

# Helping your child with Maths at home YEAR 4



#### <u>Addition</u>

#### Recording Maths in Year 4

| Voor 4            | Add numbers with up to four digits using efficient   | Children will be taught  | Dienes base 10 equipment   |  |
|-------------------|--|--|--|--|
| rear 4            | written methods of column addition   | written methods for those  | Place value chart  |  |
| Year 4<br>onwards | Add numbers with up to four digits using efficient<br>written methods of column addition<br>Solve simple measure and money problems<br>involving decimals to two decimal places,<br>e.g.<br>158.3 + 15.8<br>John drove 158.3 miles on the Saturday and 15.8<br>miles on the Sunday. How far did he travel over the<br>weekend? | Children will be taught<br>written methods for those<br>calculations they cannot<br>do 'in their heads'.<br>Expanded methods build<br>on mental methods and<br>make the value of the<br>digits clear to children.<br>Start with the units each<br>time.<br>The language used is very<br>important (7+5, 40 + 20<br>then 60 + 12 – add this<br>mentally not in columns,<br>starting with the most<br>significant numberi.e.<br>60+10(70) +2 = 72<br>- When children are<br>confident using the above<br>expanded method this can<br>be 'squashed' into the<br>traditional compact | Dienes base 10 equipment<br>Place value chart<br>Place value disks |  |
|                   |  | method where numbers<br>may be 'carried' below the   |  |  |
|                   |  | line.  |  |  |
|                   |  | Always start by adding the   |  |  |
|                   |  | units first.   |  |  |

#### **Subtraction**

| Year 3 and<br>4 onwards | Subtracting up to 2 four-digit numbers<br><i>Method: Compact written method</i> (to be<br>introduced when the expanded method is<br>secure)<br>754-286=<br>There are 754 children in the school. If 286<br>children go on a school trip, how many will be  | The expanded and<br>compact methods can<br>be taught alongside<br>each other once the first<br>is secure. But teachers<br>must ensure that the<br>examples are carefully  | Equipment should still be used<br>alongside to develop conceptual<br>understanding as needed, e.g.<br>Dienes and Place Value disks to<br>demonstrate exchanging: |
|-------------------------|--|---|--|
|                         | left in school?<br>Children do 4-6 and find they do not have<br>enough units to complete the sum so they have<br>to exchange a ten. This means they now have<br>14 in the units column and only 4 in the tens<br>column.<br>Solve simple measure and money problems<br>involving decimals to two decimal places,<br>starting with 1 place examples, e.g. | chosen – e.g. do not<br>expect children to<br>undertake complicated<br>exchanging in a compact<br>method when they have<br>not encountered this as<br>an expanded method. | Decimal place value discs.   |
|                         | As above, moving onto examples involving 2<br>place decimals, e.g.<br>£53.94 - £21.78=   | When subtracting<br>decimals, children need<br>to understand that<br>decimal points line up<br>underneath each other.   |  |

#### Subtraction continued

Children will subtract numbers with up to 4-digits using the formal written method of column subtraction with decomposition

3271-1691 = 23271 -1691 1580

Lucy has £53.34 pence in her bank. She spends £21.78. How much money does she have left?

The children should be able to choose the most efficient method between a number line or vertical compact method depending on the numbers. Children should be encouraged to consider if a mental calculation would be appropriate before using written methods.



#### **Multiplication**

|  | Bar Modelling:  |   |  |  |  |  |
|--|---|---|--|--|--|--|
| 4  | 4 4   | 4   |  |  |  |  |
| 400<br>0 show the ef<br>1000 etc.<br>U<br>3<br>1<br>riangles, e.g. | 4 4<br>400 400<br>the effect of multic.<br>• tenth<br>• 3<br>• 3<br>• e.g.<br>• 500 | 4<br>400<br>tiplying and  |  |  |  |  |
|  | 0<br>to show t<br>1000 et<br>3<br>1<br>triangles,                                   | 3     400     400       co show the effect of multiplication of the effect of the effect of multiplication of the effect of multiplication of the effect of multiplication of the effect of t |  |  |  |  |

#### **Multiplication continued**

calculations mentally. 125 Multiply two digit and three digit numbers by a one digit number using the grid method, set At this stage, the grid out either horizontally or vertically. Ensure that method is still emphasised as it 6 links so well with 600 mental methods of 125 X 6 = multiplication. 120 20 Ensure that children have plenty of 5 30 opportunities to practise multiplying children have chance to see the vertical layout and dividing by to ease adding. 10,100 and 1000, as Solve problems using measures and money, noted above. Make e.g. sure they see how Dad bought three tins of paint at £5.68 each. this links with the How much did he spend? grid method. Children learn here to turn pounds to pence to When moving to the enable an easier calculation (£5.68 becomes short method of 568p) multiplication, When children are secure with the grid ensure that children method, introduce the short method of know that it is just a multiplication alongside this: different way of recording, and a similar process is in

place to when they

## 125 125 125 125 125

Bar modelling alongside written method to enable children to visualise the calculation or problem:

Use place value disks alongside the short multiplication method to develop children's understanding of carrying, e.g. illustrate how the 24 units can be exchanged for 2 tens and 4 units.

This also helps develop conceptual understanding. 120 can be shown like this initially to emphasise that the calculation requires six sets of 20, or 20 six times:

#### **Multiplication continued**



#### **Division**

| Year 4 | Recall multiplication and division facts for | Show children the         |  |
|--------|--|---------------------------|--|
|        | multiplication tables up to 12X12            | effect of multiplying     |  |
|        | Multiply mentally using efficient methods,   | and dividing by           |  |
|        | extending to using three digit numbers,      | 10,100 and 100,           |  |
|        | e.g.   | ensuring they can         |  |
|        | Use related facts, e.g.                      | recognise how the         |  |
|        | 3 X 2= 6 so 300 X 2 = 600                    | digits slide in a place   |  |
|        | Use the inverse, e.g.                        | value table.              |  |
|        | 3 X 2 = 6 so 600 ÷ 300 = 2                   | Talk to the children      |  |
|        |  | about the inverse         |  |
|        |  | and how they can          |  |
|        |  | use this. Ensure that     |  |
|        |  | they understand           |  |
|        |  | ,<br>that division is not |  |
|        |  | commutative, unlike       |  |
|        |  | multiplication.           |  |
|        |  | Dienes equipment          |  |
|        | Continue methods started in v3 (see above).  | must be used to           |  |
|        | Begin to work towards the short method for   | develop conceptual        |  |
|        | division.                                    | understanding             |  |
|        |  | alongside method          |  |
|        |  | fluency.                  | Dienes equipment (as shown alongside the method.)  |
|        |  | Practical activities      | Place value disks and place value mats can also be |
|        |  | should show               | useful.  |
|        |  | division as both          |  |
|        |  | grouping and              |  |
|        |  | sharing                   |  |
|        |  | Good recall of            |  |
|        |  | multiplication facts      |  |
|        |  | multiplication facts,     |  |

#### **Division continued**

Good recall of multiplication facts, Division by partitioning - mental and mental 84 840 partitioning of 70 + 14 700 + 140 numbers is needed + 7 +7 to support the 100 + 20 = 120 10 + 2 = 12 written method (see the array stage Short division ('bus stop' method) e.g. shown above). 69÷4 Although at this 469 stage, grouping is emphasised over sharing to enable children to develop efficient methods, they need to understand the concept of both Children will use practical resources to support solving division number 395 - 3 = sentences with remainders (HTU ÷ U) 131r2 3395



#### Year 4 Multiplication and Division

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| ×  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  |
|----|----|----|----|----|----|----|----|----|----|-----|
| 1  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  |
| 2  | 2  | 4  | 6  | 8  | 10 | 12 | 14 | 16 | 18 | 20  |
| 3  | 3  | 6  | 9  | 12 | 15 | 18 | 21 | 24 | 27 | 30  |
| 4  | 4  | 8  | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40  |
| 5  | 5  | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50  |
| 6  | 6  | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60  |
| 7  | 7  | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70  |
| 8  | 8  | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80  |
| 9  | 9  | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90  |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

**Multiplication Strategies** 

**Expanded Column Method** 

42

| Line up the ones and the tens. | × | 6   |                 |
|--------------------------------|---|-----|-----------------|
| Multiply the ones.             |   | 12  | (2 × 6)         |
| Multiply tens.                 |   | 240 | $(40 \times 6)$ |
| Add the totals together.       |   | 252 |                 |

42 × 6 = 252

#### **Multiplication Magic**

60 x 4

Draw the wizard's hat to find the facts to calculate

 $6 \times 4 = 24$ 

Multiply the answer by 10/100/1000

60×4

Write your final answer

 $60 \times 4 = 240$ 

#### Multiplication

multiply times groups of lots of repeated addition product multiplied by

#### Division group

grouping sharing half halves share equally equal groups

# How you can help your child with Maths in Year 4





#### Times tables!

**Practise times tables every day with your 8-year-old** The more you practise, the better. Sing it, shout it, whisper it, dance it. Whatever it takes

Helping your child to learn multiplication facts and regularly going over them will benefit them enormously. They should learn to recite them in order as well as 'quickfire' answers when they are jumbled up (eg. "What are seven eights? How many nines make 81?") This can be done on a car journey or whenever you have a spare 5 minutes.

By the end of Year 4, it is expected that the children will know their 2, 5, 10, 3, 4, 6, 7, 8, 9, 11 and 12 times tables.



#### <u>Play number games</u>

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
- Dominoes supports counting and associating patterns with numbers
- 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.



#### 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.





#### Practising measures at home!

- Choose a room at home and standing in one spot can you identify 20 right angles.
- Cooking Discuss how you might work out the cost of a week's food for the family. Encourage your child to estimate the shopping bill by keeping a running total while you shop.
- Help with the cooking use scales to help weigh out ingredients What happens if you need double the amount of cakes? Can you convert between grams and Kilograms?
- Try to find examples of numbers that contain fractions or decimals in a daily newspaper, a magazine or on food containers.
- Work out how much time, on average, different people spend doing different things at home, for example, eating, tidying up, cooking, playing, watching television, using a computer, sleeping.





#### 1. Measure everything

There are lots of opportunities to practise measuring at home. Try to measure practically wherever possible. Discuss and identify standard units (like cm, m, kg, g, l, ml) on food packaging, toiletries, or clothes labels.

You could also try using non-standard measures. For example, how many paces long is the kitchen? How many paperclips wide is the book?

#### 2. Bake together

Help your child to measure ingredients when you are cooking. Identify the <u>capacity</u>/volume or mass/weight of ingredients, either using scales or less formal methods such as cups. Another great idea is to look at recipes in both metric and imperial units. Older children may be able to convert between them.

#### 3. Check the time

Look for analogue clocks and digital clocks when out and about. Practise reading times and converting them to 12- or 24-hour times. You could also use timetables to solve problems – for example, finding when the next bus will arrive or how long a train journey will take.



#### Real life problems

- 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.
- Work together to plan a party or meal on a budget.



### **Problem solving & Arithmetic**



Word problems: Jhere are 10 people on a bus. 4 people get on and 3 people get off. How many people are left on the bus?

Finding patterns: How many squares would be shaped in the 6<sup>th</sup> shape in this sequence? How do you know?



Mental arithmetic is an important life skill and regular practice is critical. Without fluency in mental maths to underpin their work in number, children will struggle with many other areas of mathematics. Children who are fluent with number will be able to use their mental arithmetic skills to find efficient strategies for completing calculations, recalling and applying number knowledge rapidly and accurately.

I have read 134 of the 512 pages pf my book. How many more pages must I read to reach the middle?

There are 8 shelves of books. 6 of the shelves hold 25 books each. 2 of the shelves have 35 books each. How many books altogether are on the shelves?

I think of a number, subtract 17 and divide by 6. The answer is 20. What was my number?



## 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.