



Helping your child with Maths at home

YEAR 3



Addition

Recording Maths in Year 3

- Expanded horizontal written method / partitioning (brief phase before introducing column method and used for mental strategy):
 $47 + 25 \Rightarrow$ tens: $40 + 20 = 60 \Rightarrow$ ones/units: $7 + 5 = 12$ Add together. Reverse and do ones/units first to lead onto column method
- Column addition, exchanging when addition goes over 10, 100. (show number under the line)
- Part whole models (linking subtraction to addition and showing commutative law)
- Counting on, on an empty numberline starting with the biggest number
- Place value counters
- Base tens picture models

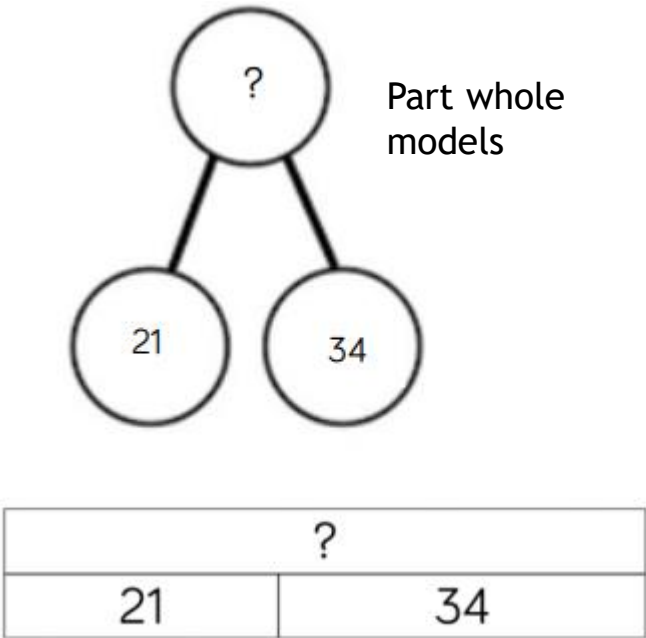
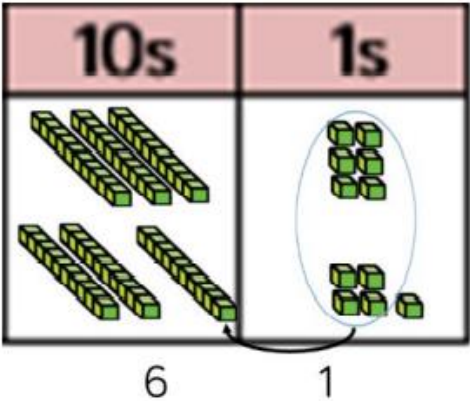
The Empty Number Line showing the Jump method of addition
e.g. $33 + 25 = 58$

33 53 58

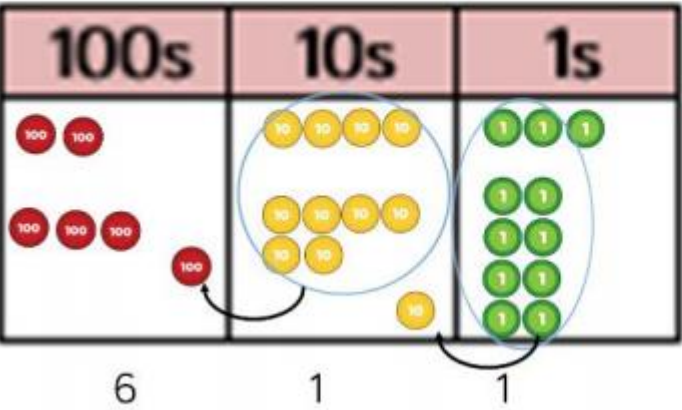
+20 +5

$$\begin{array}{r} 36 \\ +25 \\ \hline 61 \\ 1 \end{array}$$

TO + TO using base 10. Continue to develop understanding of partitioning and place value.
 $36 + 25$



Use of place value counters to add HTO + TO, HTO + HTO etc. When there are 10 ones in the 1s column- we exchange for 1 ten, when there are 10 tens in the 10s column- we exchange for 1 hundred.



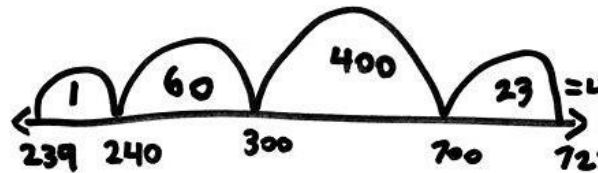
Subtraction

- Partitioning using base tens / 100's, tens and units pictures
- Column subtraction with and without exchange
- Part whole models (linking subtraction to addition)
- Finding the Difference by counting on, on an empty numberline starting with the lowest number (counting on to nearest 10) uses knowledge of number bonds to 10 and 100

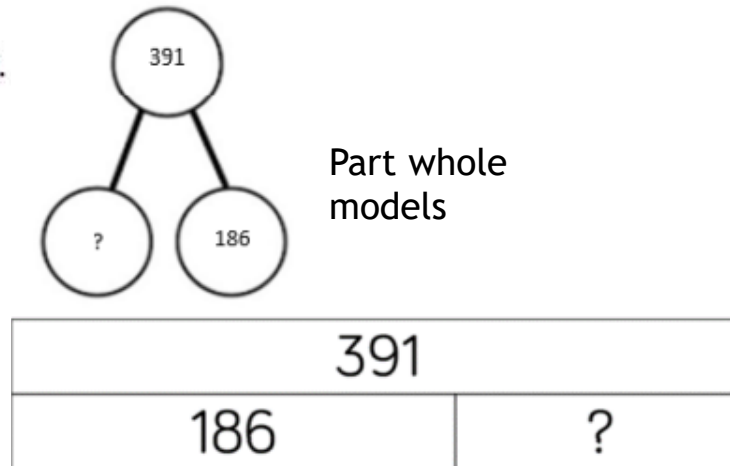
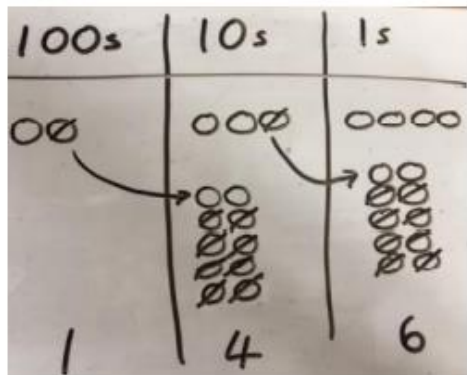
Most commonly used when teaching giving change in money and finding the difference in heights/ages/amounts in real life scenarios

- Place value counters

$$723 - 239 = 484$$



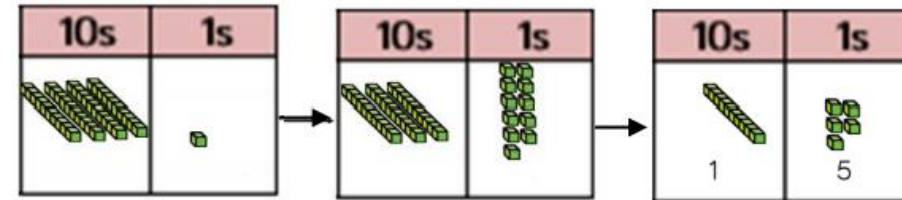
Represent the place value counters pictorially; remembering to show what has been exchanged.



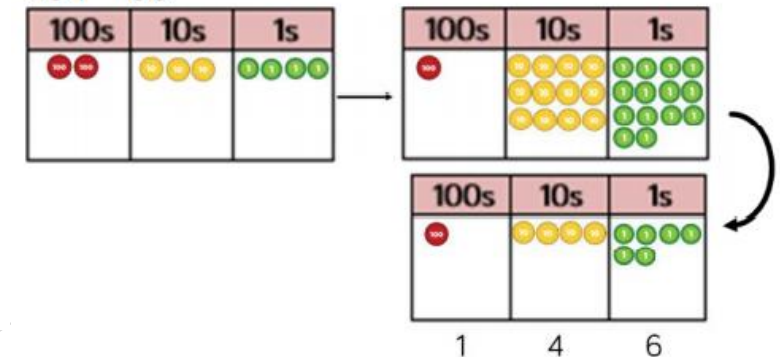
Formal column method. Children must understand what has happened when they have crossed out digits.

$$\begin{array}{r} 234 \\ - 88 \\ \hline 6 \end{array}$$

Column method using base 10 and having to exchange.
41 - 26



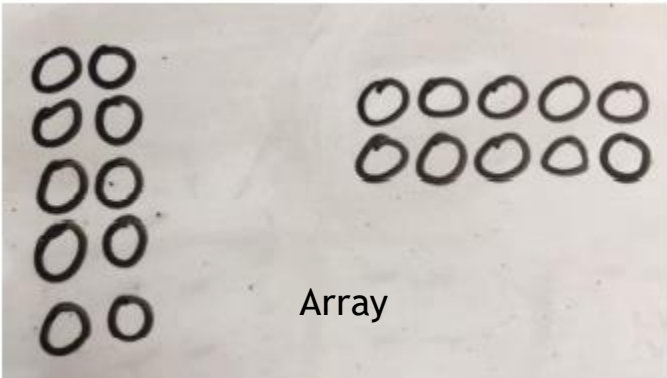
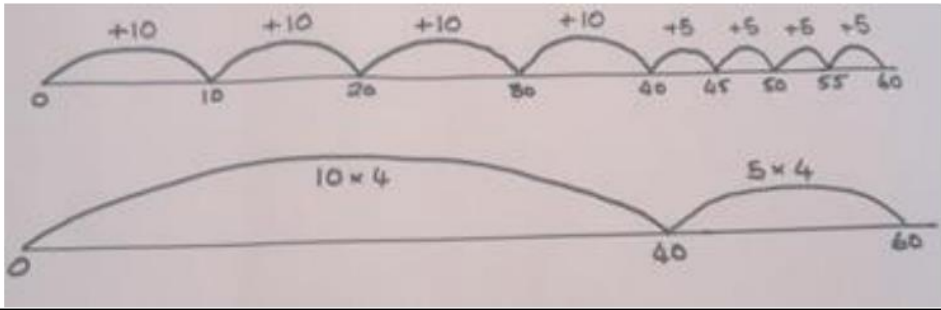
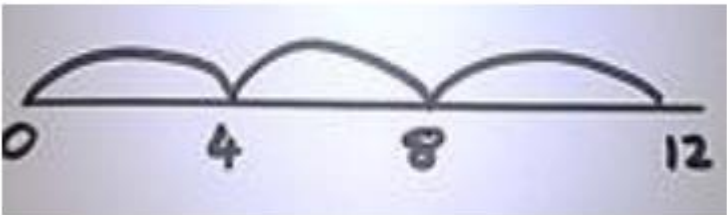
Column method using place value counters.
234 - 88



Multiplication

- Partitioning using base tens / 100's, tens and units and grouping, leading to the grid method for 1 digit x 2 or more digits
- Column method with and without exchange
- Part whole models (linking multiplication to division)
- Place value counters
- Arrays
- Number lines, showing repeated addition and counting on in steps

3 x 4 = 12



Formal column method with place value counters (base 10 can also be used.) 3 x 23

10s	1s
6	9

Children to represent the counters pictorially.

10s	1s
6	9

Children to record what it is they are doing to show understanding.

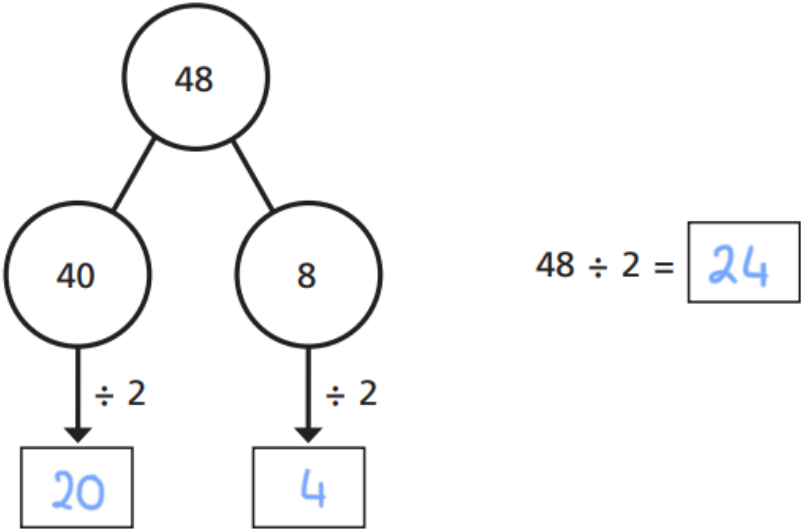
3×23
 $\begin{array}{r} 20 \\ 3 \end{array}$

$3 \times 20 = 60$
 $3 \times 3 = 9$
 $60 + 9 = 69$

$$\begin{array}{r} 23 \\ \times 3 \\ \hline 69 \end{array}$$

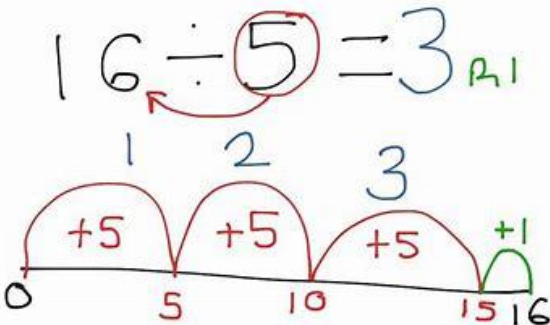
Division

- Sharing/grouping using base tens / 100's, tens and units
- Place value counters
- Part whole models (linking multiplication to division)
- Using arrays and splitting into groups
- Number lines, counting on or back in steps; also used to show division with remainders

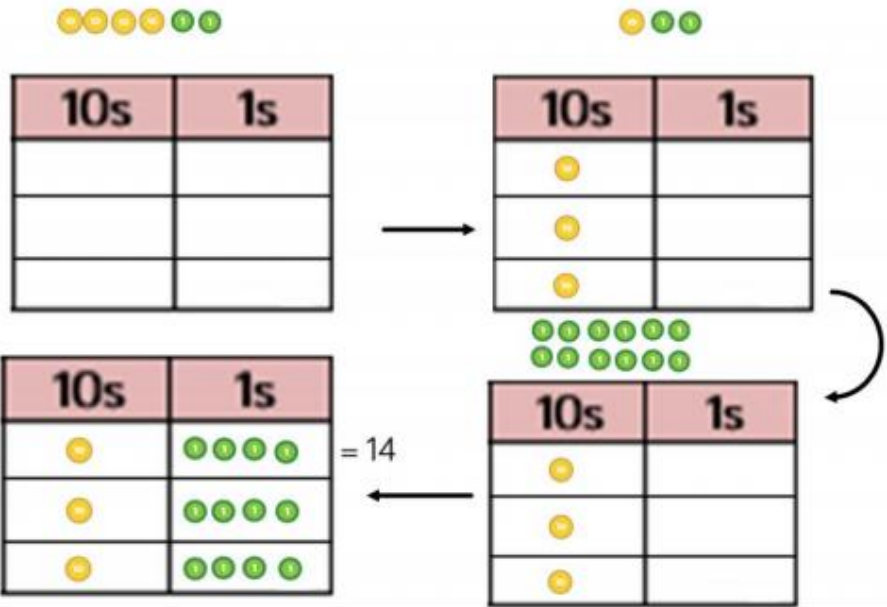


48 ÷ 2 on a place value chart.

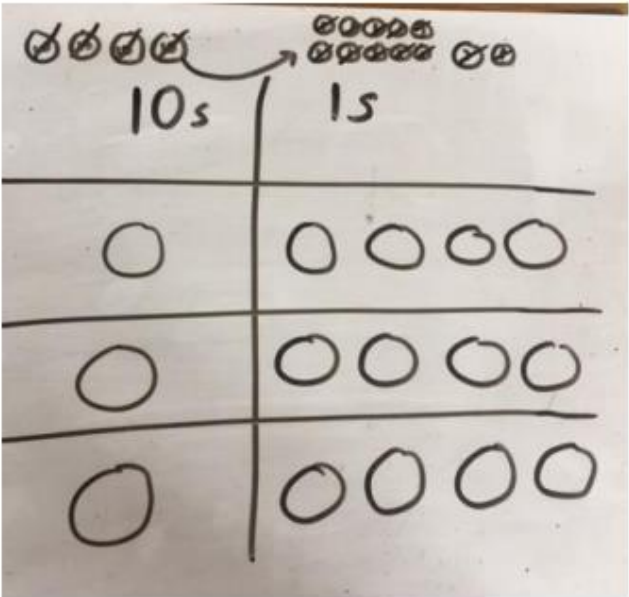
Tens	Ones
<div>1010</div>	<div>1111</div>
<div>1010</div>	<div>1111</div>



Sharing using place value counters.
42 ÷ 3 = 14



Children to represent the place value counter pictorially.



Times tables and division !

Practise times tables and division every day!

The more you practise, the better. Sing it, shout it, whisper it, dance it. Do it in order and out of order.

Your child can practise their times tables and division facts on Times Tables Rockstars with their school login or use Topmarks Daily 10.

The order to help you learn your times tables:

2 x (doubles)

5 x (ends in 0 or 5, link to learning the time)

10 x (end in 0)

3 x (2 x plus one more group)

4 x (Double and double again)

8 x (Double, double and double again!)

11 x (double to digit up to 9 x)

9 x (10 x take away one group)

6 x (5 x plus one group)

7 x (6 x plus one group)

12 x (11 x plus one group)



Play number games

Play games like snakes and ladders, bingo, top trumps, snap, jigsaw puzzles, anything that might involve logic and counting. Sneak some counting games into their Christmas stocking!

Other Good Games to Play

- Uno - good game for recognising and matching numbers
- Shut The Box - quick mental recall
- Rumicon
- Snakes and Ladders - counting numbers up to 100
- Scrabble - adding, multiplying (doubling, trebling) and good for vocabulary development and spelling.
- Monopoly - good for handling money, paying using notes, giving change.
- Yahtzee - a good game for adding, multiplying and probability.

Maths Games

https://www.nationalnumeracy.org.uk/sites/default/files/2021-01/resources_for_year_3_ages_7-8.pdf

<https://thirdspacelearning.com/blog/maths-games-ks2/>

<https://www.topmarks.co.uk/maths-games/daily10>

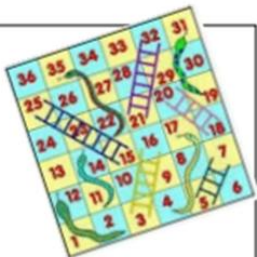


Number work at home

Playing cards are great to use. You could play pontoon up to 21 to support their number bonds.

Board games are a great way to recall number facts and mental addition and subtraction.

Computer games, often have scores to try to reach amount of 'coins' collected. Get the children to try to double, halve, increase their scores by 100 etc.



Real Life Problems

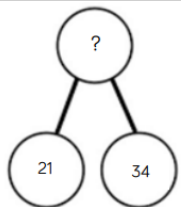
Up until this point, your 7-year-old will be used to using one operation (adding, subtracting, dividing and multiplying) at a time.

Challenge them by mixing it up!

- Go shopping with your child to buy two or three items. Ask them to work out the total amount spent and how much change you will get.
- Buy some items with a percentage extra free. Help your child to calculate how much of the product is free.
- Plan an outing during the holidays. Ask your child to think about what time you will need to set off and how much money you will need to take.
 - Use a TV guide. Ask your child to work out the length of their favourite programmes. Can they calculate how long they spend watching TV each day/each week?
 - Use a bus or train timetable. Ask your child to work out how long a journey between two places should take? Go on the journey. Do you arrive earlier or later than expected? How much earlier/later?
- Help your child to scale a recipe up or down to feed the right amount of people.



Conceptual variation; different ways to ask children to solve $21 + 34$



Word problems:

In year 3, there are 21 children and in year 4, there are 34 children. How many children in total?

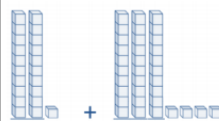
$21 + 34 = 55$. Prove it

$$\begin{array}{r} 21 \\ +34 \\ \hline \end{array}$$

$$21 + 34 =$$

$$\boxed{} = 21 + 34$$

Calculate the sum of twenty-one and thirty-four.



Missing digit problems:

10s	1s
	?
?	5

Conceptual variation; different ways to ask children to solve $391 - 186$



391
186 ?

Raj spent £391, Timmy spent £186. How much more did Raj spend?

Calculate the difference between 391 and 186.

$$\boxed{} = 391 - 186$$

$$\begin{array}{r} 391 \\ -186 \\ \hline \end{array}$$

What is 186 less than 391?

Missing digit calculations

$$\begin{array}{r} 39\boxed{} \\ -\boxed{}\boxed{}6 \\ \hline \boxed{}05 \end{array}$$

Conceptual variation; different ways to ask children to solve 6×23

23	23	23	23	23	23
?					

Mai had to swim 23 lengths, 6 times a week. How many lengths did she swim in one week?

With the counters, prove that $6 \times 23 = 138$

Find the product of 6 and 23

$$6 \times 23 =$$

$$\boxed{} = 6 \times 23$$

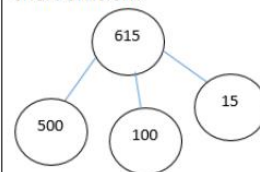
$$\begin{array}{r} 6 \quad 23 \\ \times 23 \\ \hline \end{array}$$

What is the calculation?
What is the product?

100s	10s	1s

Conceptual variation; different ways to ask children to solve $615 \div 5$

Using the part whole model below, how can you divide 615 by 5 without using short division?



I have £615 and share it equally between 5 bank accounts. How much will be in each account?

615 pupils need to be put into 5 groups. How many will be in each group?

$$5 \overline{)615}$$

$$615 \div 5 =$$

$$\boxed{} = 615 \div 5$$

What is the calculation?
What is the answer?

100s	10s	1s

SHAPES AND MEASURES

- Play 'guess my shape'. You think of a shape. Your child asks questions to try to identify it but you can only answer 'yes' or 'no' (e.g. Does it have more than 4 corners? Does it have any curved sides?)
 - Hunt for right angles around your home. Can your child spot an angles bigger or smaller than a right angle?
 - Look for symmetrical objects. Help your child to draw or paint symmetrical pictures / patterns?
- Practise measuring the lengths or heights of objects (in metres or cm). Help your child to use different rulers and tape measures correctly. Encourage them to estimate before measuring.
- Let your child help with cooking at home. Help them to measure ingredients accurately using weighing scales or measuring jugs. Talk about what each division on the scale stands for.
 - Choose some food items out of the cupboard. Try to put the objects in order of weight, by feel alone. Check by looking at the amounts on the packets.
- Practise telling the time with your child. Use both digital and ▫ analogue clocks. Ask your child to be a 'timekeeper' (e.g. tell me when it is half past four because then we are going swimming).
- Use a stop clock to time how long it takes to do everyday tasks (e.g. how long does it take to get dressed?). Encourage your child to estimate first.



Money

Receiving (and spending!) pocket money can make children very keen learners in this area! Use any shopping trips to encourage your child to be able to:

- *Recognise all the coins*
- *Total and write amounts that are over £1*
- *Work out change that should be given.*



Shopping maths

After you have been shopping, choose 6 different items each costing less than £1. Make a price label for each one, e.g. 39p, 78p. Shuffle the labels. Then ask your child to do one or more of these.

- ◆ Place the labels in order, starting with the lowest.
- ◆ Say which price is an odd number and which is an even number.
- ◆ Add 9p to each price in their head.
- ◆ Take 20p from each price in their head.
- ◆ Say which coins to use to pay exactly for each item.
- ◆ Choose any two of the items, and find their total cost.
- ◆ Work out the change from £1 for each item.



How you can support at home



Measuring

- **Cooking**- weighing and following instructions
- **Measure yourself** - make a height strip. Keep a graph to show your growth! How much have you grown?
- **Measure stuff** - use a tape measure
- **Telling the time**- how long until...? Analogue /digital time, Days of the week, dates, keep a calendar/



How you can do Maths at Home



Number games

- Board games
- Snakes and ladders
- Dominoes
- Playing card games eg snap, doubles
- Dice games eg exchange game
- Have fun playing with a calculator and try out those signs!



Picnic or Party maths:

- Preparing food for a group of people is a real problem solving opportunity; how many cups can we fill with one jug, how many pieces of pizza can we cut from each one? A great opportunity to use terms like 'half' 'quarter' 'double' and put those tables into practice.



Shopping games:

- Set up a mini supermarket in the kitchen and give the children some real money to go shopping with.
- Change can be the trickiest concept and needs to be taught in 'real' shopping activities which can be done really well at home.

Shapes everywhere

- **Shopping Shape Sort**; let your child loose on the packages and sort them into cuboids, cylinders, cubes
- **2-D shape pictures and patterns**
- Which shapes can you draw? you will need a ruler for some of them!



Props around the house

Ideas taken from **Maths for Mums and Dads** Eastaway, R. and Askew, M. (2010)

- **A prominent clock**- digital and analogue is even better. Place it somewhere where you can talk about the time each day.
- **A traditional wall calendar**-Calendars help with counting days, spotting number patterns and
- **Board games that involve dice or spinners**-helps with counting and the idea of chance
- **A pack of playing cards**- Card games can be adapted in many ways to learn about number bonds, chance, adding and subtracting
- **A calculator**- A basic calculator will help with maths homework when required, there are also many calculator games you can play, too.
- **Measuring Jug**-Your child will use them in school, but seeing them used in real life is invaluable. Also useful for discussing converting from metric to imperial
- **Dried beans, Macaroni or Smarties**- for counting and estimating
- **A tape measure and a ruler**- Let your child help when measuring up for furniture, curtains etc
- **A large bar of chocolate** (one divided into chunks)- a great motivator for fractions work
- **Fridge magnets with numbers on**- can be used for a little practice of written methods
- **Indoor/outdoor Thermometer**- especially useful in winter for teaching negative numbers when the temperature drops below freezing
- **Unusual dice**- not all dice have faces 1-6, hexagonal dice, coloured dice, dice from board games all make talking about chance a little more interesting
- **A dartboard with velcro darts**- Helps with doubling, trebling, adding and subtracting.