MATHS GUIDE

Lesson Structure:

Feedback from previous lesson

From Y1-6 children will have time to revisit their marking from the previous day to check for:

- **Corrections**
- **Challenges**
- **Consolidation**

Children will complete these tasks in **PURPLE PEN.** This work will be carried out neatly and it will be marked by the teacher.

Corrections:

PURPLE PEN
CHALLENGE

CONVINCE ME!

Maths Masters say "Can you complete these calculations?"

279 + 301 =

41 + ? = 80

? + 32 = 90

? + ? = 56

These are to be used for children who have achieved the objective well and needs 'deeper' learning (mastering the objective)

CONSOLIDATION:

PURPLE PEN CONSOLIDATION

CONVINCE ME YOU CAN DO IT!

Maths Masters say "Can you complete these calculations?"

179 + 301 =

401 + 109 =

345 + 832 =

921 + 345 =

Consolidation tasks are to be used for children who would benefit from 'practicing' the skill further. This could be done as a guided group with teacher/teaching assistant input or as an individual task.

Please use the template for both **CHALLENGE and CONSOLIDATION** but obviously tweak accordingly.

Counting

Counting should take place **daily** – this could be whole class counting forwards or backwards in numbered steps, chanting times tables or any other form of counting the teacher feels is beneficial.

Arithmetic

DAYs 1,2,3,4 and 5 some of arithmetic will take place to build number fluency & confidence. This should be in the form of 'Fluent in 5', "Learn Its" or 'Recap Robot'. 'Daily number rhymes' to be used for Foundation.

Day 5 may be used as an Arithmetic test/consolidation of learning/ TTRockstars tests/Big Maths
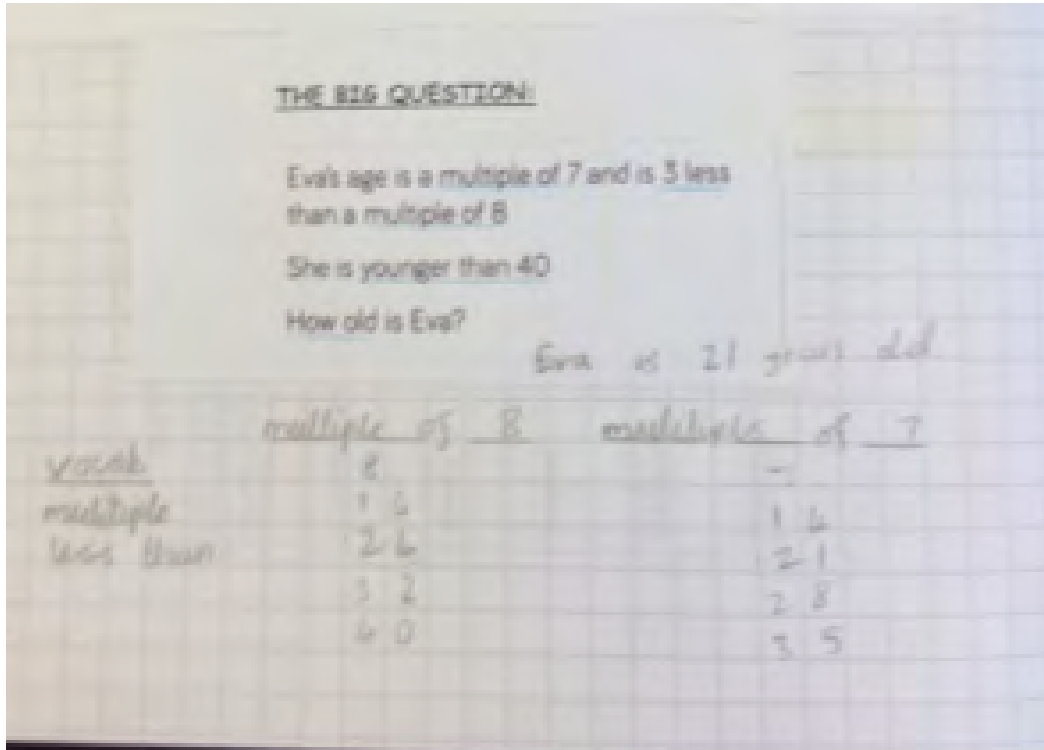
Oral Mental Starter (if applicable – dependent on length of Arithmetic section)

- Rapid recall of Year Group's mental strategies (see Maths calculation policy for list)
- Paper version of TTRockstars (One session outside of maths hour to be dedicated to TTRockstars on ipads/Chromebooks for Y2-6 – a session counts as at least 15mins)

Big Question

TWICE a week incorporate a BIG QUESTION. These can be taken from SATs questions from each year groups past tests/Testbase/White Rose Problems/Nrich/NCETM

1. Share Problem called '**BIG QUESTION**' with class – copy given to each child to stick in books

2. Which skills are needed to solve the problem? Skills/knowledge needed for learning

3. Generate **VOCABULARY** and place on WW

4. Discuss wider context

THE BIG QUESTION:

Eva's age is a multiple of 7 and is 3 less than a multiple of 8

She is younger than 40

How old is Eva?

Eva is 21 years old

multiple of 8	multiple of 7
8	—
1 6	1 4
2 4	2 1
3 2	2 8
4 0	3 5

vocab
multiple
less than

BIG QUESTION problems should relate both to the application of maths to everyday situations within the pupils' experience, and also to situations which are unfamiliar.

Introduce the BIG QUESTION and follow 4 steps and revisit either at the end of lesson/end of two days.

Teaching/Modelling

Introduce LO and concept.

Using a **CPA** progressive approach, demonstrate the new learning

Range of manipulatives for CONCRETE:

- Diennes
- Numicon
- Unifix

-See pictures for **pictorial** and methods for **abstract** in **Calculation Policy** in order to promote consistent use of algorithms; concise use of expanded methods; and use of visual representations to ensure progression in children's skills and knowledge year by year.

Guided Practice (review progress)

Children to practise the new skill/concept in their **JOTTER BOOKS/ on WHITE BOARDS.**

Teacher to carry out 'learning behaviour' check-ins:

- Identify which children are falling behind and modify teaching/deployment of TA/ensure challenge for most able

Independent Practice

- Children to complete their task for the learning in their maths book under the Star Learner provided. The number date will be printed on the SL along with the objective and a break down of differentiated levels of success.
- All children to attempt some reasoning or problem-solving tasks for each objective but not all children require Fluency tasks (children working at a competent level for the objective can go straight on to problem-solving and reasoning)
- Teachers should use predominantly White Rose premium resources as main tasks but may supplement with other schemes of work. Each White Rose Task can be snipped into different sections:
- Start the LAPs/MAPS on first section which should be FLUENCY based
- Start HAPS on second/third section which should be the REASONING section (this is only if HAPS are secure in FLUENCY of the skill). Stretch HAPS with a problem-solving challenge linked to objective or further REASONING from another scheme.

- Tasks will be snipped and cut into small 'chunks' for the children to practise. They will only move on to another section if time allows. Children will stick the section in and do their working out alongside it/underneath.

- Use discrete differentiation ensuring **SUPPORT** for LAPS and **CHALLENGE** for high attainers
- Children will present their work neatly using one digit per square, underlining headings and marking their own work (if applicable) with a neat green tick or pink dot. PURPLE PEN to be carried out neatly (please see earlier example)
- If Independent learning has taken the form of using CONCRETE resources please evidence with a general picture of PicCollage or an individual photo if you feel its appropriate. Please write an explanation of the task and learning with the photos.
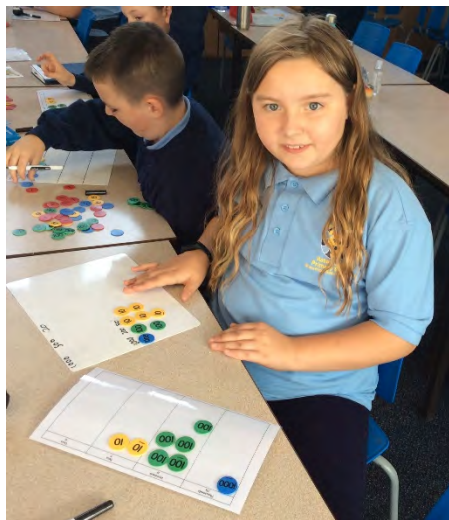
Children explored number values using Dienes to 'make' the values of numbers such as 632, 123
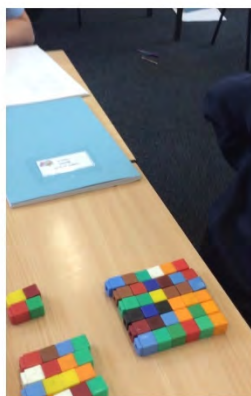
Plenary

- Revisit 'Big Question' shared at start of lesson (unless you are doing it the following day). Can the children answer it? It is particularly important that teachers and TAs stress the children's **reasoning,** rather than just checking whether the final answer is correct.
- Mark some answers as part of review of lesson
- Review learning – have chn developed their skill/met learning objective/on track to meet it over following day?

(Identify the children who have met objective/not met/ Think of next steps in learning)

FRIDAY's MAIN lesson

Friday should be **RAPID REASONING and PROBLEM-SOLVING DAY**

Children should be provided with a mix of random problem solving/word problems/reasoning questions to work through.

Mixed reasoning and problem solving using:

- NCETM
- NRich
- SATS
- White Rose

-Must include **multi-step problems** and **interlinking concepts**

	FRIDAY FOCUS	27.11.20
⭐ Star Learners: can use reasoning and problem-solving skills		Objective achieved:
Independently and in a range of contexts		
Independently		
With support from peer/adult/resources		

Problem-solving skills to teach:

Identify *knowns* and *unknowns* in a problem	Use a suggested approach to solve a problem.	Use identified *knowns* to select an approach to finding the *unknowns* in a problem
Identify the mathematical structure of a problem by modelling using concrete objects of pictorial representations	Identify part/ whole relations within the problem.	Explore how an identified *unknown* in a problem changes when the *knowns* are changed.
Recognise problems with similar mathematical structures and apply existing strategies to solve these	Work systematically to keep track of progress, to organise information and to help identify when the problem has been solved	Check results and consider whether they are sensible Model the mathematical structure of the problem using abstract representations (e.g. algebraic or graphical or geometric)
Solve routine problems by breaking them into smaller series of steps	Solve non-routine problems by breaking them into simpler series of steps, using a range of efficient techniques, methods and resources	Work backwards through a problem to identify any errors
Demonstrate perseverance to solve non-routine problems and to evaluate solutions; explore connections in mathematics across a range of contexts: number, algebra, geometry, measurement, and statistics	Pupils find their own mathematical problems to solve	Pupils use existing problems to ask further mathematical problems to find solutions to

USE A RANGE OF PROBLEM-SOLVING TASKS (located in Primary Subjects, Maths, Problem-solving Progression, problem-solving guidance):

W Problem Solving Guidance Documents - Conjecturing, Generalising and Provin...

W Problem Solving Guidance Documents - Pattern and Rule spotting.docx

W Problem Solving Guidance Documents - reasoning logically.docx

W Problem Solving Guidance Documents - trial and improvement.docx

W Problem Solving Guidance Documents - Visualising.docx

W Problem Solving Guidance Documents - Word Problems.docx

W Problem Solving Guidance Documents - Working Backwards.docx

Working Backwards

Working backwards is a specific reasoning skill which may involve several steps but does require some knowledge of inverse.
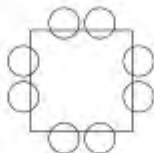
Stage one:

Recognising which number to start with and that an inverse operation is needed.

e.g. _____ + 3 = 8 here children need to recognise that they must start with 8 and subtract the 3 to find the 5 they are looking for
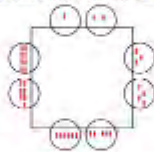
Sitting Round the Party Tables

Age 5 to 11 ⋆

So, you are at the party and sitting around the table with seven friends.

At the top left-hand corner is the friend who is giving the party. She or he has a bag of sweets and starts giving them out in a clockwise direction: one for themselves, two for the next person and three for the next and so on.

There are other similar parties going on at the same time. They have bigger square tables with more children sitting round on each side.

Explore and compare all the tables: 2 on each side, 3 on each side, 4 on each side and 5 on each side.

You could look at:
the total number of sweets that children sitting opposite each other have;
the total number of sweets needed for each size of the table;
the total number of sweets belonging to children who are diagonally opposite.

Then, what about five- and six-sided tables?

- Problem-solving skills are to be **taught**. Each step of the problem-solving task needs explaining clearly with **guided practise** in children's **JOTTER BOOKS/White boards** before children complete a different task using the same skill e.g. trial and error.
- There are 3 or 4 stages for each of the 7 problem-solving (Stage 1 being the easiest) – teachers to pitch according to ability.

ASSESSMENT

At the end of a unit, teachers will provide children with an 'End of Unit White Rose Test'. This will be stuck in books and any misconceptions either addressed as a class/groups or individuals.

TAFS

Teachers will collect evidence for each TAF on three separate occasions over the year.

Name ↑

📁 1 READING AND WRITING NUMBERS

📁 2 PLACE VALUE

📁 3 COUNTING

📁 4 ADDITION AND SUBTRACTION MENTAL SKILLS

📁 5 ESTIMATING AND CHECKING

📁 6 ADDITION AND SUBTRACTION SOLVING PROBLEMS

📁 7 MULTIPLICATION AND DIVISION MENTAL SKILLS

📁 8 MULTIPLICATION AND DIVISION CALCULATION

📁 9 MULTIPLICATION AND DIVISION SOLVING PROBLEMS

📁 10 RECOGNISE, FIND, WRITE, USE FRACTIONS AND DECIMALS

- TASKS taken from the TAF folder on the Drive will be given to the children to complete in their books. The first attempt for each statement should take place immediately after the objective has been taught. This will be carried out independently and pitched at the year group level the children are working at. The following two assessments for each objective will take place over the course of the year – one in the spring term and one in the summer term.

- The tracker in the front of the children's books will be annotated with dates showing when the tasks were carried out.

The task will have the following heading used so the tasks are easily identifiable in the children's books:

TAF TASK: Read and write numbers up to 1000 in numerals and in words (Year 3 Objective 1)

Completed INDEPENDENTLY

DATE:

Task A

- A melon weighs between 1090 grams and 1110 grams. How heavy could it be?

- An oil tank holds between 5900 litres and 6100 litres of oil. What could its capacity be?

- My car cost between £6950 and £7050. Suggest what it cost.

STAR LEARNERS:

⭐ Star Learner: can identify common factors	12.11.20 Objective achieved:
I can identify common factors in the context of problem solving and reasoning	
I can identify common factors	
With support, I can identify common factors	

- Objective achieved needs to be indicated with a tick (achieved), P (partially achieved) or a dot (.) - not achieved.

Marking and assessment
- Marking is up to date and consistently follows the policy.
- At least one deep mark per week in each book, correct symbols used, clear demarcation of M, G, I

M=modelled, G=group work, ✓I agree, S supported, worked with TA / teacher to address misconception/improve, VF verbal feedback, **pink to make you think** and responded by **purple pen,** green constructive feedback **'Green to be seen'**

- Marking is developmental showing consistent opportunity for and application of 'pink pen' for improvement/progress (including NS/challenges linked to KO) at least 1 per week each book
- You need to allow time within a lesson complete these challenges/corrections/consolidation
- Non-negotiables identified if not met (in all books)

Non-negotiables met - e.g. number formation correct, no reversals

Appendix A

Improvement Area	Evident R A G	Comments
Quantity of recorded work is appropriate At least 2 /3 (yr1) 3/4 (yr2/3) 4/ 5 (yr 4/5/6) pieces of recorded work weekly in English/maths books. I piece of science per week and 2 other topic pieces		Evidence of reading in literacy book at least 1 per week e.g. reading comprehension Evidence of SPAG/spelling in every recorded English Arithmetic (Fluent in Five/TTRockstars/ Learn its) evidence needs keeping in Maths Folder
Marking is up to date and consistently follows the policy. At least one deep mark per week in each book, correct symbols used, clear demarcation of M, G, I		M=modelled, G=group work, I agree, spelling errors underlined in pink OR you sign post at the end of a piece of writing in pink, new paragraph (KS2)• check your answer, S supported, worked with TA / teacher to address misconception/improve, VF verbal feedback, pink to make you think and responded by purple pen, green constructive feedback 'Green to be seen'
Marking is developmental showing consistent opportunity for and application of 'pink pen' for improvement/progress (including NS/challenges linked to KO) at least 1 per week each book (you need to allow time within a lesson complete these		Non-negotiables met - e.g. Have you used capital letters and full stops throughout? Evidence this has made the pupil think through use of purple pen Constructive feedback given e.g. You have

challenges/corrections) Non-negotiables identified if not met (in all books)		**written in the first person.** **NS/challenge For example in History:** ● **Name the leader of the Nazi party. (LAP) (naming)** ● **Describe Hitler's personality (MAP) (describing)** ● **Explain why the majority of the German people supported his views? (HAP) (explaining) (justifying/explaining)**
Pupils with SEND are receiving work that enables them to make progress at a similar rate to others and it is clear that lessons/resources have been adapted or personalised to support pupils		Use of word mats, peer support, resources, numberline, visual aids, sentence stems identified within the Star Learner. Work is differentiated accordingly to show it is appropriate to the individual pupil
Star learners wording & text are differentiated in all subjects and is explicitly clear,using:**Blue** GD,**Red** EXS, **Green** WTS, **Purple** SEND, Teacher to indicate Learning objective has been achieved by ticking the star learner **(Please ensure that you read work before ticking)** **Move chn to next star learner to demonstrate challenge**		✭*Write a poem using similes & metaphors* *Write a poem using similes* *Write a poem using a wordbank of similes, with a partner* *Contribute to a shared poem using a word bank, supported by an adult* *Teacher direct pupils to which star learner they are doing by dotting/verbally*
Scoring matrix/checklist are completed consistently (neat ticks). Scoring Matrix to be used in English books at the end of a teaching sequence/long writing piece		Green tick indicates that the children have achieved it. P indicates that the children have partially achieved. Pink dot (.) indicates that the children have not achieved it.
Planning for progression is evident through work/books. Teaching is focused on the correct skills and subject content for the pupils, learning objectives match LT skills & MT plans.		Star learners directly reflect the skills from the LT plans
Presentation of books is of a high standard. The work shows pupils have learnt from their mistakes.		Worksheets are trimmed and stuck neatly in books. Worksheets match the learning objective and the learning objective is not matched to a worksheet found on **twinkl**.
Are literacy/maths non-negotiables addressed? Work dated?		Work is always dated. Non-negotiables underlined in pink or commented upon. Children respond in purple pen if not achieved.
KWLs And KO are used at the beginning of each new topic and there are opportunities for children to refer back to them through their challenges. Does learning match KOs and vocab?		Pop quizzes should take place at the end of every topic. Questions to directly link to KWLs and KO and key vocabulary. This will be used as an assessment tool for foundation subjects. Teachers can highlight KOs if there is evidence the child has learned the knowledge.
How are practical learning, discussions and debates recorded? Is there evidence?		Examples of evidence include: photographs, pic collage.
Additional comments:		

Appendix B, Planning proforma

SHORT TERM MATHS PLAN

Aston Lodge Primary School   **Year 6**   **Teacher: Mrs Morton**   **Term 1a**   **Week 3**   **Unit of work: Place Value**

HAPs BM, CC, IF, AO, JS, AS, LT, EW, AIMING HIGHER;	MAPs LB, GF, MH, AM, MM, SM, LR, DS, ET, MW, CW		LAPs MA, KB, AD, RL, OM, LW, KW	SEN OM, DS,	Pupil Premium OM, DS,

Maths Weekly Plan	Class – Sycamore (Year 6) Week Beginning – 21.9.20		Mental Maths Targets for the week (based on mistakes from previous week) • Fractions of a number with numerator larger than 1 • Two-digit X two digit

	Arithmetic Starter Oral Mental Starter	Whole Class Shared Session/ New Learning including Problem called 'BIG QUESTION' Teaching/ Modelling Reviewing of Progress	Independent Practice Differentiated Activities including deployment of TA and CT Application of skill and problem solving	Application of skill and problem solving activities	Learning Stops/Plenary (Review/assess learning)	Notes/Next steps
Mon	Objective	Objective To use negative numbers in context, and calculate intervals across zero		-Revisit 'Big Question' shared at start of lesson. -Can the children answer it?	Mark some answers as part of review of lesson - Have chn developed their skill/met learning objective/on track to meet	
	Teaching points/Key Questions Arithmetic Starter·	Teaching points/Key Questions 1.Share 'BIG QUESTION' with class – copy given to each child to stick in books:	HAPs - One strip of GD fluency - Double page of GD			