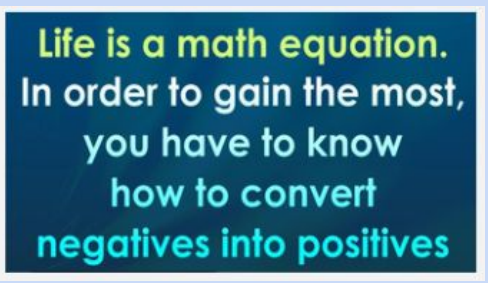
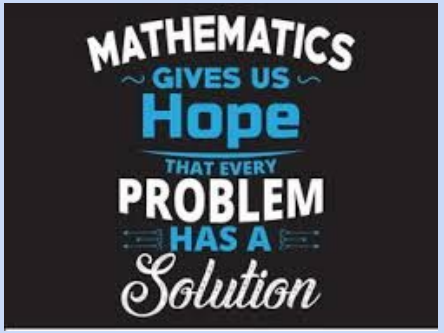
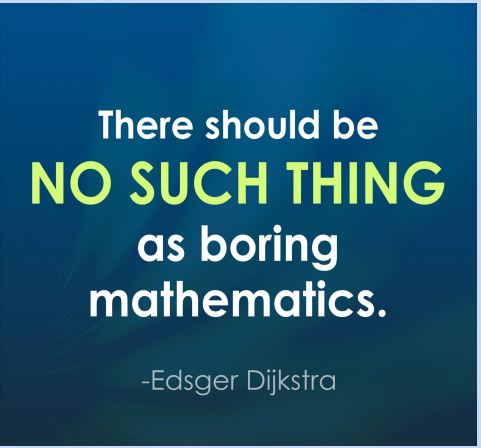
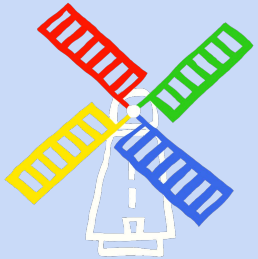
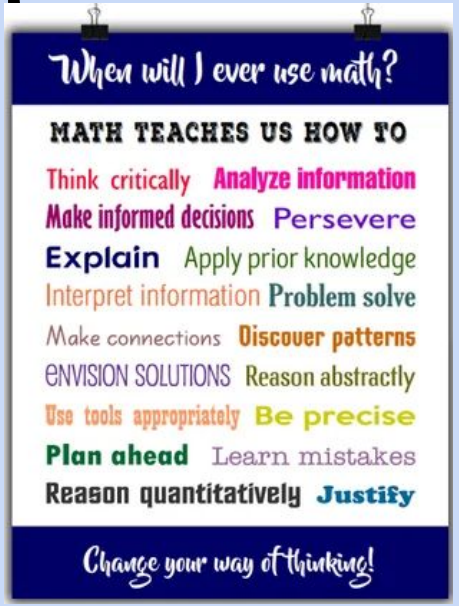


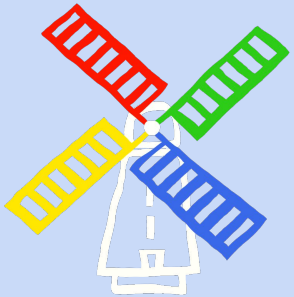


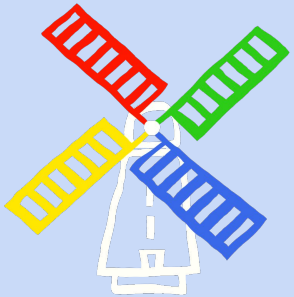
MATHS Parent Workshop At Widmer End



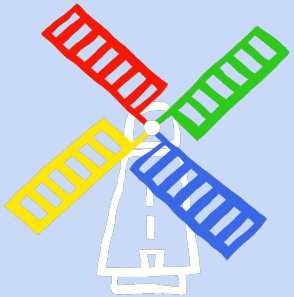






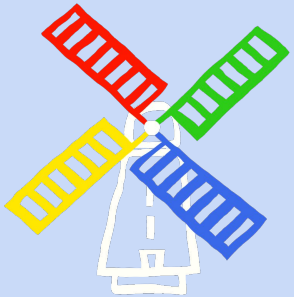


What would YOU like to get from today?



AGENDA

- What is teaching for Mastery?
- How do Widmer End achieve this?
- Lesson Structure
- What a typical Mastery lesson looks like at Widmer End?
- Ensuring Coherence
- How can I help my child at home?
- Models and Structures
- Your Turn
- Questions



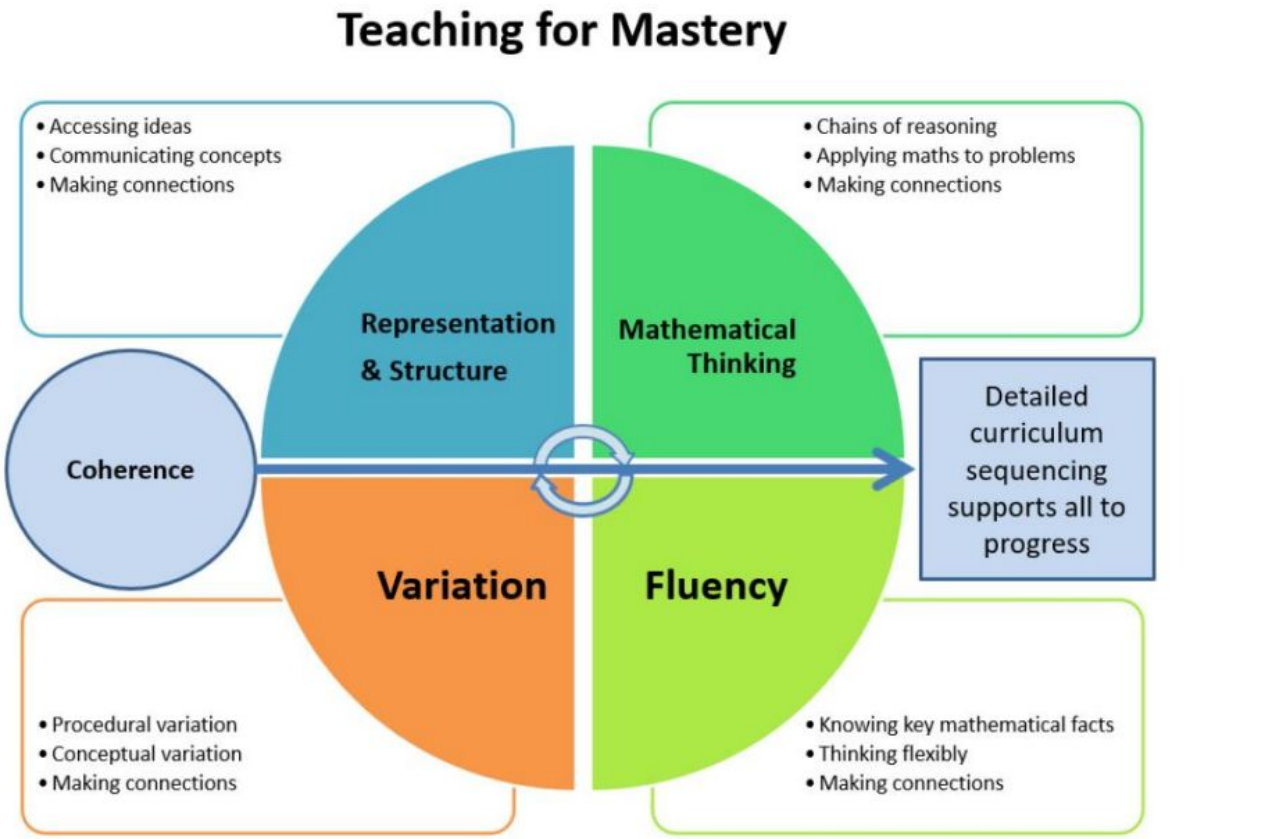
What is teaching for mastery?

"Mastering maths means acquiring a deep, long-term, secure and adaptable understanding of the subject" – NCETM

We achieve this by …

- Carefully sequenced, small step learning
- Representation that expose mathematical structures
- Developing mathematical thinking
- Building fluency

What is teaching for mastery?



Five Big Ideas of Teaching for Mastery, updated November 2022

How do Widmer End achieve this?

Scheme that supports mastery

Skill development

Progression

Questioning techniques

resources

Overview

Helps staff of all skill levels

Key aims of *Power Maths*

Keeping the whole class progressing together

Providing rich problem solving to challenge and engage every child

Practical assessment to reveal misconceptions and inform speedy interventions

Nurturing a growth mindset and building children's confidence in maths

Growth mindset

Fixed mindset	Growth mindset
"I'm not good at maths – I've never been good at maths"	"I'm finding maths hard now, but I can improve with time and effort"
"I give up – I can't make this any better"	"I can improve if I keep trying"
"If I fail I am a failure"	"Most successful people fail along the way"
"I can't do this – I keep making mistakes"	"Mistakes help me learn"

Meet the growth-mindset characters!

Flo

Flo is flexible and creative. She often with new methods to solve problems.

Can we do it differently?

Dexter

Dexter is determined. When he makes a mistake he learns from it and tries again.

Let's try again!

Meet the growth-mindset characters!

Astrid

Astrid is brave and confident. She is not afraid to make mistakes.

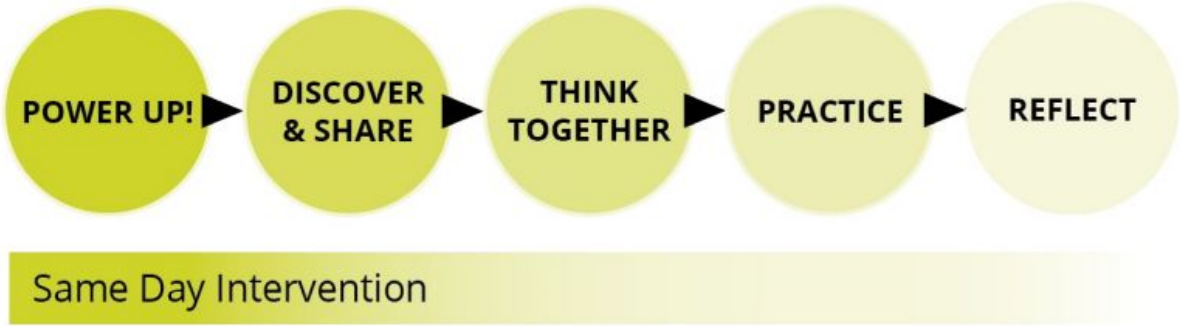
I will share my ideas!

Is there a pattern?

Ash

Ash is curious and inquisitive. He loves to explore new concepts

See the lesson structure



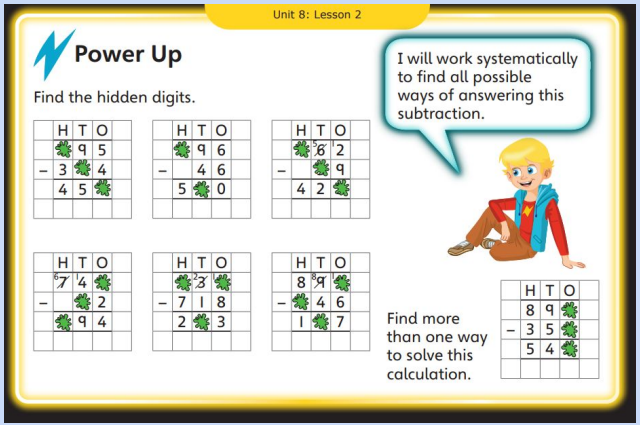
Quick 10 / Power Up / Flashback etc

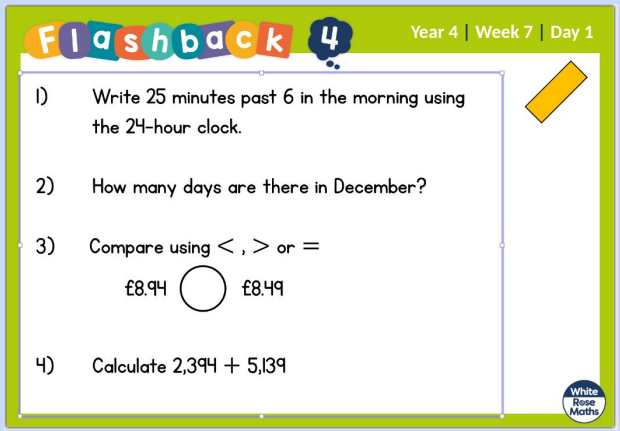
Retrieval practice

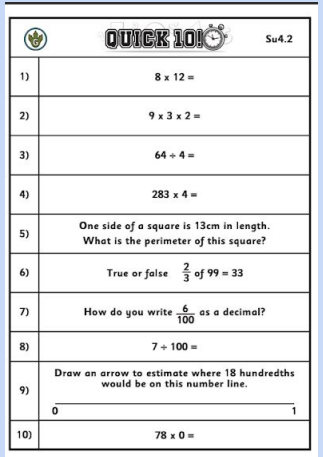
Supports fluency and working memory by re-visiting ideas previously taught recently or longer term

Helps warm up to lesson

Creates connections between prior knowledge and new learning







Children explore the image together
What can you see / what might the question be?

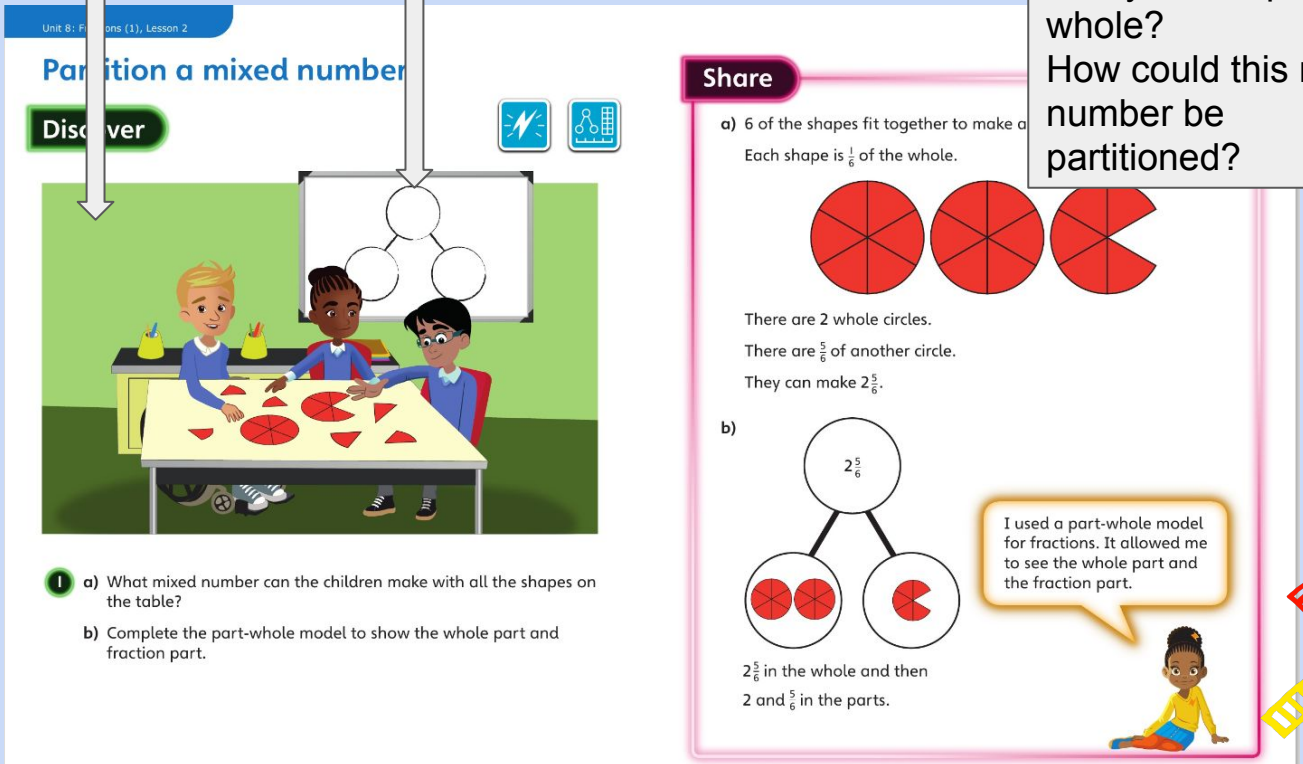
Point out the Part whole model if not already mentioned - ask how can it be helpful
Whole part / fraction part

Questions to ask children:

Can you see any complete wholes?
Can you see part of a whole?
How could this mixed number be partitioned?

C P A

Children will then explore answering the question using practical resources (the same shapes as in the diagram to create a mixed number) - work with a partner



Unit 8: Fi ons (1), Lesson 2

Par ition a mixed number

Dis ver

1 a) What mixed number can the children make with all the shapes on the table?

b) Complete the part-whole model to show the whole part and fraction part.

108

Share

a) 6 of the shapes fit together to make a

Each shape is $\frac{1}{6}$ of the whole.

There are 2 whole circles.

There are $\frac{5}{6}$ of another circle.

They can make $2\frac{5}{6}$.

b)

$2\frac{5}{6}$

I used a part-whole model for fractions. It allowed me to see the whole part and the fraction part.

$2\frac{5}{6}$ in the whole and then

2 and $\frac{5}{6}$ in the parts.

109

Fluency
Dependent upon key numerical facts
Familiarity with fractions - what makes a whole / denominator / numerator and the meanings of these
Mixed number bringing the two together / partitioning

Variation

Children begin to access concrete resources to explore ideas and match / link to pictorial - this develops understandings preparing them for abstract / reasoning style questions further on

Representation and Structure

Use of concrete and pictorial materials to expose mathematical structure.

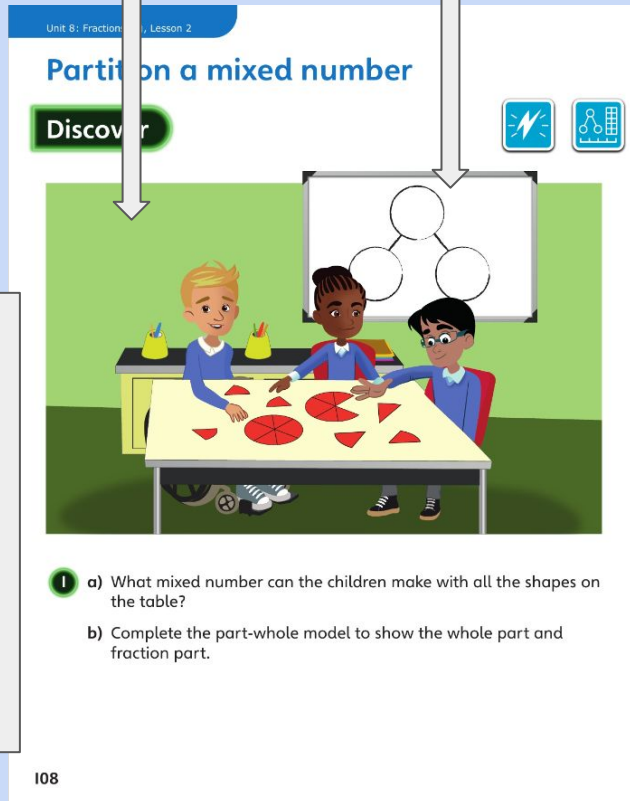
'The intention is to support pupils in 'seeing' the mathematics, rather than using the representation as a tool to 'do' the mathematics.' - NCETM

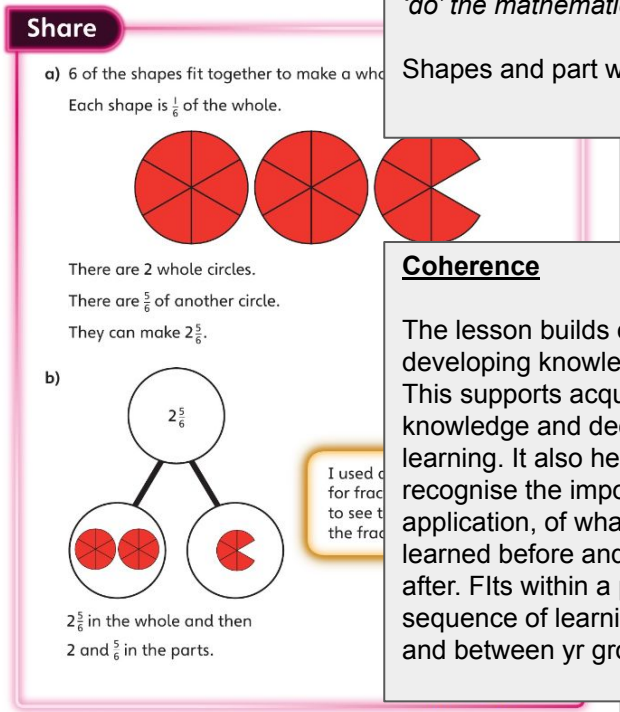
Shapes and part whole models

Mathematical thinking

Before children have even begun they are looking at and assessing what the image is showing and how it links to the learning

They will be considering:
What I already know
How it relates to LO
How can I connect the two



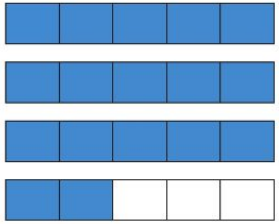


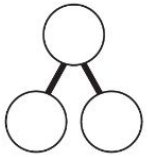
Coherence

The lesson builds on their developing knowledge.
This supports acquisition of new knowledge and deepens prior learning. It also helps children recognise the importance, and application, of what has been learned before and will come after. FIts within a progressive sequence of learning both within and between yr groups.

Think together

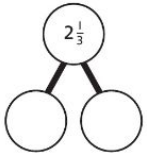
1 Each strip is one whole. Complete the part-whole model for the number of coloured strips.



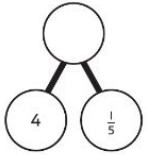


2 Complete the part-whole models.

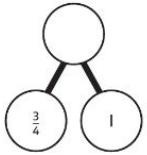
a)



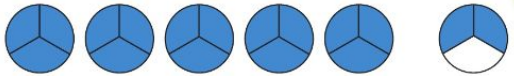
b)

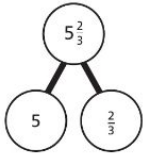


c)

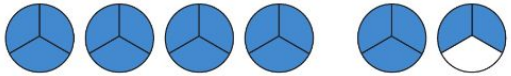


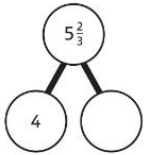
3 Emma has represented $5\frac{2}{3}$.



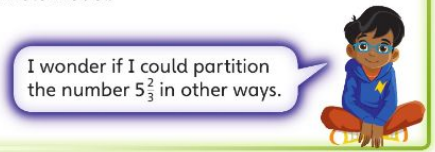


Emma wants to partition $5\frac{2}{3}$ in a different way.





Complete the part-whole model.



→ Practice book 4B p80

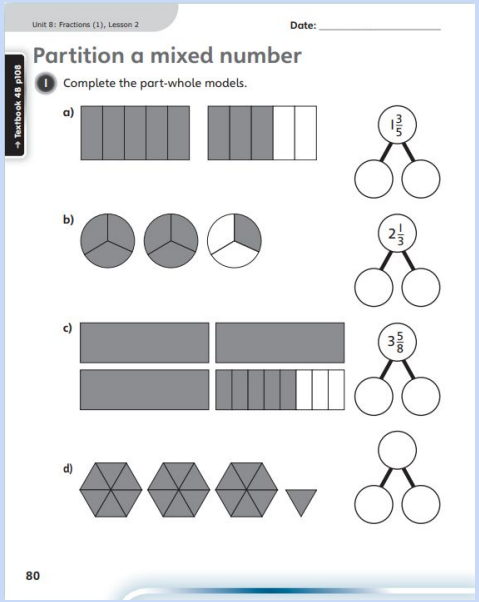
This stage follows I do, we do, you do format - provides children a model to follow and apply to own learning.

Children can still use the manipulatives to support thinking.

Children can access in the way that makes most sense to them.

The challenge question then builds on children's developing knowledge to present them alternative scenarios and consolidate their understanding.

Independent work echoes the input



Unit 8: Fractions (1), Lesson 2

Date: _____

Partition a mixed number

→ Textbook 4A p108

1 Complete the part-whole models.

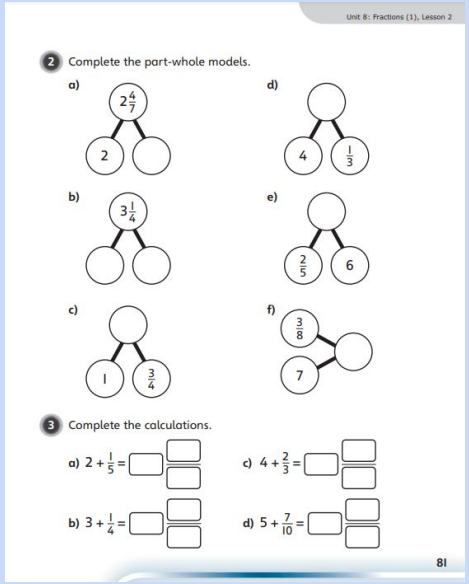
a) $1\frac{3}{5}$

b) $2\frac{1}{3}$

c) $3\frac{5}{8}$

d)

80



Unit 8: Fractions (1), Lesson 2

2 Complete the part-whole models.

a) $2\frac{4}{7}$, 2

b) $3\frac{1}{4}$

c) 1, $\frac{3}{4}$

d) 4, $\frac{1}{3}$

e) $\frac{2}{5}$, 6

f) $\frac{3}{8}$, 7

3 Complete the calculations.

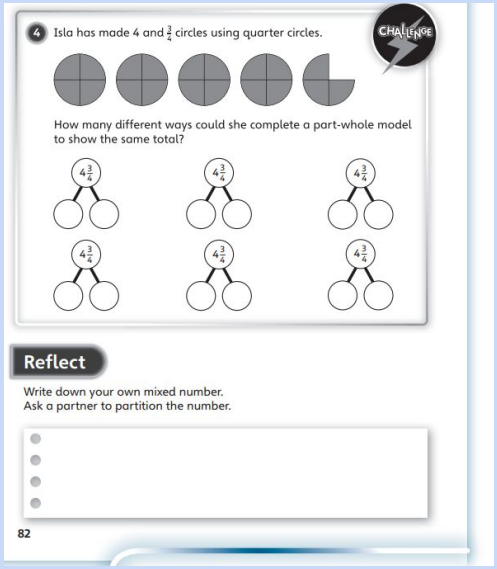
a) $2 + \frac{1}{5} = \square$

b) $3 + \frac{1}{4} = \square$

c) $4 + \frac{2}{3} = \square$

d) $5 + \frac{7}{10} = \square$

81



4 Isla has made 4 and $\frac{3}{4}$ circles using quarter circles.

CHALLENGE

How many different ways could she complete a part-whole model to show the same total?

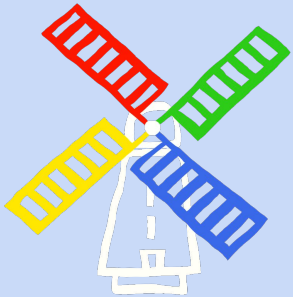
$4\frac{3}{4}$ $4\frac{3}{4}$ $4\frac{3}{4}$

$4\frac{3}{4}$ $4\frac{3}{4}$ $4\frac{3}{4}$

Reflect

Write down your own mixed number.
Ask a partner to partition the number.

82



Team TERRIFIC TRIO

1) Write a question for your teacher to answer, using the skill you have learnt in the lesson

2) Help someone that is finding the activity hard by explaining what to do; DO NOT TELL THEM THE ANSWER!!!

3) Be a teacher - write down the steps you need to succeed.

Ensuring Coherence

Structured progression within the lesson through CPA approach

This unit would always come after multiplication and division as they are key numerical facts that relate to fractions - those key skills underpin this learning.

Progression in learning across year groups so ideas are familiar and we build upon them thus not overloading the working memory

Number = Fractions							
3 and 4 yr olds	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		recognise, find and name a half as one of two equal parts of an object, shape or quantity	Recognise, find and name a half as one of two equal parts of an object, shape or quantity (yr1) recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2. Pupils	recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators compare and order unit fractions, and fractions with the same denominators recognise and show, using diagrams, equivalent fractions with small denominators add and subtract fractions with the same denominator within one whole	practise counting using simple fractions and decimals, both forwards and backwards Reason about the location of mixed numbers in the linear number system Convert mixed numbers to improper fractions and vice versa recognise and show, using diagrams, families of common equivalent fractions	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example,2/5 + 4/5 = 6/5 = 1 1/5] compare and order fractions whose denominators are all	use common factors to simplify fractions; use common multiples to express fractions in the same denomination compare and order fractions, including fractions > 1 add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions multiply proper fractions and mixed

| | | | | | | |

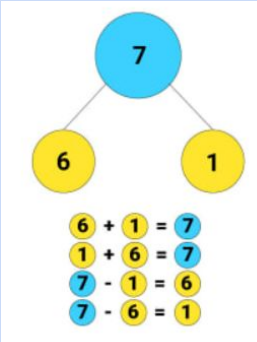
How Can I Help My Child at Home?

NUMBER BONDS

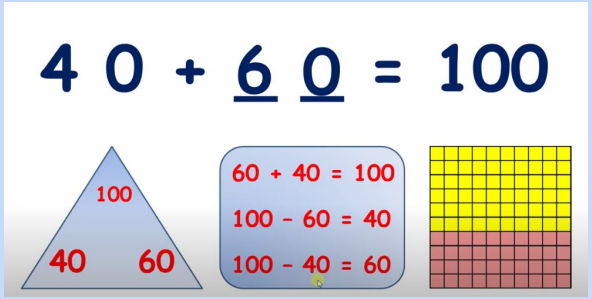
TIMES TABLES

FACT FAMILIES for + - and X /

MAKE CONNECTIONS



- Managing money
- Balancing the checkbook
- Shopping for the best price
- Preparing food
- Figuring out distance, time and cost for travel
- Understanding loans for cars, trucks, homes, schooling or other purposes
- Understanding sports (being a player and team statistics)
- Playing music
- Baking
- Home decorating
- Sewing
- Gardening and landscaping

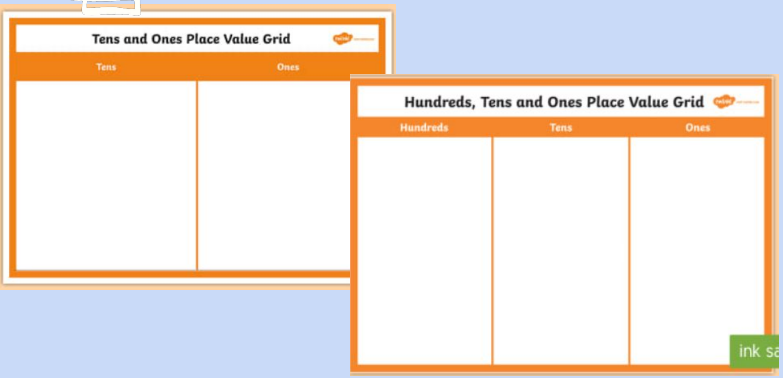


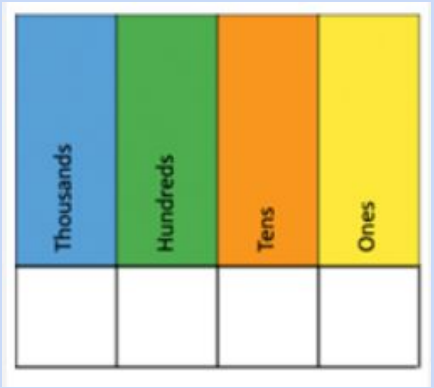
How Can I Help My Child at Home?

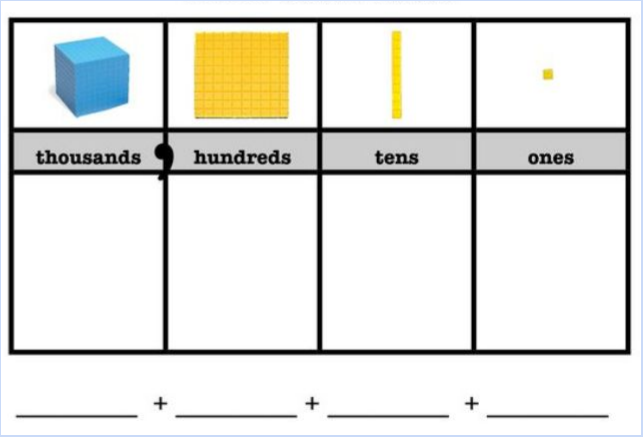
A pupil **really understands** a mathematical concept, idea or technique if they can:

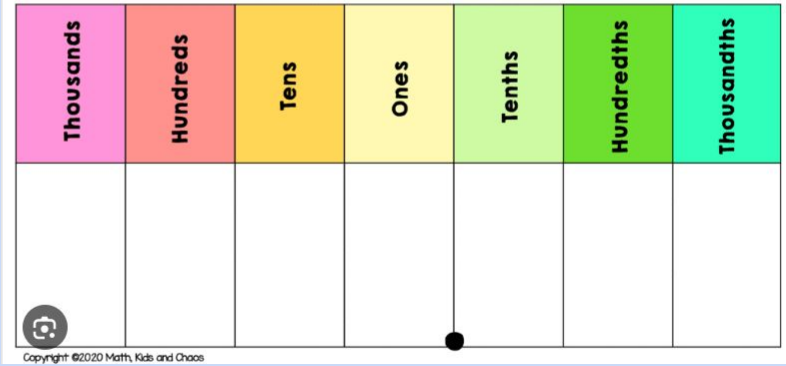
- ***describe it in their own words;***
- *represent it in a variety of ways*
- ***explain it to someone else***
- *create examples and non-examples;*
- *see connections with other facts and ideas;*
- *recognise it in new situations and contexts;*
- *make use of it in various ways, including new situations.*

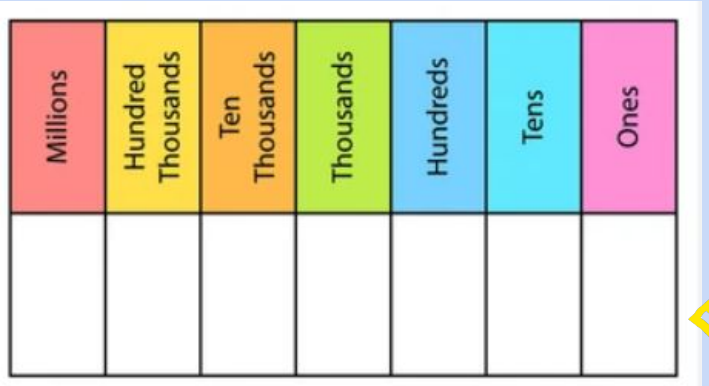
Models and representations



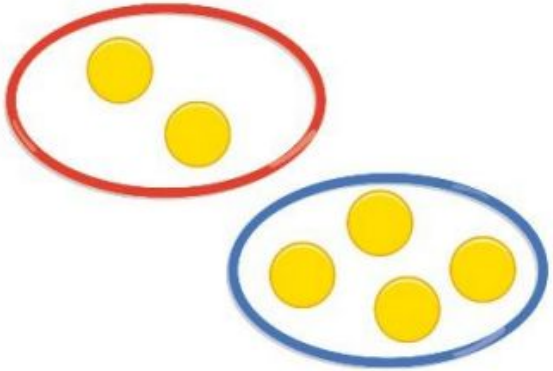


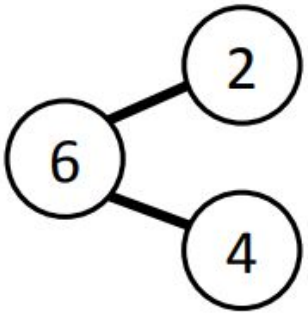






Models and representations

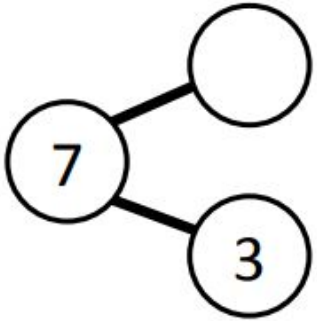


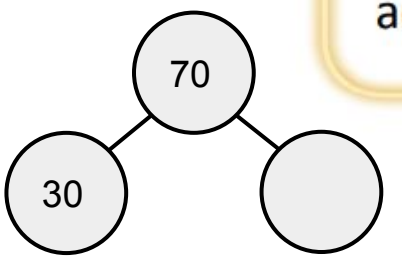


$2 + 4 = 6$

Models and representations

Part-whole models





Shows how numbers can be split into parts. Helps show the connection between addition and subtraction.

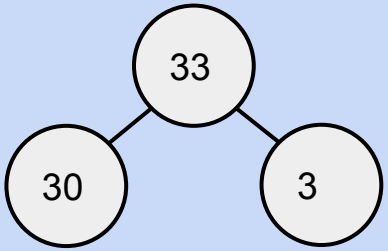
Bar models

70	
	30

Helps show the maths problem as a picture.

100			
25	25	25	25

33 x 6 =



X 6 = 180 X 6 = 18

180 + 18 = **198** = 33 x 6

Extending Learning / strengthening and deepening fluency and problem solving and reasoning skills

ALWAYS **SOMETIMES** **NEVER**

https://nrich.maths.org/12671

When you add two numbers you can change the order and the answer will be the same

YOUR TURN

Each table is set up with your name on it

There are a selection of tasks and tools to work with

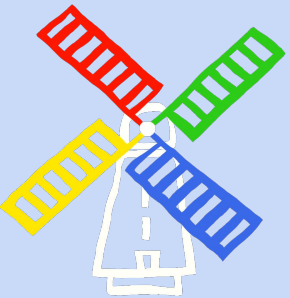
Ask your child to show you how to tackle the problem

Start with the concrete materials (practical application)

Use mathematical language to support discussion and explanation

Use How / Why / What questions to explore thinking - ask them to explain / prove it / offer an misconception and see if they can correct you

©DESIGNALIKE



Resources for parents and educators:

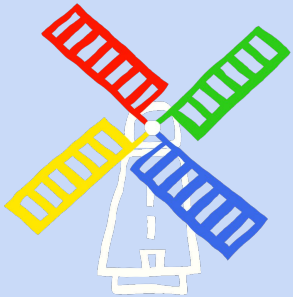
https://nrich.maths.org/9798

https://www.ncetm.org.uk/

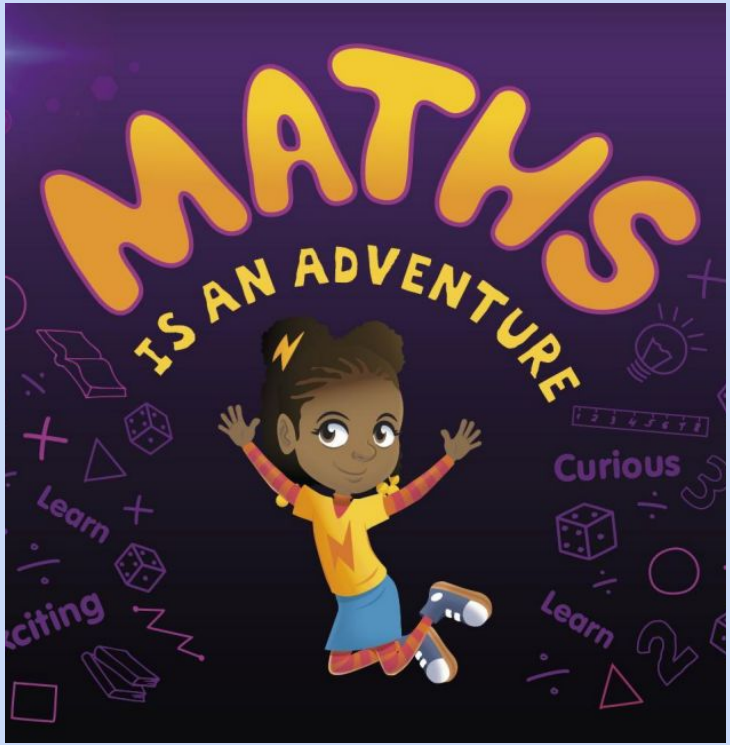
https://mathsnoproblem.com/en/resources/early-years-guide

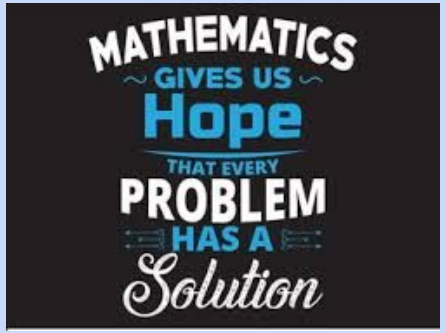
https://drive.google.com/drive/folders/10PBlK0WqGq9H9dMtgPx1AP2QLAB-C_7b

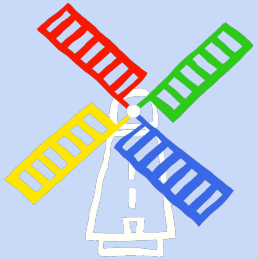
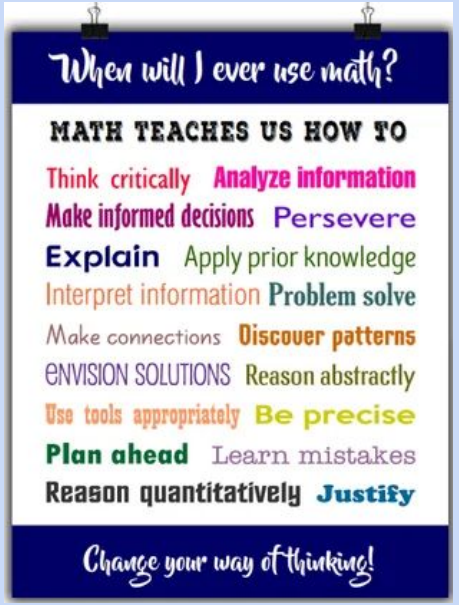
https://www.widmerend.bucks.sch.uk/maths/



Life is a math equation.
In order to gain the most,
you have to know
how to convert
negatives into positives





There should be
NO SUCH THING
as boring
mathematics.

-Edsger Dijkstra