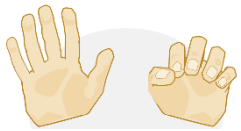
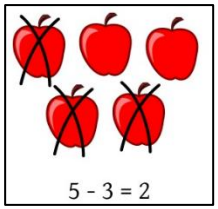
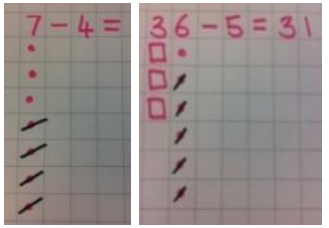
Calculation Policy: FS

Foundation Stage ELG:

- Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number.
- Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer.
- They solve problems, including doubling, halving and sharing.

Addition	Subtraction	Multiplication	Division
• Know one more for each number to 20.	• Know one less for each number to 20.	• Double each number to 5.	• Half each even number to 10.

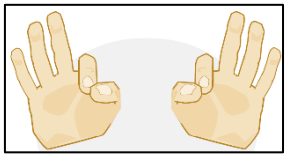
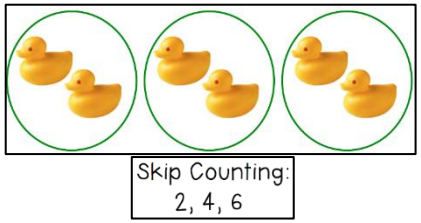
	Addition		Subtraction	
Mental Calculation Strategies	Children to find one more than a given number by counting on. 1→ 2→ 3→ 4→ 5→ 6→ 7→ 8→ 9→10	Use fingers as practical apparatus to solve addition calculations. 5 + 5 = 10 	Children to find one less than a given number by counting backwards. 10→ 9→ 8→ 7→ 6→ 5→ 4→ 3→ 2→1	Use fingers as practical apparatus to solve subtraction problems. 10 - 5 = 5 
Written Methods	Solve simple addition problems using objects, pictures or practical apparatus. Combine two sets of objects and count all to find the total.  Using pictures and marks to illustrate how they have solved an addition problem.  	Use simplified illustrations (arrays of Maltesers) to create a picture of an addition problem.   Addition of two numbers horizontally by partitioning into Maltesers and counting all.  	Solve simple subtraction problems using objects, pictures or practical apparatus. Children to solve subtraction calculations by taking away objects. Cross out pictures to demonstrate taking away.  	Use simplified illustrations (arrays of Maltesers) to create a picture of a subtraction problem.  Subtraction of two numbers horizontally by partitioning the larger number into Maltesers, crossing out the number to be taken away (beginning at the bottom) and then counting all that are 'left'.

<table>
<tr><th></th><th colspan="2">Multiplication</th><th colspan="2">Division</th></tr>
<tr><td rowspan="2">Mental Calculation Strategies</td><td>Counting by rote:
Children can count in 2s and 10s.

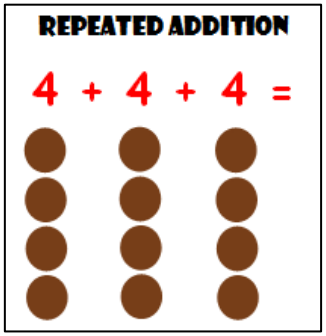
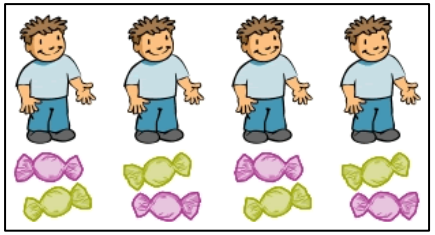
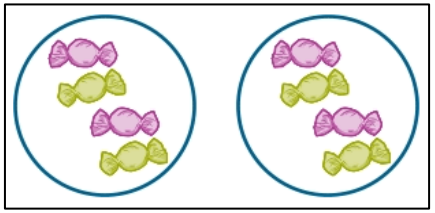
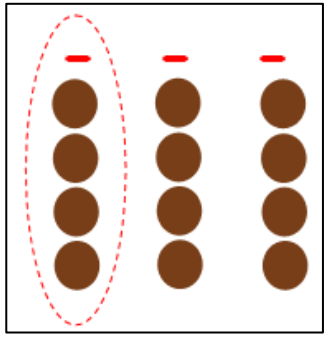
Children can also count by rote using fingers to count in groups.

Times tables:
Know by heart the facts for the 2x and 10x tables.</td><td>Doubling:
Children should be able to double each whole number to 5 (recall).

Children can use fingers to double each number to 5 …

Example:
3 + 3 = 6
  </td><td></td><td>Halving:
Children should be able to half each even number to 10 (recall).</td></tr>
<tr><td>Written Methods</td><td>Count repeated sets of objects:
Combine repeated sets of objects.
Count objects by grouping into given amounts.
 

Group pictorial arrays into sets
i.e group socks into sets of two.
  </td><td>Repeated Addition:
Solve through repeated addition using simple illustrations (arrays of maltesers).

E.g. There are 4 apples in a box. How many apples in 3 boxes?
 
</td><td>Share objects equally.
 
  </td><td>Sharing:
Use simplified illustrations (arrays of Maltesers) to create pictures of a division problems.
12 ÷ 3 =
  </td></tr>
</table>

Calculation Policy: KS1

Yr 1 - Rapid recall objectives (NC links):

- Pupils memorise and reason with number bonds to 10 and 20 in several forms (for example, 9 + 7 = 16; 16 – 7 = 9; 7 = 16 – 9). They should realise the effect of adding or subtracting zero. This establishes addition and subtraction as related operations
- Children should be able to count in 2s, 5s and 10s.

Yr 2 - Rapid recall objectives (NC links):

- Recall and use addition and subtraction facts to 20 fluently & derive/use related facts up to 100.
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.

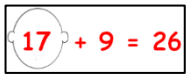
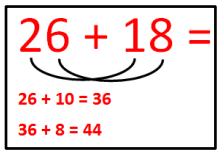
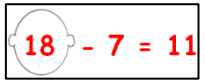
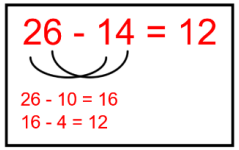
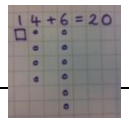
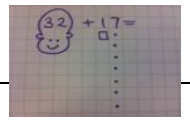
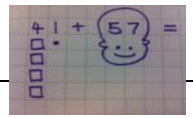
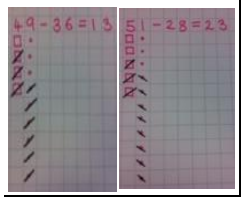
Addition	Subtraction	Multiplication	Division
• Bonds to 10 • Bonds to 20	• Subtraction facts from 10 • Subtraction facts from 20	• Times tables: x2, x5, x10 • Double numbers to 20 • Double multiples of 10 (up to 100)	• Halve even numbers to 20 • Halve multiples of 10 (up to 100)

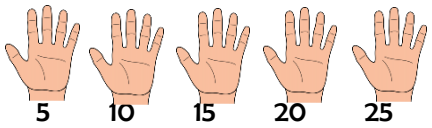
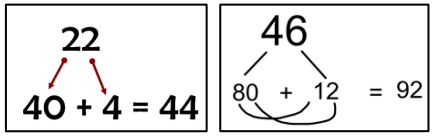
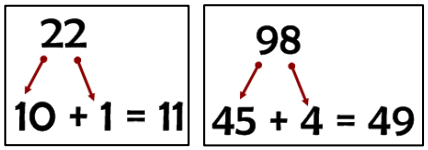
Yr 1 - Calculations (NC Links):

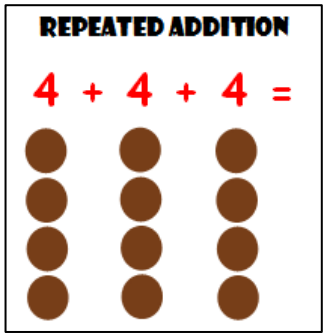
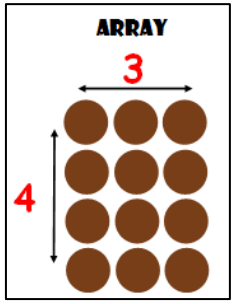
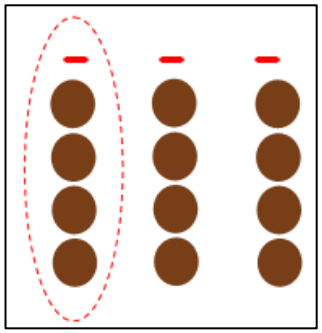
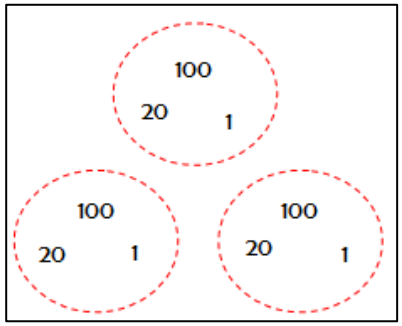
- Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs
- Add and subtract one-digit and two-digit numbers to 20, including zero

Yr 2 - Calculations (NC Links):

- Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
  - a two-digit number and ones
  - a two-digit number and tens
  - two two-digit numbers
  - adding three one-digit numbers
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.

	Addition		Subtraction	
Mental Calculation Strategies	Addition of a single digit number by counting on (possibly using fingers for support). Children put the big number in their head and count on the number of places indicated by the smaller number. 	Addition of a 2-digit number, using partitioning. First add the tens and then add the units. 	Subtraction of a single digit number by counting back (possibly using fingers to support). Children put the big number in their head and count the number of places indicated by the smaller number. 	Subtraction of a 2-digit number, using partitioning. First subtract the tens and then subtract the units. 
Written Methods	Addition of two numbers horizontally by partitioning into Maltesers and counting all (two digit + one digit, and two digit + two digit).  	Addition of two numbers horizontally by partitioning the smaller number into Maltesers and counting 'on' (putting the biggest number first)  	Subtraction of two numbers horizontally by partitioning the larger number into Maltesers, crossing out the number to be taken away (beginning at the bottom) and then counting all that are 'left' 	Subtraction of two numbers horizontally where a packet of 10 Maltesers needs to be opened – 'split' 

	Multiplication		**Division**	
Mental Calculation Strategies	**Counting by rote:** Children can count in 2s, 3s, 5s and 10s. E.g. counting fingers in 5s ...  Children can also count by rote using fingers to group in groups. **Times tables:** Know by heart the facts for the 2x, 5x and 10x tables.	**Doubling:** Children should be able to double each whole number to 10 (recall). For higher numbers, children should begin to use their knowledge of place value to partition, double each digit and then recombine.  	**Counting by rote:** Children can use knowledge of the inverse to find division facts. Example: 40 ÷ 10 = 4 Use fingers to count in groups of 10 until you reach 40. How many groups did they count? *This strategy should be used for known tables (2x, 5x and 10x in KS1).*	**Halving:** Children should be able to half each even number to 20 (recall). For higher numbers, children should begin to use their knowledge of place value to partition, half each digit and then recombine (focus on even numbers to 100). 

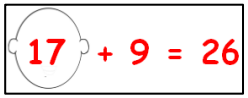
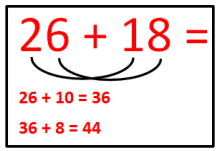
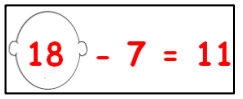
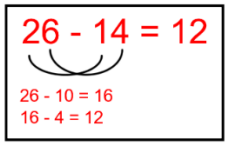
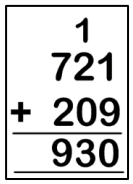
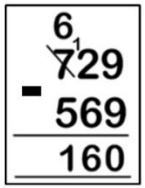
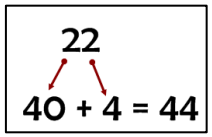
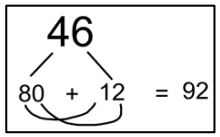
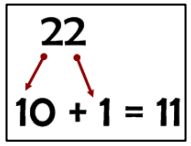
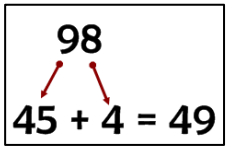
Written Methods	**Repeated Addition:** Solve through repeated addition. E.g. There are 4 apples in a box. How many apples in 3 boxes? 	**Arrays:** Use simplified illustrations (arrays of Maltesers) to create pictures of a multiplication problem. E.g. There are 4 apples in a box. How many apples in 3 boxes? 	**Sharing:** Use simplified illustrations (arrays of Maltesers) to create pictures of a division problems. **12 ÷ 3 =** 	**Grouping:** Use grouping to divide increasingly large numbers by a single digit. **363 ÷ 3 =** 

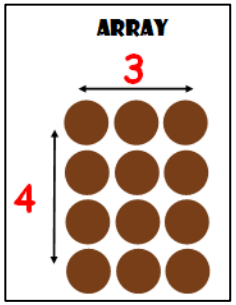
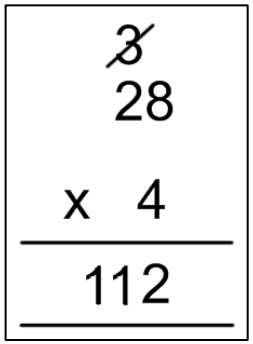
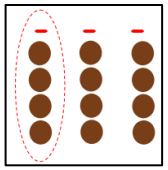
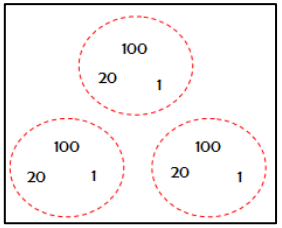
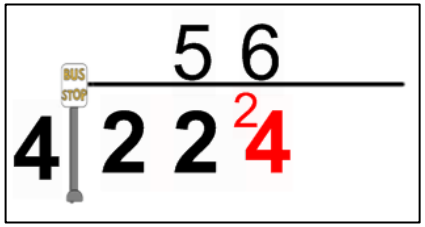
Calculation Policy: LKS2

Yr 3 - Rapid recall objectives (NC links):		**Yr 4 - Rapid recall objectives** (NC links):	
• Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • Through doubling, they connect the 2, 4 and 8 multiplication tables.		• Recall multiplication and division facts for multiplication tables up to 12 × 12 • Recognise and use factor pairs and commutativity in mental calculations	
Addition	**Subtraction**	**Multiplication**	**Division**
• Know <u>all</u> bonds to 10 (use these to work out the related multiples of 10 bonds). • Know all bonds to 100.	• Know all subtraction facts to 10 (use these to work the related multiples of 10 bonds). • Know all subtraction facts to 100.	• Times tables: 2x, 5x, 10x (from KS1) • Times Tables: 3x, 4x, 6x and 8x (new for LKS2) • Double numbers to 100	• Know related division facts for known times tables (2x, 3x, 4x, 5x, 6x, 8x) • Halve all numbers to 100
Yr 3 - Calculations (NC Links):		**Yr 4 - Calculations** (NC Links):	

• Pupils now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100 when calculating.
• Pupils should be taught to add and subtract numbers mentally, including:
  ○ a three-digit number and ones
  ○ a three-digit number and tens
  ○ a three-digit number and hundreds
• Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.
		• By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.
		• Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.
		• Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
		• Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.	

	Addition		**Subtraction**

<table>
<tr><td>Mental Calculation Strategies</td><td>Addition of a single digit number by counting on (possibly using fingers for support). Children put the big number in their head and count on the number of places indicated by the smaller number.
  </td><td>Addition of a 2-digit number, using partitioning. First add the tens and then add the units.
  </td><td>Subtraction of a single digit number by counting back (possibly using fingers to support). Children put the big number in their head and count the number of places indicated by the smaller number.
  </td><td>Subtraction of a 2-digit number, using partitioning. First subtract the tens and then subtract the units.
  </td></tr>
<tr><td>Written Methods</td><td>Addition of two numbers horizontally by partitioning the smaller number into Maltesers and counting ‘on’ (putting the biggest number first)
 
  </td><td>Column Addition: add the numbers by organising in columns.
Top tips:
1) Line up your digits.
2) Carry your digits at the top.
3) Line up your decimals.
  </td><td>Subtraction of two numbers horizontally by partitioning the larger number into Maltesers, crossing out the number to be taken away (beginning at the bottom) and then counting all that are ‘left’.
 
  </td><td>Column Subtraction: subtract the numbers by organising in columns.
Top tips:
1) Line up your digits.
2) Borrow from your Neighbor.
3) Line up your decimals.
  </td></tr>
<tr><td></td><td colspan="2">Multiplication</td><td colspan="2">Division</td></tr>
<tr><td>Mental Calculation Strategies</td><td>Counting by rote:
Children can count from 0 in 4s, 8s, 50s and 100s (Yr3) and count from 0 in 6s, 7s, 9s, 25s and 1000 (Yr4).
Children can also count by rote using fingers to group in groups.
Times tables:
Know by heart the facts for the 2x, 3x, 4x, 5x, 8x and 10x tables (Yr3).
By the end of Yr4, children should know by heart the facts for all tables up to x12.</td><td>Doubling:
Children should be able to double each whole number to 100.
For higher numbers, children should begin to use their knowledge of place value to partition, double each digit and then recombine.
 
  </td><td>Counting by rote:
Children can use knowledge of the inverse to find division facts.
Example:
40 ÷ 10 = 4
Use fingers to count in groups of 10 until you reach 40. How many groups did they count?
This strategy should be used for known tables (2x, 3x, 4x, 5x, 8x and 10x in Yr3). It should be used for all tables to x12 in Yr4.</td><td>Halving:
Children should be able to half each number to 100.
For higher numbers, children should begin to use their knowledge of place value to partition, half each digit and then recombine (focus on even numbers to 100).
 
  </td></tr>
</table>

Written Methods	**Arrays:** Use simplified illustrations (arrays of Maltesers) to create pictures of a multiplication problem. E.g. There are 4 apples in a box. How many apples in 3 boxes?  	**Short Multiplication:** children need to use the multiplication tables they know to solve 2/3-digit numbers times 1-digit numbers. *(They should progress from mental methods to formal written methods).*  	**Arrays and Grouping:** Use simplified illustrations (arrays of Maltesers) to create pictures of a division problems. **Arrays – sharing:** **12 ÷ 3 =**  **Grouping:** **363 ÷ 3 =**  	**Short Division** (bus stop): Children should use known multiplication tables to solve 2/3-digit numbers divided by 1 digit. *(They should progress from mental methods to formal written methods).* 

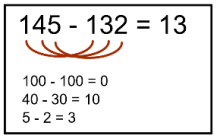
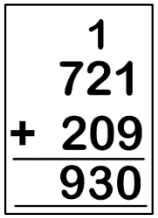
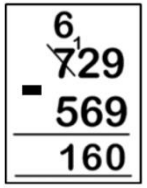
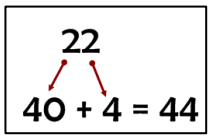
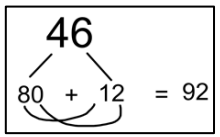
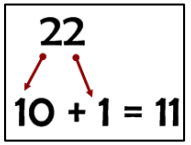
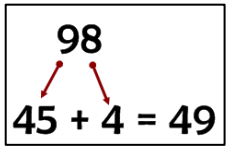
Calculation Policy: UKS2

Yr 5 - Rapid recall objectives (NC links): • Multiply and divide numbers mentally drawing upon known facts	**Yr 6 - Rapid recall objectives** (NC links): • Pupils continue to use all the multiplication tables to calculate mathematical statements.

Addition	Subtraction	Multiplication	Division
•	•	• All tables to x12 • Double numbers to 1000 • Recall prime numbers to 19	• Know related division facts for all tables to x12 • Halve numbers to 1000 • Divide numbers by 10/100/1000

Yr 5 - Calculations (NC Links): • 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. • 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. • 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 contextMultiply and divide whole numbers and those involving decimals by 10, 100 and 1000	**Yr 6 - Calculations** (NC Links): • 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

	Addition	Subtraction

<table>
<tr><td>Mental Calculation Strategies</td><td>Addition of a 2/3-digit number, using partitioning. First add the hundred, tens and then add the units.</td><td></td><td>Subtraction of a 2/3-digit number, using partitioning. First subtract the hundreds, then the tens and then the units.
  </td><td></td></tr>
<tr><td>Written Methods</td><td>Column Addition: add the numbers by organising in columns.
Top tips:
1) Line up your digits.
2) Carry your digits at the top.
3) Line up your decimals.
  </td><td></td><td>Column Subtraction: subtract the numbers by organising in columns.
Top tips:
1) Line up your digits.
2) Borrow from your Neighbor.
3) Line up your decimals.
  </td><td></td></tr>
<tr><td></td><td colspan="2">Multiplication</td><td colspan="2">Division</td></tr>
<tr><td>Mental Calculation Strategies</td><td>Doubling:
Children should be able to double each whole number to 1000.
For higher numbers, children should begin to use their knowledge of place value to partition, double each digit and then recombine.
 
  </td><td>Mental multiplication using partitioning:
17 x 5 =
10 x 5 = 50
7 x 5 = 35
50 + 35 = 85</td><td>Halving:
Children should be able to half each number to 1000.
For higher numbers, children should begin to use their knowledge of place value to partition, half each digit and then recombine (focus on even numbers to 100).
 
  </td><td></td></tr>
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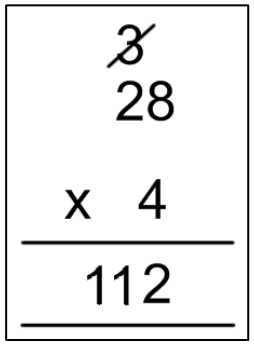
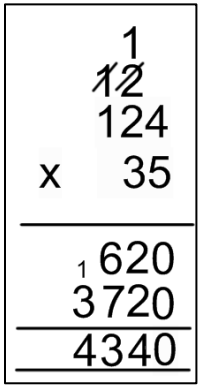
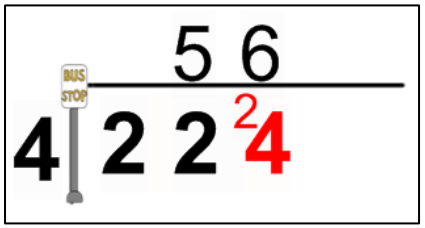
Written Methods	**Short Multiplication:** children need to use the multiplication tables they know to solve 2-digit numbers times 1-digit numbers *(they should progress from mental methods to formal written methods).*  	**Long Multiplication:** Use long multiplication to multiply up to 4-digits by a 2-digit number. **Top Tips:** Line up the digits Carry at the top – cross out the digits you have carried to avoid adding them twice.  	**Short Division** (bus stop)**:** Children should use known multiplication tables to solve 2/3-digit numbers divided by 1 digit. *(They should progress from mental methods to formal written methods).*  	

National Curriculum Aims:

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non- routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on

Mathematics Appendix 1: Examples of formal written methods for addition, subtraction, multiplication and division

This appendix sets out some examples of formal written methods for all four operations to illustrate the range of methods that could be taught. It is not intended to be an exhaustive list, nor is it intended to show progression in formal written methods. For example, the exact position of intermediate calculations (superscript and subscript digits) will vary depending on the method and format used.

For multiplication, some pupils may include an addition symbol when adding partial products. For division, some pupils may include a subtraction symbol when subtracting multiples of the divisor.

Addition and subtraction

789 + 642 becomes

$$\begin{array}{r} {\scriptstyle 1\ 1\ \ } \\ 7\ 8\ 9 \\ +\ 6\ 4\ 2 \\ \hline 1\ 4\ 3\ 1 \end{array}$$

Answer: 1431

874 – 523 becomes

$$\begin{array}{r} 8\ 7\ 4 \\ -\ 5\ 2\ 3 \\ \hline 3\ 5\ 1 \end{array}$$

Answer: 351

932 – 457 becomes

$$\begin{array}{r} {\scriptstyle 8\ 12\ 1\ \ } \\ 9\ \not{3}\ \not{2} \\ -\ 4\ 5\ 7 \\ \hline 4\ 7\ 5 \end{array}$$

Answer: 475

932 – 457 becomes

$$\begin{array}{r} {\scriptstyle \ \ 1\ \ 1\ \ } \\ 9\ 3\ 2 \\ -\ \not{4}\ \not{5}\ 7 \\ {\scriptstyle \ \ 5\ \ 6\ \ } \\ \hline 4\ 7\ 5 \end{array}$$

Answer: 475

Short multiplication

24 × 6 becomes

$$\begin{array}{r} 2\ 4 \\ \times\ \ \ 6 \\ \hline 1\ 4\ 4 \\ {\scriptstyle \ \ 2\ \ } \end{array}$$

Answer: 144

342 × 7 becomes

$$\begin{array}{r} 3\ 4\ 2 \\ \times\ \ \ \ \ 7 \\ \hline 2\ 3\ 9\ 4 \\ {\scriptstyle \ \ 2\ 1\ \ } \end{array}$$

Answer: 2394

2741 × 6 becomes

$$\begin{array}{r} 2\ 7\ 4\ 1 \\ \times\ \ \ \ \ \ 6 \\ \hline 1\ 6\ 4\ 4\ 6 \\ {\scriptstyle \ \ 4\ 2\ \ \ } \end{array}$$

Answer: 16 446

Long multiplication

24 × 16 becomes

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

Answer: 384

124 × 26 becomes

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

Answer: 3224

124 × 26 becomes

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

Answer: 3224

Short division

98 ÷ 7 becomes

$$\begin{array}{r} 1\ 4 \\ 7\overline{)\ 9^{2}\ 8} \end{array}$$

Answer: 14

432 ÷ 5 becomes

$$\begin{array}{r} 8\ \ 6\ \ r\,2 \\ 5\overline{)\ 4\ 3^{3}\ 2} \end{array}$$

Answer: 86 remainder 2

496 ÷ 11 becomes

$$\begin{array}{r} 4\ \ 5\ \ r\,1 \\ 1\ 1\overline{)\ 4\ 9^{5}\ 6} \end{array}$$

Answer: $45\frac{1}{11}$

Long division

432 ÷ 15 becomes

$$\begin{array}{r} 2\ \ 8\ \ r\,12 \\ 1\ 5\overline{)\ 4\ 3\ 2} \\ 3\ 0\ 0 \\ \hline 1\ 3\ 2 \\ 1\ 2\ 0 \\ \hline 1\ 2 \end{array}$$

Answer: 28 remainder 12

432 ÷ 15 becomes

$$\begin{array}{r} 2\ \ 8 \\ 1\ 5\overline{)\ 4\ 3\ 2} \\ 3\ 0\ 0 \quad 15\times 20 \\ \hline 1\ 3\ 2 \\ 1\ 2\ 0 \quad 15\times 8 \\ \hline 1\ 2 \end{array}$$

$\frac{12}{15} = \frac{4}{5}$

Answer: $28\frac{4}{5}$

432 ÷ 15 becomes

$$\begin{array}{r} 2\ \ 8\cdot 8 \\ 1\ 5\overline{)\ 4\ 3\ 2\cdot 0} \\ 3\ 0 \\ \hline 1\ 3\ 2 \\ 1\ 2\ 0 \\ \hline 1\ 2\ 0 \\ 1\ 2\ 0 \\ \hline 0 \end{array}$$

Answer: 28·8

Problem Solving – A Guide to Using Bar Modelling

The Bar Model – information from the NCETM website

The bar model is used in Singapore and other countries, such as Japan and the USA, to support children in problem solving. It is not a method for solving problems, but a way of revealing the mathematical structure within a problem and gaining insight and clarity as to how to solve it. It supports the transformation of real life problems into a mathematical form and can bridge the gap between concrete mathematical experiences and abstract representations. It should be preceded by and used in conjunction with a variety of representations, both concrete and pictorial, all of which contribute to children's developing number sense. It can be used to represent problems involving the four operations, ratio and proportion. It is also useful for representing unknowns in a problem and as such can be a pre-cursor to more symbolic algebra.

Addition and Subtraction

The bar model supports understanding of the relationship between addition and subtraction in that both can be seen within the one representation and viewed as different ways of looking at the same relationships.

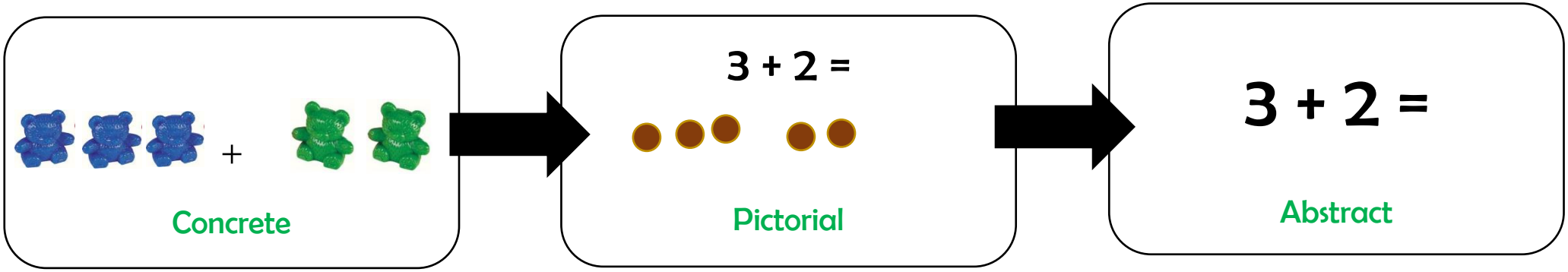
This diagram encapsulates all of the following relationships;

$a = b + c$; $a = c + b$; $a - b = c$; $a - c = b$

Multiplication, Division, Fractions, and Ratio

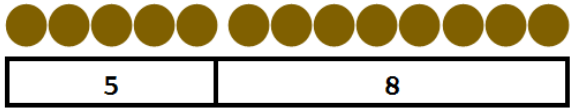
All of these concepts involve proportional and multiplicative relationships and the bar model is particularly valuable for representing these types of problems and for making the connections between these concepts visible and accessible.

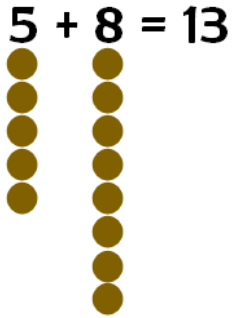
Problem solving should move from practical equipment to abstract numbers and symbols:



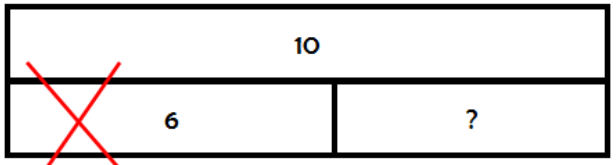
NCETM question examples Year 1:

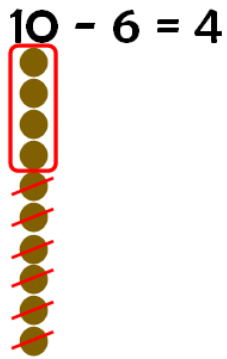
Ebony has 5p and Daniel has 8p.
How much do they have altogether?



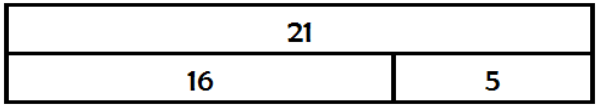


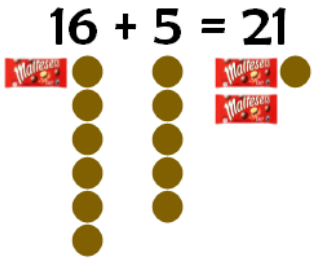
A Lolly costs 6p. Armit pays with a 10p coin.
How much change does he get?



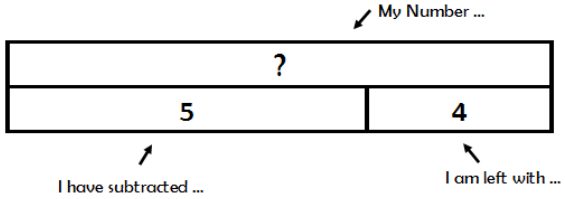


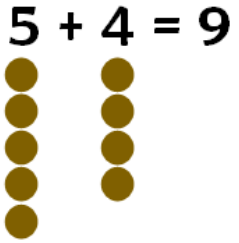
Michael says that 16 + 5 = 21
Is he correct?



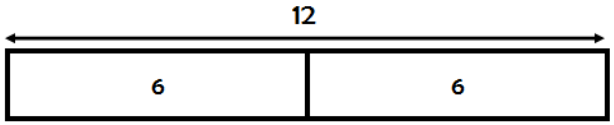


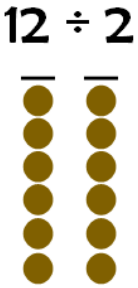
I think of a number. I subtract 5. The answer is 4.
What is my number?



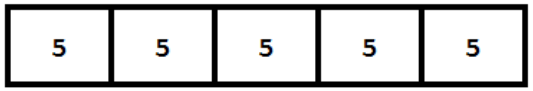


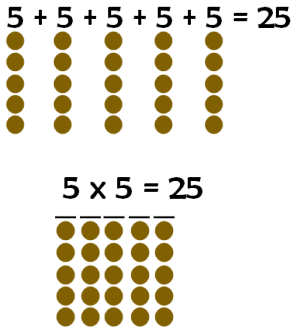
Twelve people are split into two groups.
How many are in each group?





Mrs Morton puts five 5p coins in her purse.
How much is in her purse altogether?

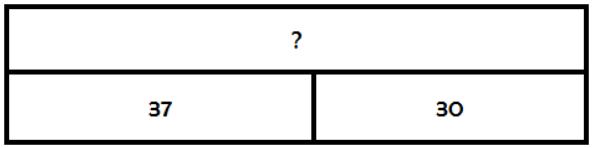


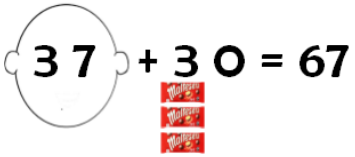


Year 2:

Dylan has 37 coloured pencils and he buys 30 more.

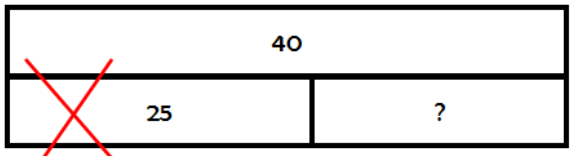
How many does he have now?

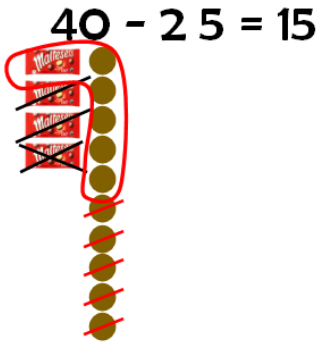




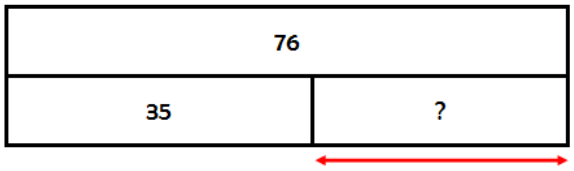
Janie has 40 beads. She loses 25 of them.

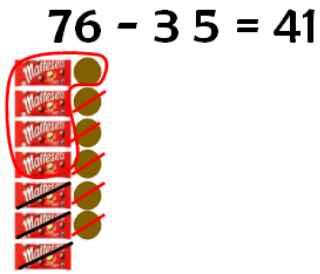
How many does she have now?





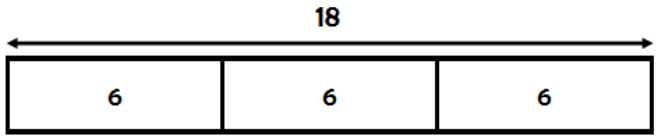
What is the difference between seventy-six and thirty-five?





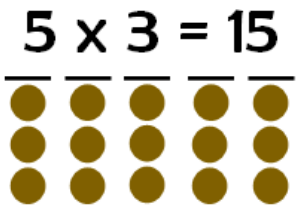
Mr Siddique shares £18 equally between his three sons.

How much does each son get?



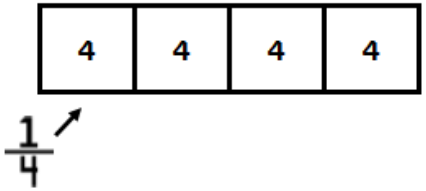
Amelia writes the calculation below as a multiplication calculation? What might she write?

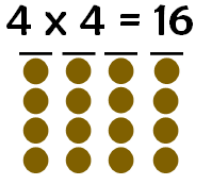
3 + 3 + 3 + 3 + 3 = 15



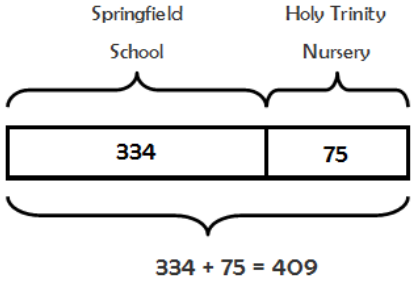
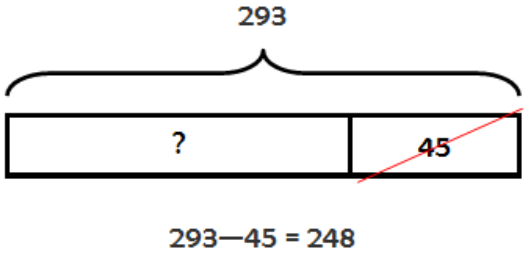
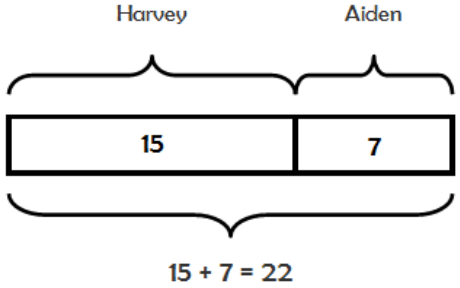
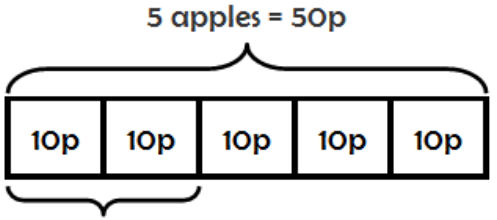
Charlotte-May had to find a $\frac{1}{4}$ of a number.

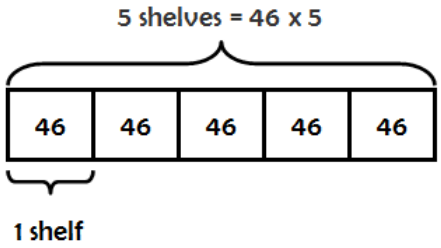
Her answer was 4. What number did she start with?

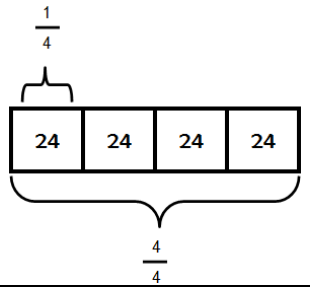




Year 3:

<table>
<tr>
<td>There are 334 children at Springfield School and 75 at Holy Trinity Nursery. How many children are there altogether?
 
</td>
<td>Gemma collected 293 badges but she gave 45 of them to her friend, Rebecca. How many badges did she have left?
 
</td>
</tr>
<tr>
<td>Aiden has seven marbles and Harvey has fifteen. They decide to share them equally between them. How many do they get each?
 
</td>
<td>If five apples cost fifty pence, how much would two apples cost?
 

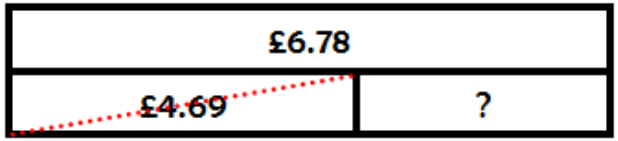
50 ÷ 5 = 10
1 0
5 | 5 0
2 x 10p = 20p</td>
</tr>
<tr>
<td>A bookcase in the library holds 5 shelves with 46 books on each shelf. How many books are there in the bookcase altogether?
 

46
x 5
230</td>
<td>A computer game is £24 in the sale. This is one quarter off its original price. How much did it cost before the sale?
 

1/4 = 24
4/4 = 24
x 4
96</td>
</tr>
</table>

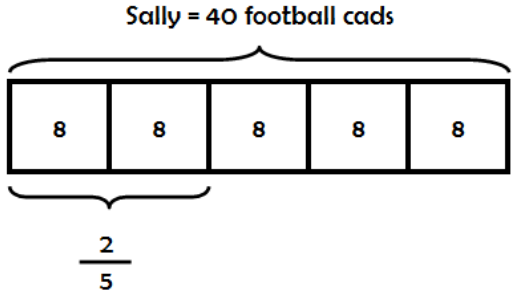
Year 4:

Martin has saved £6.78 and spends £4.69. How much does he have left?



£6.78 - £4.69 = £2.09

Sally has 40 football cards. She gives 2/5 of them away.
How many does she gives away?

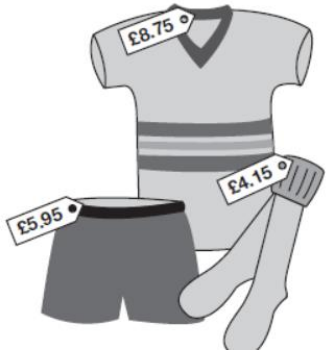


40 ÷ 5 = 8

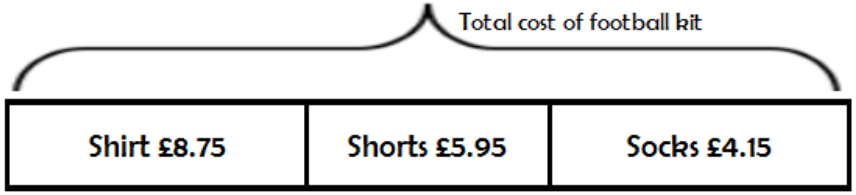
2 x 8 = 16 cards

The table shows the cost of a new football kit:

Item	Cost
Shirt	£8.75
Shorts (1 pair)	£5.95
Socks (1 pair)	£4.15



Altogether, how much does the complete football kit cost?

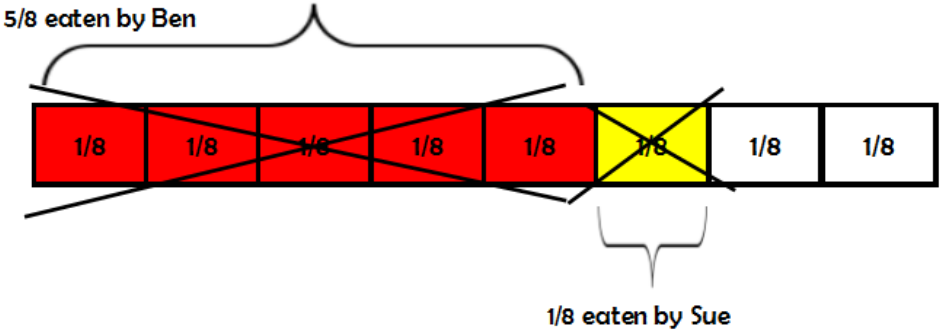


Total cost of football kit = £8.75 + £5.95 + £4.15 = £18.85

Ben cuts a pizza into 8 equal pizzas.

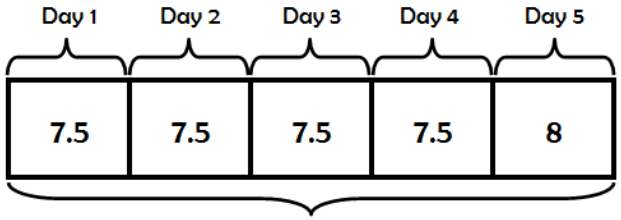
Ben eats $\frac{5}{8}$ and Sue eats $\frac{1}{8}$ of the pizza.

What fraction of the pizza is left?



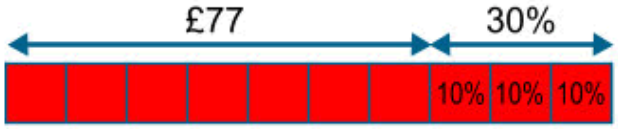
Year 5:

Every day for 4 days Helen scored 7.5 in a test. On the fifth day she scored 8. What was her total score?



Total score = 7.5 + 7.5 + 7.5 + 7.5 + 8 = 38

A computer game is reduced in a sale by 30%. Its reduced price is £77. How much was the original price?



£77 ÷ 7 = £11

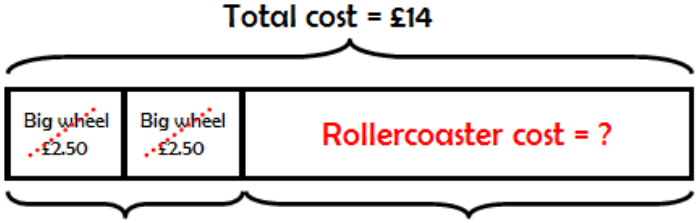
£11 x 10 = £110.00

Big Wheel £2.50 each ride	Rollercoaster £1.50 each ride

Liam spends £14 altogether on the Big Wheel and the Rollercoaster.

He goes on the Big Wheel twice.

How many times does he go on the Rollercoaster?



Big Wheel:

£2.50 x 2

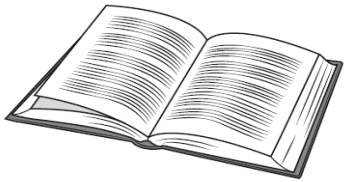
= £5.00

Money spent on the Rollercoaster:

£14.00 - £5.00 = £9.00

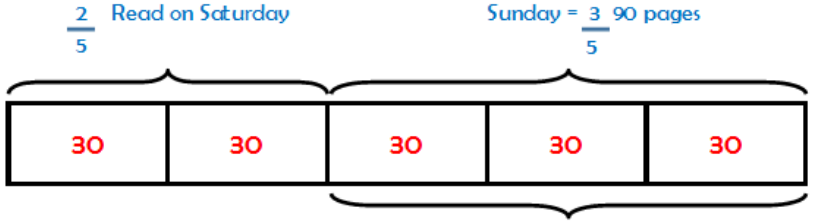
£9.00 ÷ £1.50 = 6 rides on the rollercoaster

On Saturday Lara read $\frac{2}{5}$ of her book.



On Sunday she read the **other** 90 pages to finish the book.

How many pages are there in Lara's book?



So 90 ÷ 3 = 30

Therefore 1/5 = 30

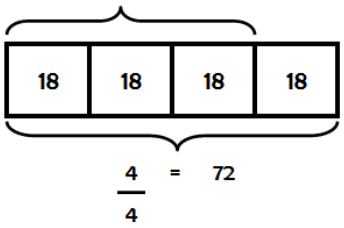
In total, Lara read the whole book (5/5).

Therefore ... 30 x 5 = 150 pages

Year 6:

Three quarters of a number is 54. What is the number?

$\frac{3}{4} = 54$



$\frac{4}{4} = 72$

Step 1 =

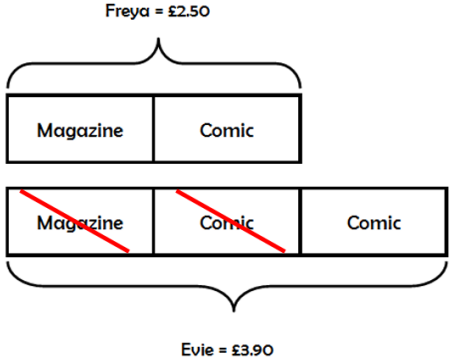
$\frac{3}{4} = 54$

$3\overline{)54} = 18$

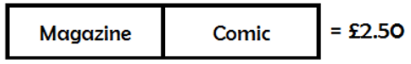
Step 2 =

$18 \times 4 = 72$

A shop sells magazines and comics. Freya buys a magazine and a comic. She pays £2·50. Evie buys a magazine and two comics. She pays £3·90. How much does a comic cost? How much does a magazine cost?



£3.90
- £2.50
£1.40 = 1 comic



= £2.50

? + £1.40 = £2.50

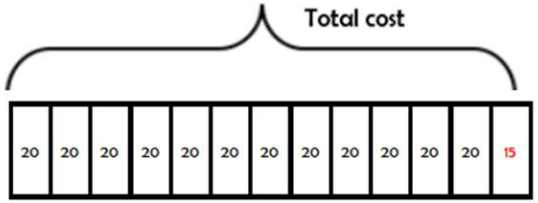
£2.50
- £1.40
£1.10 = 1 Magazine

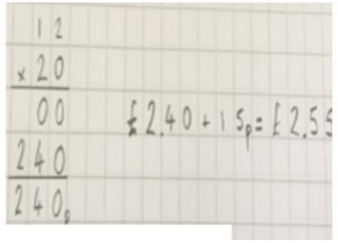
Maria bakes cakes and sells them in bags.

She uses this formula to work out how much to charge for one bag of cakes.

Cost = number of cakes × 20p + 15p for the bag

How much will a bag of 12 cakes cost?





Olivia buys a bag of cakes for £5.15.

Use the formula to calculate how many cakes are in the bag.