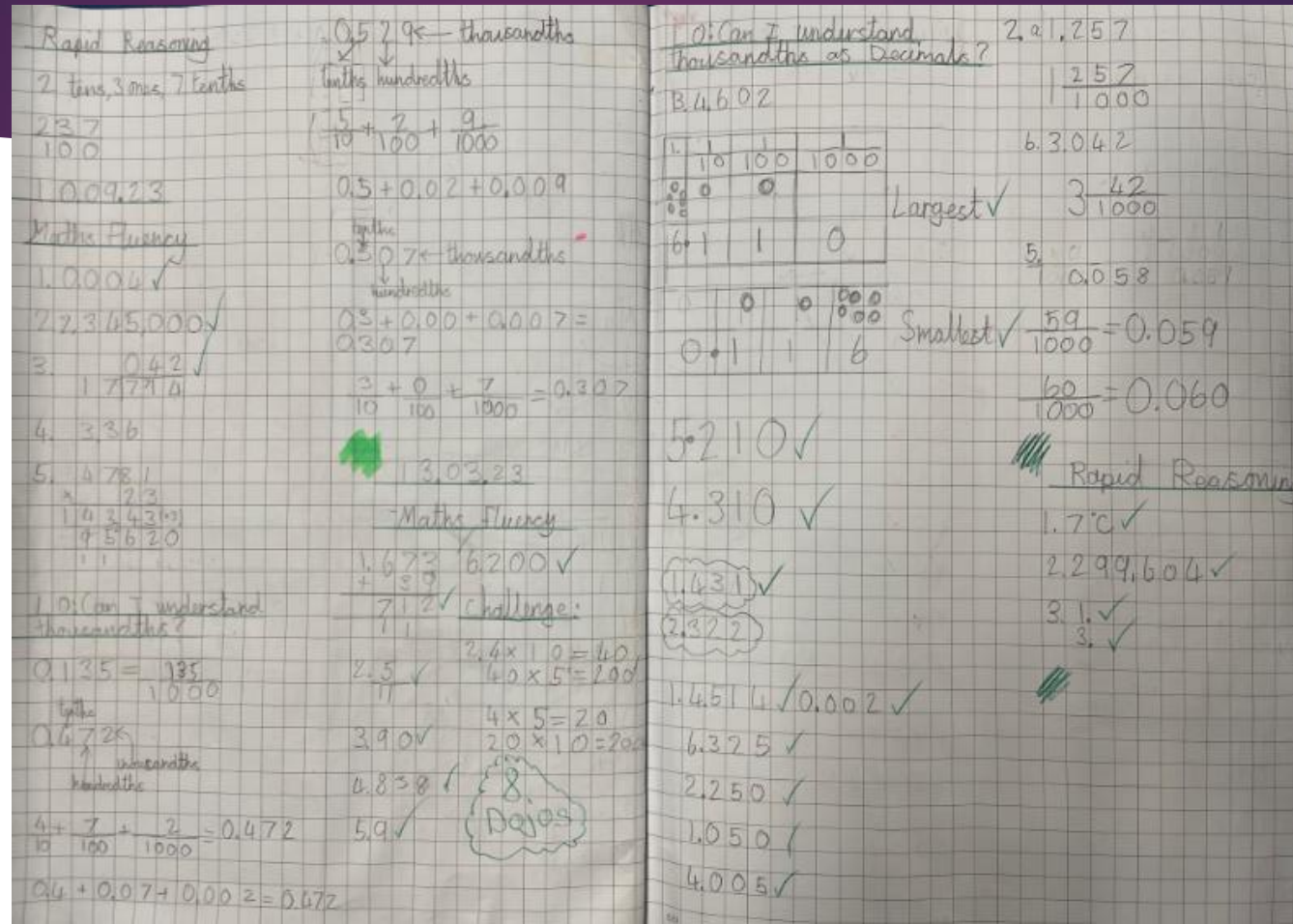
What does Maths look like in Year 5?

Recognise the place value of each digit in numbers with up to 2 decimal places

To use the formal written methods for all four operations (addition, subtraction, division and multiplication)

Rapid and accurate recall of **ALL** times tables and related division facts

Draw upon a variety of mental maths strategies to support arithmetic skills



To solve number problems using reasoning to justify my answers and to prove and disprove.

Measure angles in degrees ($^{\circ}$) and draw angles of a given size.

Secure understanding of fractions including simplifying, equivalent fractions and calculating with fractions (+ - and x by integers)

Convert between units of measure e.g. grams to kilograms

Find non-unit fractions of quantities.

What does Maths look like in Year 6?

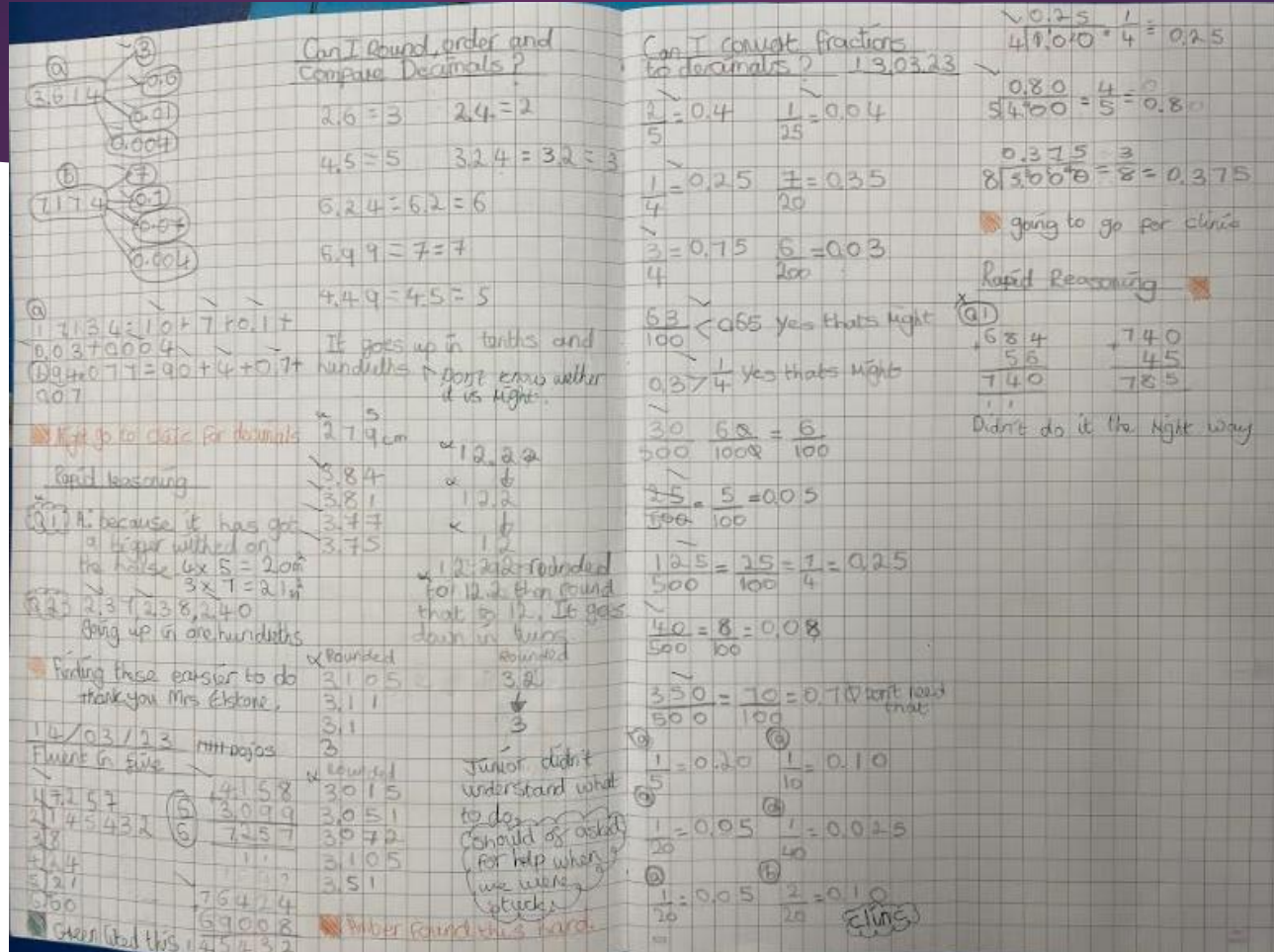
Rapid and accurate recall of **ALL** times tables

Solve problems involving ratio relationships

Recognise the place value of each digit in numbers up to 10 million, including decimal fractions

Algebra

To consolidate the formal written methods and use alongside efficient mental strategies



Working with numbers beyond 6 and 7 digits

Systematic and methodical workings

Draw upon a variety of mental maths strategies to support arithmetic skills

Find equivalent fractions, decimal and percentages

Solve multi-step word problems

Draw, compose and decompose shapes according to given properties, including dimensions, angles and area

Use common factors and multiples to simplify fractions. To securely use all four operations when calculating with fractions (+ - x ÷)

What will my child be learning?

The link below will take you to the programmes of study for each year group. This shows you what your child will be learning when at school and what a child of that age is expected to achieve by the end of the year (Age Related Expectations).

[National Curriculum Programmes of Study for Key Stage 1 and Key Stage 2](#)

Each year group will also re-visit teaching from previous year groups to ensure knowledge is consolidated and secure.

How can you help your child with Maths at home?

- ▶ Take away their fear.
- ▶ Reassure and praise whenever possible. Positive mindset...
- ▶ 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.
- ▶ Ensure that they complete the weekly homework tasks that are uploaded onto Google Classroom. These tasks are based on that week's learning in class.



A quick guide to everyday Maths opportunities for your child

- ▶ Making maths 'Real Life'
- ▶ 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.
- ▶ Practice 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
- ▶ Use of mathematical games provided - some using as a little as a pack of cards or dice!
- ▶ Having a 'budget' to spend. Calculate costings and change given
- ▶ **Task:** Choose a 'maths' game from the table to play

SATS

Children do standardised statutory tests in Y2 and Y6 so that they can be compared nationally.

They have 3 papers to complete under a time limit.

Paper 1 Arithmetic (30 mins) 36 questions with 40 marks

30 | 80% of 115 =

31 | $\frac{2}{7} - \frac{1}{9} =$

32 | $2\frac{1}{2} - \frac{2}{3} =$

33										
				4	0	7	8			
	x					6	7			

34 | $10 - 2\frac{1}{4} =$

35 | $6 + 4 \div 2 =$

36 | $\frac{4}{5} \times 400 =$

SATS - Paper 2 Reasoning and Paper 3 Reasoning 35 marks each.

The scores on the three papers are added together (max marks 110).
The expected standard is around 58

22 You can make green paint by mixing:

- 250 ml of blue paint
- 1,150 ml of yellow paint.

Stefan wants to make some of this green paint.

He uses 750 ml of **blue** paint.

How much **green** paint does he make?

23 Adam has a bag of fruit that weighs **1.25 kilograms**.



He takes out a banana. Now the bag of fruit weighs **1.1 kg**.

Next, he takes out an orange. Now the bag weighs **920 g**.

How much **more** does the orange weigh than the banana?

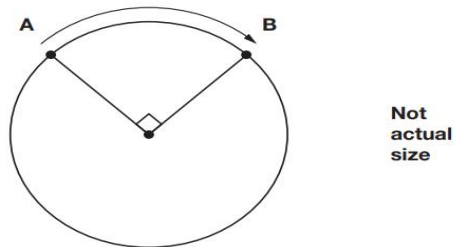
18 This sign shows the number of **empty spaces** on each level of a car park at 10 am.

P	Empty Spaces
Level 2	511
Level 1	268

In this car park, **each** level has 800 spaces.

What is the total number of cars **parked** in the car park at 10 am?

19 The **circumference** of this circle is 60 centimetres.



What is the distance around the edge of the circle from **A** to **B**?

cm

14 This 850 ml bottle of squash makes 17 drinks.



How many millilitres of squash are in each drink?

ml

11 Write the missing values.

$$\frac{3}{10} = \frac{\square}{20}$$

$$\frac{12}{15} = \frac{4}{\square}$$

1 mark

1 mark

1 mark

Websites to support children's Maths skills

www.urbrainy.com

- Multiplication Tables Check (MTC) Replicates what Y4 children have to do in the MTC in June.

www.mathswithamouse.co.uk

- Year 4 MTC Preparation Fun!

www.topmarks.co.uk

- Great maths games, such as: - Hit the Button, Coconut multiples and Daily 10 (excellent for rapid recall)

www.trockstars.co.uk

- Competitive times tables. Every pupil from Year 2 upwards has their own log-in

[KS2 Maths - BBC Bitesize](http://www.bbc.com/1/learning/ks2-maths)

- Lots of information alongside short videos help to make the learning enjoyable and accessible for all children

www.nrich.co.uk

- Problem solving and challenge questions

www.primarygames.com

- Lots of maths games

www.mathsisfun.com

- Provides step-by-step guidance and explanations on 'how' to tackle specific mathematical concepts.

- Create worksheets to print off or complete online!

[Maths - Oxford Owl](http://www.oxfordowl.co.uk)

- Maths at home. maths skills and maths glossary