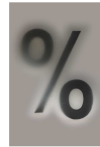
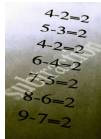




Hampton Hill Junior School

Numeracy Booklet for Parents and Carers



Our aim at HHJS is for all children to feel able and confident in Numeracy, to take enjoyment from the subject and to have the skills necessary for everyday life. We introduce a number of different calculation methods to the children throughout their time at school so that they can identify those approaches which enable them to complete calculations accurately and with increasing speed.

With this in mind, we have produced a booklet to provide an understanding of how we teach Numeracy at HHJS, the methods we use to teach number, as well as offering a range of ideas for you to use at home to support your child.





Mathematical Language

+

add addition
plus the total
altogether
more than combine
the sum of
greater than
increase and make more

-

take away minus
subtract decrease
less than
fewer than
reduce
subtraction
the difference leave

×

times multiplication
multiply
sets of/groups of
the product of
lots of
multiplied by

÷

divided by
put into groups of
share
put into lots of
put into sets of
sharing between

Addition

Mental skills for addition:

- Recall all addition pairs to 9 +9
- Add mentally a series of one digit numbers
- Add multiples of 10
- Recall doubling and halving facts
- Partition numbers up to 1000 into 1000s, 100s, 10s and 1s.
- Recall numbers bonds to 10/ 20/ 100
- Use the inverse (subtraction) to check answers

Informal Methods using Partitioning

Grouping numbers enables children to collect in sets of 1s, 10s, 100s etc...

$$47 + 76 =$$

$$40 + 70 = 110$$

$$7 + 6 = 13$$

$$110 + 13 = 123$$

Informal Methods using the Empty Number Line

The empty number line can be used by children to record and/or visualise a number line in 10 head. Using their knowledge of number bonds to 10 they can count on from different starting points in different jumps sizes of 1s, 10s, 100s etc...

$$47 + 7 = 54$$

	+3	+4
47	50	

Recorded Method using Partitioned Column Headings -

This is where the children set out the addition question in columns and add up using the partitioning method above.

$$426 + 32 =$$

+	4	2	6	
	3	2		
	8			
	5	0		
	4	0	0	
	4	5	8	

Groups of 1s, 10s and 100s area added in turn
6 + 2 = 8
20 + 30 = 50
400
and finally totalled
400 + 50 + 8 = 458

Recorded Method using Continuous Column Addition -

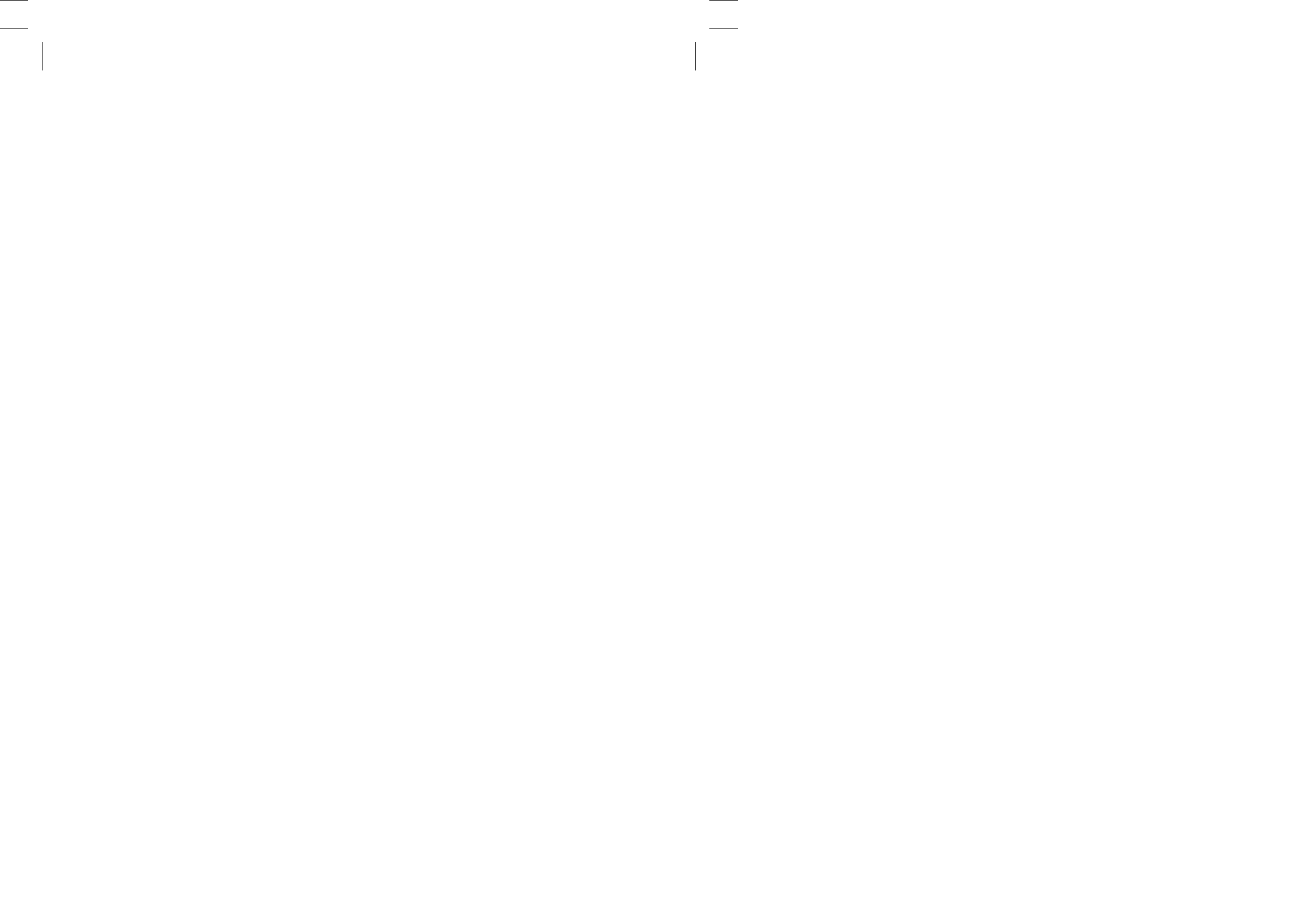
This method can be used for adding large and even decimal numbers. Digits with 'bridge' column headings are recorded below the line, using the words that describe the actual value being carried eg 'ten'/'a hundred' rather than 'one'

$$24 + 14 = \qquad 366 + 458 =$$

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+	2	4																							
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$$3.45 + 1.76 =$$

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+	3	.	4	5																					
	1	.	7	6																					
	5	.	2	1																					
	1	.	1	1																					



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47	50	54	

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$$24 + 14 =$$

+	2	4
	1	4
	38	

$$3.45 + 1.76 =$$

+	3	.	4	5
	1	.	7	6
	5.21			
	1		1	

$$366 + 458 =$$

+	3	6	6
	4	5	8
	824		
	1	1	

It is important the decimal places line up and numbers are put in the correct columns.



Subtraction

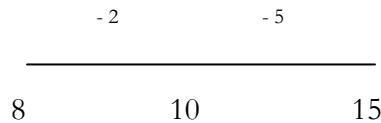
Mental skills for subtraction:

- Recall all addition / subtraction facts to 20
- Subtract multiples of 10
- Partition two and three digit numbers into hundreds, tens and ones
- Count back in ones and tens

Using the Empty Number Line

Counting back 7 steps from 15 in small jumps using a multiple of ten.

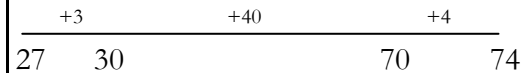
$$15 - 7 = 8$$



Using the counting up/on method

The mental method of counting up from the smaller to larger number can be recorded using a number line.

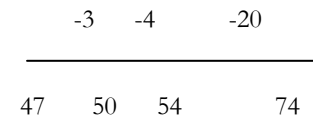
$$74 - 27 = 47$$



Partitioning

This requires the children to subtract a single digit number or a multiple of 10 from a two digit number mentally. It can be recorded on a number line, but is used mainly as a mental method.

$$74 - 27 =$$



$$74 - 20 = 54$$

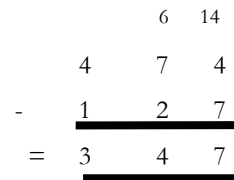
$$54 - 7 = 47$$

Column Subtraction

In this method we can take from the number 'next door' if we cannot complete the sum.

$$474 - 127 =$$

Don't forget to start with the units!



This method can be used for subtracting with decimals

Multiplication

Mental skills for multiplication:

- Recall all multiplication facts to 10×10
- Multiply by 10, 100 and 1000

Mental multiplication using partitioning.

This method allows tens and ones to be multiplied separately and then added together to find the total.

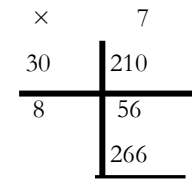
$$14 \times 3 =$$

Split 14 into 10 and 4, then multiply both numbers by 3 and finally add them up.

The grid method.

This is a similar method to partitioning but uses a more formal recording using a grid.

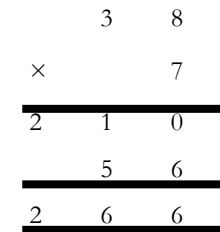
$$38 \times 7 =$$



$30 \times 7 = 210$
 $8 \times 7 = 56$
 $210 + 56 = 266$

Column Method The next step is to represent the method of recording in a column format. This is an alternative method to the grid.

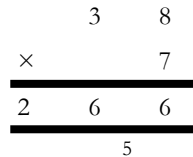
$$38 \times 7 =$$



$30 \times 7 = 210$
 $8 \times 7 = 56$
 $210 + 56 = 266$

Compact Column Method - The recording is reduced further, with carry digits recorded below the line.

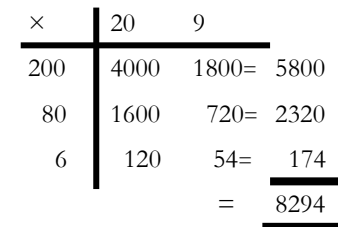
$$38 \times 7 =$$



This method is helpful for sums involving decimals.

Once all of the above methods have been taught the children can choose the method they are most confident with. Children often find the grid method most structured when solving larger multiplication problems.

$$29 \times 286 =$$



Multiply all the numbers together within the grid, next add them up horizontally, finally add the numbers in the end column vertically to find the total.



Multiplication

Mental skills for multiplication:

- Recall all multiplication facts to 10×10
- Multiply by 10, 100 and 1000

Mental multiplication using partitioning.

This method allows tens and ones to be multiplied separately and then added together to find the total.

$$14 \times 3 =$$

$10 \times 3 = 30$
 $4 \times 3 = 12$
 $30 + 12 = 42$

Split 14 into 10 and 4, then multiply both numbers by 3 and finally add them up.

The grid method.

This is a similar method to partitioning, but uses a more formal recording using a grid.

$$38 \times 7 =$$

×	7	
30	210	
8	56	
	266	

$30 \times 7 = 210$
 $8 \times 7 = 56$
 $210 + 56 = 266$

Column Method The next step is to represent the method of recording in a column format. This is an alternative method to the grid.

$$38 \times 7 =$$

	3	8	
	×	7	
	2	1	0
	5	6	
	2	6	6

$30 \times 7 = 210$
 $8 \times 7 = 56$
 $210 + 56 = 266$

Compact Column Method - The recording is reduced further, with carry digits recorded below the line.

$$38 \times 7 =$$

	3	8	
	×	7	
	2	6	6
	5	6	5

This method is helpful for sums involving decimals.

Once all of the above methods have been taught the children can choose the method they are most confident with. Children often find the grid method more structured when solving larger multiplication problems.

$$29 \times 286 =$$

	×	20	9	
		200	4000	1800 = 5800
		80	1600	720 = 2320
		6	120	54 = 174
		=	8294	

Multiply all the numbers together within the grid, next add them up horizontally, finally add the numbers in the end column vertically to find the total.



Division

Mental skills for division:

- Recognise the size and position of numbers
- Recall multiplication and division facts to 10×10
- Divide by 10, 100 and 1000

Mental Division

Using their knowledge of multiplication facts to solve division questions.

$$45 \div 5 = 9 \quad 5 \times 9 = 45$$

$$45 \div 9 = 5 \quad 9 \times 5 = 45$$

The children work out how many fives there are in 45 using their knowledge of the fives times tables.

Mental Division Using Partition

Using your knowledge of the times table. Split the number to make the division question more manageable. E.g.

$$84 \div 7 =$$

$$\begin{array}{r} 70 \\ + 14 \\ \hline 84 \end{array} \div 7 = 12$$

We know that:
 $70 \div 7 = 10$, then divide the number left over.
 $14 \div 7 = 2$. Finally add them up.

Short division of TU \div U and HTU \div U

The compact method for division:

$$291 \div 3 =$$

$$\begin{array}{r} 97 \\ 3 \overline{) 291} \end{array}$$

“3 into 2 doesn't go. 3 into 29 is 9 with a remainder of 2. Carry the 2 over to make 21. Then 3 into 21 is 7. Answer 97”

HTU \div TU Often referred to as ‘chunking’, where the children subtract multiples of the divisor e.g. $458 \div 26 =$

Start by multiplying 26 by multiples of 10 to get an estimate. As $24 \times 10 = 240$ and $24 \times 20 = 480$, we know the answer lies between 10 and 20.

We start by subtracting 260 ($\times 10$) from 458. We are then left with 198. We then take 130 ($\times 5$) and are left with 68. $26 \times 2 = 52$, which leaves a remainder of 16. Therefore the answer is 17 r 16

$$\begin{array}{r} 1 \quad 7 \quad r \quad 16 \\ \hline 26) 4 \quad 5 \quad 8 \\ - 2 \quad 6 \quad 0 \quad (26 \quad 10) \\ \hline 1 \quad 9 \quad 8 \\ - 1 \quad 3 \quad 0 \quad (26 \quad 5) \\ \hline 6 \quad 8 \\ - 5 \quad 2 \quad (26 \quad 2) \\ \hline 1 \quad 6 \quad 17 \end{array}$$

Activities at Home

Pocket Money Work out weekly pocket money in relation to saving for a particular item in relation to change given etc.

Supermarket Looking at packaging while shopping in relation to 3D shapes (e.g. prism and nets of shapes (opening out packaging to see how they are made up).
 Half price deals/ estimating the price of several items/whole bill/weighing out fruit and vegetables.

Catalogues 10% - how much?
 15 %VAT—How much?
 Give the children a budget to spend (e.g. Christmas presents for the family or group of friends).

Bills and Invoices Explain about household bills and discuss how they are laid out and calculated, ask the children to check them as well as discussing methods of payment (cash, cheque, direct debit etc.)

Time Telling the time to five minutes, analogue, digital and the 24 hour clock. Days of the week, months of the year, days in a month, year etc
 If I need to be at...What time will I have to leave?
 Look at travel timetables and work out timings for routes.

I leave the house at ...it takes me 10 minutes to walk to the station, I walk 10 minutes for the train etc, what time do I arrive at my destination? (Analogue and digital answers)

Estimation How long is the room? How much liquid is in a bottle?

Cooking-weights and measures Let your child help with the 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.

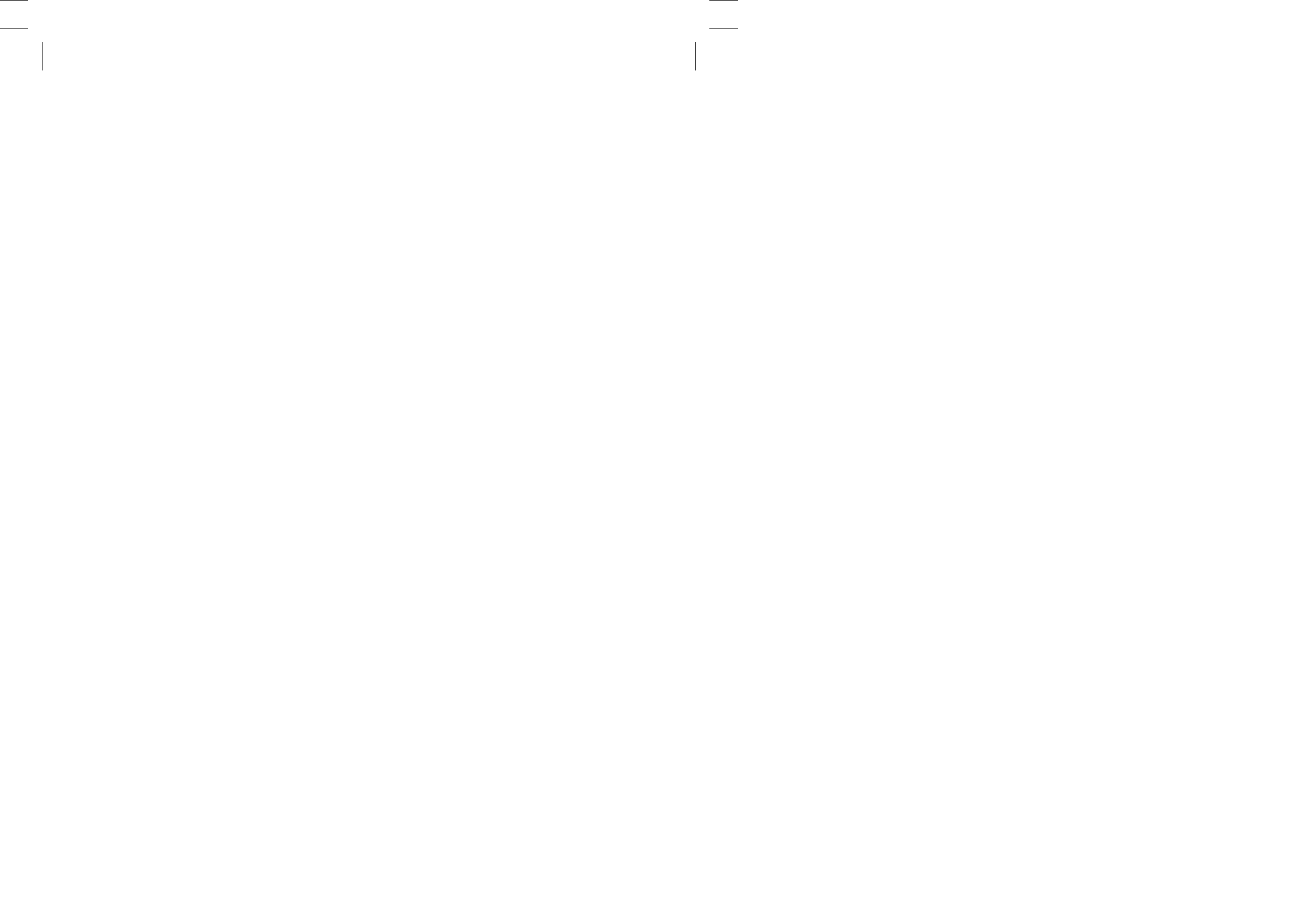
Food Fractions—sharing out portions of things.

Measuring Practice measuring the lengths or heights of objects (cm or metres). Help your child to use different rulers and tape measures correctly. Encourage them to estimate before measuring.

Sport Football leagues/probability /estimation of how likely it is that England will win the rugby?

Games Counting games, card games, pairing up cards, rummy, 21's, Monopoly

Art How do different shapes fit together? Explore the garden/house—how many different shapes can you find, what are their names and properties?



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Pocket Money	Work out weekly pocket money in relation to saving for a particular item or in relation to change given etc.
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Number Games -

- Throw two dice. Ask your child to find the total of the numbers (+), the difference between them (-) or the product (\times). Can they do this in their heads?
- Use a set of playing cards. Turn over two cards and ask your child to add or multiply the numbers. If they answer correctly, they keep the cards. How many cards can they collect in two minutes?
- Play 'ping pong' to practise number bonds with your child. You say a number. They reply with how much more is needed to make 10, 20, 100, 1000.
- Name the number 'before' and the number 'after' a given number (What comes before 27?)
- Count on and back in 10s from any given number (13, 23, 33, 43, 53, 63, etc....)
- Know doubles and halves up to 20 e.g. half of 18
- Give a series of prices and ask children to order them
- Identifying which number is the largest / smallest within a selection
- Identifying which numbers come between 2 given numbers
- Select a target number e.g. 15. How many car numbers can you spot with 3 digits adding up to your target number, e.g. K456 XWL. So $4 + 5 + 6 = 15$, bingo!

Websites for Maths Games

- www.mymaths.co.uk (log in : hamptonh password: lower)
- www.bbc.co.uk/education
- www.woodlandjuniors.co.uk
- www.nrich.co.uk
- www.transum.org

