



**One school, four viewpoints:
what does effective
assessment look like?**



Who are we?

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So What?



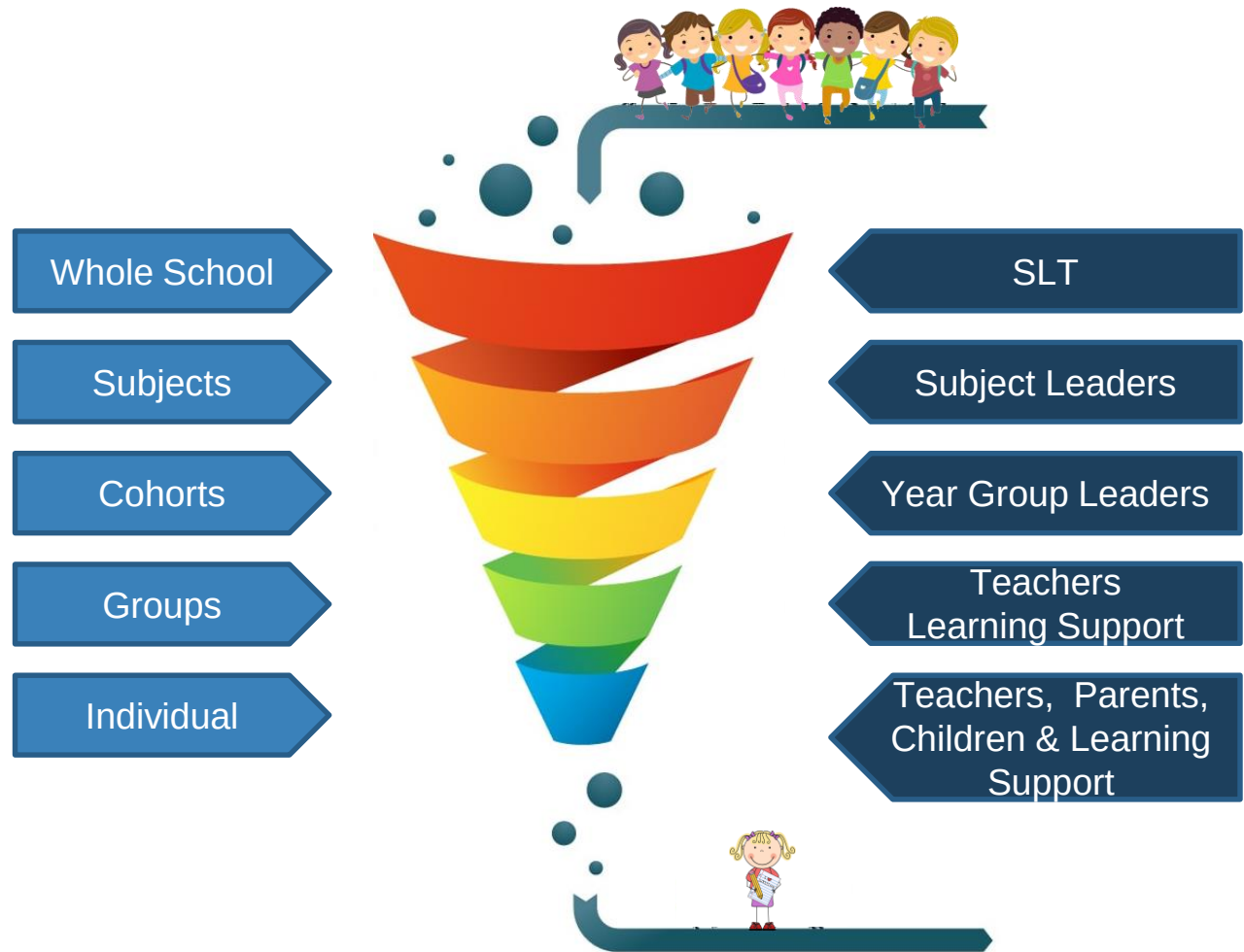
Data for Impact

The power of... **So What?**

The focus of data analysis needs to filter down to the needs of **an individual child.**



Get to know your students



The Rubix Cube Solution



CATs Rubix Cube Solution

CATs School Response

Class Teachers	Year Group Leaders	Learning Support	Core Subject Leaders	Senior Leaders
IDENTIFY INDIVIDUALS THAT MAY BE UNDER ACHIEVING	IDENTIFY YEAR GROUP TRENDS	IDENTIFY PUPILS THAT MAY BE AT RISK	IDENTIFY SUBJECT TRENDS	DOWNLOAD SENIOR LEADER REPORT
IDENTIFY INDIVIDUALS THAT MAY BE OVER ACHIEVING	IDENTIFY INDIVIDUAL PUPILS WITH SIGNIFICANTLY DIFFERENT SCORES	IDENTIFY PUPILS WITH UNEVEN PROFILES	COMPARE APTITUDE & ATTAINMENT	COMPARE SCORES WITH PREVIOUS CATs
CONSIDER CONTEXT	CONSIDER CONTEXT	CONSIDER CONTEXT	Specialist Teachers	REFLECT ON PUPIL PROGRESS FEEDBACK
CONSIDER ACTION	CONSIDER ACTION	CONSIDER ACTION	IDENTIFY PUPILS THAT MAY BE UNDER OR OVER ACHIEVING IDENTIFY GIFTED & TALENTED PUPILS	CONSIDER ACTION

1

IDENTIFY PUPILS THAT MAY BE UNDER ACHIEVING

i.e CAT scores significantly higher than attainment.
Triangulate with teacher assessment, Progress Test and AFL.



2



IDENTIFY PUPILS THAT MAY BE OVER ACHIEVING

CAT scores significantly lower than attainment.
Triangulate with teacher assessment, Progress Test and AFL.

3

CONSIDER THE CONTEXT

Does this accurately represent what you know about the pupil?
Consider class observation / classwork / observed behaviour.
Triangulate with attainment and attitudinal data.
e.g TA, Progress Test, PASS



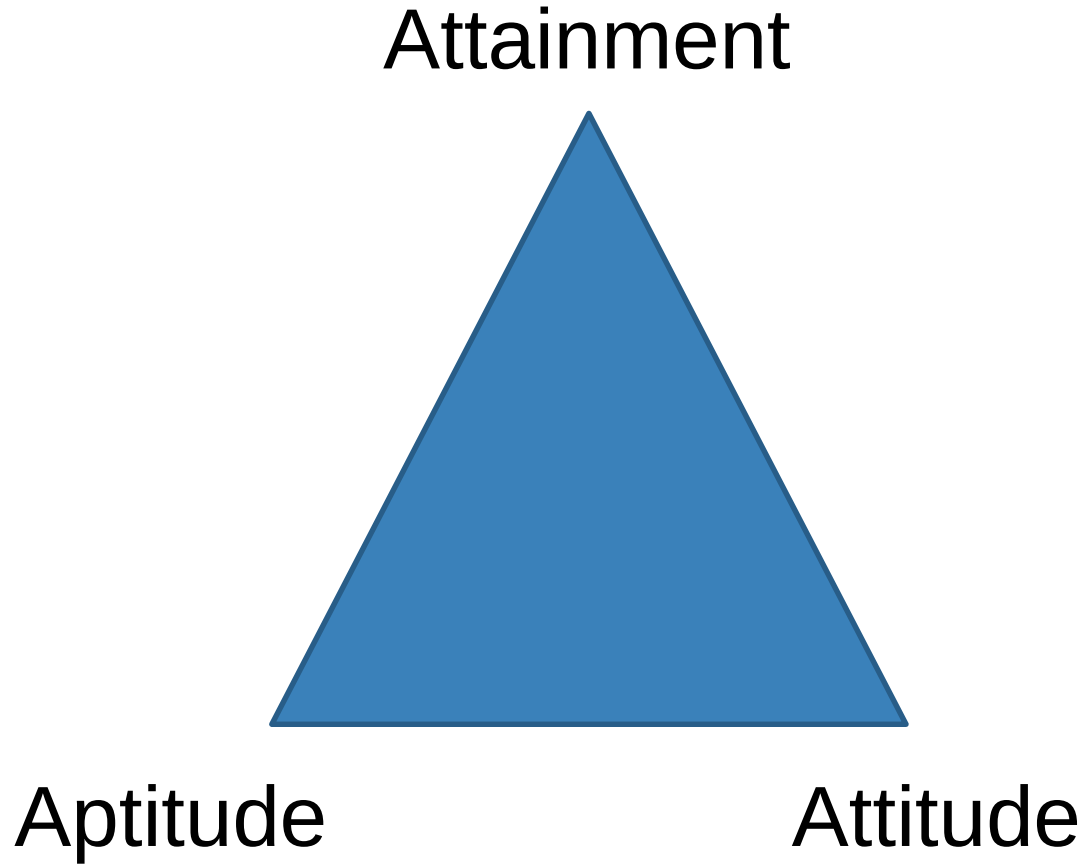
4

CONSIDER ACTION

1. Provide targeted support.
2. Have conversations with parents.
3. Have conversations with Learning Support, where required.
4. Adapt differentiation / challenge.
5. Look at specific report recommendations about preferred learning biases.
6. Inform middle leader through pupil progress.



Get to
know
your
students



Get to know your students

**Summative
Assessment**



AFL



**Low stakes
testing**

**Learning
Conversations**



Classwork



**External
Testing**

Make new PT/CAT/ PASS reports for your specific sets.

Verbal			Quantitative			Non-verbal			Spatial			Overall	
No. attempted (/48)	SAS	GR (/21)	No. attempted (/36)	SAS	GR (/21)	No. attempted (/48)	SAS	GR (/21)	No. attempted (/36)	SAS	GR (/21)	Mean SAS	GR (/21)
26	100	=4	22	108	6	48	126	1	36	127	1	115	1
48	100	=4	36	112	5	48	106	2	36	123	2	110	2
48	115	1	36	107	7	48	101	4	36	103	8	107	3
48	97	=7	36	122	1	48	97	=6	36	105	7	105	4
48	107	2	35	87	20	47	97	=6	36	109	5	100	=5
48	94	=10	36	115	2	48	90	17	36	99	=11	100	=5
48	94	=10	36	97	=14	48	91	=14	33	114	4	99	7
48	97	=7	36	98	=12	48	82	=19	36	115	3	98	=8
48	84	18	36	103	9	48	105	3	36	99	=11	98	=8
47	104	3	36	101	10	48	86	18	36	96	13	97	10
48	99	6	35	114	3	48	94	=10	36	78	20	96	=11
48	90	=15	31	92	17	35	95	9	32	108	6	96	=11
44	96	9	36	94	16	48	99	5	35	89	17	95	13
48	90	=15	36	99	11	48	92	=12	36	95	14	94	14
48	81	20	36	104	8	48	82	=19	36	101	9	92	15
48	88	17	35	113	4	48	91	=14	36	70	21	91	=16
48	91	=13	36	98	=12	48	92	=12	36	81	19	91	=16
48	94	=10	36	85	21	48	96	8	35	83	18	90	=18
47	83	19	36	91	18	48	94	=10	34	91	15	90	=18
48	78	21	36	90	19	48	91	=14	36	100	10	90	=18
48	91	=13	36	97	=14	48	77	21	36	90	16	89	21

Organise from highest mean SAS to lowest mean SAS when printing the report.

Make new PT/CAT/ PASS reports for your specific sets.

SAS	SAS (with 90% confidence bands)										ST	NPR	GR (/20)	End of KS2 indicator	Progress category
	60	70	80	90	100	110	120	130	140						
113											7	80	1	109	Expected
110											6	74	2	108	Higher
106											6	66	3	106	Expected
105											6	63	4	105	Lower
104											6	60	=5	105	Expected
104											6	60	=5	105	Expected
104											6	60	=5	105	Higher
103											5	58	=8	104	Expected
103											5	58	=8	104	Higher
102											5	55	10	103	Lower
101											5	53	11	103	Expected
100											5	50	12	102	Lower
97											5	42	13	101	Much lower
96											4	40	14	100	Expected
95											4	37	15	100	-
93											4	32	16	98	Expected
90											4	26	17	97	Much lower
88											3	22	18	95	Much lower
86											3	18	=19	94	Expected

Organise from highest mean SAS to lowest mean SAS when printing the report.

Using PTM from the previous academic year

Whole Year Group

Curriculum Content category	Number of questions	Group % correct	National % correct	Group/national difference
Number	30	67%	44%	23%
Geometry	3	76%	58%	18%
Measurement	10	67%	36%	31%
Statistics	4	77%	42%	35%

My Teaching Set

Curriculum Content category	Number of questions	Group % correct	National % correct	Group/national difference
Number	30	44%	44%	0%
Geometry	3	55%	58%	-3%
Measurement	10	35%	36%	-1%
Statistics	4	55%	42%	13%

Analysing
the data

Using PTM from the previous academic year

Whole Year Group

Process category	Number of questions	Group % correct	National % correct	Group/national difference
Fluency in facts and procedures	14	75%	53%	22%
Fluency in conceptual understanding	15	67%	41%	26%
Mathematical reasoning	14	67%	41%	26%
Problem solving	4	60%	30%	30%

My Teaching Set

Process category	Number of questions	Group % correct	National % correct	Group/national difference
Fluency in facts and procedures	14	55%	53%	2%
Fluency in conceptual understanding	15	44%	41%	3%
Mathematical reasoning	14	39%	41%	-2%
Problem solving	4	24%	30%	-6%

Using the data

Using KPIs to plan and assess

Number & Place Value

Count in multiples of 6, 7, 9, 25 and 1000.

I can count in multiples of 6, 7, 9, 25 and 1000.

Find 1000 more or less than a given number.

I can find 1000 more or less than a given number.

Count backwards through zero to include negative numbers.

I can count backwards through 0 to include negative numbers.

Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones).

I can recognise the place value of each digit of a 4 digit number (thousands, hundreds, tens and units).

Order and compare numbers beyond 1000.

I can order and compare numbers beyond 1000.

Identify, represent and estimate numbers using different representations.

I can identify, represent and estimate numbers, including measures, using different representations.

Round any number to the nearest 10, 100 or 1000.

I can round numbers to the nearest 10, 100 or 1000.

Solve number and practical problems that involve all of the above, and with increasingly large positive numbers.

I can solve number and practical problems that involve large positive numbers.

Read Roman numerals up to 100 (I to C) and know that, over time, the numeral system changed to include the concept of zero and place value.

I can read Roman numerals up to 100 and know that the number system has changed to include 0 and place value.

Addition & Subtraction

Add and subtract numbers with up to 4 digits, using the formal written methods of columnar addition and subtraction where appropriate.

I can add and subtract numbers with up to four digits using formal column methods.

Estimate and use inverse operations to check answers to a calculation.

I can use estimating and inverse operations to check my answers.

Solve addition and subtraction two-step problems in context, deciding which operations and methods to use and why.

I can solve two step addition and subtraction problems, using different methods and explain why I used them.

Planning
to meet
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pupils

Medium Term Planning



MATHEMATICS MEDIUM TERM PLAN Year: 4 Teacher: Amu RMu Term: 1

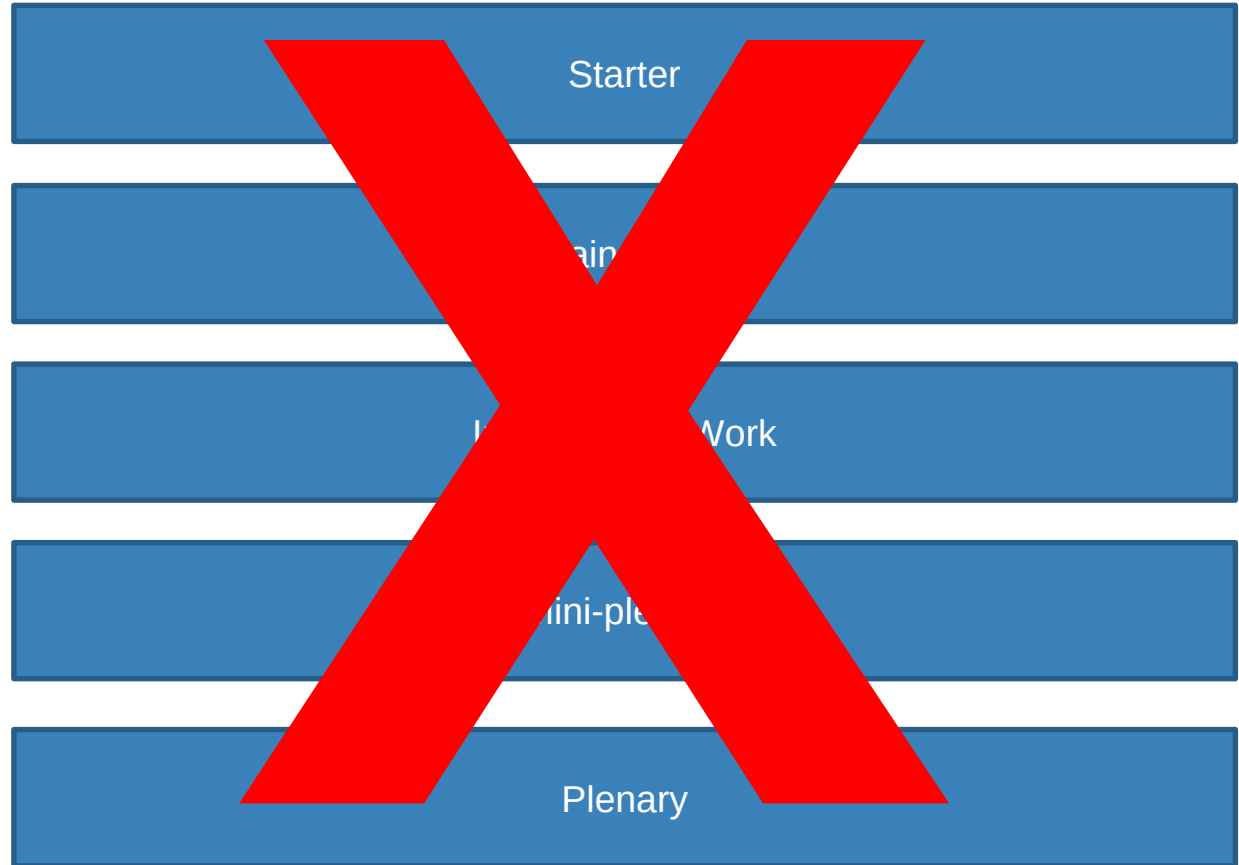
Assessment	Week	1	2	3	4	5	6	7	8
Areas to cover	Maths Units Taken from KPI tracking sheet.	Maths grouping being firmed up by teachers. Place Value	Maths grouping being firmed up by teachers. Place Value	-To read and write numbers up to 10,000. -To order whole and decimal numbers. -To explain the value of each digit in a three, <u>four</u> and <u>five</u> <u>digit</u> number. -To partition up to <u>five</u> <u>digit</u> numbers.	Place Value -To use positive and negative numbers in context. -To understand and use the greater than and less than symbols.	Addition -Solve two-step worded problems involving addition and subtraction.	Subtraction -Use a variety of mental strategies to add and subtract -Add numbers up to 4 digits using formal columnar addition -Subtract numbers up to 4 digits using formal written methods	Addition and Subtraction -Use a variety of mental strategies to add and subtract -Subtract numbers up to 4 digits using formal written methods	Half Term
Strengths:									
Additional Notes:	Opportunities to use and apply their skills			Real life application to money and race times (decimals).	Worded problems for negative numbers. Comparing temperatures of countries that competed in the 2018 World Cup.	Maths Shop Maths hub fluency and reasoning questions.	Start to apply knowledge to solve worded problems involving addition and subtraction Twinkl Mastery Questions.	Start to apply knowledge to solve worded problems involving addition and subtraction Twinkl Mastery Questions.	
	Cross Curricular Links			PE - races.	Topic – Blue Abyss – negative numbers as in m below sea level.	PSHE/Global Citizenship – buying and selling.	English – reading and discussing learning.	English/PSHE – Presenting learning to others. ICT – Using Explain Everything to explain learning.	–

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Lesson Design

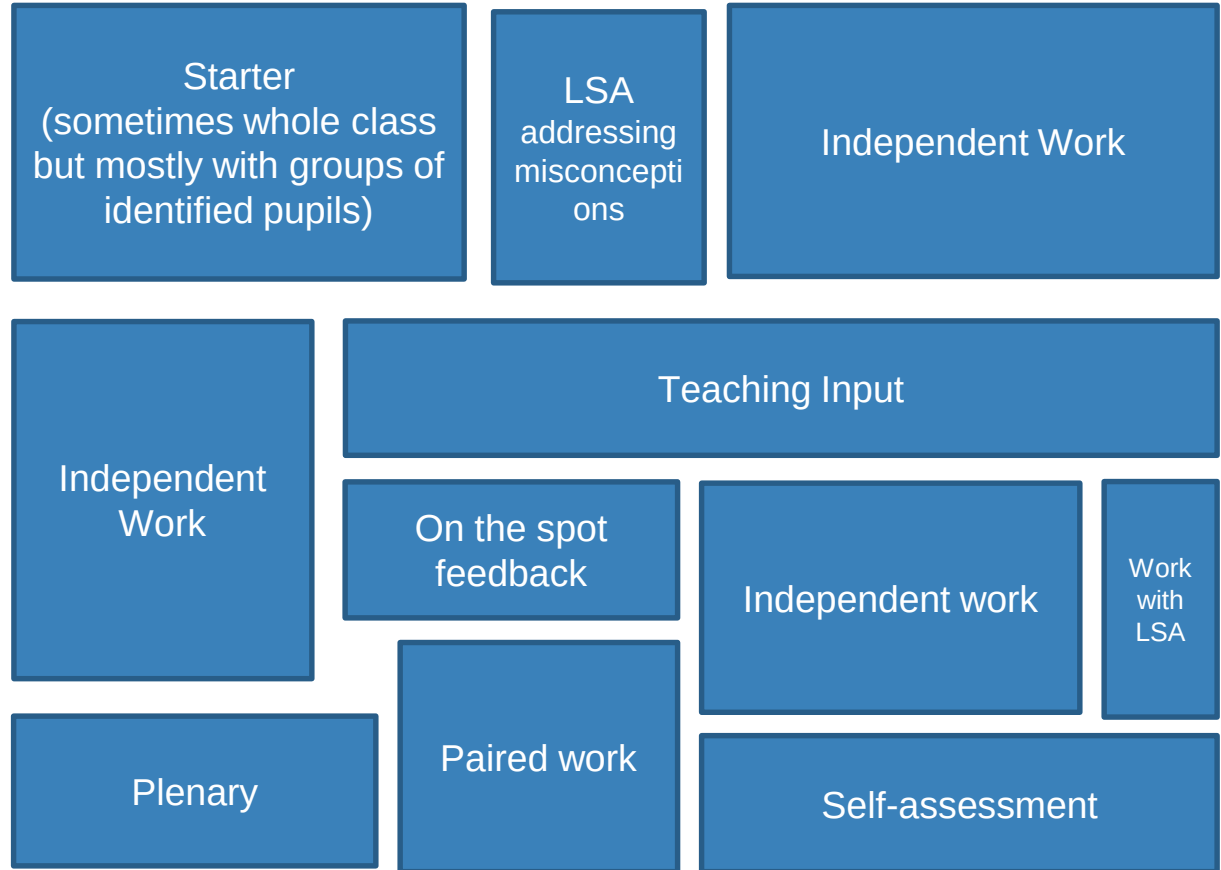


Planning to meet the diverse needs of your pupils



@AmyMulgrew_1

Lesson Design



Planning to meet the diverse needs of your pupils

Using a Challenge Based Approach

Challenge 1 - Fluency

WALT: subtract numbers (no decomposition)

Copy the sums carefully into your books and find the answer.

- A) $578 - 64$ B) $976 - 465$ C) $6365 - 244$ D) $7582 - 4421$

True or false

- E) $3,876 - 256 = 3,520$

Challenge 2 - Fluency

WALT: subtract numbers (no decomposition)

Copy the sums carefully into your books and find the answer.

- A) $578 - 454$ B) $976 - 215$ C) $6465 - 2443$ D) $5682 - 4421$

True or false

- E) $3,876 - 1,526 = 2,520$

Challenge 3 – Problem-solving

WALT: subtract numbers (no decomposition)

Cut out the sums and put them in order from which sum will give the smallest answer to the one that will give you largest answer. Stick them in your book. Now find the answers by using column subtraction. Were you right?

489-	9876-	7576-	4979
326	8333	1560	- 678

Challenge 4 - Fluency

WALT: subtract numbers with 1 exchange (decomposition)

Copy the sums carefully into your books and find the answer.

- A) $573 - 164$ B) $906 - 432$ C) $6365 - 2744$ D) $7532 - 2481$

True or false

- E) $3,616 - 256 = 3,450$

Challenge 5 - Fluency

WALT: subtract numbers with 1 exchange (decomposition)

Use column subtraction, find the answers to the following sums:

- A) $1,573 - 254 =$
B) $2,948 - 1,174 =$
C) $6,365 - 2,724 =$
D) $8,421 - 3,109 =$

True or false

- E) $3,616 - 2,476 = 1140$

Challenge 6 - Reasoning

WALT: subtract numbers with 1 exchange (decomposition)

The sums below are all incorrect. Can you find the mistake and explain what is wrong? Complete the sums to find the right answers.

4	2	7	3	-
1	8	4	1	
3	6	3	2	
5	3	1	9	-
3	2	7	6	
8	1	4	3	
2	4	0	7	-
2	3	3	6	
0	1	3	1	
5	6	8	8	-
1	0	9		
4	5	9	0	

Challenge 7 - Fluency

WALT: subtract numbers – 2 exchanges (decomposition)

Copy the sums carefully into your books and find the answer.

- A) $345 - 78 =$
B) $426 - 168 =$
C) $1572 - 384 =$
D) $3473 - 1524 =$

Challenge 8 – Fluency and Reasoning

WALT: subtract numbers – 2 exchanges (decomposition)

True or false?

One of these balancing statements below is correct and 2 are wrong. Find out which is which by using column subtraction.

- A) $2846 - 1837 = 5145 - 4236$
B) $5128 - 3419 = 7952 - 6244$
C) $3476 - 548 = 4337 - 1409$

Planning to meet the diverse needs of your pupils

Using a Challenge Based Approach

Challenge 9- Fluency

WALT: subtract numbers – 2 exchanges (decomposition)

TEACHER WORKSHOP

Work with an adult to help you with this tricky challenge.

A) $7,500 - 3,840 =$

B) $6,300 - 2,102 =$

C) $4,000 - 2,039 =$

Can you think of another method to help you check your answer? Which do you prefer

Challenge 10 – Problem Solving

WALT: answer worded questions using subtraction

Answer the questions below in your book. Show all your working out. Use the bar model to help you.

- A) 843 go to JESS Jumeirah, 512 go to JESS Ranches. How many more go to JESS Jumeirah?
B) There are 126 palm trees on an island. 53 are blown down in a hurricane. How many are left?
C) An ice-cream seller sells 1321 vanilla ice-creams and 901 chocolate. How many more vanilla ice-creams were sold?

SHOW WHAT YOU KNOW

Can you make your own worded question to test on a friend?

Challenge 11 – Problem Solving

WALT: answer worded questions using subtraction

Answer the questions below in your book. Show all your working out. Use the bar model to help you.

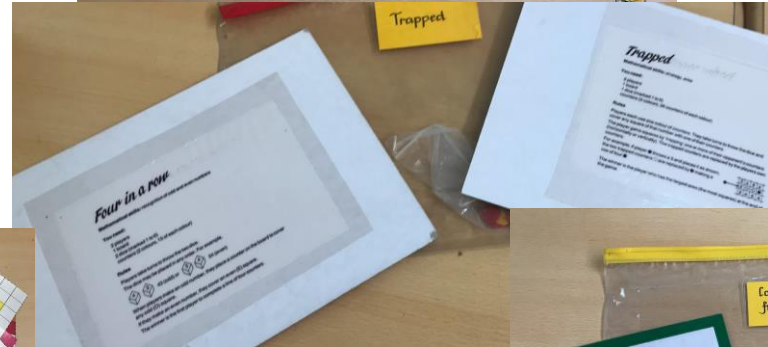
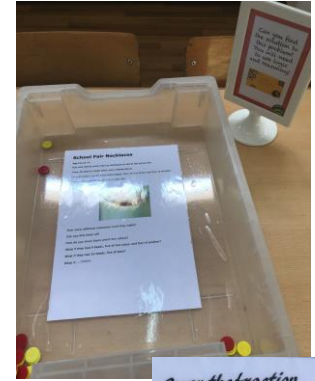
- A) 2843 people go to Wild Wadi, 4321 people go to Legoland and 3512 go Aquaventure. How many more go to Legoland compared to Wild Wadi?
B) There are 3226 palm trees on an island and 1432 cactus. 2753 palm trees are blown down in a hurricane. How many are left?
C) An ice-cream seller sells 5121 vanilla ice-creams, 3240 strawberry and 2903 chocolate. How many more vanilla ice-creams were sold than chocolate?

SHOW WHAT YOU KNOW

Can you make your own worded question to test on a friend?

Planning
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Embedding Maths into the Learning Environment



Cover the fraction

Mathematical skills: fractions of quantities

You need:
2 players and 1 referee
1 board
1 referee's chart
100 small cubes (100 of each colour)
100 small dice (1, 1, 1, 1, 1, 1, 1, 1, 1, 1)

Rules
Players take turns to throw the dice and cover up the fraction shown on any shape.
For example, if 5 is scored, the player may cover
1 square on the 5-square shape,
2 squares on the 4-square shape,
3 squares on the 3-square shape,
4 squares on the 2-square shape.
The next player may continue covering the same shape or use any other shape.
Play continues until no more squares can be covered.
The winner is the player who covers most individual squares.

Referee's Chart for Cover the Fraction

4 squares of 4 = 2	4 squares of 4 = 3	4 squares of 4 = 2
3 squares of 3 = 4	3 squares of 3 = 2	3 squares of 3 = 4
2 squares of 2 = 4	2 squares of 2 = 3	2 squares of 2 = 4
1 square of 1 = 4	1 square of 1 = 3	1 square of 1 = 4

Comparing Aptitude to Attainment

Y3 PTM	CAT quant	CAT NV	CAT spatial	AV Q&NV	Underachieving	Overachieving	Achieving Expectation	Quantitative bias	Non-Verbal bias	Spatial bias	no bias
113	104	82	101	93		x		x			
110	107	101	103	104		x		x			
106	113	91	70	102			x	x			
105	97	91	114	94		x				x	
104	98	92	81	95		x		x			
104	92	95	108	93.5		x				x	
104	90	91	100	90.5		x				x	
103	98	92	115	95		x				x	
103	101	86	96	93.5		x		x		x	
102	112	106	123	109	x						x
101	99	92	95	95.5		x		x			
100	114	94	78	104			x	x			
97	108	126	127	117	x				x	x	
96	103	105	99	104	x						x
95	91	94	91	92.5			x				x
93	97	77	90	87		x		x			
90	87	97	109	92			x			x	
88	94	99	89	96.5	x						x
86	85	96	83	91			x		x		
86	122	97	105	109.5	x			x			

Comparing Aptitude to Attainment – Underachieving

Y3 PTM	CAT quant	CAT NV	CAT spatial	AV Q&NV	Underachieving	Overachieving	Achieving Expectation	Quantitative bias	Non-Verbal bias	Spatial bias	no bias
113	104	82	101	93		x		x			
110	107	101	103	104		x		x			
106	113	91	70	102			x	x			
105	97	91	114	94		x				x	
104	98	92	81	95		x		x			
104	92	95	108	93.5		x				x	
104	90	91	100	90.5		x				x	
103	98	92	115	95		x				x	
103	101	86	96	93.5		x		x		x	
102	112	106	123	109	x						x
101	99	92	95	95.5		x		x			
100	114	94	78	104			x	x			
97	108	126	127	117	x				x	x	
96	103	105	99	104	x						x
95	91	94	91	92.5			x				x
93	97	77	90	87		x		x			
90	87	97	109	92			x			x	
88	94	99	89	96.5	x						x
86	85	96	83	91			x		x		
86	122	97	105	109.5	x			x			

3/5 of underachieving pupils have a specific learning need so require specific strategies, as per their IEP, to support them in meeting their potential.

Strategies for underachieving pupils

Y3 PTM	CAT quant	CAT NV	CAT spatial	AV Q&NV	Underachieving	Overachieving	Achieving Expectation	Quantitative bias	Non-Verbal bias	Spatial bias	no bias
96	103	105	99	104	x						x

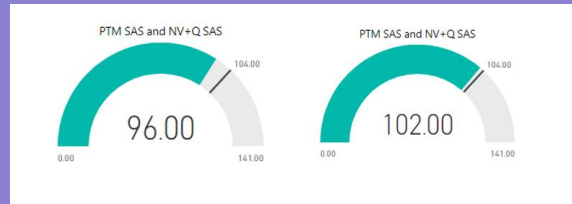
Year	1	2	3	4	5	6	7	8	9
	Feelings about school	Perceived learning capability	Self-regard as a learner	Preparedness	Attitudes to learning	General work	Confidence in learning	Attitudes to attendance	Response to curriculum demands
4	58.0	25.3	74.0				48.9	56.8	72.0

Mild spatial bias

- Some students with this profile have weaker Verbal Reasoning skills
- A slight bias for learning through

PTM 8

PTM 9



Spatial Ability and relatively
this group.

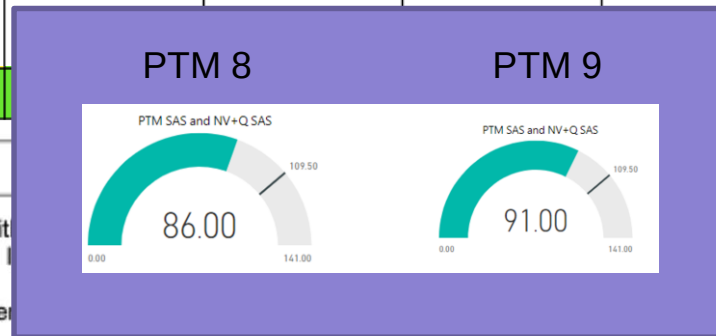
Strategies:

- Provide targeted support. This child responds well with a number of easier challenges to build confidence. Then she will tackle the harder challenges.
- Inform parents – In initial parents meeting, discussed power of growth mindset.
- Adapt differentiation/challenge for individuals. This child responds to individual challenges that are a bit different to what everyone else receives.
- Look at CATs report for learning biases – mild spatial (V=84)
- Speak to other teachers/middle leaders about how to engage.

Strategies for underachieving pupils

Y3 PTM	CAT quant	CAT NV	CAT spatial	AV Q&NV	Underachieving	Overachieving	Achieving Expectation	Quantitative bias	Non-Verbal bias	Spatial bias	no bias
86	122	97	105	109.5	x			x			

Year	1	2	3	4	5	6	7	8	9
	Feelings about school	Perceived learning capability				work	Confidence in learning	Attitudes to attendance	Response to curriculum demands
4	30.8	32.4					28.7	16.8	9.2



No bias or even profile

- Scores for students with across the range from
- Students with high even methods.
- Students with low even scores, conversely, may require significant levels of support to access the curriculum but will be open to a range of teaching and learning methods.

Strategies:

- Provide targeted support – allow her to build confidence in quantitative activities initially.
- Use quantitative strategies as a “way in” to non-verbal tasks e.g. clear steps and methods as examples.
- Inform parents about strategies that work.
- Provide worked examples with clearly labelled steps.

Comparing Aptitude to Attainment – Overachieving

Y3 PTM	CAT quant	CAT NV	CAT spatial	AV Q&NV	Underachieving	Overachieving	Achieving Expectation	Quantitative bias	Non-Verbal bias	Spatial bias	no bias
113	104	82	101	93		x		x			
110	107	101	103	104		x		x			
106	113	91	70	102			x	x			
105	97	91	114	94		x				x	
104	98	92	81	95		x		x			
104	92	95	108	93.5		x				x	
104	90	91	100	90.5		x				x	
103	98	92	115	95		x				x	
103	101	86	96	93.5		x		x		x	
102	112	106	123	109	x						x
101	99	92	95	95.5		x		x			
100	114	94	78	104			x	x			
97	108	126	127	117	x				x	x	
96	103	105	99	104	x						x
95	91	94	91	92.5			x				x
93	97	77	90	87		x		x			
90	87	97	109	92			x			x	
88	94	99	89	96.5	x						x
86	85	96	83	91			x		x		
86	122	97	105	109.5	x			x			

48% overachieving

Look at set composition to ensure opportunity for further stretch and challenge. Use a challenge based approach to allow children to develop their own learning pathways and have a flexible approach to differentiation so children are supported.

Supporting Students with Low Scores

How to support cognitive bias



@AmyMulgrew_1

Low Verbal SAS

- Reduce dense text
- Provide summaries
- Use highlighters to pick out essential text
- Use visual aid demonstrations
- Encourage use of bar models
- Avoid multi-step directions – or support with visuals
- Build in non-verbal activities
- Drill key words to mastery

Low Quantitative SAS

- Support by ensuring students understand lower order maths to support the concept being taught.
- Plan carefully to ensure that cognitive overload is not reached.
- Review using low stakes tests little and often to practice recall.
- Place greater emphasis on mental maths.

Low Non-Verbal SAS

- Give one instruction at a time
- Directly teach problem solving methods with worked examples and step by step
- Focus on one-step problem solving questions and don't move onto two-step problems until children are secure
- Repeat instructions
- Use concrete manipulatives and tools
- Apply chunking and provide frequent feedback.
- Provide direct instructions rather than allowing children to "discover" .

Low Spatial SAS

- Encourage verbal explanations of learning.
- Support pictures with words
- Reduce pictures on presentations
- Teach using gestures e.g. "Perimeter – Path - Plus (while using hands to show a path) or "area – all – multiply".
- Give methods of calculations rather than open ended ways of them devising their own solutions.

Comparing Aptitude to Attainment – Quantitative Bias

Y3 PTM	CAT quant	CAT NV	CAT spatial	AV Q&NV	Underachieving	Overachieving	Achieving Expectation	Quantitative bias	Non-Verbal bias	Spatial bias	no bias
113	104	82	101	93		x		x			
110	107	101	103	104		x		x			
106	113	91	70	102			x	x			
105	97	91	114	94		x				x	
104	98	92	81	95		x		x			
104	92	95	108	93.5		x				x	
104	90	91	100	90.5		x				x	
103	98	92	115	95		x				x	
103	101	86	96	93.5		x		x		x	
102	112	106	123	109	x						x
101	99	92	95	95.5		x		x			
100	114	94	78	104			x	x			
97	108	126	127	117	x				x	x	
96	103	105	99	104	x						x
95	91	94	91	92.5			x				x
93	97	77	90	87		x		x			
90	87	97	109	92			x			x	
88	94	99	89	96.5	x						x
86	85	96	83	91			x		x		
86	122	97	105	109.5	x			x			

Comparing Aptitude to Attainment – Quantitative Bias

Y3 PTM	CAT quant	CAT NV	CAT spatial	AV Q&NV	Underachieving	Overachieving	Achieving Expectation	Quantitative bias	Non-Verbal bias	Spatial bias	no bias
100	114	94	78	104			x	x			
106	113	91	70	102			x	x			

Moderate verbal bias

- Students in this group will have average to high scores for Verbal Reasoning and relatively weaker Spatial Ability with scores in the average range.
- These students are likely to prefer to learn through reading, writing and discussion.
- Step-by-step learning, which builds on prior knowledge incrementally, is likely to suit these students.

Low Non-Verbal SAS

- Give one instruction at a time
- Directly teach problem solving methods with worked examples and step by step
- Focus on one-step problem solving questions and don't move onto two-step problems until children are secure
- Repeat instructions
- Use concrete manipulatives and tools
- Apply chunking and provide frequent feedback.
- Provide direct instructions rather than allowing children to "discover" .

Low Spatial SAS

- Encourage verbal explanations of learning.
- Support pictures with words
- Reduce pictures on presentations
- Teach using gestures e.g. "Perimeter – Path - Plus (while using hands to show a path) or "area – all – multiply".
- Give methods of calculations rather than open ended ways of them devising their own solutions.

Planning to meet the diverse needs of your pupils

Using a Challenge Based Approach

Challenge 1 - Fluency

WALT: subtract numbers (no decomposition)

Copy the sums carefully into your books and find the answer.

A) $578 - 64$ B) $976 - 465$ C) $6365 - 244$ D) $7582 - 4421$

True or false

E) $3,876 - 256 = 3,520$

Challenge 2 - Fluency

WALT: subtract numbers (no decomposition)

Copy the sums carefully into your books and find the answer.

A) $578 - 454$ B) $976 - 215$ C) $6465 - 2443$ D) $5682 - 4421$

True or false

E) $3,876 - 1,526 = 2,520$

Challenge 3 – Problem-solving

WALT: subtract numbers (no decomposition)

Cut out the sums and put them in order from which sum will give the smallest answer to the one that will give you largest answer. Stick them in your book. Now find the answers by using column subtraction. Were you right?

489-	9876-	7576-	4979
326	8333	1560	- 678

Challenge 4 - Fluency

WALT: subtract numbers with 1 exchange (decomposition)

Copy the sums carefully into your books and find the answer.

A) $573 - 164$ B) $906 - 432$ C) $6365 - 2744$ D) $7532 - 2481$

True or false

E) $3,616 - 256 = 3,450$

Challenge 5 - Fluency

WALT: subtract numbers with 1 exchange (decomposition)

Use column subtraction, find the answers to the following sums:

A) $1,573 - 254 =$
 B) $2,948 - 1,174 =$
 C) $6,365 - 2,724 =$
 D) $8,421 - 3,109 =$

True or false

E) $3,616 - 2,476 = 1140$

Challenge 6 - Reasoning

WALT: subtract numbers with 1 exchange (decomposition)

The sums below are all incorrect. Can you find the mistake and explain what is wrong? Complete the sums to find the right answers.

4	2	7	3	-
1	8	4	1	
3	6	3	2	
5	3	1	9	-
3	2	7	6	
8	1	4	3	
2	4	0	7	-
2	3	3	6	
0	1	3	1	
5	6	8	8	-
1	0	9		
4	5	9	0	

Challenge 7 - Fluency

WALT: subtract numbers – 2 exchanges (decomposition)

Copy the sums carefully into your books and find the answer.

A) $345 - 78 =$
 B) $426 - 168 =$
 C) $1572 - 384 =$
 D) $3473 - 1524 =$

Challenge 8 – Fluency and Reasoning

WALT: subtract numbers – 2 exchanges (decomposition)

True or false?

One of these balancing statements below is correct and 2 are wrong. Find out which is which by using column subtraction.

A) $2846 - 1837 = 5145 - 4236$
 B) $5128 - 3419 = 7952 - 6244$
 C) $3476 - 548 = 4337 - 1409$

Planning to meet the diverse needs of your pupils

Using a Challenge Based Approach

Challenge 9- Fluency

WALT: subtract numbers – 2 exchanges (decomposition)

TEACHER WORKSHOP

Work with an adult to help you with this tricky challenge.

A) $7,500 - 3,840 =$

B) $6,300 - 2,102 =$

C) $4,000 - 2,039 =$

Can you think of another method to help you check your answer? Which do you prefer

Challenge 10 – Problem Solving

WALT: answer worded questions using subtraction

Answer the questions below in your book. Show all your working out. Use the bar model to help you.

- A) 843 go to JESS Jumeirah, 512 go to JESS Ranches. How many more go to JESS Jumeirah?
B) There are 126 palm trees on an island. 53 are blown down in a hurricane. How many are left?
C) An ice-cream seller sells 1321 vanilla ice-creams and 901 chocolate. How many more vanilla ice-creams were sold?

SHOW WHAT YOU KNOW

Can you make your own worded question to test on a friend?

Challenge 11 – Problem Solving

WALT: answer worded questions using subtraction

Answer the questions below in your book. Show all your working out. Use the bar model to help you.

- A) 2843 people go to Wild Wadi, 4321 people go to Legoland and 3512 go Aquaventure. How many more go to Legoland compared to Wild Wadi?
B) There are 3226 palm trees on an island and 1432 cactus. 2753 palm trees are blown down in a hurricane. How many are left?
C) An ice-cream seller sells 5121 vanilla ice-creams, 3240 strawberry and 2903 chocolate. How many more vanilla ice-creams were sold than chocolate?

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Comparing Aptitude to Attainment – Quantitative Bias

Y3 PTM	CAT quant	CAT NV	CAT spatial	AV Q&NV	Underachieving	Overachieving	Achieving Expectation	Quantitative bias	Non-Verbal bias	Spatial bias	no bias
93	97	77	90	87		x		x			

No bias or even profile

- Scores for students with this profile will be very similar for both Verbal Reasoning and Spatial Ability but will be across the range from low to high.
- Students with high even scores will excel across the curriculum and will learn through the range of media and methods.
- Students with low even scores, conversely, may require significant levels of support to access the curriculum but will be open to a range of teaching and learning methods.

Low Non-Verbal SAS

- Give one instruction at a time
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- Repeat instructions
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- Apply chunking and provide frequent feedback.
- Provide direct instructions rather than allowing children to "discover" .

- Further emphasis on quantitative required as, although it is stronger than non-verbal, it is still an area that needs further support.
- Needs to be taught through a step-by-step approach.
- Needs to be taught specific problem solving strategies – bar modelling is great for this.

Planning to meet the diverse needs of your pupils

Using a Challenge Based Approach

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- A) $578 - 64$ B) $976 - 465$ C) $6365 - 244$ D) $7582 - 4421$

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Comparing Aptitude to Attainment – NV/Spatial Bias

Y3 PTM	CAT quant	CAT NV	CAT spatial	AV Q&NV	Underachieving	Overachieving	Achieving Expectation	Quantitative bias	Non-Verbal bias	Spatial bias	no bias
113	104	82	101	93		x		x			
110	107	101	103	104		x		x			
106	113	91	70	102			x	x			
105	97	91	114	94		x				x	
104	98	92	81	95		x		x			
104	92	95	108	93.5		x				x	
104	90	91	100	90.5		x				x	
103	98	92	115	95		x				x	
103	101	86	96	93.5		x		x		x	
102	112	106	123	109	x						x
101	99	92	95	95.5		x		x			
100	114	94	78	104			x	x			
97	108	126	127	117	x				x	x	
96	103	105	99	104	x						x
95	91	94	91	92.5			x				x
93	97	77	90	87		x		x			
90	87	97	109	92			x			x	
88	94	99	89	96.5	x						x
86	85	96	83	91			x		x		
86	122	97	105	109.5	x			x			

Comparing Aptitude to Attainment – NV/Spatial Bias

Y3 PTM	CAT quant	CAT NV	CAT spatial	AV Q&NV	Underachieving	Overachieving	Achieving Expectation	Quantitative bias	Non-Verbal bias	Spatial bias	no bias
97	108	126	127	117	x				x	x	

Extreme spatial bias

- These students should excel in problem solving and will grasp concepts quickly and intuitively.
- They will not enjoy rote learning and may arrive at a correct solution to a task without demonstrating the steps along the way.
- They are likely to be high achievers in subjects that require good visual-spatial skills such as maths, physics and technology.
- Owing to a relative weakness in verbal skills, attainment may be uneven and they may need support in subjects where the emphasis is on the written word.

Where quantitative is lower than non-verbal/spatial, use strengths in non-verbal as a way in to improving quantitative ability.

E.g. timestables – guide children to see patterns between numbers rather than learning as rote.

<https://www.youtube.com/watch?v=yXdHGBfoqfw>

Progress in
times tables
after using a
NV approach
for someone
with a
quantitative
weakness.

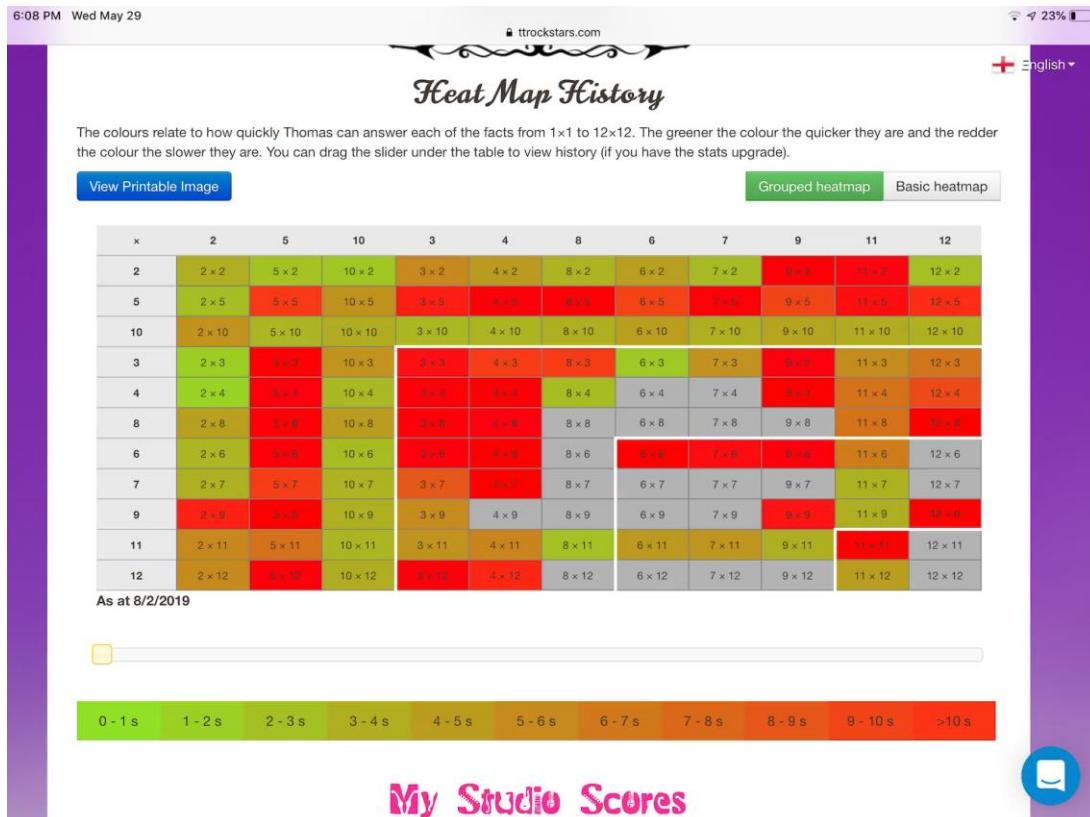
Baseline
speed
21.43

Current speed
3.41

Status
Headliner

Best Status
Rock Star

Lifetime coins
44,715



Ongoing low stakes testing

Assessing
progress
and
attainment



Assessing progress and attainment

Mid-Year Pupil Progress



JUMEIRAH ENGLISH SPEAKING SCHOOL

'Achieving Excellence Together'

Class/YGL

Mid-Year Pupil Progress - 2018-19

Class/YG: 4 Blue, Year 4

Teacher: Amy Mulgrew

Date: 30.01.2018

Subject	% Students On Track to be Below (Within or less) at EoY	% Students On Track to be Meeting (Within +) at EoY	% Students On Track to be Exceeding (At least Secure) at EoY
Maths	33% (7 pupils)	33% (7 pupils)	33% (7 pupils)

Mid-Year Pupil Progress

Assessing progress and attainment

Maths

Key Identified pupils– Actions to implement

Students on Track to be below expectation at EoY:

Sam – 3b+ - Power of 2

Adam – 3s – Power of 2

Yousef– 3s

Charlie – 3s

Maggie – 3s

Lisa – 3s+

Elaine – 3s+

All have made expected progress or greater.

Students on Track to be meeting expectation at EoY:

Sally - 4b – potential dyscalculia – Power of 2 for 1 term and then reassess.

Neeyaz - 4b

Mohammed – 4b

Jonathan – 4b

Mairi – 4b

Polly – 4b

Frederick – 4b **Slow progress

All, apart from Frederick, have made expected progress or greater.

There are 3 adults providing support for this set: A. Mulgrew, R. Munif and either J. Garner or R. Fuhrmann. Through careful AfL, groups change on a weekly/daily basis to ensure that the needs of the group are met. Times Table practice occurs daily in the form of Times Table Rockstars and a marked improvement has been made in this area. Class average speed is now 9.17 seconds per question which is 5.95 seconds faster than the initial baseline.