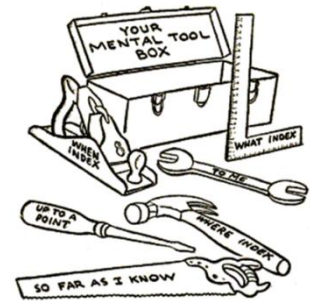# Supporting your child's maths fluency at home

"The only way to learn maths is to do maths"

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What maths have you already done today?

National Curriculum

- the curriculum is presented on a year-on-year basis

- content has generally become more challenging

- Fewer things but in more depth

Curriculum 2014 - mathematics

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics – mental and written
- **reason mathematically**
- can **solve problems** by applying their mathematics

What is fluency?

- Not only about number

- Not about practice, practice, practice of formal algorithms

The government wishes to continue to emphasise fluency, but this should not be understood to mean *"rote learning without understanding"…..conceptual understanding is clearly important and ..any emphasis on practice needs to be a part of achieving that understanding.*

- *Stefano Pozzi , Mathematics in School , May 2013, p2*

What is fluency in Mathematics?

Fluency means that children can:

Be Efficient

Choose the most efficient strategy rather than getting bogged down with too many steps.
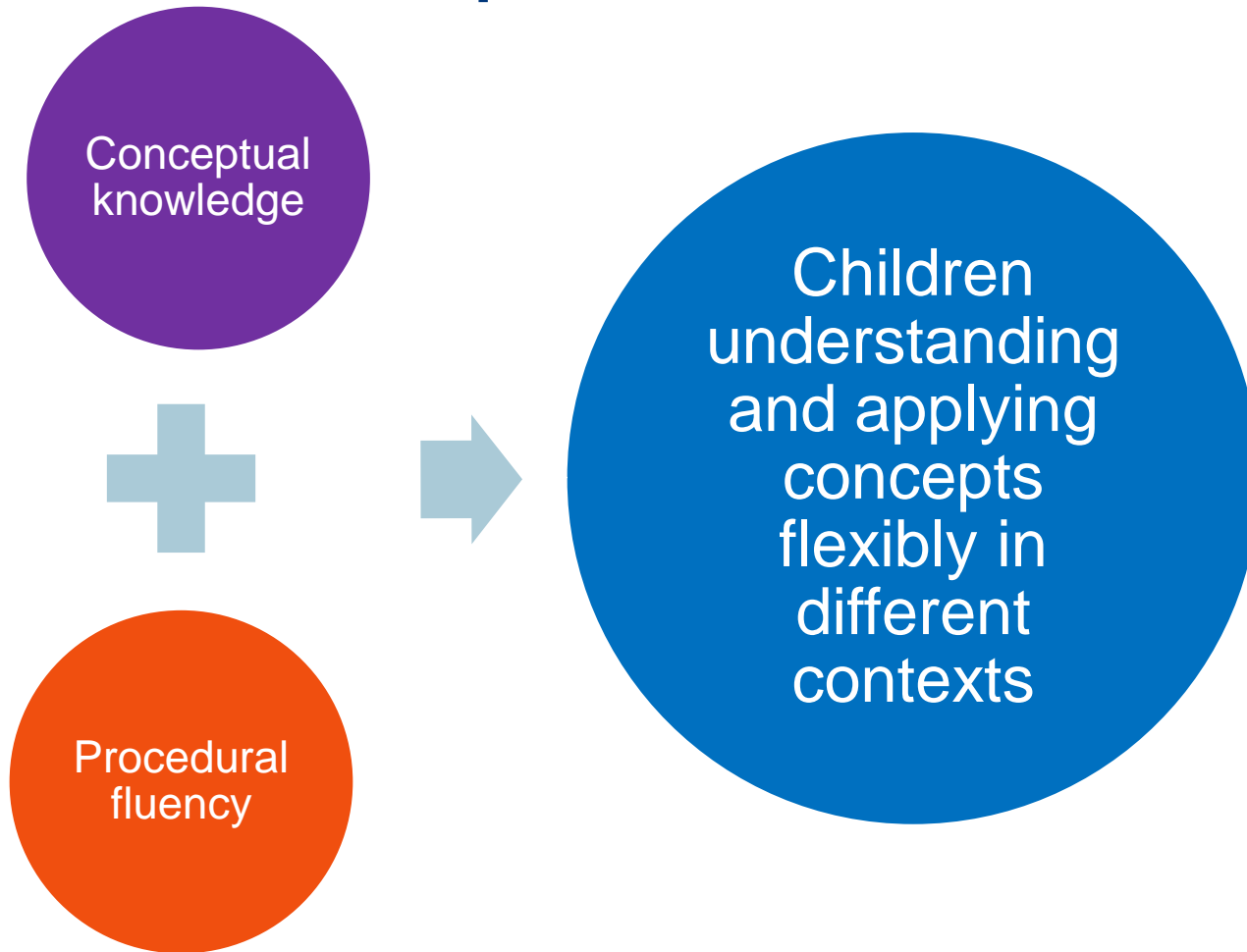
Be Accurate

That they know some things about number facts such as: two numbers that make 5; two numbers that make 8; two numbers that make 10.

Be Flexible

They know how to solve a problem and gradually realise that there are lots of ways to solve the same problem.

So fluency in mathematics demands more of pupils than memorising a single procedure – they need to understand why they are doing what they are doing and know when it is appropriate to use different methods. (Russell 2000)

Interrelationship

Conceptual knowledge

+

Procedural fluency

➡

Children understanding and applying concepts flexibly in different contexts

Times tables

- Sally knows her facts up to 12 x 12

- When asked what is 12 x 13 she looks blank.

- Discuss:

- Does she have fluency and understanding?

- What can we do to help her?

Mastering mathematical understanding

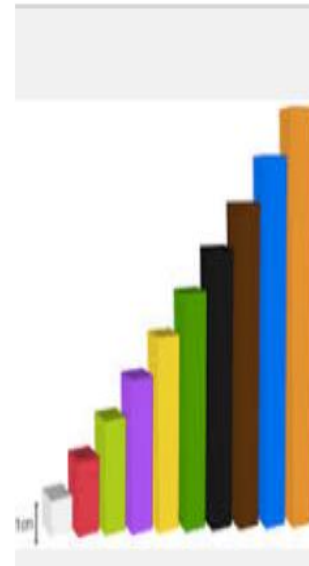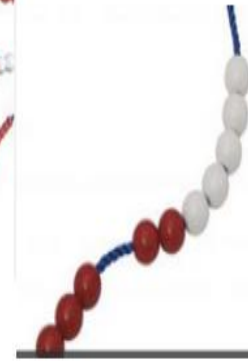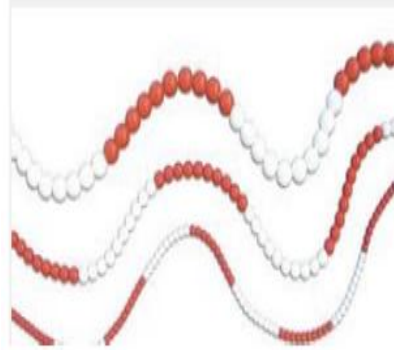- **Findings from Ofsted 2011:**
- Practical, hands-on experiences of using, comparing and calculating with numbers and quantities … are of crucial importance in establishing the best mathematical start …
- Understanding of place value, fluency in mental methods, and good recall of number facts … are considered by the schools to be essential precursors for learning traditional vertical algorithms (methods)

Concrete-Pictorial-Abstract approach

- Bruner, 1960
- Reaches out to a variety of learners
- Sequence is critical – every concept, within a lesson, within a unit.
- Concrete allows discovery
- Pictorial allows conceptual understanding
- Abstract allows a shorter and more efficient way to represent numerical ideas using symbols.

Concrete Pictorial Abstract

2 + 1 = 3

Resources used to underpin conceptual understanding

Resources used to underpin conceptual understanding

What can you do at home?

In the kitchen

- Involve your child when measuring and weighing
- Become familiar with the weight of things
- - 1oz – 28g (Bag of Crisps)
- - 1kg (Bag of Sugar)
- Become familiar with the volume / capacity of containers
- Mug of tea
- Can of drink

- Identify the heaviest / lightest objects
- Order objects

In the bath

- Experiment with the sizes of containers by encouraging them to pour from one to another e.g. a small one to a large one or a large one to a small one.

Walking to school

- look at the environment around you and spot shapes e.g. windows, pavements. See how many squares, rectangles, round shapes and cylinders you can spot. Which did you see the most of? Choose a shape for the week e.g. a square. How many of these can your child spot on the way to school or setting? (You could include in the home as well).

- Count the leaves, cracks in the pavements; Look at door numbers of your friends, relatives and where you live – what does it say? Can they spot their favourite number or their age number?

What's the time?

- **Younger children**
- Talk about the passing of time – seasons, months of the year, days of the week as well as recurring significant events and celebrations within their lives. Look at the clock – analogue and make a point of showing them o'clock and significant times of the day e.g. 'We are going to school at half past eight and this is what half past eight looks like'.

Going Shopping – Younger Children

- Buying one thing, e.g. 18p get your child to tell you how much change you will get from 20p.

- Ask him/her how many tens and how many ones 18p is made up from.

- After you have been shopping, choose different items costing less than £1. Make price labels for each one e.g: 48p, 79p. Then ask your child to do one or more of the following these:

- Choose two items and find the total

- Work out the change from £1

- Add 9p to each price in their head

- Say which price is an odd number and which is an even number

- Place the labels in order, starting with the lowest

- Identify the coins that they have to use to pay for each item (fewest)

Going Shopping – Older Children

- '2 for £2.30'

- Buy one get one free

- Three for two

- Sale - work out what some items would cost with: 50% off; 25% off; 10% off or 5% off

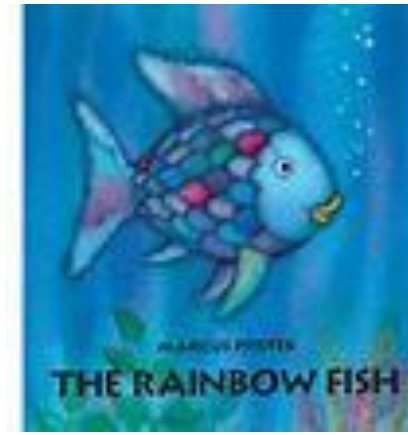- Ask your child to explain how she worked it out.

Other money activities

- How much? Tip out the small change from a purse. Count it up with your child.

- William has £1 he spends 40p. How much change does he receive? Link it to number bonds to 100. Spent 40p, 60p change.
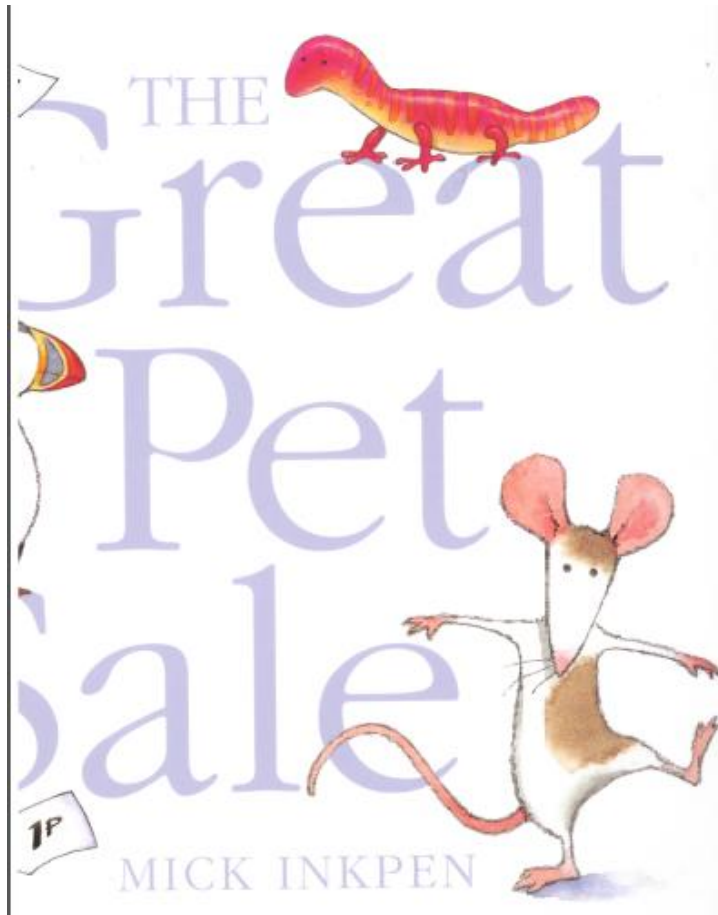
Fractions

- Real life – Sharing
- Know what the whole is

- Find ½ of things
- Find fraction of a quantity

Using Books

The Great Pet Sale

- Draw out Maths from the book

The Great Pet Sale

'EVERYTHING MUST GO!'
said the sign on the pet shop
window.

In the window was a rat.
I looked at him. Half of his
whiskers were missing.
'I'm a bargain!'
called the rat
through the glass.

'I'm only 1 p!
Choose me!'

- If a rat with half the whiskers cost 1p. How much would a rat with all of his whiskers cost?

- What is a half?

- Show me 1p

The Great Pet Sale

Inside the shop there was
a tiny terrapin for **2** pence,
a turtle for **3** pence
and a tortoise,
a great big one,
for **4** pence.

- Pick out a 2p
- How could we make 3p?
- How could we make 4p?
- If I bought a terrapin and a tortoise how much would it cost?
- How much change from 10p?

Using Rhymes and Songs

Five Little Freckled Frogs

- Five little freckled frogs
- Sat on a speckled log
- Eating some most delicious grubs. Yum, Yum,
- One jumped into the pool
- Where it was nice and cool
- Then there were four green speckled frogs.
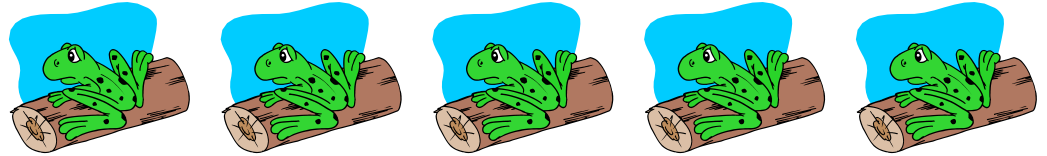
- Four little freckled frogs
- Sat on a speckled log
- Eating some most delicious grubs, Yum, Yum,
- One jumped into the pool
- Where it was nice and cool
- Then there were three green speckled frogs.

- Three little freckled frogs
- Sat on a speckled log
- Eating some most delicious grubs, Yum, Yum,
- One jumped into the pool
- Where it was nice and cool
- Then there were two green speckled frogs.

- Two little freckled frogs
- Sat on a speckled log
- Eating some most delicious grubs, Yum, Yum,
- One jumped into the pool
- Where it was nice and cool
- Then there was one green speckled frogs.

- One little freckled frog
- Sat on a speckled log
- Eating some most delicious grubs, Yum, Yum,
- One jumped into the pool
- Where it was nice and cool
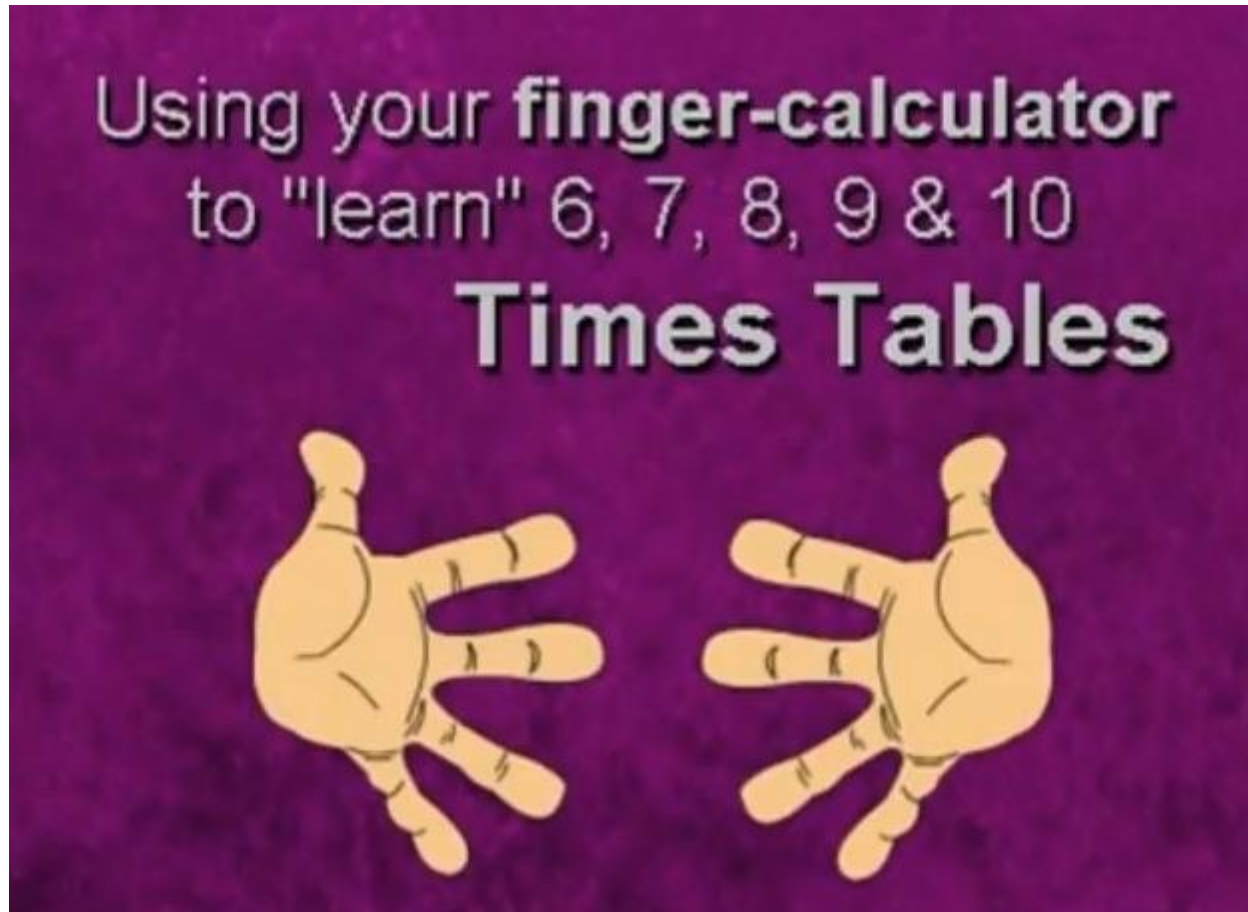- Then there were four green speckled frogs.

- Subtraction
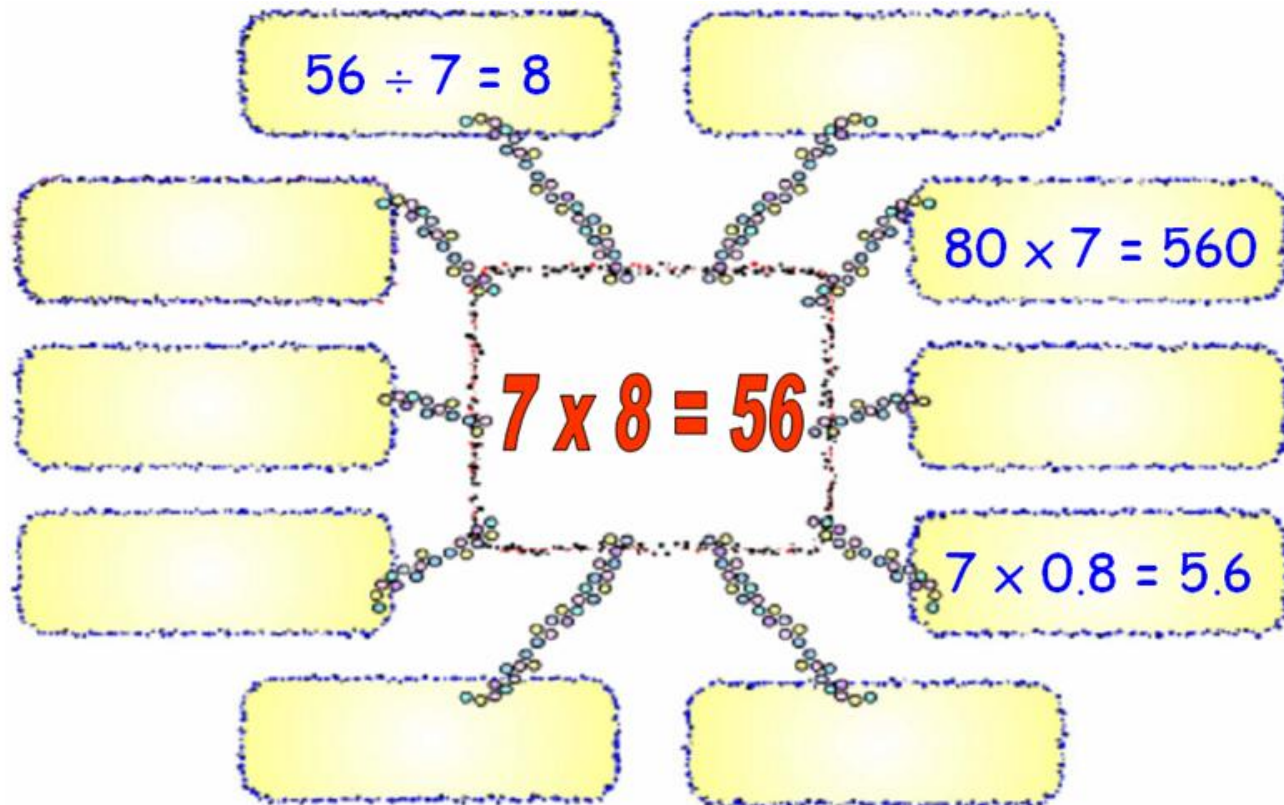
Inch worm

- ■ https://www.youtube.com/watch?v=W0lQ0bdcjfY&autoplay=1&app=desktop

Maths song quiz

- http://www.youtube.com/watch?v=cF9f_Y6k2aw

Times tables

56 ÷ 7 = 8

80 × 7 = 560

7 x 8 = 56

7 × 0.8 = 5.6

Bingo

3-digit numbers   Years 3 and 4

641	224	506	162	729	385
138	371	783	482	197	750
473	945	830	248	524	966
618	719	547	860	679	891
284	336	112	557	398	463
975	459	634	823	916	258

Gladiators

Multiples of 10 and 100

500 20 300 90 50 700

100 60 800 10 900 30

40 600 80 400 70 200

Other ways

- Emphasise numbers in real life e.g. telephone numbers, lottery numbers, bus…

- Talk about maths in sport e.g. how many points do you need to go top?

- Challenge with mental maths and tables

- Look at number puzzles in magazines, TV

- Encourage concentration on a problem, perseverance – especially when the first attempt is wrong