

Mental calculations that children should be able to recall quickly:



- Multiplication/division facts to 12×12 .
 - Use rounding and adjusting to $\pm 9/11$ or $19/21$.
 - Use knowledge of \times/\div facts to solve larger calculations and work with decimals, so when solving 40×70 , use $4 \times 7 = 28$ OR $63 \div 9 = 7$ helps to solve $630 \div 9 = 70$ OR $6 \times 5 = 30$ helps to solve $0.6 \times 5 = 3$
 - Use of number bond knowledge so that if:
 $700 + 300 = 1000$ then $7000 + 3000 = 10000$
- Use knowledge of doubles with larger calculations, eg double 35 is 70, so double 350 is 700.

Useful websites



www.bbc.co.uk/schools/bitesizeprimary
http://www.bbc.co.uk/schools/websites/4_11/site/numeracy.shtml
<http://nrich.maths.org>
<http://resources.oswego.org/games>
www.subtangent.com/maths/games.php
www.woodlands-junior.kent.sch.uk
www.coxhoe.durham.sch.uk
www.teachingtables.co.uk
<http://www.multiplication.com>
<http://www.coolmath4kids.com/>
<http://www.primarygames.com/math.htm>
[http://www.wmnet.org.uk/resources/gordon/Hit%20the%](http://www.wmnet.org.uk/resources/gordon/Hit%20the%20)

Carr Hill Community Primary School



Supporting Mathematics in Year 6



This booklet has been written to support parents and children in maths. It explains the different methods we use to solve +, -, x and ÷ calculations. It also includes some useful websites and activities to do at home.



Working Together for our Children
Carr Hill Community Primary School

Addition methods in Year 6



- Children use the formal extended method, using column addition to solve calculations, initially using smaller numbers: $925 + 848 = 1773$

e.g.

$$\begin{array}{r} 925 \\ + 848 \\ \hline 1773 \end{array}$$

add the units (5+8), carry the 1 ten
add the tens (20+40), including the carried ten
add the hundreds (900+800), carry the thousand

- They then use the formal extended method, using column addition to solve calculations with larger numbers:

- $3459 + 5846 = 9305$

e.g.

$$\begin{array}{r} 3459 \\ + 5846 \\ \hline 9305 \end{array}$$

add the units (9+6), carry the 1 ten
add the tens (50+40+10), including the carried ten
add all the hundreds (400+800+100) including the carried hundred
add all the thousands



Fun activities to do at home



Money

- Allow children to experience the use of real money
- Using different holiday brochures calculate how much it would cost for a holiday to different locations. Do different companies offer the same holiday? Which is cheaper? How much would it cost for families of different sizes?
- Use a catalogue like Argos and ask children to choose 5 items under £20. Calculate how much they cost and the change from £100.
- Give your child a budget for the week/month – encourage them to keep a record of spending.
- Plan and cost a party within a given budget. Essentials? How many people can you cater for?

Measures and shape



- Allow children to redesign their bedroom. Measure the room. Look at dimensions of furniture in a catalogue. What will fit? Calculate cost and draw a plan.
- Look at different recipes and calculate the quantities needed if you had twice as many people, half as many people, one more person, one less etc.
- Read maps. Work out distances using scale.
- Involve children with everyday situations that involve time e.g. reading bus timetables and journey times.

Fun activities to do at home

Games



- Play board games like Monopoly. Card games, darts and snooker are all good ways to help children get faster at mental maths.
- Play card games that require and practise mental maths.

Number



- Practise all times tables to 12×12
- Choose 5 items from a catalogue and use a calculator to work out how much they would cost if they were reduced by 10%, 20% etc.
- Play tables 'Millionaire'. Devise questions for each stage including tables backwards e.g. how many 8s in 56?
- Write fractions and decimals on different blank playing cards and match them.
- Make up word problems in different categories e.g. time, money.

Subtraction methods in Year 6



Now they use the extended method to solve $6972 - 4196$ by counting up from the smallest number until they reach the largest number.

Target	→	$6\ 9\ 7\ 2$	
number	→	$\underline{-\ 4\ 1\ 9\ 6}$	← total so far
		$4\ (4200)$	$4196 + 4$ to make 4200
		$8\ 0\ 0\ (5000)$	$4200 + 800$ to make 5000
		$1\ 0\ 0\ 0\ (6000)$	$5000 + 1000$ to make 6000
add them		$\underline{\quad\ 9\ 7\ 2\ (6972)}$	$6000 + 972$ to make 6972
altogether	→	$\underline{\underline{2\ 7\ 7\ 6}}$	

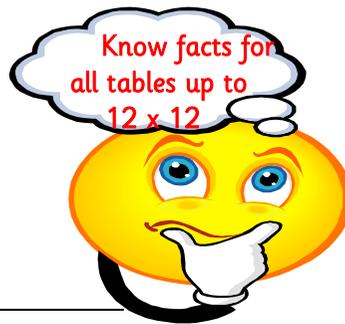
Start with 4196 and count on to 6972.

Then children move onto the formal method of subtraction involving decomposition to solve $6475 - 2586$.

Subtract the units - adjust from tens to change 5 to 15 and 7 tens to 6 tens.	→	$\begin{array}{r} 5\ 13\ 16\ 1 \\ \cancel{6}\ 4\ \cancel{7}\ 5 \\ -\ 2\ 5\ 8\ 6 \\ \hline 3\ 8\ 8\ 9 \end{array}$	← This becomes 15 - 6
Subtract tens. We can't do 60 - 80 so we adjust from hundreds. Now subtract 80 from 160.			

Subtract hundreds. We can't do 300 - 500 so we adjust from the thousands. $1300 - 500 = 800$. Complete the thousands column $5000 - 2000 = 3000$.

Multiplication in Year 6



• Children need to use their times tables knowledge to help solve multiplication and division problems, so this requires regular practise.

• They also use the expanded method to solve multiplication problems by partitioning numbers to make them easier to work with and then adding the totals together.

So that 138×74 :

138	
$\times 74$	
7000	(100×70)
$+ 400$	(100×4)
2100	(30×70)
120	(30×4)
560	(8×70)
32	(8×4)
$\hline 10212$	
$\substack{1 \\ 1}$	

Partitioning of 138
 $138 = 100 + 30 + 8$

Transfer and record the 0's in the sum as 1×7 is easier to solve than 100×70 .

Add them up, remembering to carry where necessary.

• Pupils are then expected to learn formal methods of Multiplication.

$$\begin{array}{r} 3578 \\ \times 7 \\ \hline 25046 \\ \hline \end{array}$$

Here we multiply 7 by 8 and carry the ten. The process is repeated for the tens, hundreds and thousands and add on the carried digit each time.

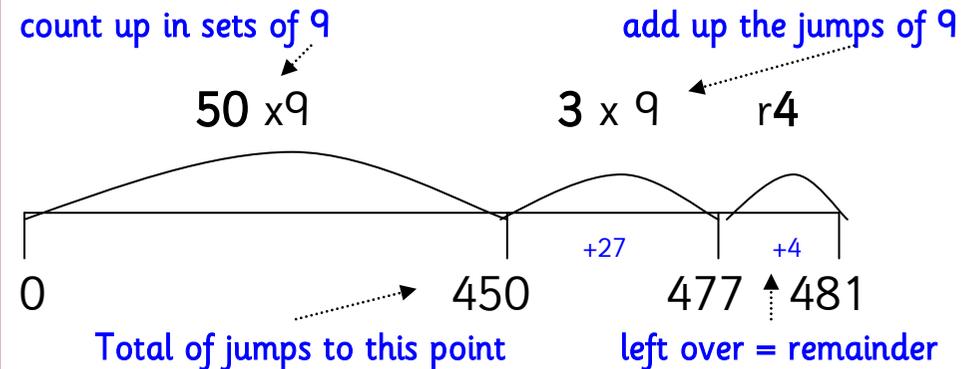
$$\begin{array}{r} 518 \\ \times 42 \\ \hline 1036 \\ \substack{1 \quad 1} \\ 20720 \\ \hline \substack{2 \quad 3} \\ 21756 \end{array}$$

- First we multiply 2 (in 42) by 8, then 1 and finally 5 so we have multiplied 2 by 518.
- In the next row we add a 0 as we are multiplying by 40 not 4
- Then we multiply 4 by 8, then 1 and finally 5.
- Then we add the two rows.

Division in Year 6



• Children use empty number lines and multiplication knowledge to solve division problems. So that $481 \div 9$ is solved using their knowledge of x facts.



$$\begin{aligned} \text{So, } 481 \div 9 &= 50 + 3 + r4 \\ &= 53 r4 \end{aligned}$$

• They then use the formal written method, dividing across the target number as follows:

$$481 \div 9 = 53 r 4$$

We could also say the answer as a fraction
 $= 53 \frac{4}{9}$

$$\begin{array}{r} 053 \\ 9 \overline{)481} \\ \underline{45} \quad (9 \times 5) \\ 31 \\ \underline{27} \quad (9 \times 3) \\ 4 \end{array}$$

We say, 'How many 9's in 4? - 0'
'How many 9's in 48? - 5' and then subtract the 45 from the 48.
We then bring down the 1 to make 31 and say, 'How many 9's in 31? - 3'
We then subtract the 27 from the 31 to leave 4 - a remainder of 4.