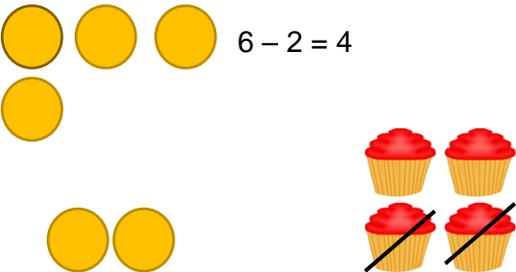
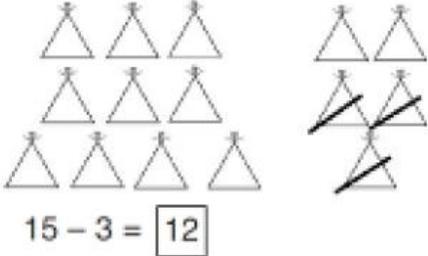


King George V Primary School



Subtraction Calculation Policy

Objective and Strategies	Concrete	Pictorial	Abstract
<p>EY Taking away ones When this is first introduced, the concrete representation should be based upon the diagram. Real objects should be placed on top of the images as one – to – one correspondence so that pupils can take them away, progressing to representing the group of ten with a tens rod and ones with ones cubes</p> <p>Early Learning Goals Children count reliably with numbers from 1 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.</p>	<p>Use physical objects, counters, cubes etc to show how objects can be taken away.</p>  <p>The concrete representation shows a subtraction problem. On the left, there are six yellow circles arranged in two rows of three. Below them is the equation $6 - 2 = 4$. To the right, there are four red cupcakes arranged in two rows of two. Below them, two cupcakes are crossed out with black diagonal lines, representing the subtraction of two from six.</p>	<p>Cross out drawn objects to show what has been taken away.</p>  <p>The pictorial representation shows a subtraction problem using triangles. On the left, there are 15 triangles arranged in three rows: the top row has 3, the middle row has 4, and the bottom row has 4. Below them is the equation $15 - 3 = 12$, where the number 12 is enclosed in a box. To the right, there are 5 triangles arranged in two rows: the top row has 2 and the bottom row has 3. The top two triangles of the bottom row are crossed out with black diagonal lines, representing the subtraction of 3 from 15.</p>	<p>$8 - 1 = 7$</p> <p>$5 - 1 = 4$</p>

Year 1

Counting back

Subtracting 1, 2, or 3

by counting back

Pupils should be encouraged to rely on

number bonds knowledge as time goes on, rather than

using counting back as

their main strategy

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 zero.

Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$.

Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones.

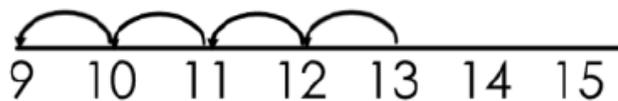
$$13 - 4$$



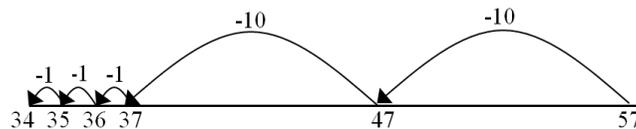
Use counters and move them away from the group as you take them away counting backwards as you go.



Count back on a number line or number track



Start at the bigger number and count back the smaller number showing the jumps on the number line.



This can progress all the way to counting back using two 2 digit numbers.

Put 13 in your head, count back 4. What number are you at? Use your fingers to help.

Year 2

Find the difference

Solve problems with addition and subtraction:

- i. using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- ii. 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.

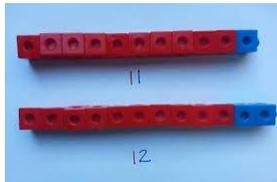
Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:

- i. a two-digit number and ones
- ii. a two-digit number and tens
- iii. two two-digit numbers
- iv. adding three one-digit numbers.

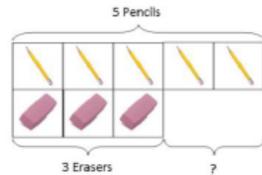
Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.

Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

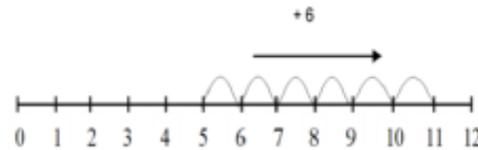
Compare amounts and objects to find the difference.



Use cubes to build towers or make bars to find the difference



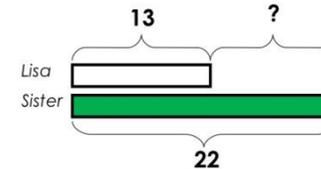
Use basic bar models with items to find the difference



Count on to find the difference.

Comparison Bar Models

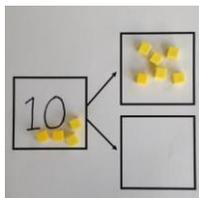
Lisa is 13 years old. Her sister is 22 years old.
Find the difference in age between them.



Draw bars to find the difference between 2 numbers.

Hannah has 23 sandwiches, Helen has 15 sandwiches.
Find the difference between the number of sandwiches.

Part Part Whole Model

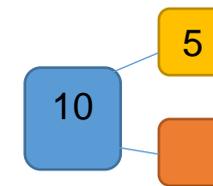
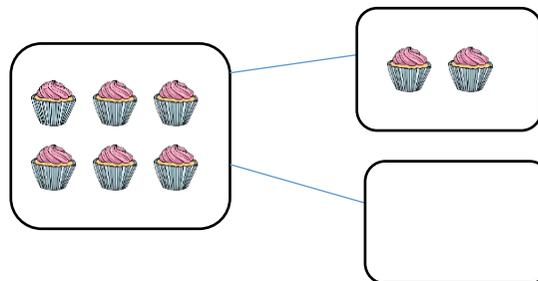


Link to addition- use the part whole model to help explain the inverse between addition and subtraction.

If 10 is the whole and 6 is one of the parts. What is the other part?

$$10 - 6 =$$

Use a pictorial representation of objects to show the part part whole model.



Move to using numbers within the part whole model.

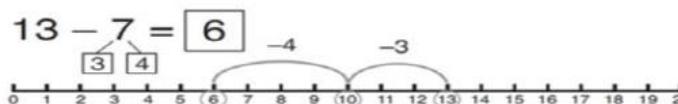
Make 10

As with addition, chd see that it is more efficient to subtract to get to ten first then subtract again from ten. Knowledge of number bonds to and from ten and twenty are vital.

$$14 - 9 =$$



Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9.



Start at 13. Take away 3 to reach 10. Then take away the remaining 4 so you have taken away 7 altogether. You have reached your answer.

$$16 - 8 =$$

How many do we take off to reach the next 10?

How many do we have left to take off?

Year 3

Column method without regrouping

Subtract numbers with up to three digits, using formal written methods of columnar subtraction.

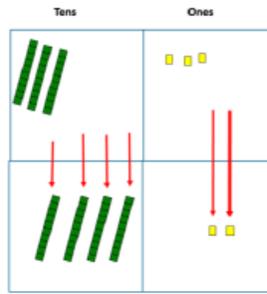
Add and subtract numbers mentally, including:

- a three-digit number and ones
- a three-digit number and tens
- a three-digit number and hundreds.

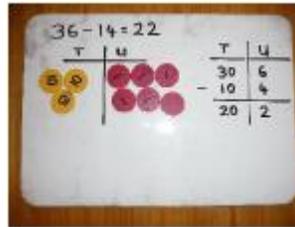
Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.

Estimate the answer to a calculation and use inverse operations to check answers.

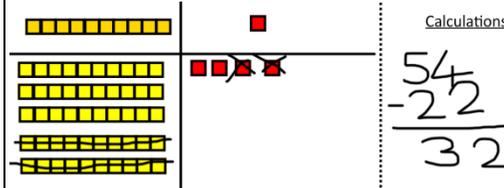
Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.



Show how you partition numbers to subtract. Again make the larger number first.



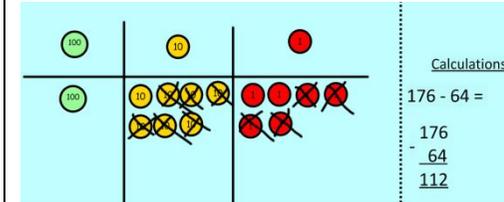
Use Base 10 to make the bigger number then take the smaller number away.



Calculations

$$\begin{array}{r} 54 \\ - 22 \\ \hline 32 \end{array}$$

Draw the Base 10 or place value counters alongside the written calculation to help to show working.



Calculations

$$176 - 64 =$$

$$\begin{array}{r} 176 \\ - 64 \\ \hline 112 \end{array}$$

Start with expanded method to subtract

$$\begin{array}{r} 47 - 24 = 23 \\ 40 + 7 \\ - 20 + 4 \\ \hline 20 + 3 \end{array}$$

This will lead to a clear written column subtraction.

$$\begin{array}{r} 32 \\ - 12 \\ \hline 20 \end{array}$$

Year 4

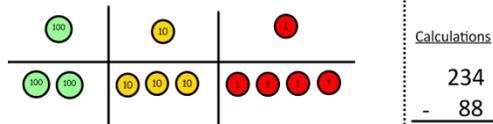
Column method with regrouping

Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.

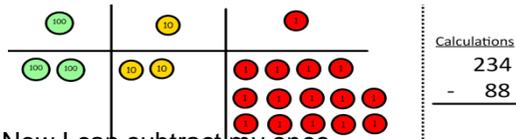
Estimate and use inverse operations to check answers to a calculation.

Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges. Make the larger number with the place value counters.

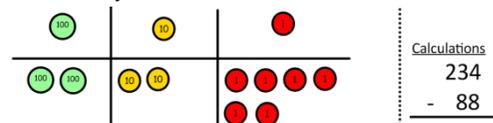


Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones.

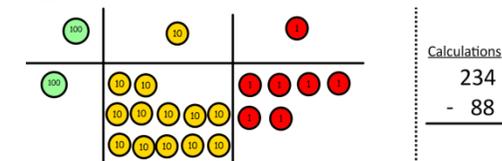


Now I can subtract my ones.

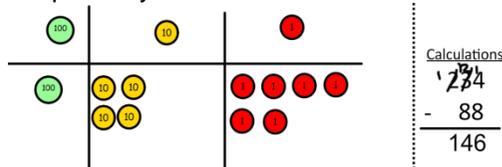
Now look at the tens, can I take away 8 tens easily?



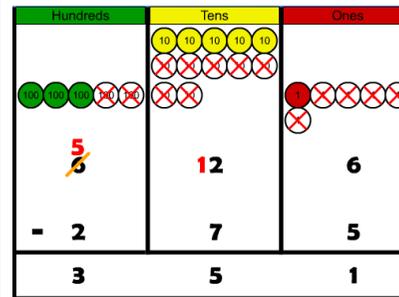
I need to exchange one hundred for ten tens.



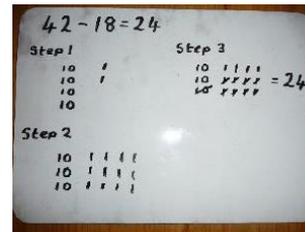
Now I can take away eight tens and complete my subtraction



Show children how the concrete method links to the written method alongside your working. Cross out the numbers when exchanging and show where we write our new amount.



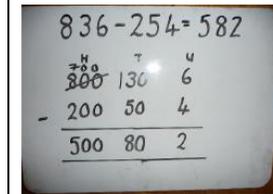
Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.



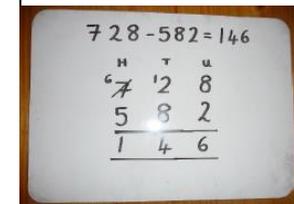
When confident, children can find their own way to record the exchange/regrouping.

Just writing the numbers as shown here shows that the child understands the method

and knows when to exchange/regroup.



Children can start their formal written method by partitioning the number into clear place value columns.



Year 5 and 6

Column method

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.

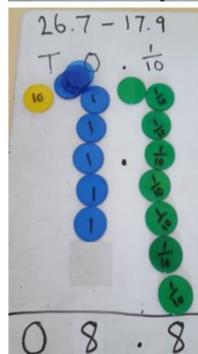
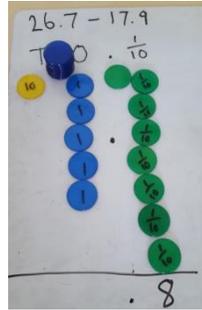
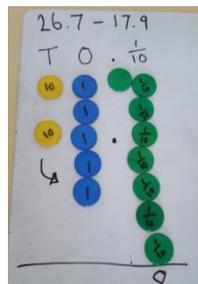
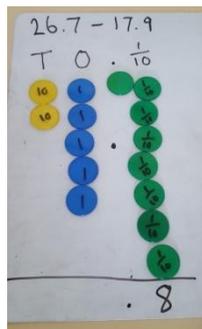
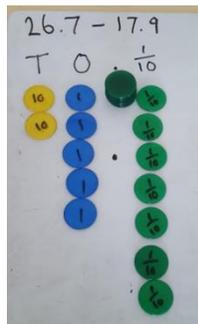
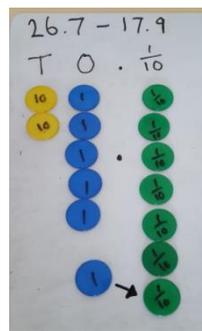
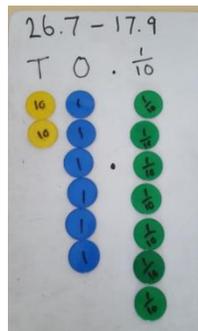
Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.

Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Use their knowledge of the order of operations to carry out calculations involving the four 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.



Use concrete materials to represent columnar subtraction with decimal numbers. Decimal numbers can also be represented with base equipment.

As year 4 if needed with decimal numbers.

Move chd onto using the column method to subtract increasingly larger numbers. Including those where more than one borrow is required.

$$\begin{array}{r}
 \begin{array}{ccc}
 \cancel{4}^3 & \cancel{0}^9 & 1^3 \\
 - & 2 & 8 & 4 \\
 \hline
 1 & 1 & 9
 \end{array}
 \end{array}$$

Then, develop an understanding of subtracting any number including decimals.

$$\begin{array}{r}
 \begin{array}{ccc}
 & 5 & 12 & & 1 \\
 2 & \cancel{6} & \cancel{3} & . & 0 \\
 - & 2 & 6 & . & 5 \\
 \hline
 2 & 3 & 6 & . & 5
 \end{array}
 \end{array}$$

