



# Years 3 and 4 Maths Workshop

**Friday 25<sup>th</sup> January, 2019**



# ADDITION

**The children are taught a range of mental strategies for addition throughout the year.**

## Year 4 Addition

### Mental Strategies

Develop confidence at calculating mentally with larger numbers. Using the full range of strategies:

- Bridging through 60 when calculating with time
- Bridging through multiples of 10

$$\begin{aligned}425 + 8 &= 425 + 5 + 3 \\ &= 430 + 3 \\ &= 433\end{aligned}$$

### Partitioning

$$\begin{aligned}167+55 &\text{ as } 167 + 50=217 \\ 215+5 &=222\end{aligned}$$

### Using known facts

#### Number Family

If I know:  
 $63+37=100$   
I also know:?

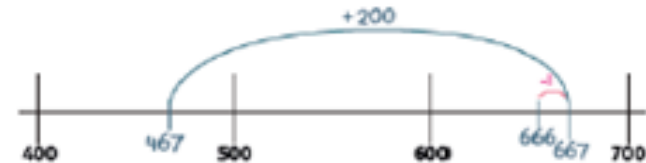
### Counting on in 1000s, 100s, 10s, 1s

$3375+2000$  as 3475, 4475, 5475

### Special Strategy

#### Rounding and adjusting

$$467 + 199$$



# ADDITION

**Children calculate addition using the formal written method.**

	2	7	8	
+	1	9	4	
	<hr/>	<hr/>	<hr/>	
	4	7	2	
	<hr/>	<hr/>	<hr/>	
	1	1		



# ADDITION

**Now it's your turn.**

**Do questions 1, 2 and 3 on your worksheet.**



# SUBTRACTION

**The children are taught a range of mental strategies for subtraction throughout the year.**

## Year 4 Subtraction

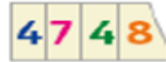
### Mental Strategies

Develop mental fluency with subtraction using a range of strategies. Children are encouraged to think about the best method for the numbers involved.

Use empty number lines, concrete equipment (Base 10, beadstrings, Numicon, hundred squares etc.) to build confidence and fluency in mental subtraction skills.

#### Using Place Value

$$4748 - 4000 = 748$$
$$4748 - 8 = 4700$$



#### Partitioning

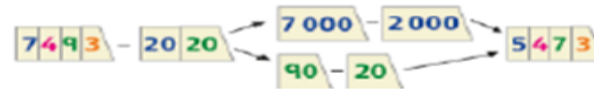
Use of practical to consolidate learning

E.g £5.87 - £3.04 as

£5 - £3 and 7p - 4p

7493 - 2020 as

7000 - 2000 and 90 - 20



#### Number Facts

Number bonds to 10 and 100 and derived facts e.g.  $100 - 76 = 24$  and

$$1 - 0.6 = 0.4$$



#### Bridging through 1, 10, 100, 1000

$$2004 - 9 =$$

$$2004 - 4 = 200$$

$$2000 - 5 = 1995$$

$$8.6 - 0.9 =$$

$$8.6 - 0.6 = 8$$

$$8 - 0.3 = 7.7$$

# SUBTRACTION

**Children calculate subtraction using the formal written method.**

$$\begin{array}{r} 2754 \\ - 1562 \\ \hline 1192 \end{array}$$

# SUBTRACTION

**What if there are zeros within the calculation?**

**This is an area the children find challenging.**

$$\begin{array}{r} 602 \\ - 371 \\ \hline \end{array}$$

$$\begin{array}{r} 705 \\ - 212 \\ \hline \end{array}$$

$$\begin{array}{r} 900 \\ - 882 \\ \hline \end{array}$$



# SUBTRACTION

Let's try some together.

$$\begin{array}{r} 892 \\ - 273 \\ \hline \end{array} \quad \begin{array}{r} 847 \\ - 657 \\ \hline \end{array}$$

$$\begin{array}{r} 705 \\ - 212 \\ \hline \end{array} \quad \begin{array}{r} 900 \\ - 882 \\ \hline \end{array}$$

# SUBTRACTION

**Now it's your turn.**

**Do questions 4, 5 and 6 on your worksheet.**

# MULTIPLICATION

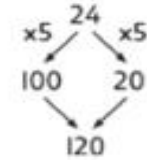
**The children are taught a range of mental strategies for multiplication throughout the year.**

## Year 4 Multiplication

### Mental strategies

#### Grouping

Use partitioning to multiply 2-digit numbers by 1-digit numbers e.g.  $24 \times 5$



Multiply multiples of 100 and 100 by 1-digit numbers using tables facts

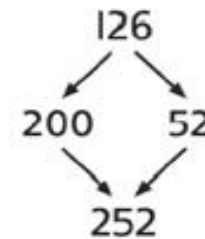
e.g.  $4 \times 8 = 32$  so make it 100 times bigger,

$$400 \times 8 = 3200$$

Th	H	T	U
		3	2
3	2	0	0

#### Doubling and halving

Find doubles to 100 and beyond using partitioning e.g. double 126



Begin to double amounts of money

e.g. £3.50 doubled

Is £7

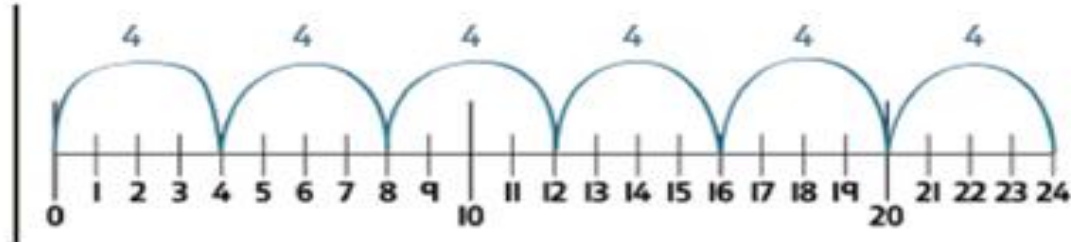


# MULTIPLICATION

The children are taught a range of mental strategies for multiplication throughout the year.

## Counting in steps (sequences)

Count in 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12, 25s, 50s, 100s and 1000s



## Written methods

Multiply 2 and 3 digits by a single digit number, using all multiplication tables up to 12x12

Developing the grid method, encouraging column addition to add accurately:

$$136 \times 5 = 680$$

X	100	30	6	500
5	500	150	30	150
				<u>+30</u>
				<u>680</u>

Move onto **short multiplication** (see Y5) if and when children are confident and accurate multiplying 2 and 3-digit numbers by a single digit this way, **and** are already confident in "carrying" for written addition.





# MULTIPLICATION

Let's try some together.

	4	5	
		2	x

	3	2	
		5	

	5	2	7
x			3
<hr/>			
<hr/>			



# MULTIPLICATION

**Now it's your turn.**

**Do questions 7, 8 and 9 on your worksheet.**

# DIVISION

## Written methods

**Divide up to 3-digit numbers by a single digit**

**Step 1: Grouping on a number line**

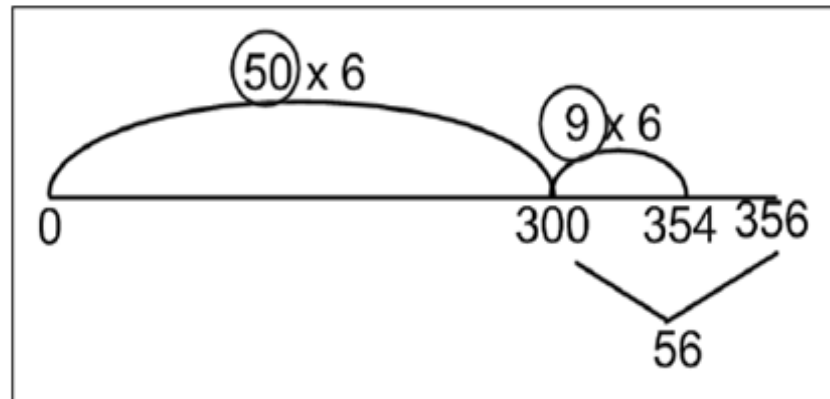
**Divide on a number line using multiple groups of the divisor.**

Model jotting down useful multiplication facts e.g.  $10 \times$ ,  $50 \times$ ,  $100 \times$

Children to make the first jump the largest possible using known facts e.g. 'I know there are five 6's in 30 so there are fifty 6's in 300.'

Then calculate what is left to make the final jump. e.g. how many 6s are in 56? I know there are nine 6's in 54 and then 2 left over.

Children to circle the 'lots of' and total.



# DIVISION

## Step 2: Long division (chunking)

When children are secure dividing using a number line, introduce long division (chunking). Children must be secure using multiplication facts and subtracting. Model the link between division on the number line and long division. Ensure children make the largest first 'chunk' possible by writing down a useful list. Then using known facts, 'look at 186, what 3x facts do I know about the first 2-digits 18,  $3 \times 6 = 18$ , I know 180 is 10 x bigger so  $3 \times 60 = 180$ .

$$186 \div 3 = 62$$

$$\begin{array}{r} 62 \\ 3 \overline{) 186} \\ \underline{-180} \\ 6 \\ \underline{-6} \\ 0 \end{array} = 3 \times (60) + 3 \times (2)$$

$$432 \div 7 = 61 \text{ r } 5$$

$$\begin{array}{r} 61 \text{ r } 5 \\ 7 \overline{) 432} \\ \underline{-420} \\ 12 \\ \underline{-7} \\ 5 \end{array} = 7 \times (60) + 7 \times (1) + 5$$

# DIVISION

Divide up to 4-digits by a single digit, including those with remainders

**Step 1: Introduce short division when children are secure with long division (chunking) dividing by a single digit . Start with carefully selected examples requiring no calculating of remainders at all.**

**Remind children of correct place value, that 96 is equal to 90 and 6, but in short division, pose:**

- How many 3's in 9? = 3, and record it above the **9 tens**.
- How many 3's in 6? = 2, and record it above the **6 units**.

$$\begin{array}{r} 32 \\ 3 \overline{)96} \end{array}$$

**Step 2: Short division (2-digits) with remainders within the calculation**

Move on to using this method when remainders occur within the calculation (e.g.  $96 \div 4$ ), and be taught to "carry" the remainder onto the next digit.

$$\begin{array}{r} 18 \\ 4 \overline{)7^3 2} \end{array}$$

**Step 3: Short division (3-digits) with remainders within the calculation**

Pupils move onto dividing numbers with up to 3-digits by a single digit,

$$\begin{array}{r} 218 \\ 4 \overline{)8^2 7 2} \end{array}$$



# DIVISION

Let's try some together.

$$9 \overline{)864}$$

$$5 \overline{)495}$$

# DIVISION

**Now it's your turn.**

**Do questions 10 and 11 on your worksheet.**



# USEFUL WEBSITES:

[HTTPS://WWW.TOPMARKS.CO.UK/](https://www.topmarks.co.uk/)

[HTTPS://WWW.BBC.COM/BITESIZE/TOPICS/ZWV39J6](https://www.bbc.com/bitesize/topics/zwv39j6) (BBC BITESIZE KS2 MATHS)

[HTTP://MATHSZONE.CO.UK/](http://mathszone.co.uk/)

[HTTPS://WWW.OXFORDOWL.CO.UK/FOR-HOME/KIDS-ACTIVITIES/FUN-MATHS-GAMES-AND-ACTIVITIES/](https://www.oxfordowl.co.uk/for-home/kids-activities/fun-maths-games-and-activities/) (OXFORD OWL)

