

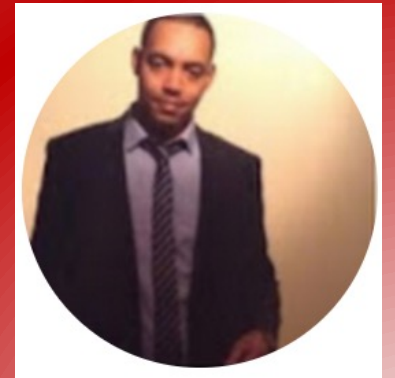
MATH WORKSHOP

FOR PARENTS



Agenda: Aims for the session

- Statutory assessment
- Mathematics 'debunked'
- How we teach mathematics
- What children learn
- Home learning tools
- What's next?
- Questions



Justin Banton: Subject Leader/CT

jbanton@jessop.lambeth.sch.uk

Intro: What questions do you hope get answered today?

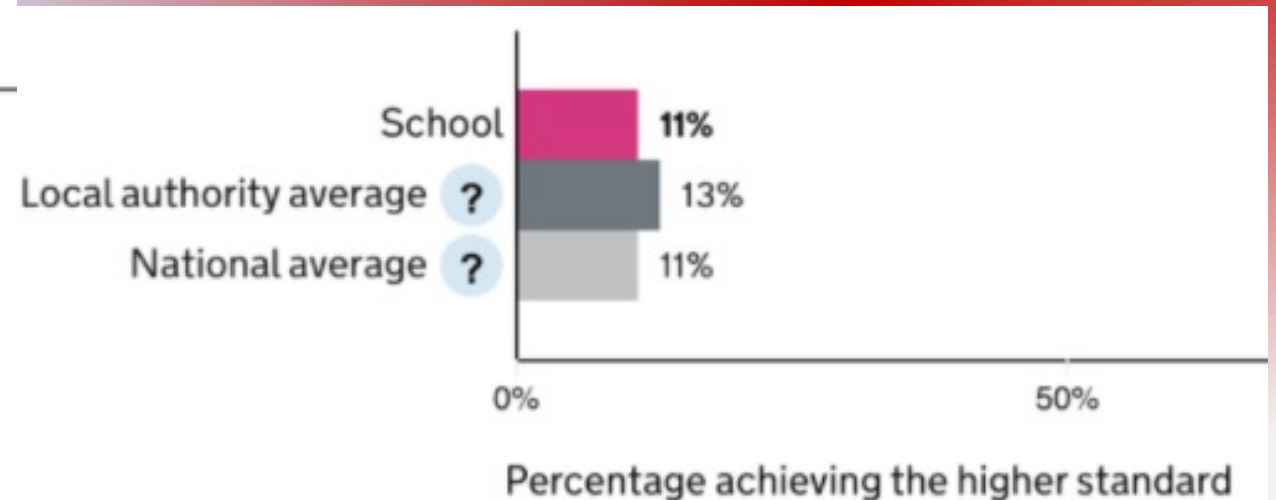
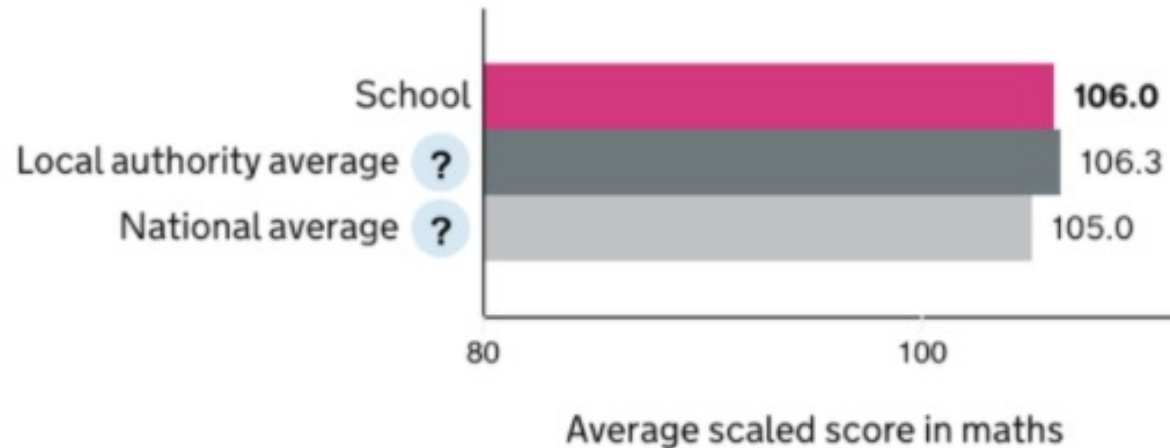


Statutory Assessment: SATs are back!



The KS1 SATs will take place across schools during a flexible 2 week period in May.

KS2 SATs on the other hand is week is a defined period of time from Monday 9th May 2022 to Thursday 12th May. Read on for more detail.



Statutory Assessment: **Multiplication Check**

Do you have a child in year 4 at primary school?

If so, your child will be participating in the multiplication tables check in June.

The purpose of the check is to determine whether your child can fluently recall their times tables up to 12, which is essential for future success in mathematics. It will also help your child's school to identify if your child may need additional support.

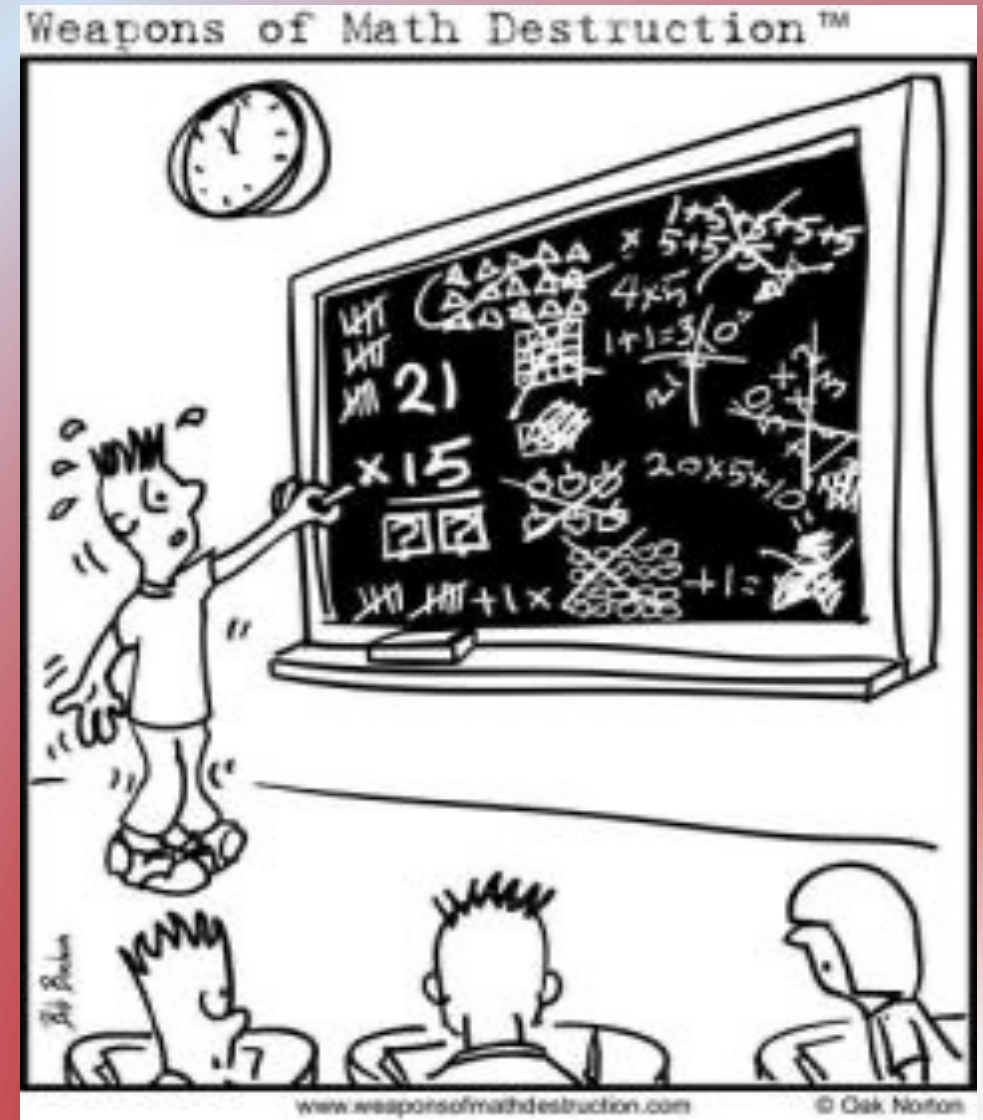
What is the Multiplication tables check?

It is an on-screen check consisting of 25 times table questions. Your child will be able to answer 3 practice questions before taking the actual check. They will then have 6 seconds to answer each question. On average, the check should take no longer than 5 minutes to complete.

Subject Development: How we learned maths!



"Memorizing the multiplication table is *not* brainwashing!"



Intent: National Curriculum

1. Become **FLUENT** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problem over time. So that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
2. **REASON MATHEMATICALLY** by following a line of enquiry, conjecturing relationships and generalisations (*making a suggestion*), and developing an argument, justification or proof using **mathematical language**.
3. **SOLVE PROBLEMS** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Learn it! Discuss it! Apply it! Master it!

Intent: Mastery 'Debunked'



Mastering maths means acquiring a deep, **long-term, secure, flexible** and **adaptable** understanding of the subject.

Learn it! Discuss it! Apply it! Enjoy it?

Learn it!

28.09.2021

LO: To use the standard written method.

Steps to Success:

- I can line up the digits in the correct place value column.
- I can 'carry' the digit in to the correct column & add this
- I can use related multiplication facts.
- I can recognize zero as an important place holder.

Key vocabulary: multiplicand, multiplier, product, digit, place holder, commutative

Word of the Week:

Expression

Spicy

$$\begin{array}{r} 2,086 \\ \times 24 \\ \hline 8,344 \\ 41,720 \\ \hline 50,064 \end{array}$$

2) $\begin{array}{r} 4,928 \\ \times 45 \\ \hline 24,640 \\ 19,712 \\ \hline 221,760 \end{array}$

3) $\begin{array}{r} 4,254 \\ \times 12 \\ \hline 8,508 \\ 85,080 \\ \hline 51,048 \end{array}$

29.09.2021

LO: To use the standard method to multiply by 2 digit numbers

Steps to Success:

- I can line up the digits in the correct place value column.
- I can 'carry' the digit in to the correct column & add this
- I can use related multiplication facts.
- I can recognize zero as an important place holder.

Key vocabulary: multiplicand, multiplier, product, digit, place holder, commutative

Word of the Week:

Expression

mild

$$\begin{array}{r} 2,132 \\ \times 31 \\ \hline 2,132 \\ 63,960 \\ \hline 66,092 \end{array}$$

2) A is correct because B doesn't have a zero place holder.

$$\begin{array}{r} 3,342 \\ \times 12 \\ \hline 6,684 \\ 33,420 \\ \hline 39,762 \end{array}$$

$$\begin{array}{r} 2,112 \\ \times 34 \\ \hline 8,448 \\ 63,360 \\ \hline 71,808 \end{array}$$

3) $\begin{array}{r} 8,3204 \\ \times 12 \\ \hline 16,6408 \\ 83,2040 \\ \hline 100,0448 \end{array}$

Great, you found the error.

Fluency: Introducing a Concept

Pupils develop conceptual understanding...
Teaching maths begins with physical objects!



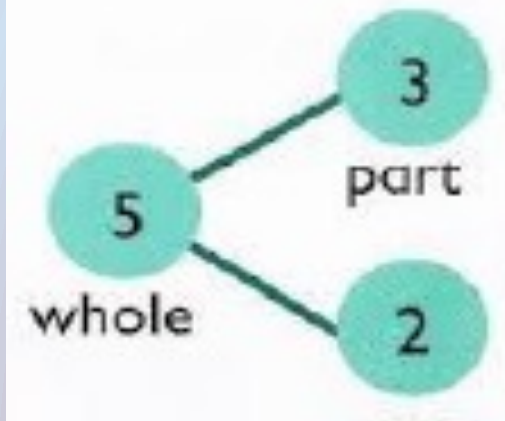
Fluency: Understanding a Concept

To deepen conceptual understanding...
Teaching follows:



*EYFS: Counting on
is adding within 10*

Year 1: Number bonds
and partitioning numbers

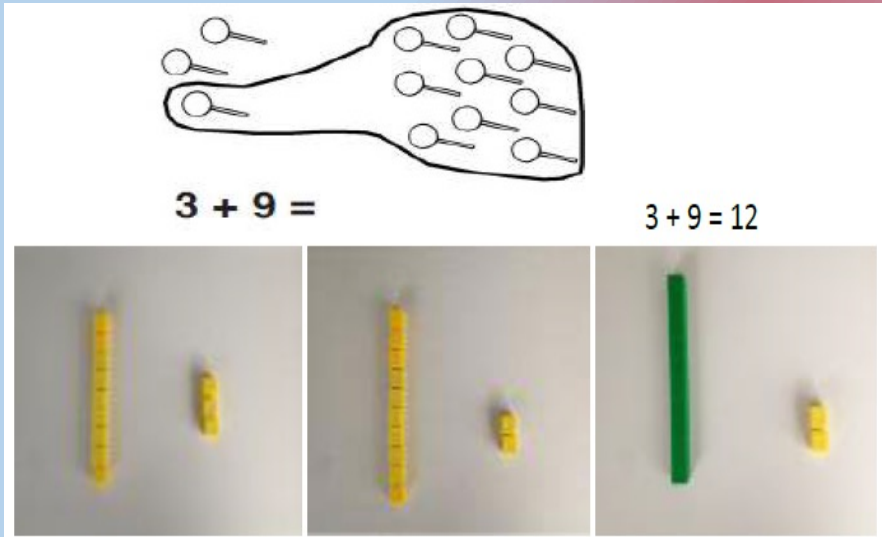


$$10 = 6 + 4$$

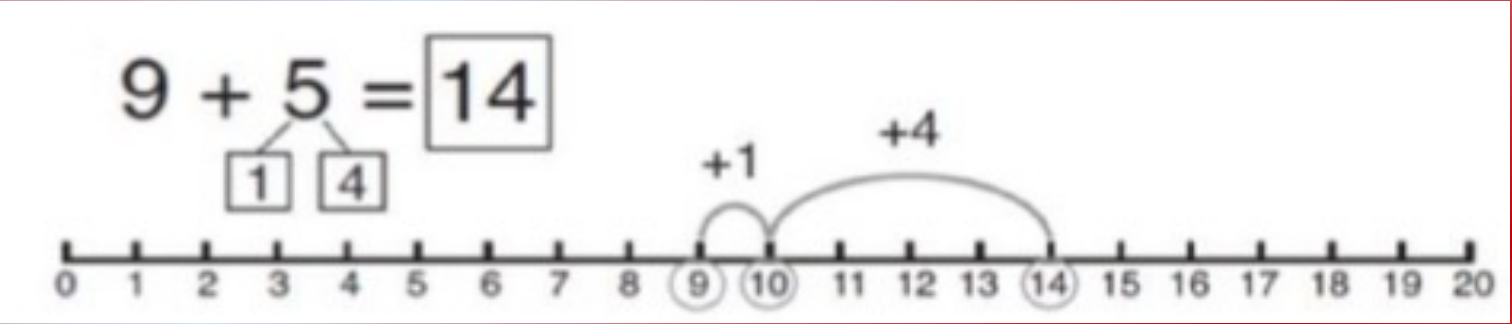
Missing numbers:

$$4 + \square \text{ is } 10$$

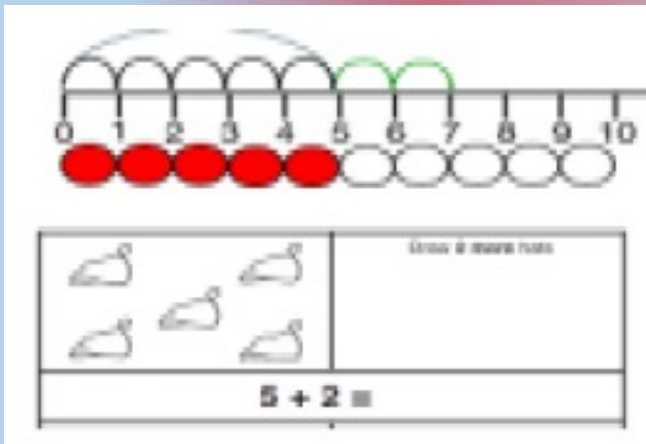
Fluency: Developing a Concept



Year 1: Addition over 10 boundary



Year 1: Adding to find 'more', two different things can be 'equal'



Abstract:

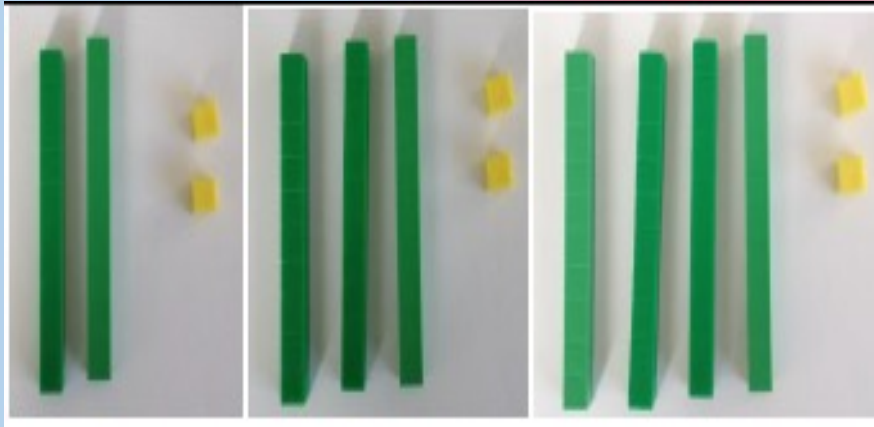
"1 more than 5 is equal to 6"
"2 more than 5 is 7"
"8 is 3 more than 5"



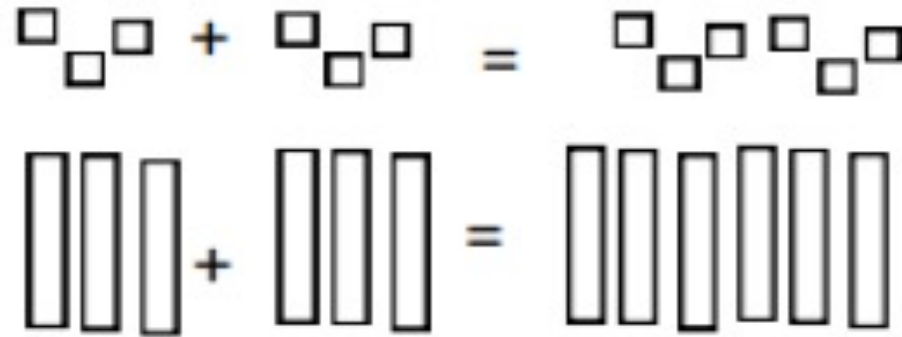
Fluency: Developing a Concept



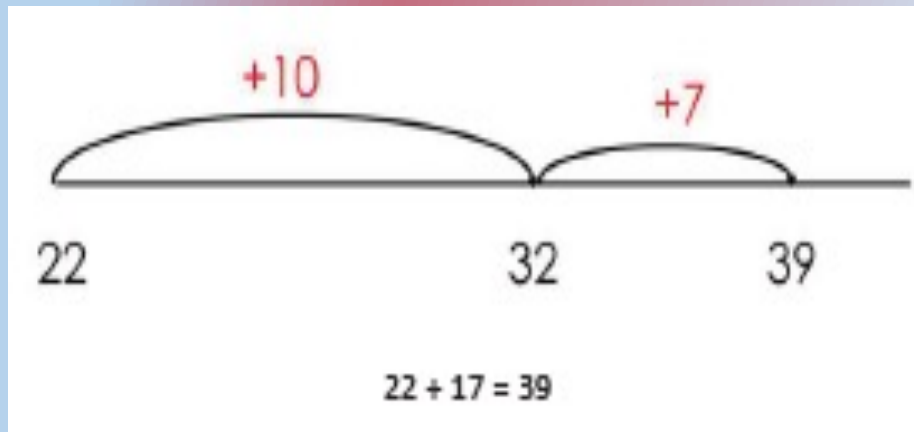
Y2: Parts of numbers have a value



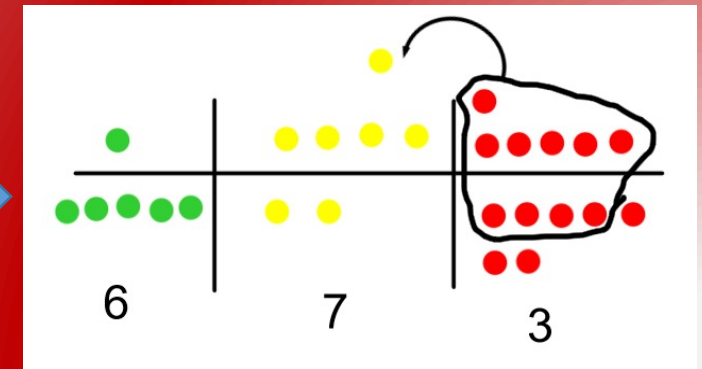
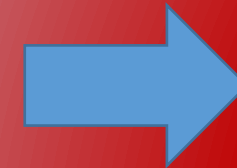
Y2: Combine tens & ones to add



Y2: Add tens, then ones


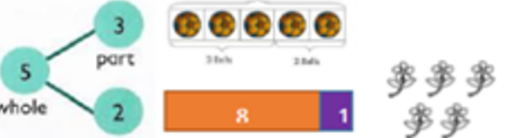


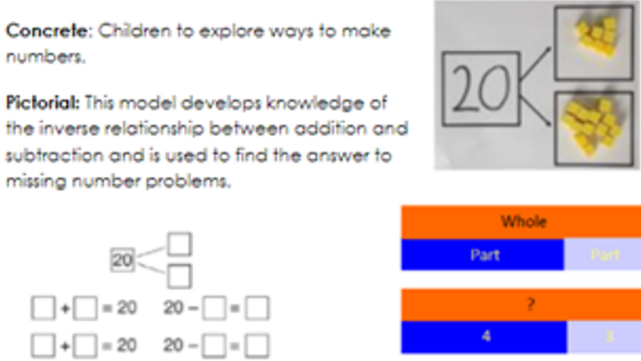
$$\begin{array}{r} 22 + 14 = \\ 20 + 2 \\ + 10 + 4 \\ \hline 30 + 6 \\ \hline = 36 \end{array}$$



Fluency: Supporting your child at home...



YEAR 1 - ADDITION	
Objective:	CPA:
Combining two parts to make a whole number.	<p>Concrete: Use cubes to add two numbers together as a group or a bar.</p>  <p>Pictorial: Use pictures to add two numbers together as a group or in a bar.</p>  <p>Abstract: Use the part-part whole diagram as shown above to move into the abstract.</p> <p>□ □ □ □ + □ □ = □ □ □ + □ = □ □ □ □ □ □ $4 + 3 = 7$ $10 = 6 + 4$</p> <p>Empty box with numerals $4 + \square$ is 7</p>

YEAR 2 - ADDITION	
Objective:	CPA:
<p>Use known number facts including different combinations of tens & ones of any 2 digit number.</p> <p>Part-part-whole.</p>	<p>Pupils explore the different ways of making 20. They can do this with all numbers using the same representations.</p> <p>Concrete: Children to explore ways to make numbers.</p> <p>Pictorial: This model develops knowledge of the inverse relationship between addition and subtraction and is used to find the answer to missing number problems.</p>  <p>Abstract: Include teaching of the inverse of addition and subtraction:</p> <p> $\square + 1 = 16$ $16 - 1 = \square$ $1 + \square = 16$ $16 - \square = 1$ </p>

Weekly maths homework, on the topic just taught, is set via:

Tasks are automatically marked so your child can be independent.



In the pipeline!

It is likely that we will soon offer EYFS / KS1 access to...



Application: Concrete Resources in LKS2

Pupils in LKS2 revisit concepts using objects.
Procedures can be modelled to them in real life terms.

The Doorbell Rang by Pat Hutchins



“Nan had 4 cookies. She gave two to Victoria. Then she gave two to Mia.”

$$4 - 2 - 2$$

Each child had 2 each

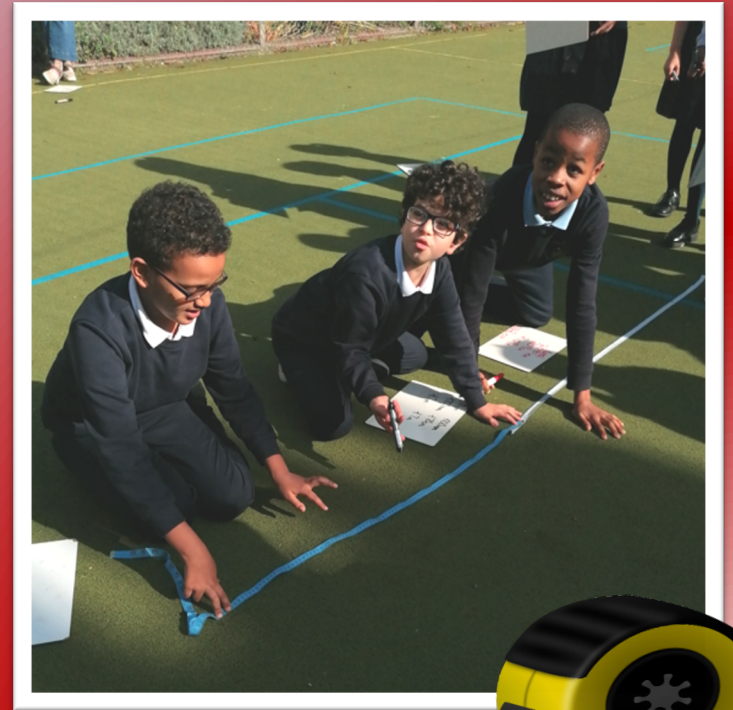
$$4 \div 2 = 2 \text{ cookies each}$$

Year 3: Using context to show that division (sharing) is the same as taking away groups (repeated subtraction)

Application: Concrete Resources in UKS2

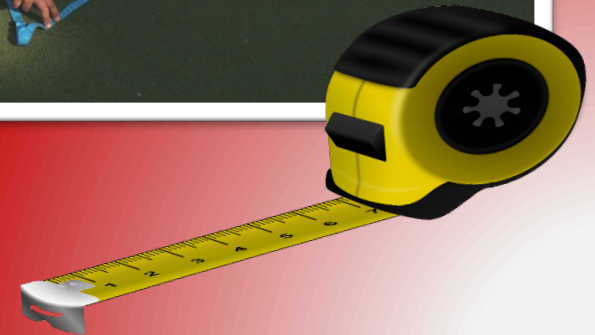
Pupils in KS2 continue to revisit concepts...

Topics can use a 'hook' or a practical task for a lesson.




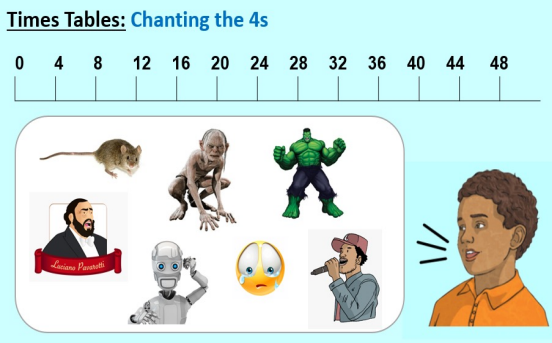



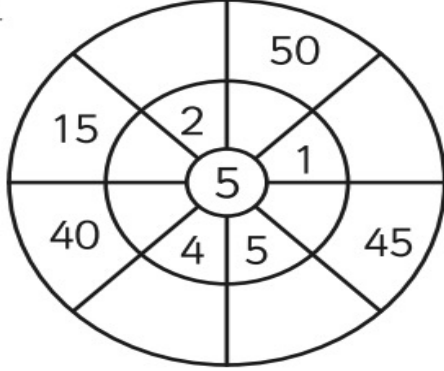
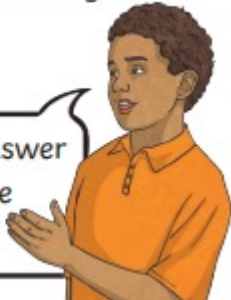
Year 5: Fractions

Year 6 Lesson: Converting units of measure using knowledge of place value to multiply and divide



Task 1: Let's explore the learning of times tables!

Look at the images. Can you number them (f1-8) to reflect a logical order in which a child might encounter them?

	<table border="1"><tr><td>$7 \times 3 =$</td><td></td></tr><tr><td>$24 \div 3 =$</td><td></td></tr><tr><td>$3 \times \underline{\quad} =$</td><td>36</td></tr><tr><td>$\underline{\quad}$ lots of 3 =</td><td></td></tr></table>	$7 \times 3 =$		$24 \div 3 =$		$3 \times \underline{\quad} =$	36	$\underline{\quad}$ lots of 3 =			
$7 \times 3 =$											
$24 \div 3 =$											
$3 \times \underline{\quad} =$	36										
$\underline{\quad}$ lots of 3 =											
 <table border="1"><tr><td>$4 \times 7 = 28$</td><td>$7 \times 4 = 28$</td></tr><tr><td>$28 \div 7 = 4$</td><td>$28 \div 4 = 7$</td></tr></table>	$4 \times 7 = 28$	$7 \times 4 = 28$	$28 \div 7 = 4$	$28 \div 4 = 7$			<p>Do you agree or disagree?</p> <p>Explain your answer.</p> <div><p>I can work out the answer to 5×6 if I double the answer for 5×3.</p></div>				
$4 \times 7 = 28$	$7 \times 4 = 28$										
$28 \div 7 = 4$	$28 \div 4 = 7$										

Fluency: Daily Times Tables Starters

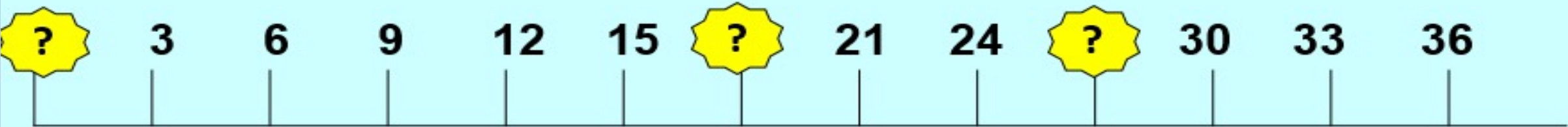
Pupils develop the confidence to recite facts...

Times Tables: Chanting the 4s



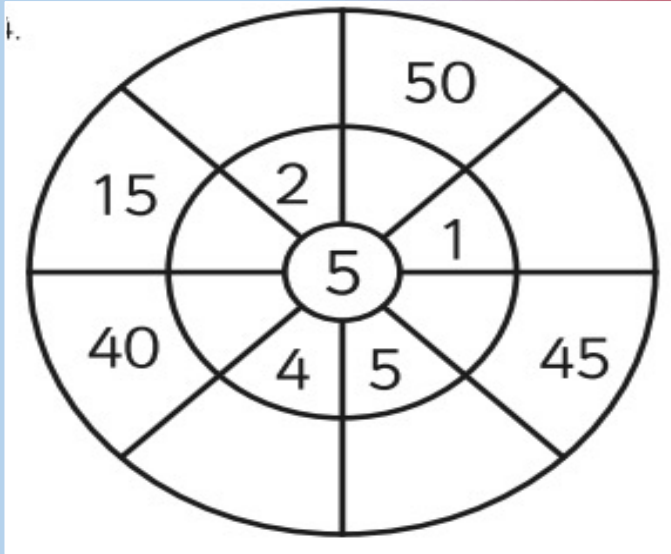
$0 \times 4 =$?
$1 \times 4 =$?
$2 \times 4 =$?
$3 \times 4 =$?
$4 \times 4 =$?
$5 \times 4 =$?
$6 \times 4 =$?

$7 \times 4 =$?
$8 \times 4 =$?
$9 \times 4 =$?
$10 \times 4 =$?
$11 \times 4 =$?
$12 \times 4 =$?

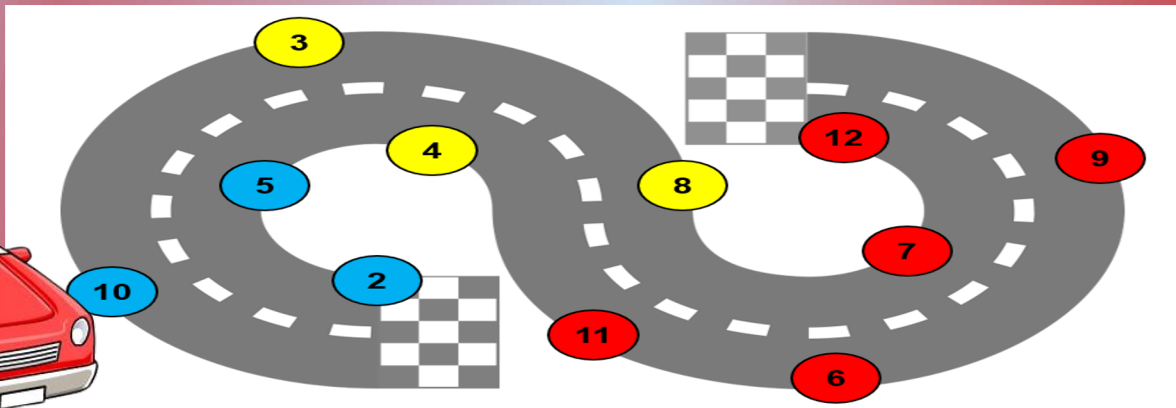
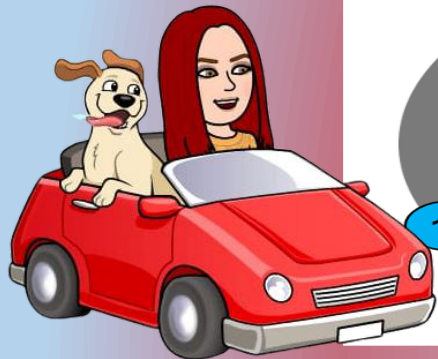


Fluency: Daily Times Tables Starters

Pupils become motivated to recall knowledge...



$7 \times 3 =$	
$24 \div 3 =$	
$3 \times \underline{\quad} =$	36
$\underline{\quad} \text{ lots of } 3 =$	

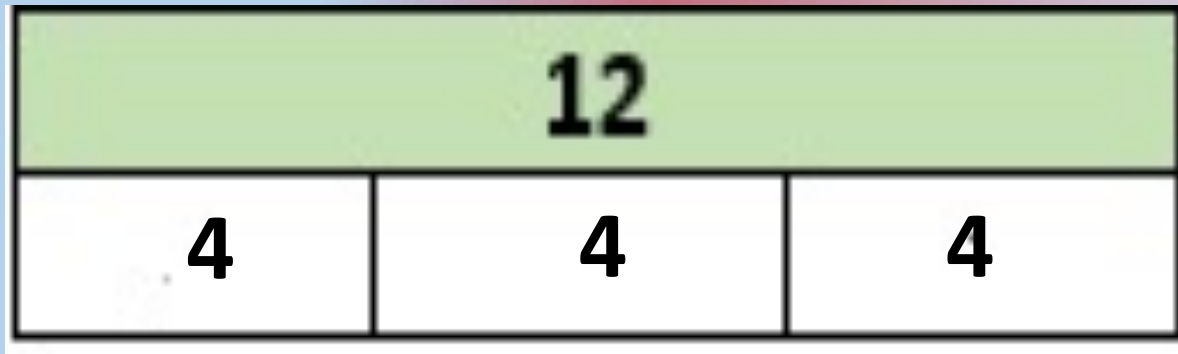


*TTRS is for extra
practise at home!*

<https://ttrackstars.com/>
<https://www.timestables.co.uk/speed-test/>

Application: Daily Times Tables Starters

Pupils learn how to apply knowledge accurately...



What number is missing in from the first bar model?

Miss Thomas says she can generate no more than 4 number statements using the first bar model. Can you find more than 4?

Look at both bar models. Grace wants to add another bar where each white box has been halved again. Is this possible? If it isn't, why?

Application: Daily Times Tables Starters

Pupils continue learning to explain understanding...

Starter:

TTYP! Develop an explanation that tells me how you know these are correct...



All multiples of six (even those larger than 36) are both even and they're composite.

2070 is the product of 345 and 6 so I know that it must have prime factors 2 and 3.



Discuss it!

Task 2: Let's test your mathematical vocabulary!

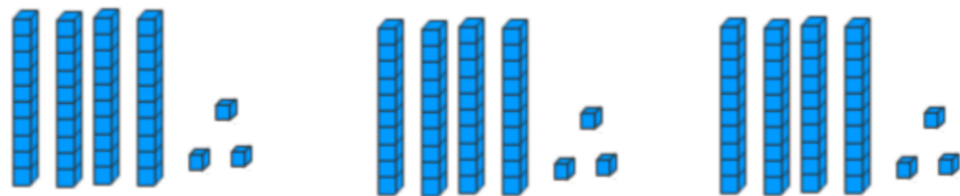
Can you beat a Jessop student?

In 1 minute, list vocabulary for the topic '**multiplication**'.



Reasoning: Mathematical Vocabulary

Key vocabulary:	numeral, column, digit, value, integer, positive, negative, interval, temperature. °C, depth, Roman numerals, I, V, X, L, C, D, M
Word of the week:	formula



$$\textcircled{43} \times \textcircled{3}$$

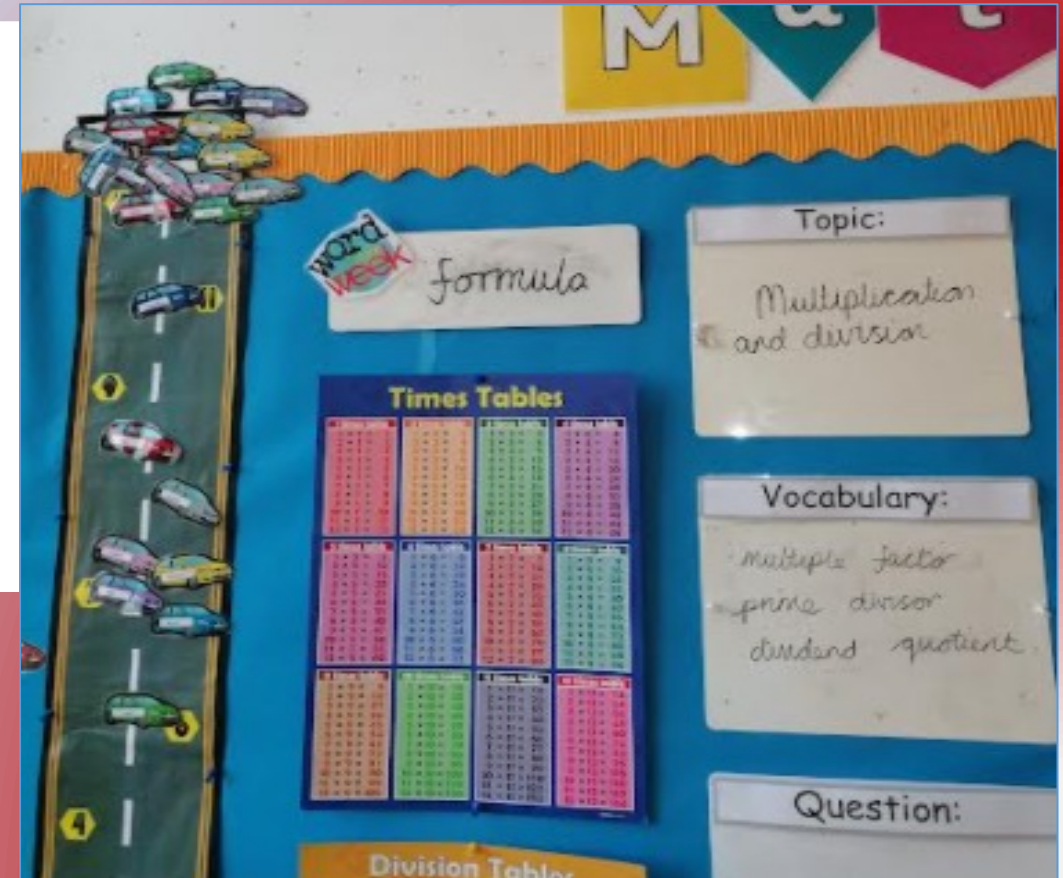
Which number is the **multiplicand**?
Which number is the **multiplier**?

STEM SENTENCES:

The multiplicand is ...

The multiplier is ...

$$43 \times 3 = 129$$



Example: Teaching Vocabulary

Our word of the week is *mastery*. Do you know what this word means?



Mastery approach (adjective)

The aim of the mastery approach is for all children to achieve a deep, long-term, secure, adaptable understanding of mathematics procedures and concepts.

To master (verb)

So children can master mathematics, teaching promotes using multiple strategies.



Mastery (noun)

Children who gain mastery grow in self-confidence and resilience and are more likely to enjoy the subject.

You are the teacher! How can you tell if a child has achieved *mastery*?

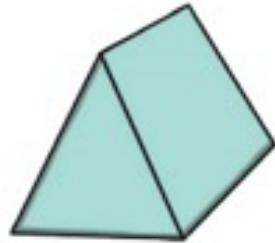


Reasoning: Modelling Mathematical Talk

Listen to the description and work out – Which shape am I?



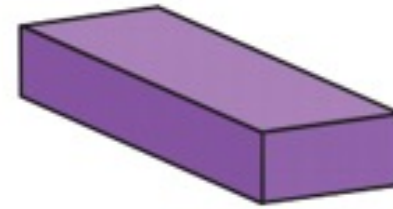
square-based pyramid



triangular prism



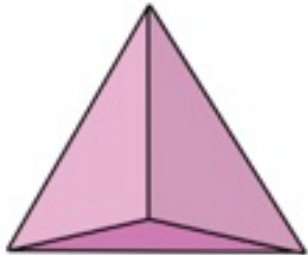
cone



rectangular prism



cuboid



tetrahedron



cube



cylinder



sphere

Vocabulary:

- Shape
- Base
- Face
- Edge
- Vertex

Reasoning: Modelling Explanations

Discuss:

Ahmed has 98 beads but he started with 134 beads. What has happened?

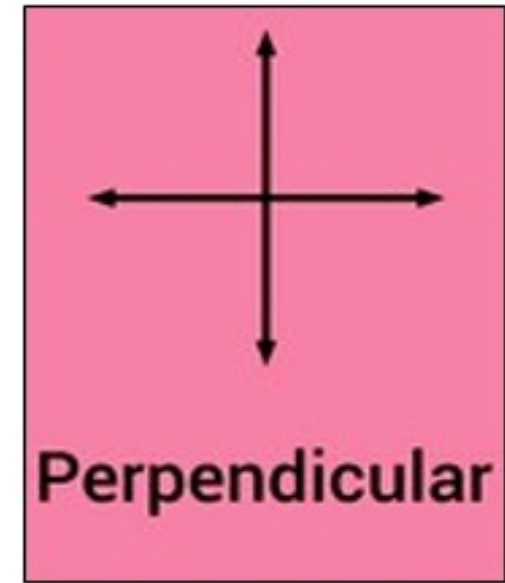
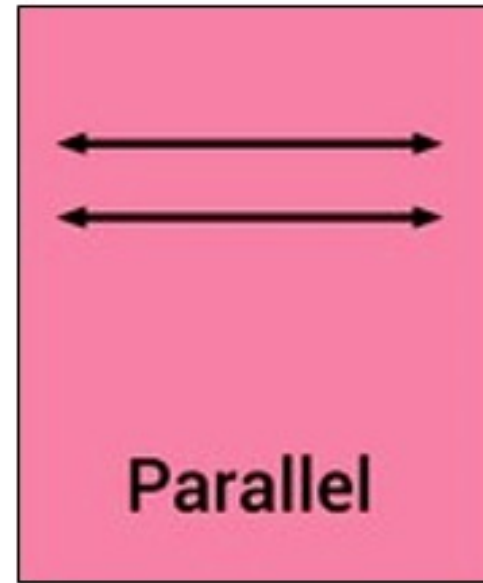
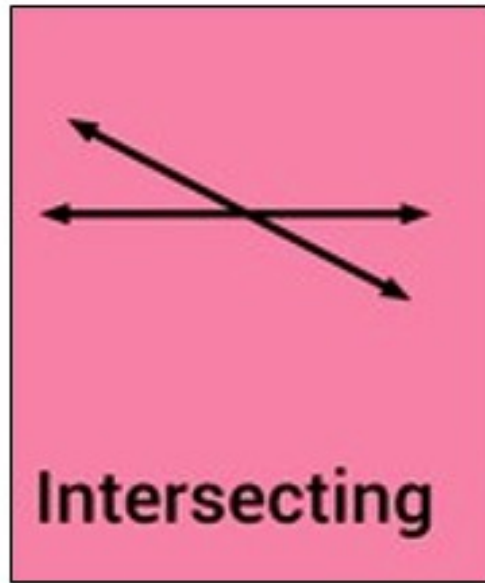
The question says 'how many' so I know I need to add.

I disagree! He lost them so I have to subtract $98 - 134$.

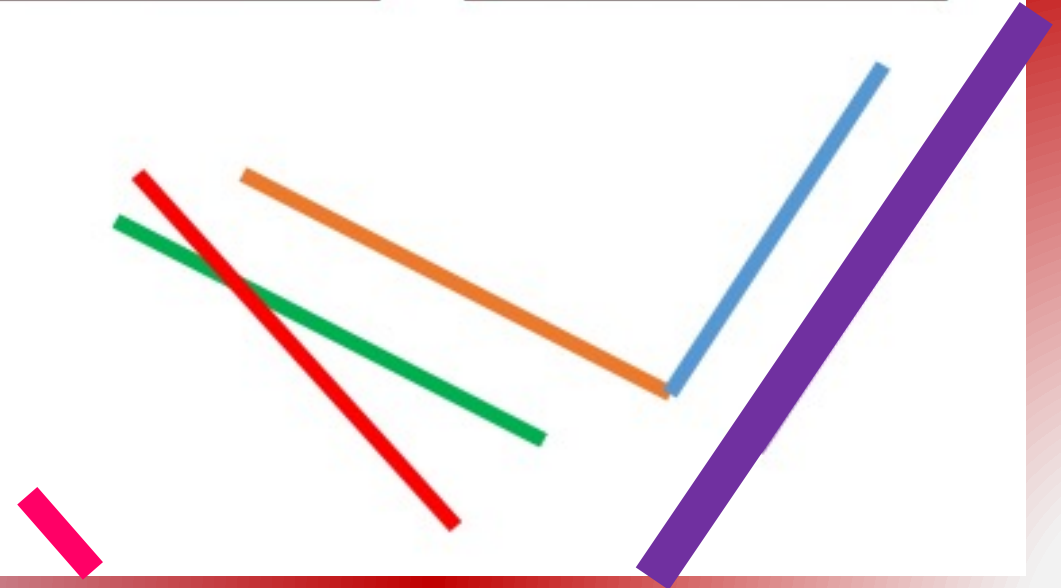
I disagree! I have to do $134 - 98$ and that calculation looks like this.

	1	3	4
-	9	8	

Task 3: Let's practise using mathematical vocabulary!

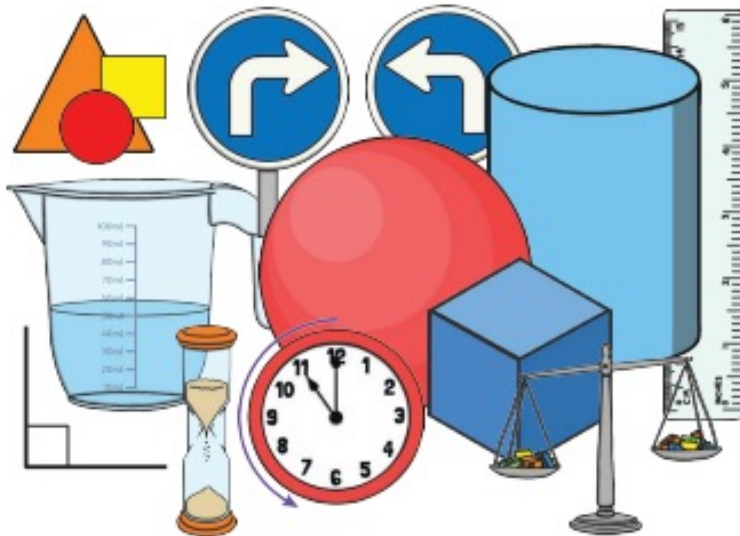


Discuss and describe these colourful lines using key vocabulary.



Reasoning: Supporting your child at home...

Maths Vocabulary Booklet



Year 6 Multiplication and Division

Long Multiplication Multiplying by a Two-Digit Number

$$154 \times 26$$

- 1 Write the numbers above each other in the correct columns.

$$\begin{array}{r} 154 \\ \times 26 \\ \hline \end{array}$$

- 2 First, multiply the ones in the three-digit number by the ones in the two-digit number.

$$\begin{array}{r} 2 \\ 154 \\ \times 26 \\ \hline 4 \end{array}$$

$$4 \text{ ones} \times 6 \text{ ones} = 24 \text{ ones} = 2 \text{ tens and } 4 \text{ ones.}$$

Write 4 in the answer section and regroup the 2 tens by writing 2 above the tens column.

- 3 Next, multiply the tens in the three-digit number by the ones digits in the two-digit number and add any regrouped tens.

$$\begin{array}{r} 32 \\ 154 \\ \times 26 \\ \hline 308 \end{array}$$

$$5 \text{ tens} \times 6 = 30 \text{ tens} + 2 \text{ tens} = 32 \text{ tens} = 3$$

- 4 Finally, multiply the hundreds in the three-digit number by the ones digits in the two-digit number and add any regrouped hundreds.

$$\begin{array}{r} 32 \\ 154 \\ \times 26 \\ \hline 924 \end{array}$$

$$1 \text{ hundred} \times 6 = 6 \text{ hundreds} + 3 \text{ hundreds} = 9 \text{ hundreds}$$

Write 9 in the answer section.

- 5 Cross out any previous regroupings.

$$\begin{array}{r} \cancel{3} \cancel{2} \\ 154 \\ \times 26 \\ \hline 924 \\ 80 \end{array}$$

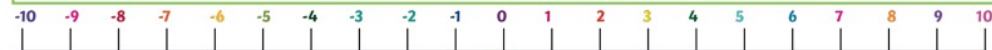
In the next section, multiply the ones in the three-digit number by the tens in the two-digit number.

Because the calculation involves multiplying by the right-hand

Year 6 Number and Place Value

Count Forwards and Backwards through 0

Tm	M	Hth	Tth	Th	H	T	O	t	h	th
Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
10 000 000	1 000 000	100 000	10 000	1 000	100	10	1	0.1 $\frac{1}{10}$	0.01 $\frac{1}{100}$	0.001 $\frac{1}{1000}$



Negative Numbers

Positive Numbers

Rounding to 10

Rounding to the nearest 10

239
238
237
236
235
234
233
232
231

Round up to 240

Round down to 230

Remember: The red digit is the one to consider.

Rounding to 100

Rounding to the nearest 100

7399
7398
...
7351
7350
7349
7348
...
7302
7301

Round up to 7400

Round down to 7300

Remember: The red digit is the one to consider.

Rounding to 1000

Rounding to the nearest 1000

5999
5998
...
5501
5500
5499
5498
...
5002
5001

Round up to 6000

Round down to 5000

Remember: The red digit is the one to consider.

Rounding to 10 000

Rounding to the nearest 10 000

29 999
29 998
...
25 001
25 000
24 999
24 998
...
20 002
20 001

Round up to 30 000

Round down to 20 000

Remember: The red digit is the one to consider.

Rounding to 100 000

Rounding to the nearest 100 000

699 999
699 998
...
650 001
650 000
649 999
649 998
...
600 002
600 001

Round up to 700 000

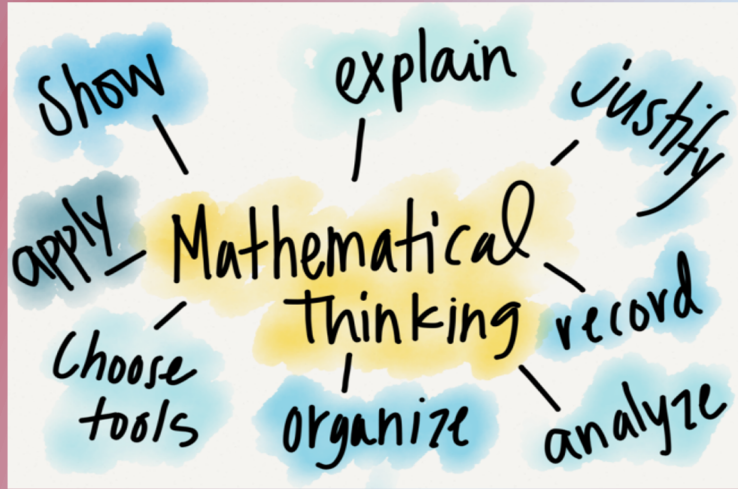
Round down to 600 000

Remember: The red digit is the one to consider.



Upcoming: Mathematics Mastery Workshop

Learn it! Discuss it! Apply it! Enjoy it?



FEEDBACK

Please fill in the feedback form to help me know how and what to plan for the next workshop!

Q & A: Was your question answered?



**Thank you
for coming!**