

10.02.22

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



Maths Subject Leader:
Miss Grace Thomas 6B

Intro: What questions do you hope get answered today?

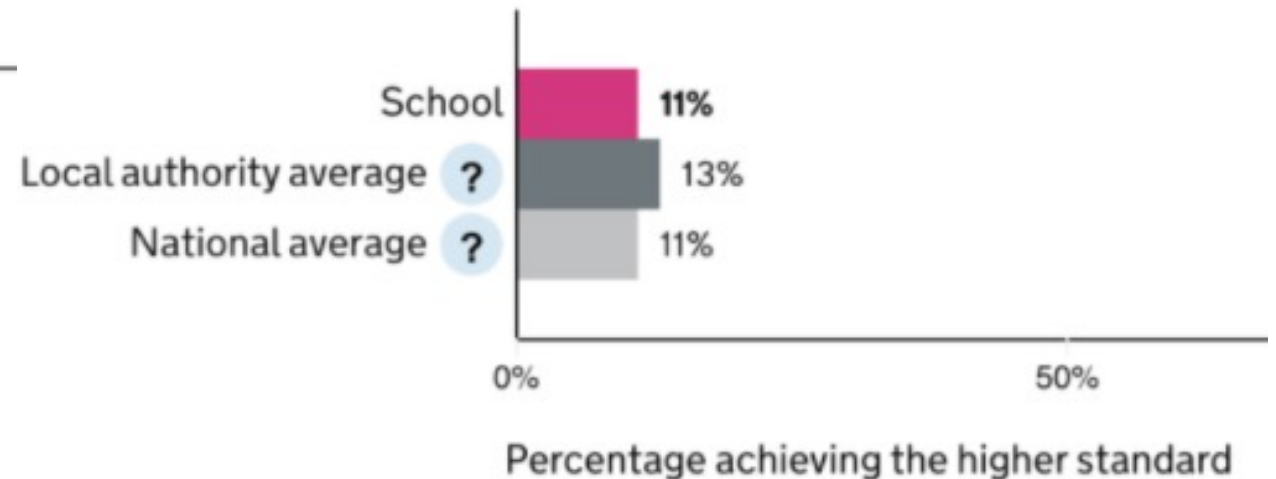
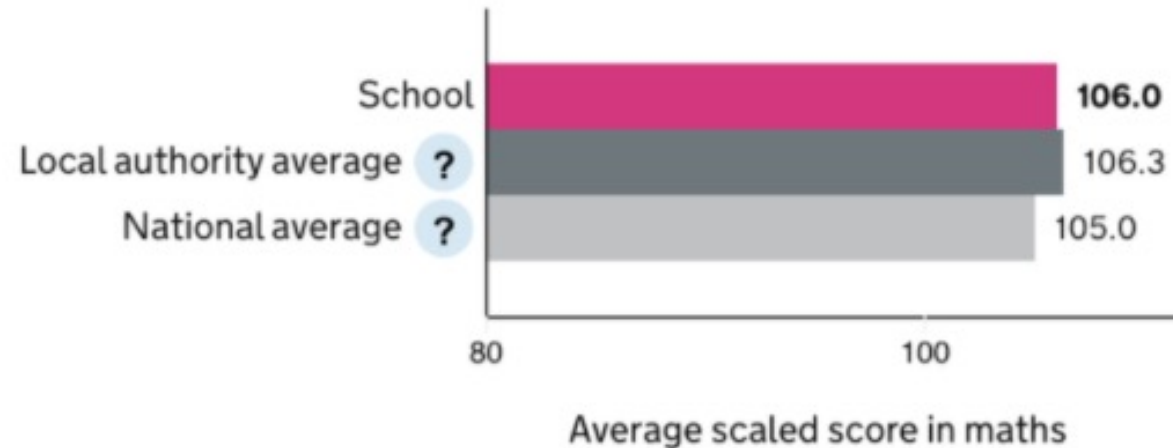


Statutory Assessment: SATs are back!



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.

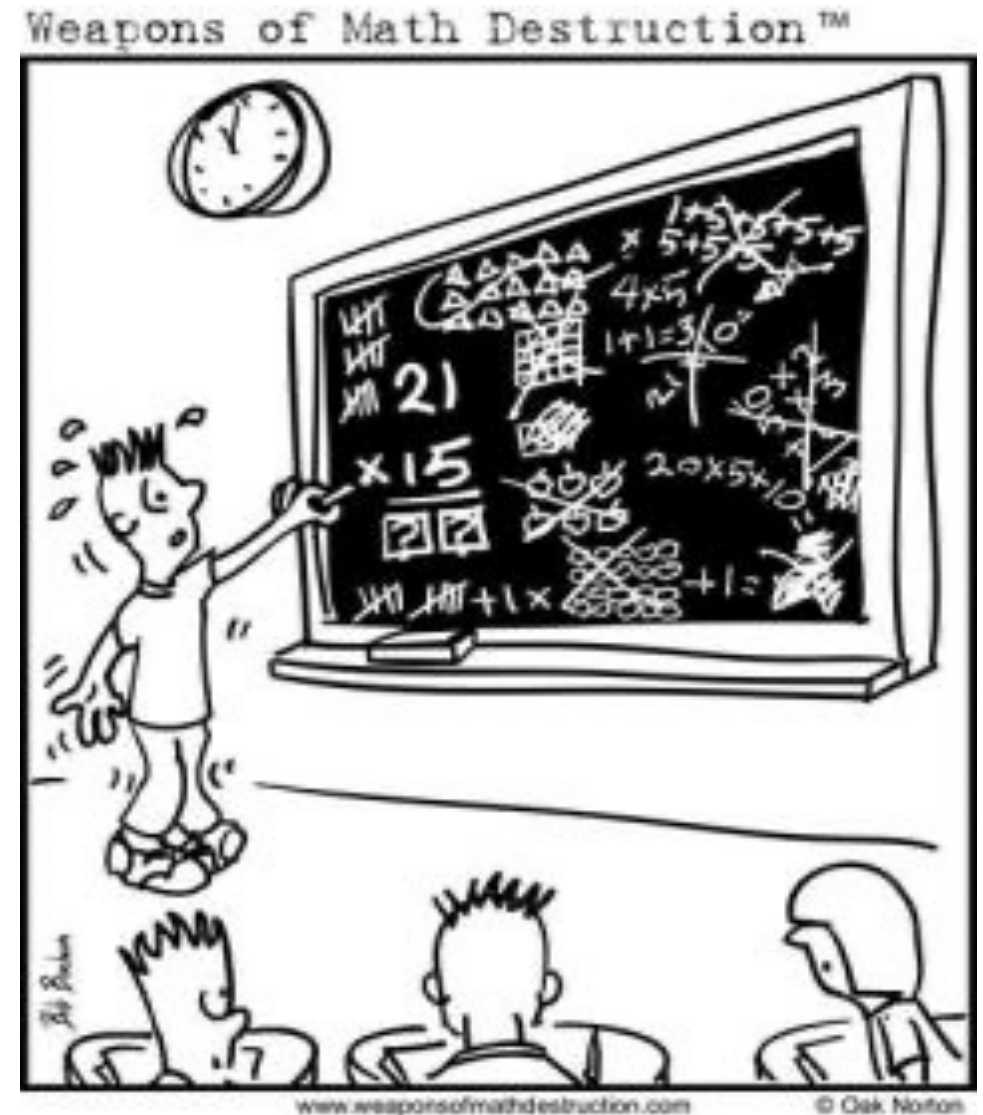
What is the Multiplication tables check?

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!

What a difference a day makes...

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

CT Me

| | | | |
|----|---|---|---|
| m | 5 | 6 | 2 |
| fm | x | 7 | 9 |
| fm | | | |
| fm | | | |

1) $2,086 \times 24 = 8,344$

2) $4,928 \times 45 = 221,760$

3) $4,254$

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

CT Me

| | | | |
|----|---|---|---|
| m | 5 | 6 | 2 |
| fm | x | 7 | 9 |
| fm | | | |
| fm | | | |

1) $2,132 \times 31 = 66,092$

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

3) $8,3204 \times 12 = 38,4408$



Fluency: Understanding a Concept

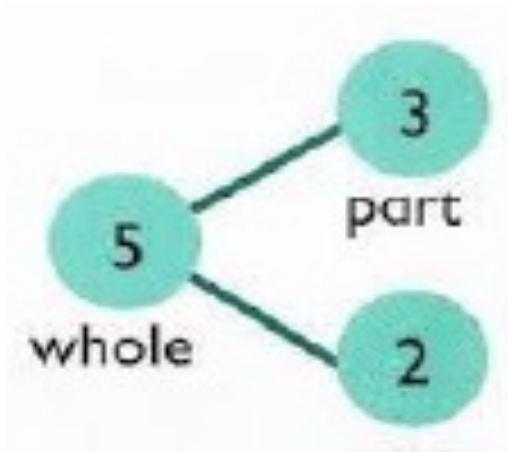


To deepen conceptual understanding...
Teaching follows:



***EYFS:** Counting on
is adding within 10*

Year 1: Number bonds
and partitioning numbers



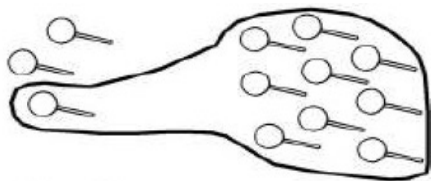
$$10 = 6 + 4$$

Missing numbers:

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



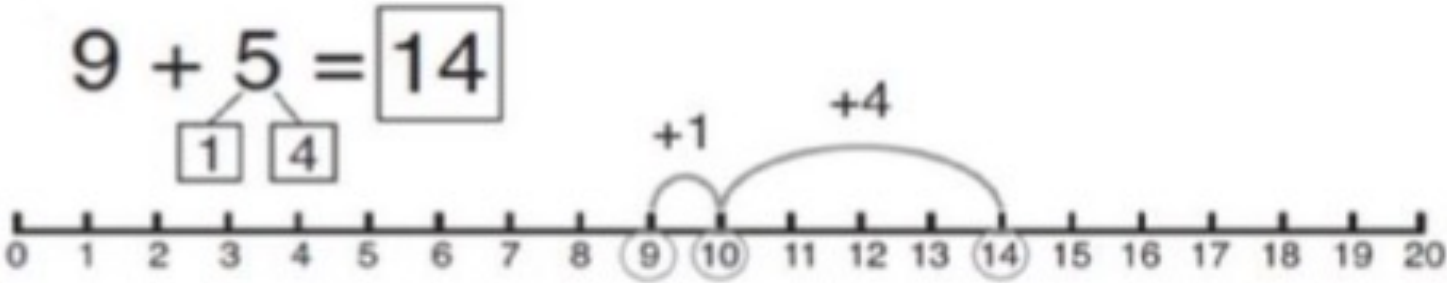
Fluency: Developing a Concept



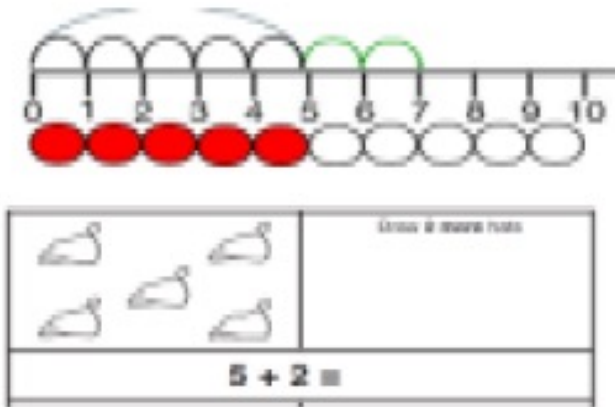
$3 + 9 =$

$3 + 9 = 12$

Year 1: Addition over 10 boundary



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



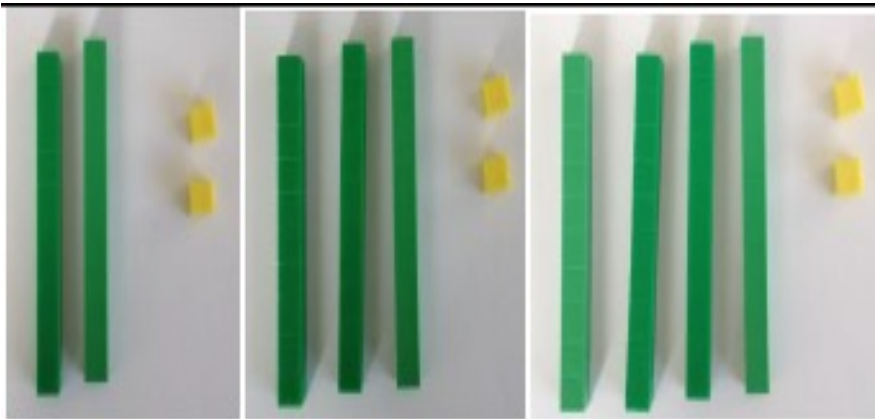
Abstract:
“1 more than 5 is equal to 6”
“2 more than 5 is 7”
“8 is 3 more than 5”



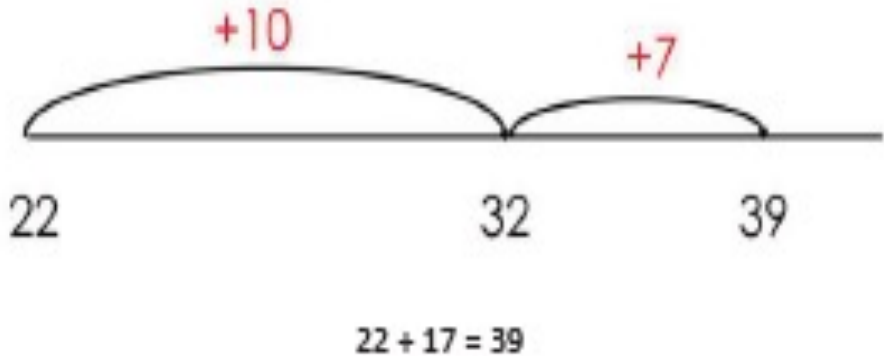
Fluency: Developing a Concept



Y2: Parts of numbers have a value



Y2: Add tens, then ones



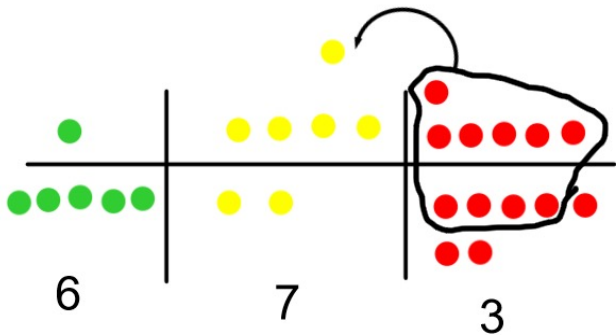
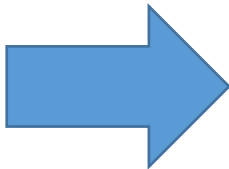
Y2: Combine tens & ones to add

$$\begin{array}{c} \square \\ \square \end{array} \begin{array}{c} \square \\ \square \end{array} + \begin{array}{c} \square \\ \square \end{array} \begin{array}{c} \square \\ \square \end{array} = \begin{array}{c} \square \\ \square \end{array} \begin{array}{c} \square \\ \square \end{array} \begin{array}{c} \square \\ \square \end{array} \begin{array}{c} \square \\ \square \end{array}$$

$$\begin{array}{|} \hline \\ \hline \end{array} \begin{array}{|} \hline \\ \hline \end{array} \begin{array}{|} \hline \\ \hline \end{array} + \begin{array}{|} \hline \\ \hline \end{array} \begin{array}{|} \hline \\ \hline \end{array} \begin{array}{|} \hline \\ \hline \end{array} = \begin{array}{|} \hline \\ \hline \end{array} \begin{array}{|} \hline \\ \hline \end{array} \begin{array}{|} \hline \\ \hline \end{array} \begin{array}{|} \hline \\ \hline \end{array} \begin{array}{|} \hline \\ \hline \end{array} \begin{array}{|} \hline \\ \hline \end{array}$$




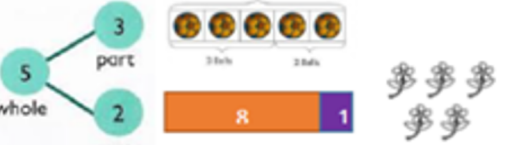
$$\begin{array}{r} 22 + 14 = \\ \begin{array}{r} 20 + 2 \\ + 10 + 4 \\ \hline 30 + 6 \\ \hline = 36 \end{array} \end{array}$$



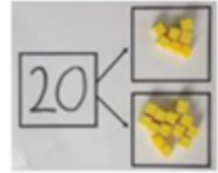
Fluency: Supporting your child at home...



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: |
|---|---|
| Use known number facts including different combinations of tens & ones of any 2 digit number. Part-part-whole. | <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>□ + □ = 20 20 - □ = □ □ + □ = 20 20 - □ = □</p> <p>Whole Part Part</p> <p>□ + 1 = 16 16 - 1 = □ 1 + □ = 16 16 - □ = 1</p> |

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

Tasks are automatically marked so your child can be independent.



Hot off the press!

EYFS / KS1 & targeted KS2 children can now use...

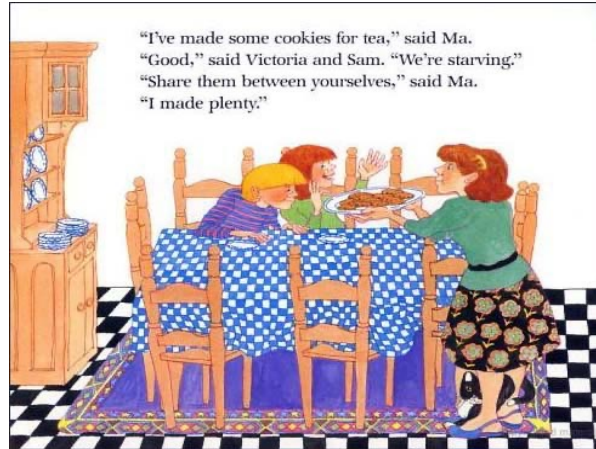


Application: Concrete Resources in LKS2



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

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

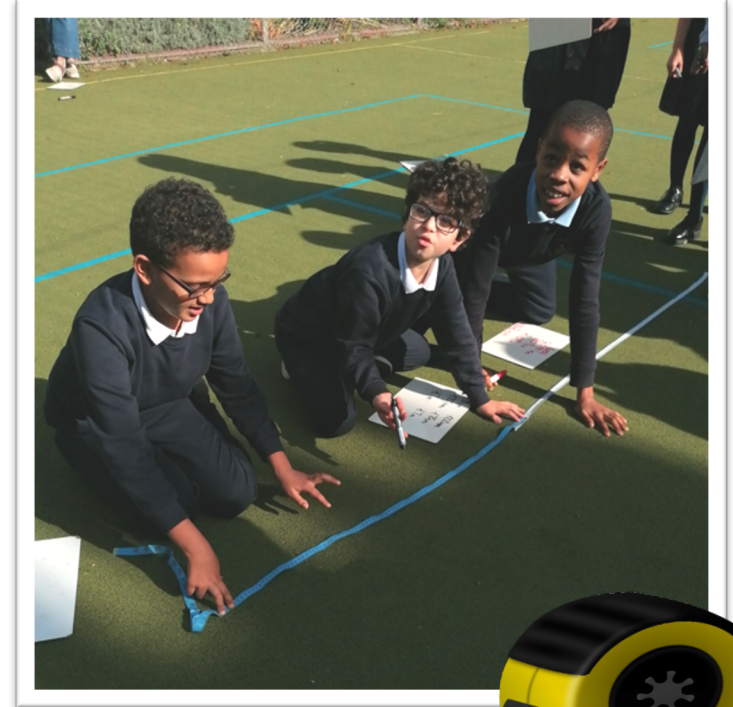
Year 3: Using context to show that division (sharing) is the same as taking away groups (repeated subtraction)

Application: Concrete Resources in UKS2



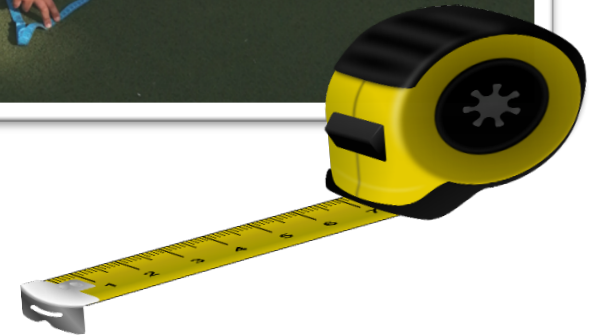
Pupils in KS2 continue to revisit concepts...

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



Year 5: Fractions


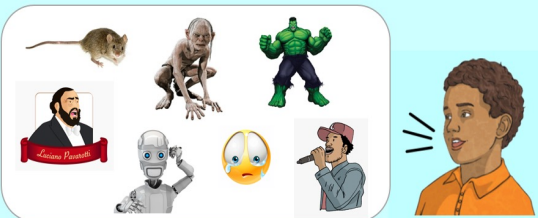
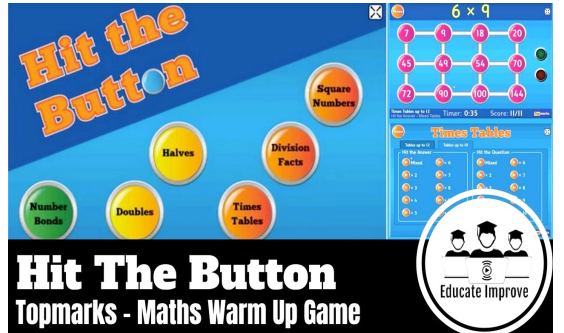

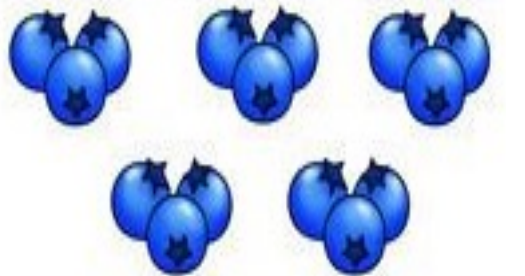
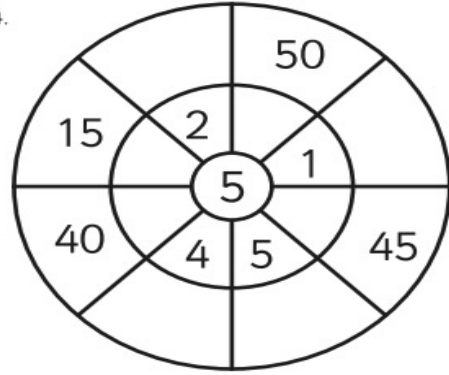
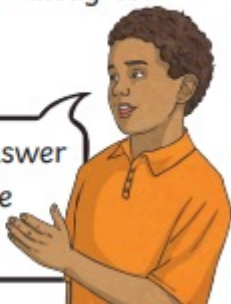
Year 6 Lesson: Converting units of measure using knowledge of place value to multiply and divide



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 = | | <p>Times Tables: Chanting the 4s</p> <p>0 4 8 12 16 20 24 28 32 36 40 44 48</p>  |  |
| $7 \times 3 =$ | | | | | | | | | | | |
| $24 \div 3 =$ | | | | | | | | | | | |
| $3 \times \underline{\quad} =$ | 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> <p>I can work out the answer to 5×6 if I double the answer for 5×3.</p>  | | | | |
| $4 \times 7 = 28$ | $7 \times 4 = 28$ | | | | | | | | | | |
| $28 \div 7 = 4$ | $28 \div 4 = 7$ | | | | | | | | | | |

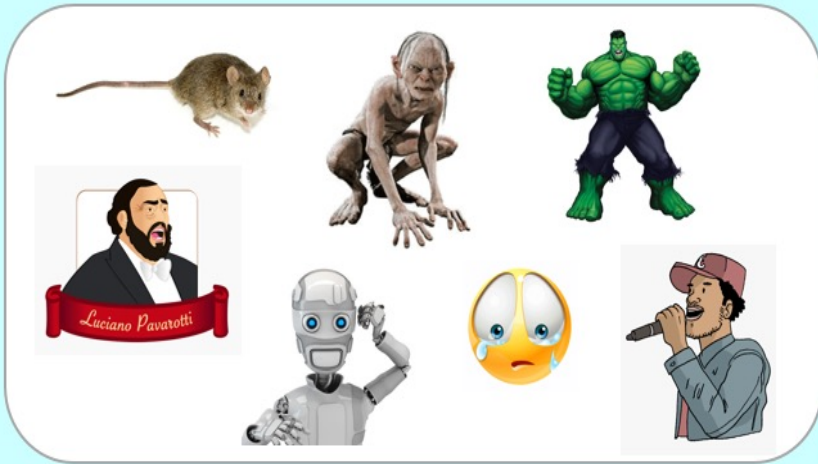
Fluency: Daily Times Tables Starters



Pupils develop the confidence to recite facts...

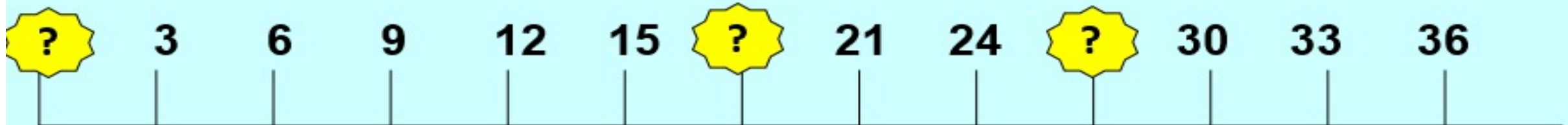
Times Tables: Chanting the 4s

0 4 8 12 16 20 24 28 32 36 40 44 48



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

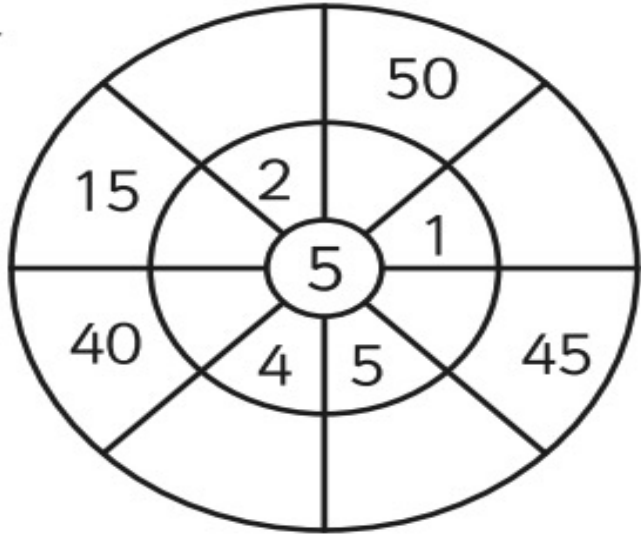
| | |
|-----------------|---|
| $7 \times 4 =$ | ? |
| $8 \times 4 =$ | ? |
| $9 \times 4 =$ | ? |
| $10 \times 4 =$ | ? |
| $11 \times 4 =$ | ? |
| $12 \times 4 =$ | ? |



Fluency: Daily Times Tables Starters



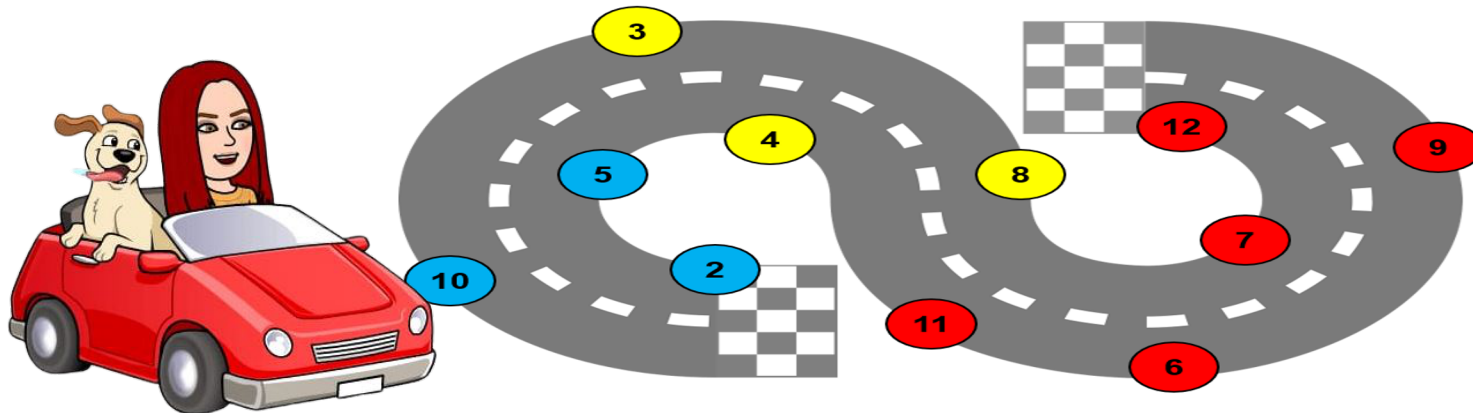
Pupils become motivated to recall knowledge...



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



*TTRS is for extra
practise at home!*

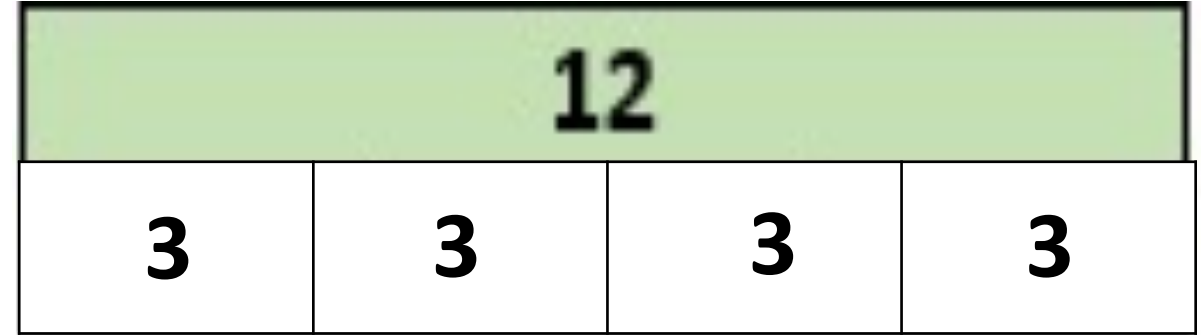
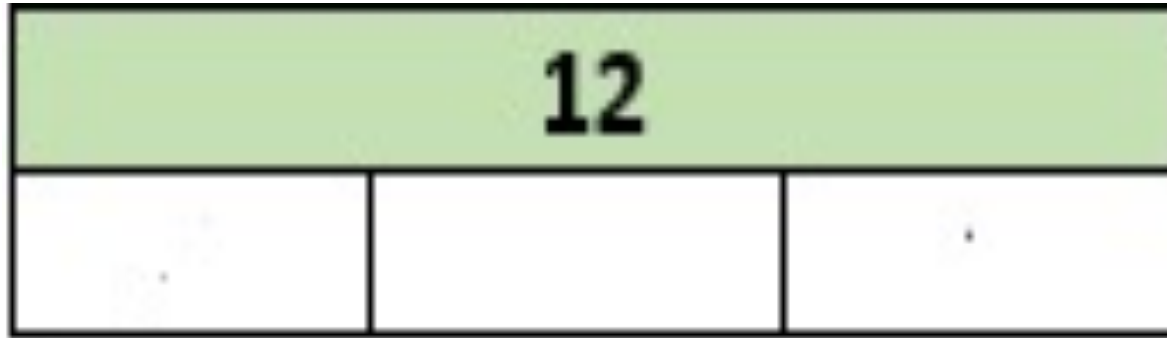


<https://ttrackstars.com/>
<https://www.timestables.co.uk/speed-test/>

Application: Daily Times Tables Starters



Pupils learn how to apply knowledge accurately...



What numbers are missing 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 learn how to explain their 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 Stockwell student?

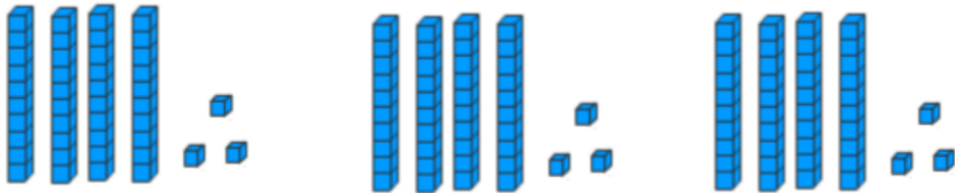
In 1 minute, list vocabulary for the topic '**multiplication**'.



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 |

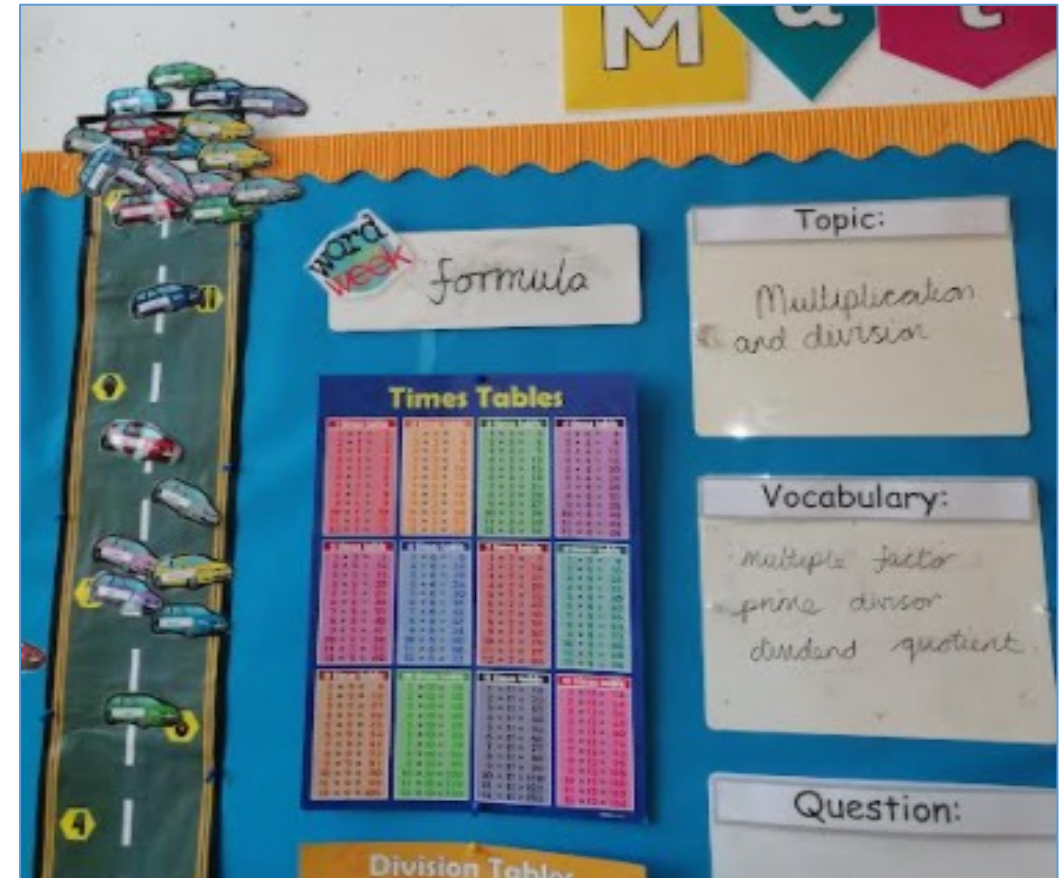


$$\textcircled{43} \times \textcircled{3}$$

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*?



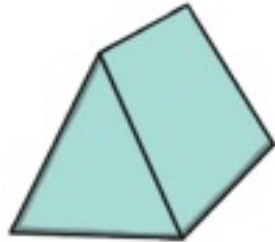
Reasoning: Modelling Mathematical Talk



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



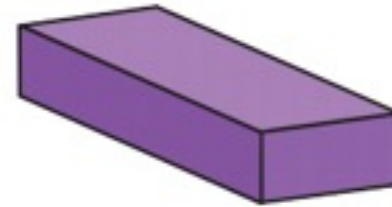
square-based pyramid



triangular prism



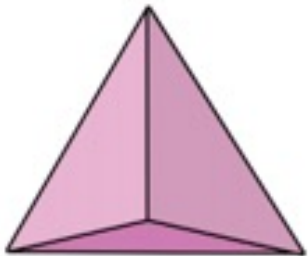
cone



rectangular prism



cuboid



tetrahedron



cube



cylinder



sphere

Vocabulary:

- Shape
- Base
- Face
- Edge
- Vertex

Reasoning: Modelling Explanations



Pupils can recognise & correct common mistakes...

Discuss:

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

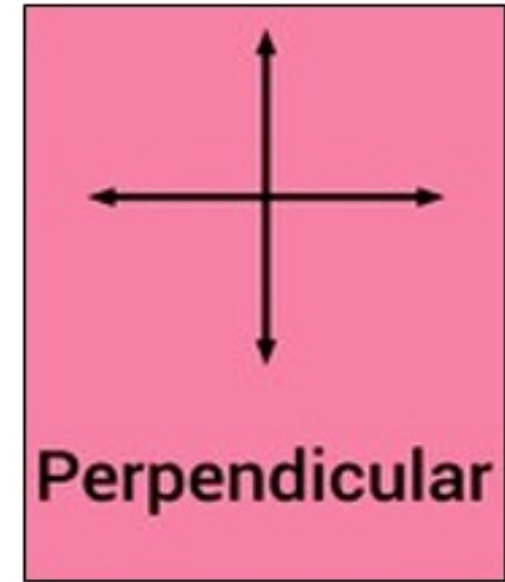
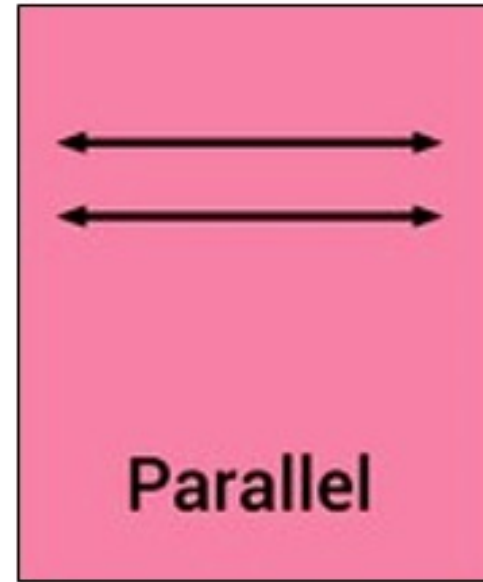
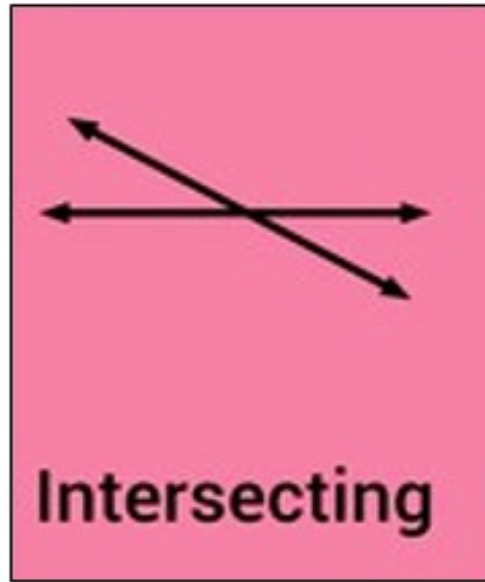
The question says 'how many' so I know I need to add.

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

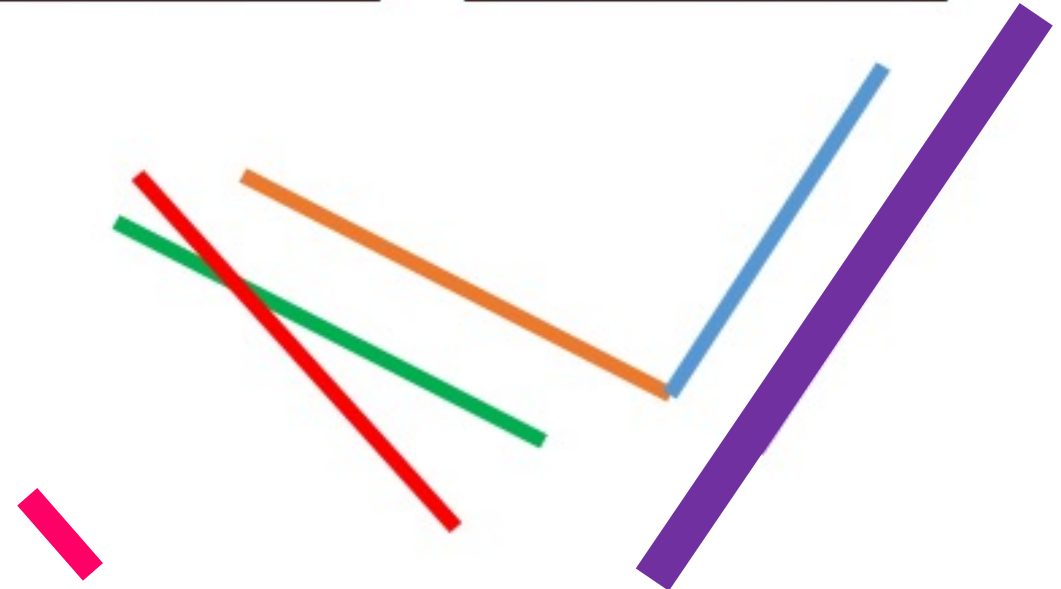
I disagree! I have to do $134 - 98$ and that calculation looks like this.

| | | | |
|---|---|---|---|
| | 1 | 3 | 4 |
| - | 9 | 8 | |
| | | | |
| | | | |

Task 3: Let's practise using mathematical vocabulary!



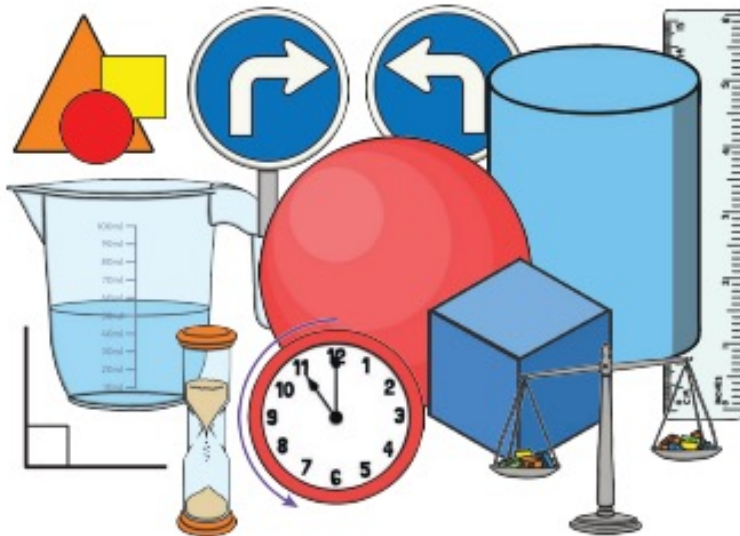
Discuss and describe these colourful lines using key vocabulary.



Resources: Supporting your child at home...



Maths Vocabulary Booklet



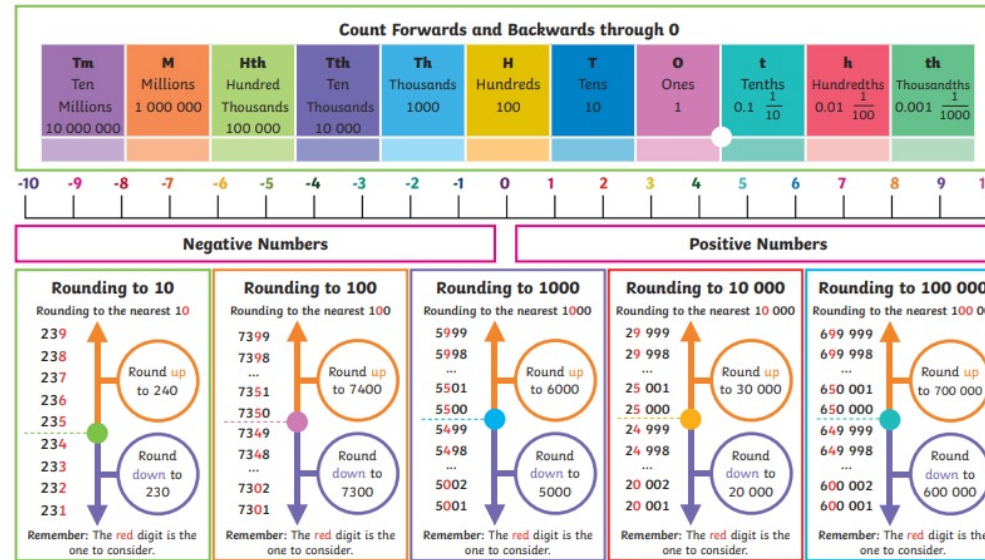
Year 6 Multiplication and Division

Long Multiplication
Multiplying by a Two-Digit Number

154×26

- Write the numbers above each other in the correct columns.
- First, multiply the ones in the three-digit number by the ones in the two-digit number.
 $4 \text{ ones} \times 6 \text{ ones} = 24 \text{ ones} = 2 \text{ tens and } 4 \text{ ones.}$
Write 4 in the answer section and regroup the 2 tens by writing 2 above the tens column.
- Next, multiply the tens in the three-digit number by the ones in the two-digit number and add any regrouped tens.
 $5 \text{ tens} \times 6 = 30 \text{ tens} + 2 \text{ tens} = 32 \text{ tens} = 3$
- Finally, multiply the hundreds in the three-digit number by the ones in the two-digit number and add any regrouped hundreds.
 $1 \text{ hundred} \times 6 = 6 \text{ hundreds} + 3 \text{ hundreds} = 9 \text{ hundreds}$
Write 9 in the answer section.
- Cross out any previous regroupings.
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

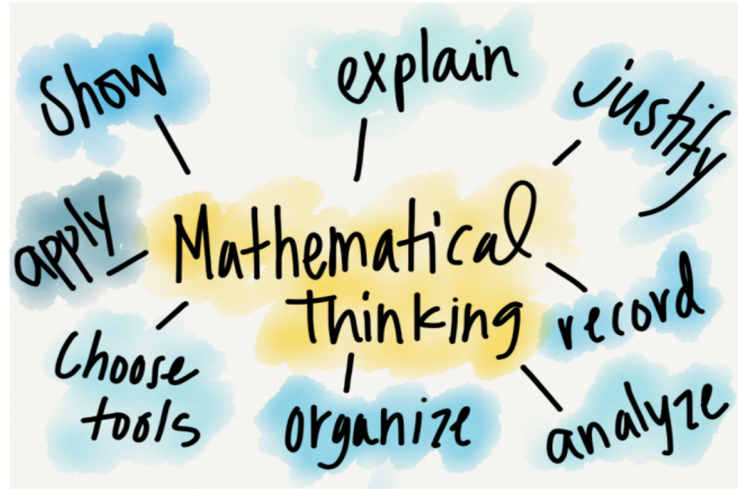
Year 6 Number and Place Value



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!**