

# **Long Row Primary School Calculations Policy**



**February 2023**

# Year 1 – Addition & Subtraction

## Objectives:

- Read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs
- Represent and use number bonds and related subtraction facts within 20
- Add and subtract one-digit and two-digit numbers to 20, including 0
- Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as  $7 = ? - 9$

**Progression:** Children should have many opportunities to develop their understanding of addition and subtraction. By the end of Year 1, children should be able to use and recall facts up to 20.

## Addition:

- Partitioning into 2 or more parts
- Using + and = symbols to write number sentences
- Addition fact families and commutativity
- Number bonds within 10
- = sign in different places

## Key language:

*Equals, add, altogether, total, how many more, plus, and, the same as, double, most, count on, part, whole, more.*

## Subtraction:

- Concept of taking away practically and use of language
- Using − and = symbols
- Subtraction stories
- Fact families
- Counting back using number lines
- Finding the difference (Visually or counting back)

## Key language:

*Equal to, take away, less, minus, subtract, leaves, difference, how many more/fewer, count back, least, how much less/more is...*

Bar model should be explored for both addition and subtraction.

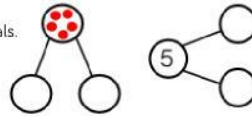


## Addition:

### Part whole model:

Combining 2 parts to make a whole using counters

Complete the part whole models by drawing the counters then writing the numerals.



### Writing number sentences:

Show that 3 green cubes plus 4 red cubes is equal to 7 cubes.

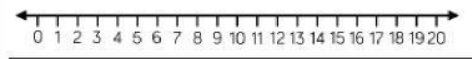


### Use number lines (first within 10, then 20):

Write a number sentence to describe what has happened on the ten frames.



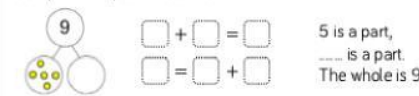
Use a number line to find the answer.



## Subtraction:

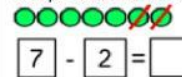
### Part whole model:

Complete the part whole model.



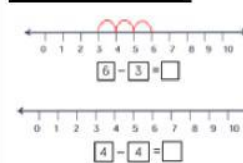
### Writing number sentences:

Complete the number sentence



Create a story to represent the calculation.

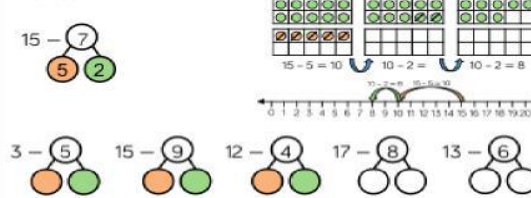
### Number lines:



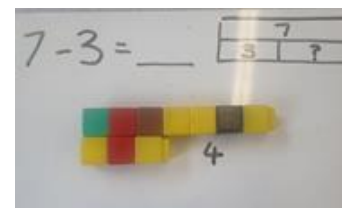
### Writing calculations (Crossing 10):

Children subtract numbers, within 20, crossing 10. They look at subtraction as take away. Then children look at subtraction as partitioning and then they will go on to see subtraction as the difference.

Complete the following calculations using base ten and a number line.



### Finding the difference:



## Year 2 – Addition & Subtraction

### Objectives:

- Solve problems with addition and subtraction:
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
  - applying their increasing knowledge of mental and written methods
- Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
  - a two-digit number and 1s
  - a two-digit number and 10s
  - 2 two-digit numbers
  - adding 3 one-digit numbers
- Show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems

### Progression:

#### Addition:

- Fact families
- Related facts (If I know  $2 + 3 = 5$ , then I know  $20 + 30 = 50$ )
- Bridging through 10 ( $26 + 7 = 26 + 4 + 3$ )
- Number bonds to 100 (tens)
- Counting on/back in 10s ( $26 + 20 =$ )
- Add 2-digit and 2-digit
- Bonds to 100 (tens and ones)
- Add three 1-digit numbers

#### Key language:

Add, more, plus, and, make, altogether, total, equal to, equals, the same as, sum, tens, units, partition, addition.

#### Subtraction:

- Fact families
- Subtract 1s
- 10 less
- Subtract 1-digit from 2-digit
- Subtract 2-digit from 2-digit (not crossing ten)
- Subtract 2-digit from 2-digit (crossing ten)

### Addition: (Numbers up to 100)

#### Part whole model/bar model:

Complete the part whole models below:



|           |
|-----------|
| 100       |
| ?      40 |

#### Add 2-digit and 1-digit (initially not crossing ten then move to crossing ten):

$$17 + 5 =$$



Can we use number bonds to solve the addition more efficiently?



We can partition 5 into 3 and 2 and use this to bridge the 10

#### Add 2-digit and 2-digit

$$\begin{array}{r} 9 \\ 16 + 13 = 29 \\ 20 \end{array}$$

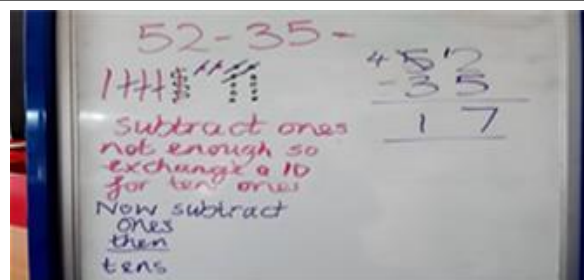
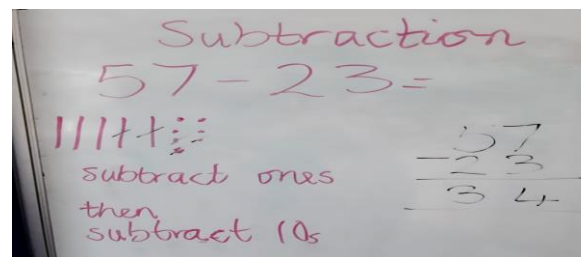
### Subtraction:

#### If numbers are close together, count on:

$$82 - 79$$

$$79 + 1 + 1 + 1 = 82$$

#### Subtract with 2-digits (initially not crossing tens then move to crossing ten)



## Year 3 – Addition & Subtraction

### Objectives:

- Add and subtract numbers mentally, including:
  - a three-digit number and 1s
  - a three-digit number and 10s
  - a three-digit number and 100s
- Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction
- Estimate the answer to a calculation and use inverse operations to check answers

### Mental Methods:

#### Bridging to 10 (also with numberlines):

$$\begin{aligned} 355 + 8 &= 355 + 5 + 3 \\ &= 360 + 3 \\ &= 363 \end{aligned}$$

#### Adjusting:

$$\begin{aligned} 326 + 90 &= 326 + 100 \\ &= 426 - 10 \\ &= 416 \end{aligned}$$

$$\begin{aligned} 246 - 9 &= 246 - 10 + 1 \\ &= 236 + 1 \\ &= 237 \end{aligned}$$

$$\begin{aligned} 246 - 50 &= 246 - 40 - 10 \\ &= 206 - 10 \\ &= 196 \end{aligned}$$

#### Counting forwards or backwards in 100s:

$$648 + 200 = 848 \qquad 648 - 500 = 148$$

#### Written methods:

|     |     |
|-----|-----|
|     |     |
| 265 | 164 |

|     |
|-----|
|     |
| 265 |
| 164 |

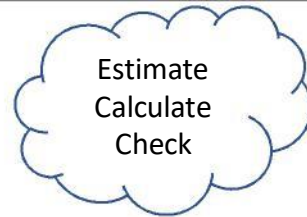
**265 + 164 = 429**

| Hundreds | Tens | Ones |
|----------|------|------|
| 2        | 6    | 5    |
| +        | 1    | 6    |
|          |      |      |
| 4        | 2    | 9    |

| Hundreds | Tens | Ones |
|----------|------|------|
| 2        | 6    | 5    |
| +        | 1    | 6    |
|          |      |      |
| 4        | 2    | 9    |

### Written methods:

continued



|   |   |   |  |   |   |   |   |   |   |   |   |
|---|---|---|--|---|---|---|---|---|---|---|---|
| 2 | 3 | 5 |  | + |   | 7 | 3 | = | 3 | 0 | 8 |
|   |   |   |  |   |   |   |   |   |   |   |   |
| 2 | 0 | 0 |  | + |   | 3 | 0 | + | 5 |   |   |
|   |   |   |  |   |   | 7 | 0 | + | 3 |   |   |
| 2 | 0 | 0 |  | + | 1 | 0 | 0 | + | 8 |   |   |
|   |   |   |  |   |   |   |   |   |   |   |   |

|   |   |   |   |  |  |   |   |   |   |
|---|---|---|---|--|--|---|---|---|---|
|   | 2 | 3 | 5 |  |  |   | 2 | 3 | 5 |
| + |   | 7 | 3 |  |  | + |   | 7 | 3 |
|   |   |   | 8 |  |  |   |   |   |   |
|   | 1 | 0 | 0 |  |  |   | 2 | 0 | 8 |
|   | 2 | 0 | 0 |  |  |   | 1 |   |   |
|   | 3 | 0 | 8 |  |  |   |   |   |   |

|   |   |   |  |   |  |   |   |   |   |   |   |
|---|---|---|--|---|--|---|---|---|---|---|---|
| 1 | 8 | 7 |  | - |  | 6 | 4 | = |   |   |   |
|   |   |   |  |   |  |   |   |   |   |   |   |
| 1 | 8 | 7 |  | - |  | 6 | 0 | = | 1 | 2 | 7 |
| 1 | 2 | 7 |  | - |  | 4 |   | = | 1 | 2 | 3 |
|   |   |   |  |   |  |   |   |   |   |   |   |
|   |   |   |  |   |  |   |   |   |   |   |   |

Formal column method. Children must understand that when they have exchanged the 10 they still have 41 because  $41 = 30 + 11$ .

|   |   |   |
|---|---|---|
| 3 | 4 | 1 |
| - | 2 | 6 |
|   | 1 | 5 |

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

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

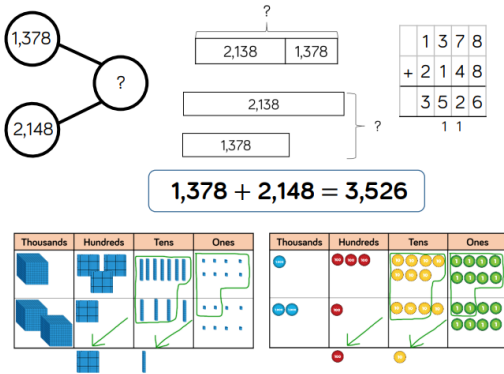
## Year 4 – Addition & Subtraction

### Objectives:

- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- Estimate and use inverse operations to check answers to a calculation
- Solve money problems to 2 decimal places

### Mental Methods:

Develop confidence using full range of strategies



**Written methods:**

continued.

Estimate  
Calculate  
Check

[illegible]

(Money):

£32.50 + £21.75

|   |   |   |   |   |   |   |  |
|---|---|---|---|---|---|---|--|
|   | £ | 3 | 2 | • | 5 | 0 |  |
| + | £ | 2 | 1 | • | 7 | 5 |  |
|   | £ | 5 | 4 | • | 2 | 5 |  |
|   |   |   | 1 |   |   |   |  |
|   |   |   |   |   |   |   |  |

£42.50 - £13.35

|   |   |    |    |   |    |    |  |
|---|---|----|----|---|----|----|--|
|   | £ | 34 | 12 | • | 45 | 10 |  |
| - | £ | 1  | 3  | • | 3  | 5  |  |
|   | £ | 2  | 9  | • | 1  | 5  |  |
|   |   |    |    |   |    |    |  |

Estimate: Use skills of rounding to make sensible estimates.

Match the calculations with a good estimate for the number sentence.

|                 |                 |
|-----------------|-----------------|
| $345 + 1,234$   | $3,000 + 6,000$ |
| $2,985 + 6,325$ | $3,500 + 1,200$ |
| $1,541 + 1,179$ | $350 + 1,200$   |
| $2,135 + 6,292$ | $2,000 + 6,000$ |

Checking: Pupils learn to use inverse to check answers.

If we know  $3,450 + 4,520 = 7,970$ , what other addition and subtraction facts do we know?

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

Does the equal sign have to go at the end? Could we write an addition or subtraction with the equals sign at the beginning? How many more facts can you write now?

Missing number examples (White Rose):

Complete:

$$\begin{array}{r} 6 \square \square 8 \\ + \square \square 8 \square \\ \hline 9,325 \\ \hline \end{array}$$

Greg says that 'there is more than one answer for the missing numbers in the hundreds column'. Is he correct? Explain your answer.

## Year 5 – Addition & Subtraction

### Objectives:

- Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- Add and subtract numbers mentally with increasingly large numbers
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy

### Mental Methods:

13 463 – 2300

Use knowledge of place value to calculate mentally with increasingly larger numbers.

Strategies to develop confidence:

$$2463 + 1999 =$$

$$2463 + 2000 = 4463$$

$$4463 - 1 = 4462$$

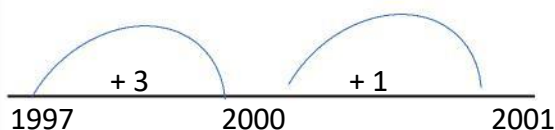
$$15\,383 + 3\,400 =$$

$$15\,000 + 3\,000 = 18\,000$$

$$383 + 400 = 783$$

$$18\,000 + 783 = 18\,783$$

2001 – 1997



### Written methods:

Continue to use part whole model/bar mode.

789 + 642 becomes:

**a) Estimate:** rounding e.g.  $800 + 640 = \text{approx. } 1440$

### b) Calculate:

|   |   |   |   |   |  |
|---|---|---|---|---|--|
|   |   | 7 | 8 | 9 |  |
| + |   | 6 | 4 | 2 |  |
|   | 1 | 4 | 3 | 1 |  |
|   |   | 1 | 1 |   |  |

Estimate  
Calculate  
Check

### c) Check:

Is your answer close to your estimate?

932 – 457 becomes:

### a) Estimate:

$$900 - 500 = 400$$

### b) Calculate:

|   |   |   |   |  |  |
|---|---|---|---|--|--|
|   | 8 | 2 | 1 |  |  |
| - | 4 | 5 | 7 |  |  |
|   | 4 | 7 | 5 |  |  |

### Check:

Is your answer close to your estimate?

**Efficient working** e.g.  $\pounds 20 - \pounds 13.76 = \text{column method of } \pounds 19.99 - \pounds 13.75$

Estimate & Approximate examples:

True or false?

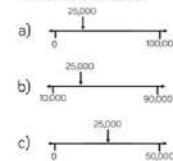
$$49,999 - 19,999 = 50,000 - 20,000$$



I did not need to use a written method to work this out.

How could Lea have worked this out?

Which estimate is inaccurate?



Explain how you know.

## Year 6 – Addition & Subtraction

### Objectives:

- Perform mental calculations, including with mixed operations and large numbers
- Use their knowledge of the order of operations to carry out calculations involving the 4 operations
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- Solve problems involving addition, subtraction, multiplication and division
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

### Written methods:

Continue to use part whole model/bar model.

12 462 + 8456 becomes:

#### a) Estimate:

$$12\,500 + 8\,000 = 20\,500$$

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   | 1 | 2 | 4 | 6 | 2 |
| + |   | 8 | 4 | 5 | 6 |
|   | 2 | 0 | 9 | 1 | 8 |
|   | 1 |   | 1 |   |   |

Estimate  
Calculate  
Check

#### c) Check:

Is your answer close to your estimate?

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13 601 - 5787 becomes:

#### a) Estimate:

$$14\,000 - 6\,000 = 8\,000$$

#### b) Calculate:

|   |                |                |                |                 |                |  |
|---|----------------|----------------|----------------|-----------------|----------------|--|
|   | 0 <sub>1</sub> | 2 <sub>3</sub> | 5 <sub>6</sub> | 91 <sub>0</sub> | 1 <sub>1</sub> |  |
| - |                | 5              | 7              | 8               | 7              |  |
|   | 7              | 8              | 1              | 4               |                |  |
|   |                |                |                |                 |                |  |

#### c) Check:

Is your answer close to your estimate?

### Add / Subtract numbers with up to 3 decimal places:

13.6 - 2.78 = line up decimal points-

|   |   |    |   |                 |                |  |
|---|---|----|---|-----------------|----------------|--|
|   | 1 | 23 | • | 15 <sub>6</sub> | 1 <sub>0</sub> |  |
| - |   | 2  | • | 7               | 8              |  |
|   | 1 | 0  | • | 8               | 2              |  |
|   |   |    |   |                 |                |  |

### Mental Methods:

Pupils use a wide range of mental strategies including decimals and larger numbers.

*What is 4 minus 0.007?*

*What is the sum of 5.3 and 12.6?*

$$57 + \underline{\quad\quad} = 125$$

$$911 - 47 \underline{\quad\quad} =$$

$$149 + 137 + 158 =$$

$$(\underline{\quad} + \underline{\quad}) - \underline{\quad} = 10$$

$$63 + \underline{\quad} = 100 - \underline{\quad}$$

## Year 1 – Multiplication & Division

### Objectives:

- Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

### Progression:

#### Multiplication:

- Concrete grouping of objects
- Pictorial grouping
- Repeated addition

#### Key language:

*Groups, lots of, arrays*

#### Division:

- Concrete sharing activities
- Pictorial sharing – drawing amounts in sets

#### Key language:

*Share, share equally, groups, lots of*

### Multiplication:

Count in multiples of 2s, 5s, 10s  
Doubles up to 10

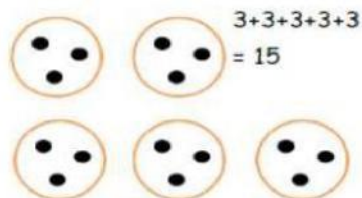
### Practically making groups of objects leading to repeated addition:

Dan has 3 pairs of socks.



How many socks does he have altogether?

There are 3 sweets in one bag.  
How many sweets are in 5 bags altogether?



### Use visual and concrete arrays and 'lots of' objects to find to '3 lots of 4' etc (Use Numicon)



### Division:

Concrete sharing activities:

*Sam has 6 sweets and shares them equally between his 3 friends. How many sweets do his friends get?*



## Year 2 – Multiplication & Division

### Objectives:

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs
- Show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts

### Progression:

#### Multiplication:

- Recognise, make and add equal groups
- Multiplication sentences using the  $\times$  symbol
- Use arrays
- 2 times table
- 5 times table
- 10 times table

#### Division:

- Make equal groups – sharing
- Make equal groups – grouping
- Divide by 2
- Odd & even numbers
- Divide by 5
- Divide by 10

### Children should know:

2 x table, 5 x table, 10 x table, Doubles up to 20

#### Equal groups:

Complete:



There are \_\_\_ equal groups with \_\_\_ in each group.  
There are three \_\_\_\_  
\_\_\_ + \_\_\_ + \_\_\_ = 12

#### The multiplication symbol:

The multiplication symbol is introduced for the first time. Children should link repeated addition and multiplication together. The use of concrete and pictorial representations is still vital.

Complete the sentences to describe the equal groups.



There are \_\_\_ equal groups with \_\_\_ in each group.  
There are three \_\_\_\_.

Complete:



\_\_\_  $\times$  \_\_\_ = \_\_\_  
lots of 3 = \_\_\_  
multiplied by \_\_\_ = 12

#### Simple arrays to show commutativity

6 x 3

3 x 6

Find different ways to solve six lots of three.



#### Division:

##### Sharing objects:

Children use pictures or shapes to share quantities.



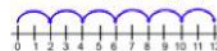
$$8 \div 2 = 4$$

Share 9 buns between three people.

$$9 \div 3 = 3$$

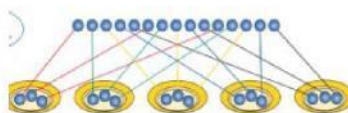
##### Grouping objects:

Tim uses a number line to work out how many equal groups of 2 he can make from 12



Use a number line to work out how many equal groups of 5 you can make from 30

$$15 \div 3 = 5$$



**(Extension:** Count in 3s until you get to 15)

## Year 3 – Multiplication & Division

### Objectives:

- Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods

### Mental Methods:

Children should now know 2x, 5x, 10x facts

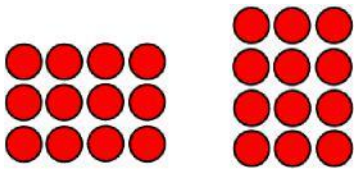
They need to know:

- 3 x table
- 4 x table
- 8 x table

And corresponding division facts.

Know fact families e.g.

$$4 \times 3$$



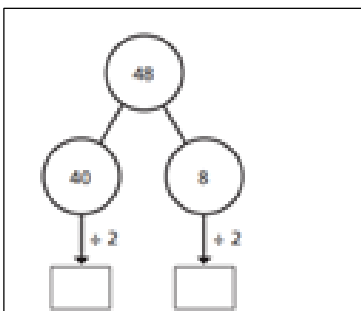
$$4 \times 3 = 3 \times 4$$

$$12 \div 3 = 4$$

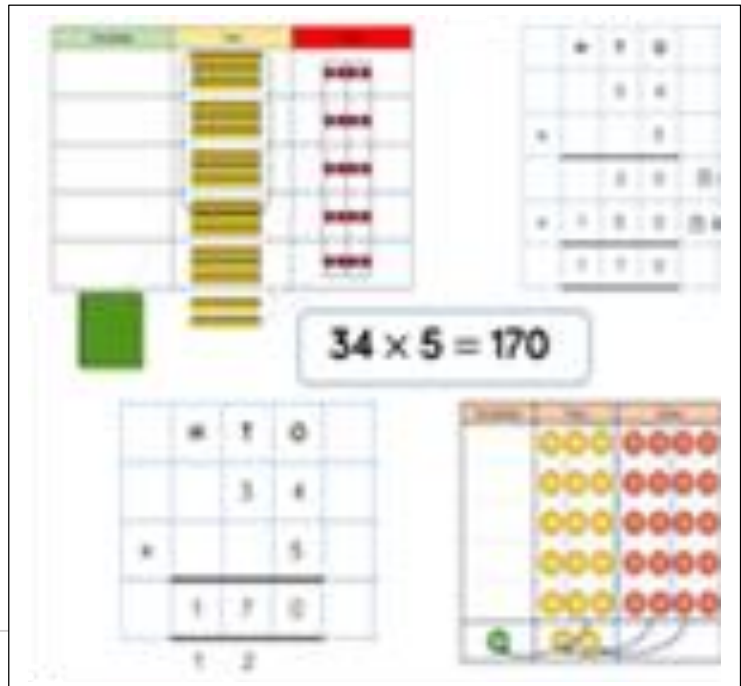
$$12 \div 4 = 3$$

### Written methods:

Part whole model/bar model e.g.



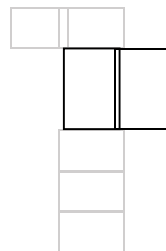
### Written methods: continued



### Division:

$$36 \div 3 = 12$$

$$36 \div 3 =$$



Short multiplication and division rely on mental methods at this stage. Children should be given short multiplication and division involving 2,3,4,5,6 and 10 times tables.

## Year 4 – Multiplication & Division

### Objectives:

- Recall multiplication and division facts for multiplication tables up to  $12 \times 12$
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers
- Recognise and use factor pairs and commutativity in mental calculations
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

### Mental Methods:

Children should know  $\times 2, 5, 10, 3, 4, 8$  already.

They need to know:

- 6 x table
- 7 x table
- 9 x table
- 11 x table
- 12 x table

Explore what happens when we divide by 0 and 1

### Factor pairs:

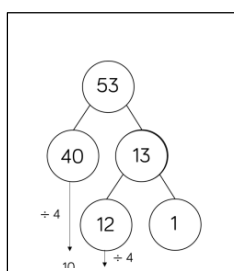
$$24 \times 3$$

$$8 \times 3 \times 3$$

$$6 \times 4 \times 3$$

### Written methods:

Part whole model/bar model e.g.



### Written methods: continued

#### Short Multiplication:

$$24 \times 6$$

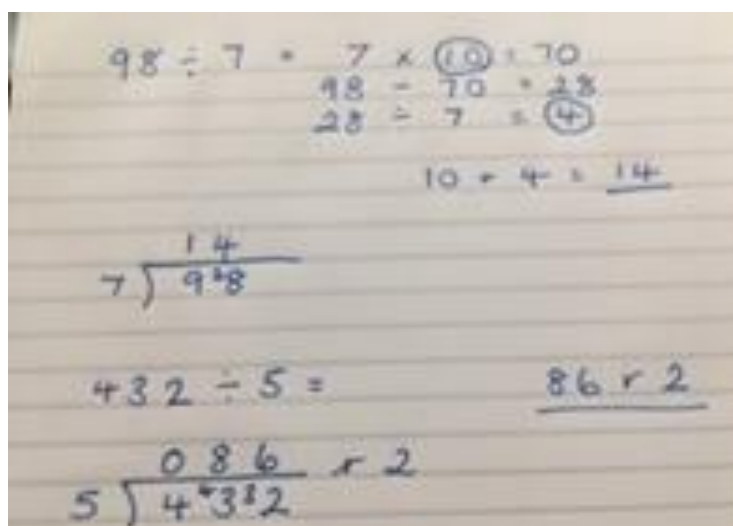
|   |   |   |   |
|---|---|---|---|
|   |   | 2 | 4 |
| x |   |   | 6 |
|   | 1 | 4 | 4 |
|   |   | 2 |   |

$$342 \times 7$$

|   |   |   |   |   |
|---|---|---|---|---|
|   |   | 3 | 4 | 2 |
| x |   |   |   | / |
|   | 2 | 3 | 9 | 4 |
|   |   | 2 | 1 |   |

#### Division (short extended to with remainders):

*Children to continue to divide by known multiples*



## Year 5 – Multiplication & Division

### Objectives:

- Identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers
- Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- Establish whether a number up to 100 is prime and recall prime numbers up to 19
- Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- Multiply and divide numbers mentally, drawing upon known facts
- Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000
- Recognise and use square numbers and cube numbers, and the notation for squared ( $^2$ ) and cubed ( $^3$ )

### Written methods:

#### (Long) Multiplication:

- 2-digit x 2-digit
- 3-digit x 2-digit
- 4-digit x 2-digit

$$24 \times 16$$

#### a) Estimate:

$$20 \times 20 = 400$$

#### b) Calculate:

$$\begin{array}{r}
 \phantom{x} \phantom{00} 2 \phantom{0} 4 \\
 \phantom{x} \phantom{00} 1 \phantom{0} 6 \\
 \hline
 x \phantom{00} 1 \phantom{0} 4 \phantom{0} 4 \phantom{0} (6 \times 24) \\
 \phantom{00} 2 \phantom{0} 4 \phantom{0} 0 \phantom{0} (10 \times 24) \\
 \hline
 \phantom{00} 3 \phantom{0} 8 \phantom{0} 4
 \end{array}$$

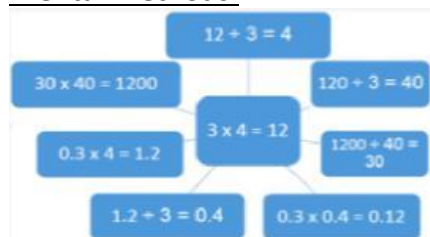
### Efficient working:

$$99 \times 13 = (100 \times 13) - 13$$

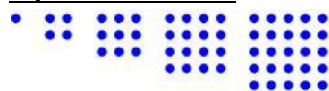
### Division:

Short Division (as year 4)

### Mental Methods:



### Square numbers:



$$1 \times 1 = 1$$

$$2 \times 2 = 2^2$$

$$3 \times 3 = 3^2$$

$$4 \times 4 = 4^2$$

### Cube numbers:

$$1 \times 1 \times 1 = 1^3$$

$$2 \times 2 \times 2 = 2^3$$

$$3 \times 3 \times 3 = 3^3$$

## Year 6 – Multiplication & Division

### Objectives:

- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
- Perform mental calculations, including with mixed operations and large numbers
- Identify common factors, common multiples and prime numbers
- Use their knowledge of the order of operations to carry out calculations involving the 4 operations
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

### Mental Methods:

All tables up to 12 x 12 including all related facts.

Round answers to the required degree of Accuracy.

Order of operations using brackets e.g.

$$2 + 1 \times 3 = 5$$

$$(2+1) \times 3 = 9$$

### Written methods:

Confidence in all formal written methods as shown in National Curriculum Appendix:

124 x 26 becomes

$$\begin{array}{r} \phantom{0}1\phantom{0}2\phantom{0}4 \\ \times \phantom{0}2\phantom{0}6 \\ \hline \phantom{0}7\phantom{0}4\phantom{0}4 \\ \phantom{0}2\phantom{0}4\phantom{0}8\phantom{0}0 \\ \hline \phantom{0}3\phantom{0}2\phantom{0}2\phantom{0}4 \\ \phantom{0}1\phantom{0}1 \end{array}$$

Answer: 3224

### Multiplying integers by decimals

$$8 \times 2.66 =$$

#### a) Estimate:

$$8 \times 3 = 24$$

#### b) Calculate:

|   |  |   |   |   |   |   |  |
|---|--|---|---|---|---|---|--|
|   |  |   | 2 | • | 6 | 6 |  |
| x |  |   | 8 |   |   |   |  |
|   |  | 2 | 1 | • | 2 | 8 |  |
|   |  |   | 5 |   | 4 |   |  |

#### c) Check:

Is your answer close to your estimate?

**Short division** (by one digit) see yr 4/5

### Division by 2 digit numbers:

$7,335 \div 15 = 489$

|    |   |               |                |                |
|----|---|---------------|----------------|----------------|
|    | 0 | 4             | 8              | 9              |
| 15 | 7 | $\frac{7}{3}$ | $\frac{13}{3}$ | $\frac{13}{5}$ |

|    |    |    |    |    |    |     |     |     |     |
|----|----|----|----|----|----|-----|-----|-----|-----|
| 15 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 |
|----|----|----|----|----|----|-----|-----|-----|-----|