

Addition

*Some information about
progression, strategies and tools
for children (and parents!)*

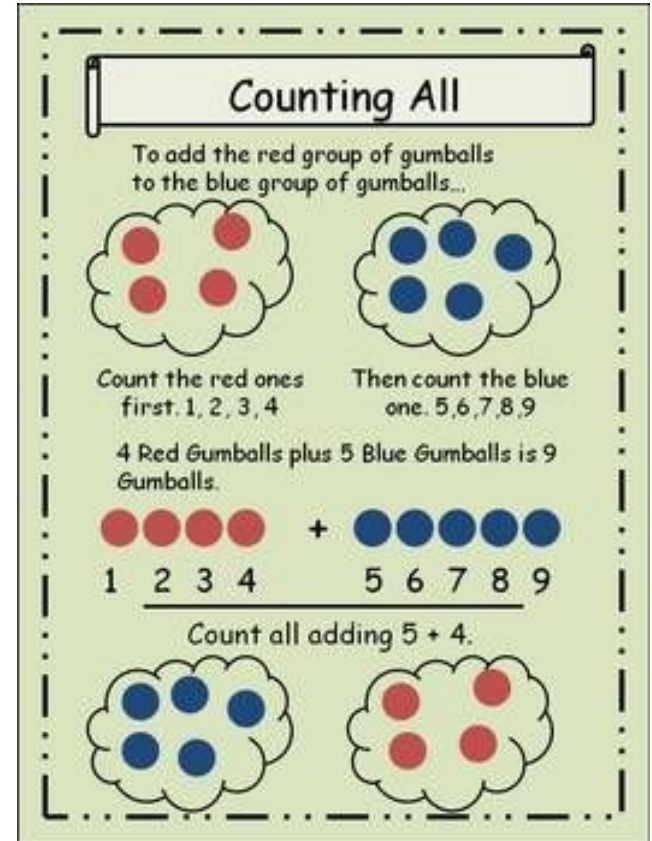


By Miss Murray

Addition progression - counting all

When we begin adding we show simple amounts and use materials, then pictures.

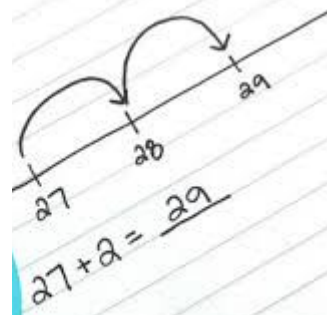
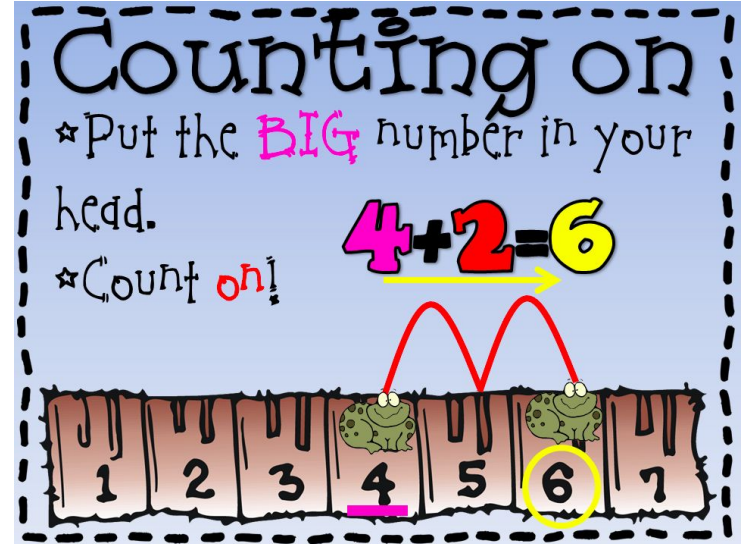
We begin by counting all objects starting from 1



Addition progression - counting on

Once we have become confident with counting all we move to **counting on**.

(Remember to put the big number in your head as the picture shows...)

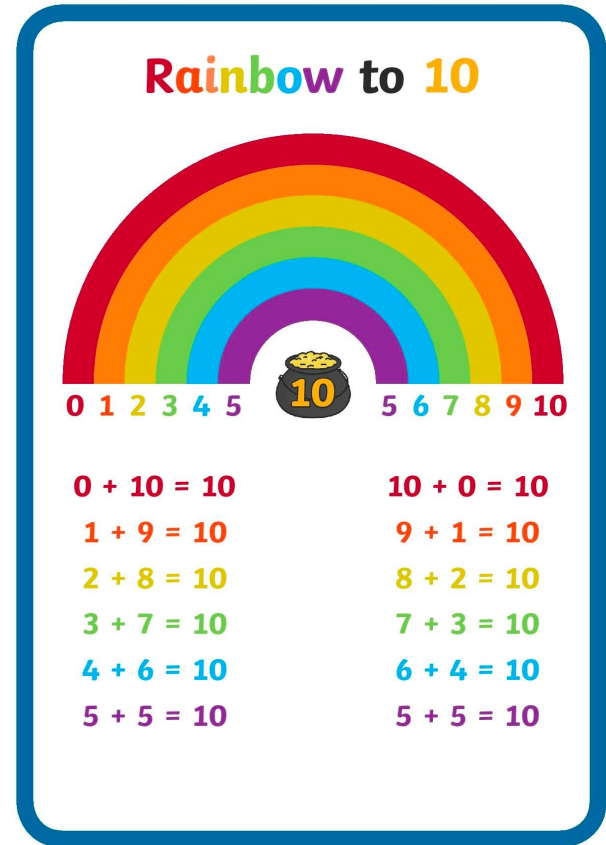


Addition progression - number bonds

We then learn number bonds to help us later when adding larger numbers together.

We begin learning bonds to 10 then bonds to 20.

P2 and beyond...*do you know* these bonds with *quick or instant recall*??



Addition progression - doubles

We also learn **doubles** to help us later when adding larger numbers together.

P2 and beyond...*do you know your doubles with quick or instant recall??*

| | | | | |
|---|---|---|---|---|
|  $1+1=2$ |  $2+2=4$ |  $3+3=6$ |  $4+4=8$ |  $5+5=10$ |
|  $6+6=12$ |  $7+7=14$ |  $8+8=16$ |  $9+9=18$ |  $10+10=20$ |

Addition progression - commutative rule

We also learn that numbers can be added in any order (swapped or flip flopped)


Flip Flop Facts

$2 + 4 = 4 + 2$

$2 + 4 = 6$
 $4 + 2 = 6$

Commutative Rule:
You can add numbers in any order.

$1 + 6 + 3 = 10$
 $3 + 1 + 6 = 10$




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Addition progression - bridge to 10

Some learners know that we can break numbers up and put back together to make 10...and then add on from 10.

This is a tricky strategy which requires good working memory skills! Some of us like this strategy and some of us don't...

We might not all use this strategy as we progress...



Bridge to 10

Break the smaller number to make 10:

$$7 + 5 = ?$$

Diagram showing 7 broken into 3 and 4, and 5 broken into 2 and 3. The 3 from 7 and the 2 from 5 are circled together to form 10.


$$10 + 2 = 12$$

Addition progression - add 10 more

We then begin taking 2 digit numbers e.g. 24 and add on 10 more.

We work on skip counting in 10s to help with this...

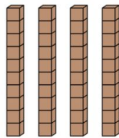

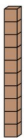
We sometimes use 10s sticks and 1s blocks (Dienes)

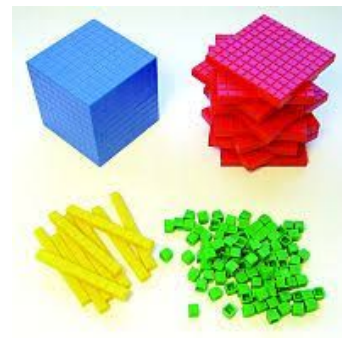


Add 10

It's just like adding a tens stick!

$$43 + 10 = ?$$

   = 53!

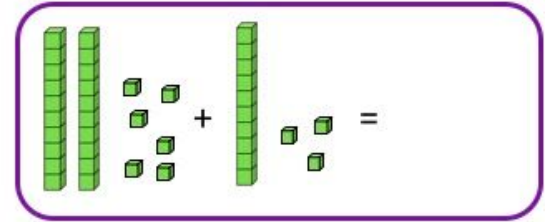


Addition progression - 2 digit add 2 digit

We can move onto adding 2 digit numbers and 2 digit numbers.

We work on this:

- using materials 10s and 1s blocks
- using materials 100 squares
(circle the first 2 digit number, skip count in 10s, then add 1s to find your answer)



$$16 + 32 = 48$$

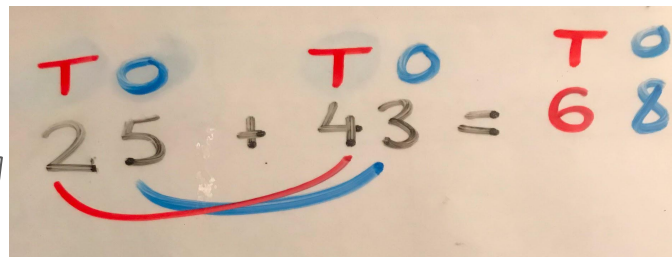
| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

Addition progression - 2 digit add 2 digit

We can move onto adding 2 digit numbers and 2 digit numbers.

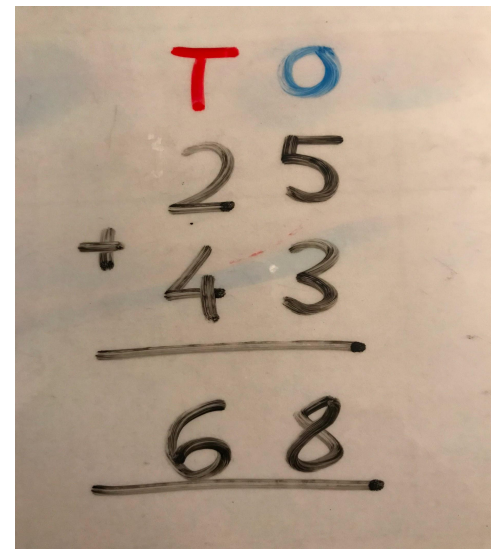
We work on this:

- Showing working (smile strategy - adding 10s then 1s)
- chimney sum (vertical algorithm)



A handwritten addition problem on a piece of paper. The numbers 25 and 43 are written in black ink. Above the 2 is a red 'T' and above the 5 is a blue 'O'. Above the 4 is a red 'T' and above the 3 is a blue 'O'. A red curved line connects the 2 and the 4, and a blue curved line connects the 5 and the 3. The result 68 is written to the right of the plus sign, with a red '6' and a blue '8'.

$$\begin{array}{r} \text{T O} \\ 25 \end{array} + \begin{array}{r} \text{T O} \\ 43 \end{array} = \begin{array}{r} \text{T O} \\ 68 \end{array}$$



A handwritten addition problem on a piece of paper. The numbers 25 and 43 are written in black ink. Above the 2 is a red 'T' and above the 5 is a blue 'O'. Above the 4 is a red 'T' and above the 3 is a blue 'O'. A horizontal line is drawn below the numbers. The result 68 is written below the line, with a red '6' and a blue '8'.

$$\begin{array}{r} \text{T O} \\ 25 \\ + 43 \\ \hline 68 \end{array}$$

Addition progression - 3 digit or 4 digit or more digits!

- Larger numbers can be added in these same ways shown in the previous 2 slides...

3 Digits Addition

Calculate the answer to each sum:

| | | | | | |
|---|---|--|--|--|--|
| $\begin{array}{r} 271 \\ + 524 \\ \hline \end{array}$ | $\begin{array}{r} 421 \\ + 643 \\ \hline \end{array}$ | $375 + 511 = \underline{\hspace{2cm}}$ | $\begin{array}{r} \square 72 \\ + 621 \\ \hline 9 \square 3 \end{array}$ | $\begin{array}{r} 45\square \\ + 122 \\ \hline 5\square 3 \end{array}$ | a) I have a sack of 345 potatoes and another bag with 212. How many potatoes do I have altogether? |
| | | $176 + 434 = \underline{\hspace{2cm}}$ | | | |
| | | $810 + 523 = \underline{\hspace{2cm}}$ | | | |

Addition progression - addition with carrying (regrouping)

- This chimney sum layout is worked on *when we are already confident with adding*
- 2digit + 2d or 3d +3d or 4d +4d *mentally first!*

Addition with regrouping is tricky to do,
So here's a little rhyme to help you!
Put your **tens up high**, and
Your **ones down low**..
Add them all together
And you're ready to go!

The diagram illustrates the 'chimney sum' method for adding 45 and 18. A vertical line separates the tens and ones columns. The numbers 45 and 18 are written on either side of the line. A green box with the number '1' is placed above the tens column, representing the carry. A yellow box with the number '3' is placed below the ones column, representing the result of the ones column addition. The final sum '63' is shown at the bottom, with '6' in the tens column and '3' in the ones column. To the left and right of the main diagram are smaller examples of addition problems: $\begin{array}{r} 1 \\ 4 \\ + 1 \\ \hline 6 \end{array}$ and $\begin{array}{r} 5 \\ + 8 \\ \hline 13 \end{array}$.

Addition progression - expanded columns

- When adding larger number they can be organised into 10s and 1s:

Addition Strategies

Expanded Columns

Write the numbers underneath each other lining up the tens and ones.

54

+ 68

Add the ones.

12

Add the tens.

+110

Combine your ones and tens.
Line up any hundreds.

122

Addition

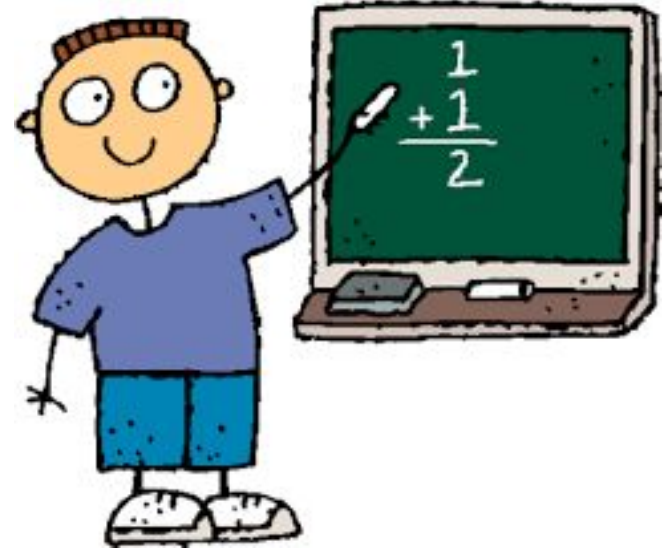


TODAY - can you talk to your parents or teacher or me about:

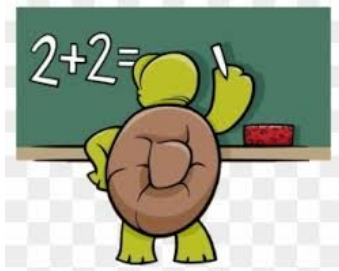
1. Which addition **strategies** you are confident with and use regularly?
2. Which stage of addition you **need more practice** with?
3. Which stage of addition you are **currently working on** in class/CLIC? See next slide...

Addition

1. Counting all
2. Counting on
3. Bonds to 10
4. Bonds to 20
5. Doubles
6. Commutative rule (flip flop)
7. Bridge to 10
8. Adding 10s (to 2 digit numbers)
9. 2d + 2d using 10s sticks and 1s blocks
10. 2d + 2d using 100 square
11. 2d + 2d using smile strategy (adding 10s and 1s separately)
12. 2d + 2d using chimney sum strategy
13. 2d + 2d addition with carrying (also called regrouping)
14. 2d + 2d using expanded column strategy
15. Steps 9, 10, 11, 12, 13, 14 with **3d + 3d** or **4d + 4d** numbers



Addition



Thanks for reading and discussing and thinking about addition today!

Soon we will explore a range of addition games!

I'll show you how to make some on paper/card or provide some to print off at home.