Teaching Map

Do & Understand

Concentration

Maths

Personal

Object
Picture
Process

Emotional
Barriers

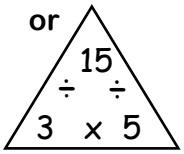
Sharing Learning	
Share	Questions before Telling
	Nudging & Hinting
Assess	Swift Summary
	Building on Explanations

Do & Understand

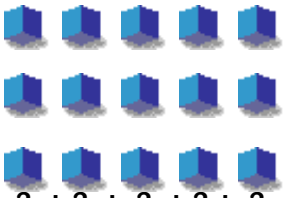
To teach the difference between knowing how to do something & truly understanding it, you have to be clear about this as a teacher. Only then can you explain why..

eg 1) Do

Learn the Facts:
3 x 5 = 15
5 x 3 = 15
15 ÷ 3 = 5
15 ÷ 5 = 3
or



Understand



5 + 5 + 5

3 + 3 + 3 + 3 + 3

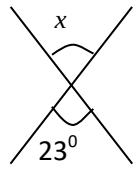
3 x 5 in Rows
3 rows,
5 in each row
So 3 x 5 = 15

5 x 3 in Columns
5 columns,
3 in each column
So 5 x 3 = 15

15 ÷ 3 in Rows
15 things divided into 3 equal rows, there's 5 in each row
So 15 ÷ 3 = 5

eg 2) Do

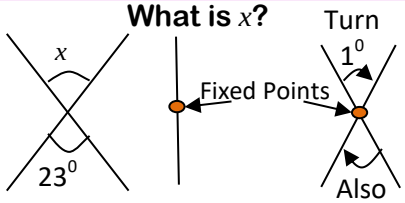
What is x?



Vertically Opposite Angles so x = 23

Understand

What is x?



Turning the top 1⁰, turns the bottom 1⁰
We're turning the top by 23⁰ so also the bottom. So x = 23⁰

eg 3) Do

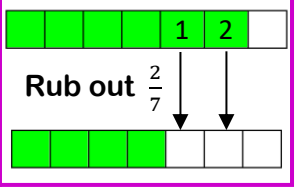
$\frac{6}{7} - \frac{2}{7}$

Subtract the Tops

$= \frac{6-2}{7} = \frac{4}{7}$

Understand

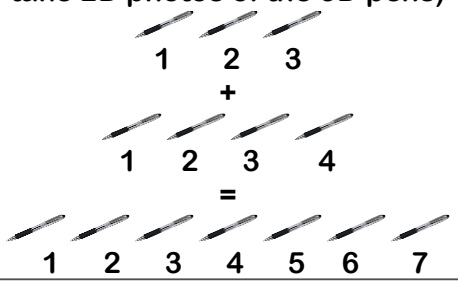
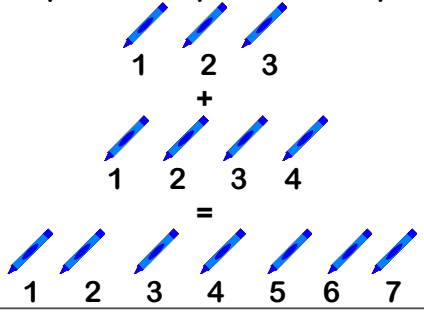
$\frac{6}{7} - \frac{2}{7} = \frac{4}{7}$



Rub out $\frac{2}{7}$

Object, Picture, Process

On the surface is the process, how we do something, how we "work out the answer." Behind the process are pictures and objects that help us understand it in a deep and meaningful way.

	Object (3D)	Picture (2D)	Process (0D)
Eg 1)	 Stick 4 coloured cm² stickers on each of the 3 rows, write cm² on each. We use 3 x 4 = 12 cm² stickers to fill up the shape	Make a Sketch (not to scale) 3rd row of 4cm² 2nd row of 4cm² cm² cm² cm² cm² There's 3 rows, each with 4 cm² So 3 x 4 = 12cm²	Area = base x height so A = b x h so A = 3 x 4 so A = 12cm²
Eg 2a) 3 + 4 = 7	Use actual physical things (here we'll take 2D photos of the 3D pens)  1 2 3 + 1 2 3 4 = 1 2 3 4 5 6 7	Draw pens to represent real pens  1 2 3 + 1 2 3 4 = 1 2 3 4 5 6 7	Know fact 3 + 4 = 7
Eg 2b) 3 + 4 = 7	Count on your fingers	Count on a number line	Count in your head

Sharing Learning

Questions before Telling: Sometimes we need to give information, but as often as possible ask questions to revisit & build on background knowledge, and investigate or reflect to move forward.

Telling	Questioning
The formula for the area of a rectangle is base times height	How could we arrange cm^2 in the rectangle in an organised way to help us count them?
To times fractions you just times the tops and times the bottoms	¾ x ½… Fold a piece of A4 paper into quarters vertically & halves horizontally & compare

Nudging & Hinting: Use hints, to link from what they know, to what you want them to understand next. Scaffold their steps, but don't make giant leaps for them. The hints might be questions, objects or drawings that nudge them from what they know, on to further and deeper understandings.

Swift Summary: Ask for a one-minute summary of what they have just learned; a great way to assess understanding. It can also be used for two or three previous steps before building onto new steps.

Building on Explanations: Ask them to explain what they know or can do. Then build on their explanation by offering your own explanation. Then ask them to build on what you have said.

Concentration

Concentration takes mindfulness & practice. Whether we are concentrating on learning maths, on listening to a friend in need, or on painting a landscape, concentration and awareness are vital skills. Here are some general tips for keeping your learner on track. Remember that ultimately each learner is responsible for themselves, you can but try! These are subtle skills, and if you are finding your learners hard to manage then speak to your adult teacher for tips or practical support.

Barrier	A possible approach
All Barriers: Humour	As a general rule, humour is helpful. Be light hearted, smile & non-verbally remind your learner that you like them. Humour can often be used to defuse tension or distraction and bring the focus back where you & your learner need it.
Tiredness 1: Breaks & Rest	If your learner is losing focus, feeling tired, or getting itchy feet, it might be time for short break. A 5 min break (or more) can refresh the brain. Rest, rest, rest. Or do something different: stretch your legs; do a puzzle; play a game.
Tiredness 2: Sleep	If your learner is dropping off in the lessons, suggest they go and take a siesta! If this happens regularly, mention it to your adult teacher.
Behaviour 1: Distraction	If your learner gets distracted, stay aware. Briefly go with them into the focus of their distraction, then draw the subject back to the focus of your learning.
Behaviour 2: Disrespect	Poor behaviour is often about trapped negative emotions. Refer to the emotional barriers section. Ask for support from your adult learner if needed.
Behaviour 3: Motivation	Does your learner seem uninterested? If you have considered all the barriers perhaps they just aren't feeling it today. Ask them. Remind them that this is a voluntary activity, and suggest they might stop, leave, or work alone so you can spend time with someone who is feeling motivated today.

Emotional Barriers

	First	Then	You might say…
The Day's Emotions	Listening	More Listening	"What's going on for you?"
Fear of failure		Reassurance that they're good enough already, and that maths is much less important than their happiness.	"You're a great person already. You don't need to prove yourself with any maths, because you're already greater than all the maths will ever be!"
Comparison (I'm not as good as…)		Your own examples of feeling that way might help. And reassurance that we are a team, and we all work together.	"I remember when I was learning this the first time, it took me a few goes to get it. You can only compare yourself to yourself last year (when you were only on step 2!)"