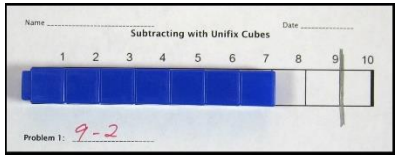
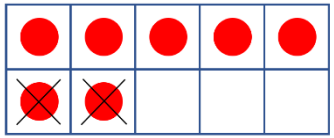
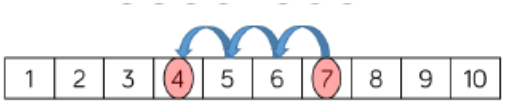
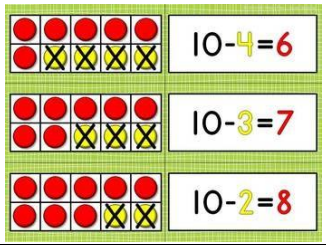
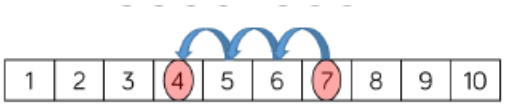
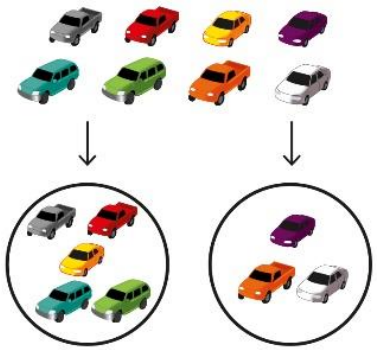
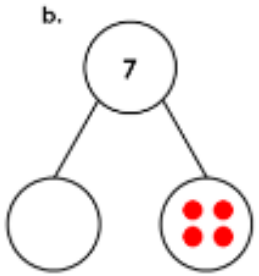
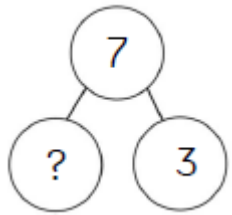
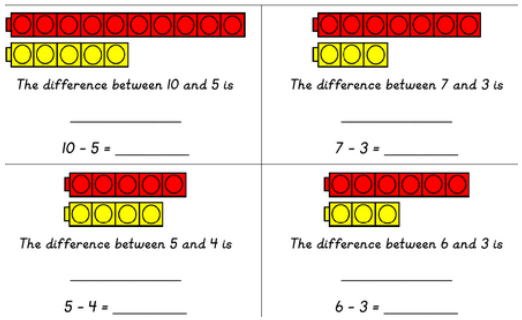
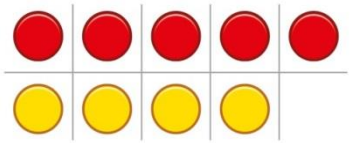
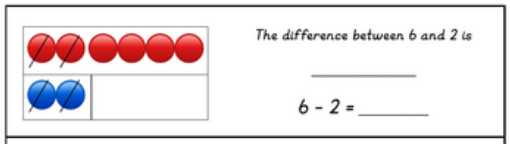
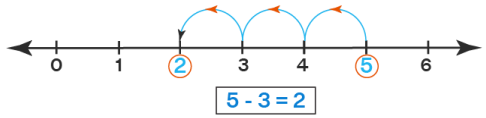
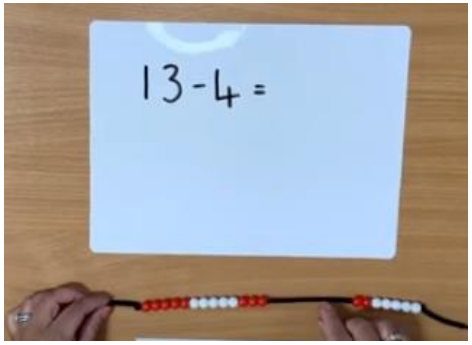
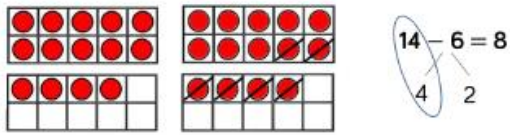
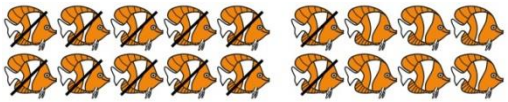
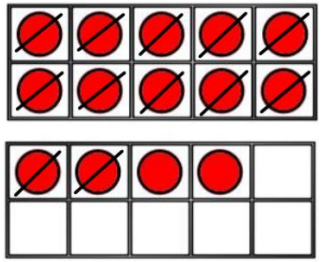
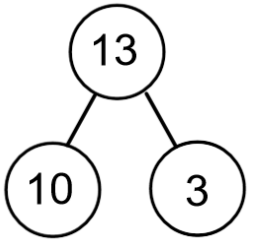
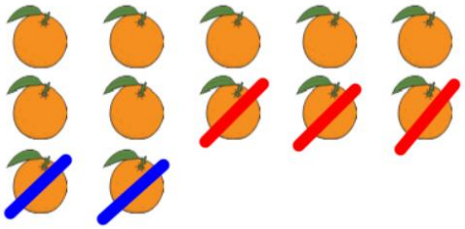
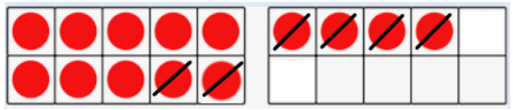
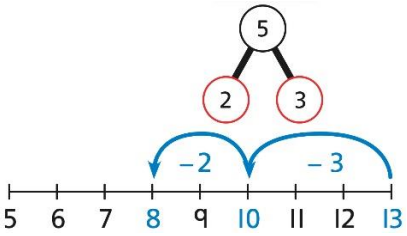
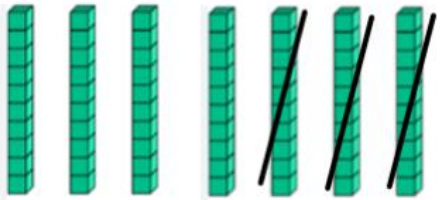
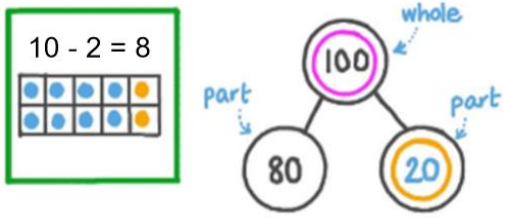
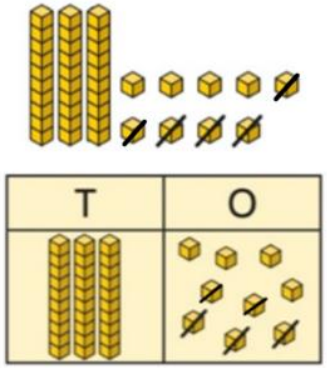
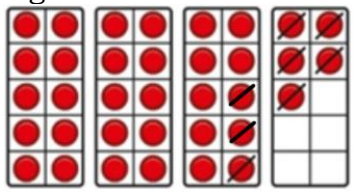
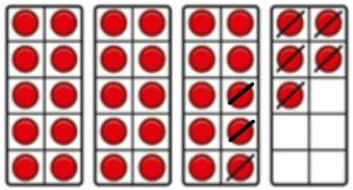
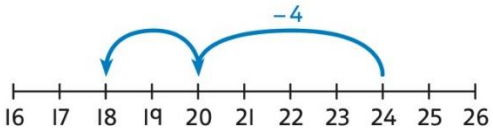
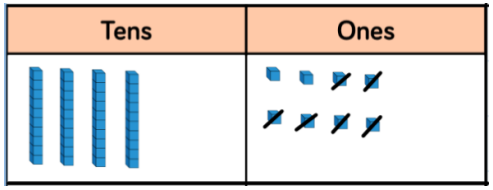
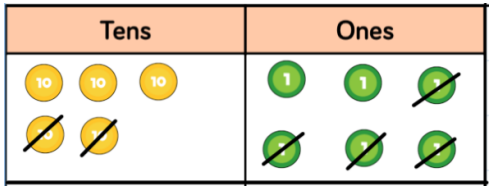
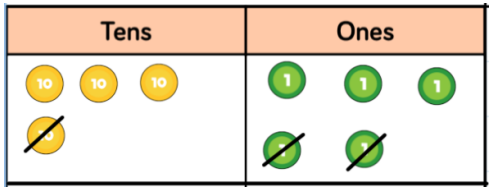
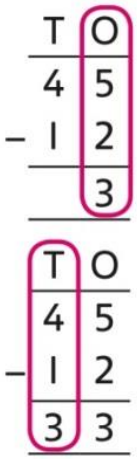
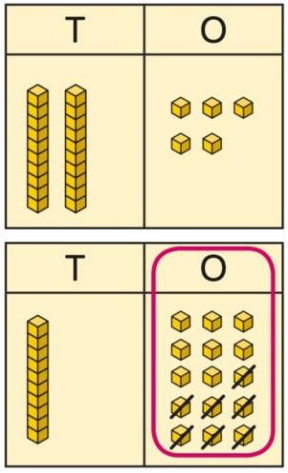
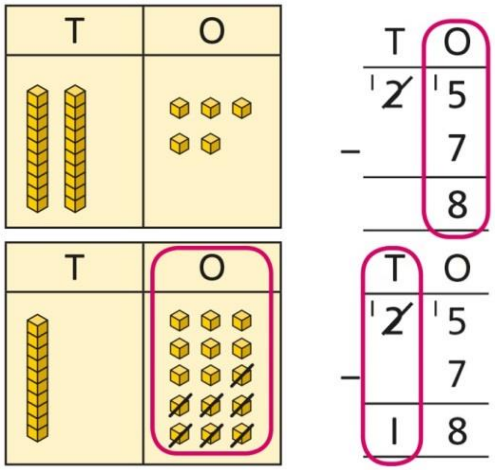
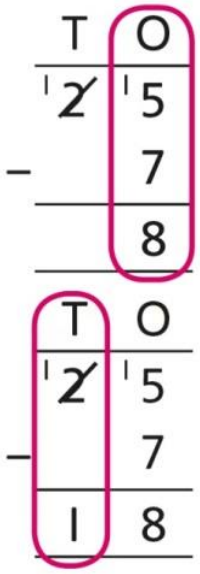
Calculation Policy – Progression in Calculations

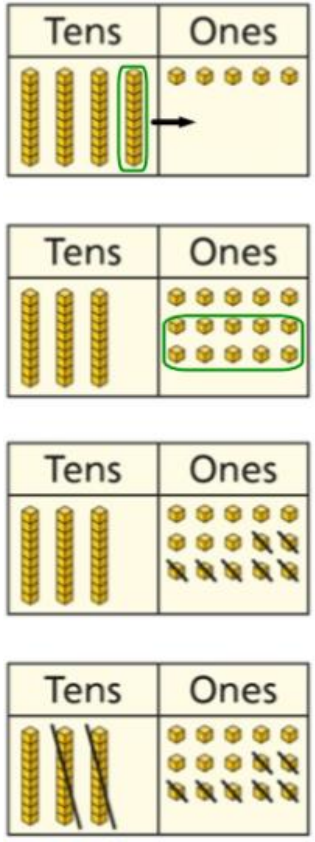
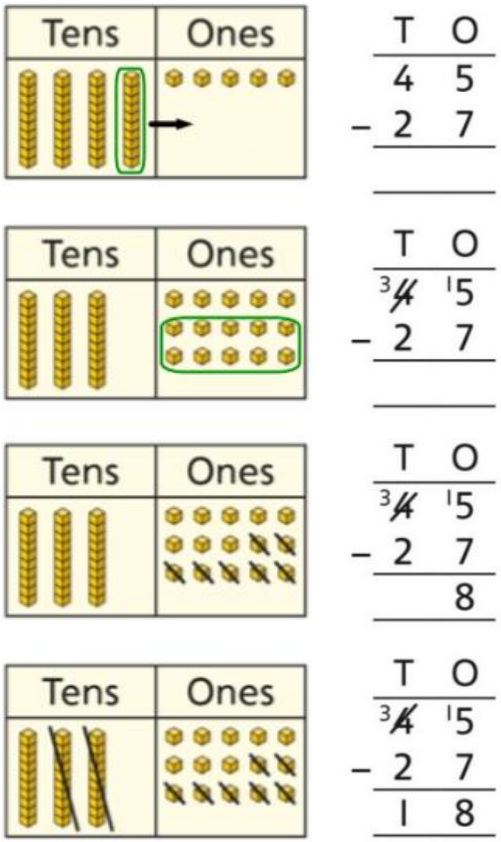
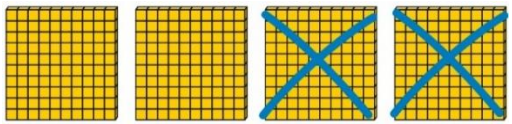
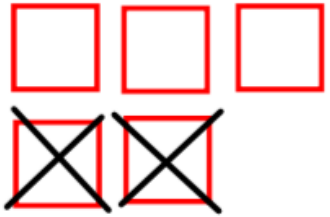
Progression in Calculations - Subtraction				
Expected Year Group	**Objectives**	**Concrete**	**Pictorial**	**Abstract**
EYFS	Find one less from a group of five objects, then ten objects. Using quantities and objects, they subtract two single digit numbers and count back to find the answer.	First, use toys or general classroom objects to physically take away items. Then, use specific maths resources such as cubes, Numicon, bead strings etc.   	First, use pictures for children to cross out or cover items to support subtraction. Then, use visual supports and pictures for example tens frames.  	Mix of pictures, symbols and numbers to form a calculation.  Using a number line for our more able children and introducing the idea to others when appropriate. 
Year 1	Counting back and taking away	Children arrange objects and remove to find how many are left. 	Children draw and cross out or use counters to represent objects from a problem. 	Count back to take away and use a number line or number track to support the method. 

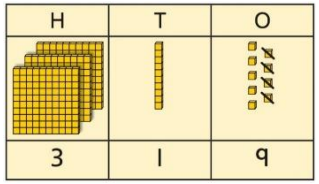
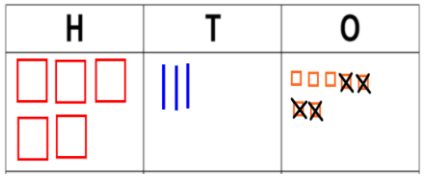
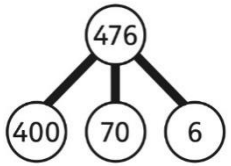
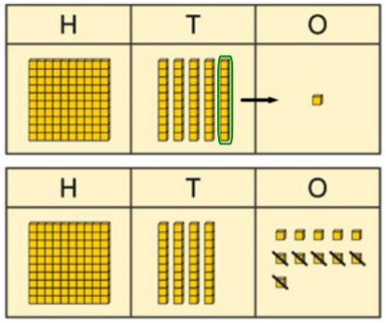
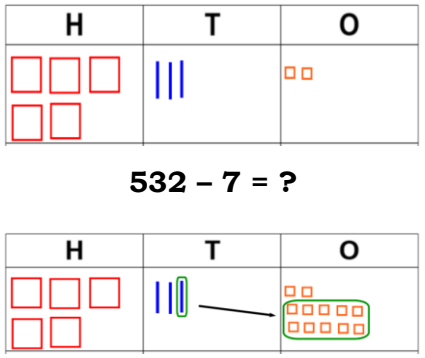
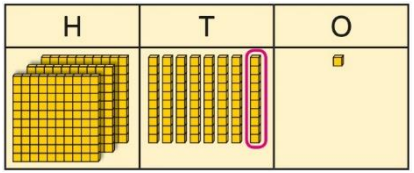
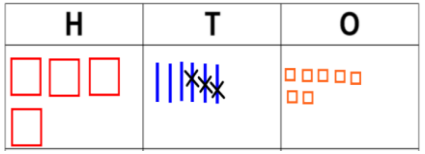
Year 1	Finding a missing part, given a whole and a part	Children separate a whole into parts and understand how one part can be found by subtraction. 	Represent a whole and a part and understand how to find the missing part by subtraction. 	Children use a part-whole model to support the subtraction to find a missing part.  Pupils begin to develop an understanding of the relationship between addition and subtraction facts in a part-whole model. 
Year 1	Finding the difference	Set up two groups so that the difference between the groups can be seen and worked out. 	Represent objects using pictures or counters to support finding the difference.  *The difference between 5 and 4 is 1.* *So 5 – 4 = 1.* 	Children understand finding the difference as a subtraction using a number track or number line to support.  *The difference between 5 and 3 is 2.* *So 5 – 3 = 2.*

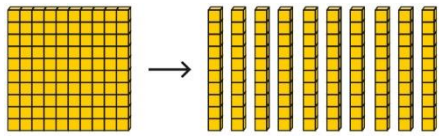
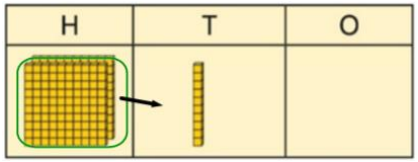
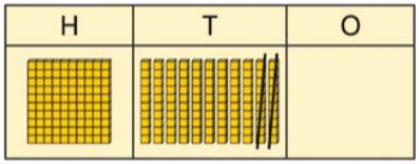
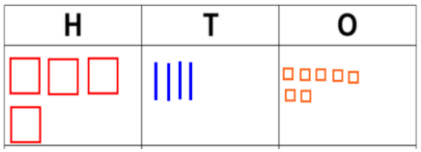
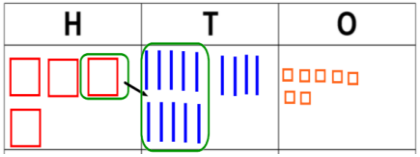
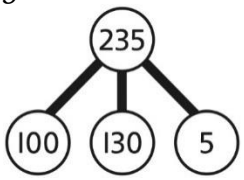
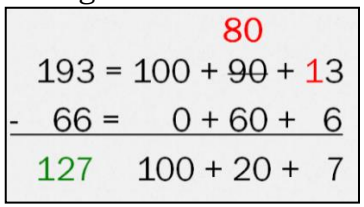
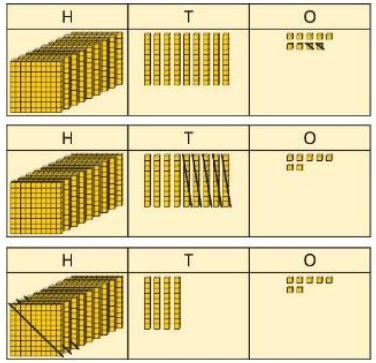
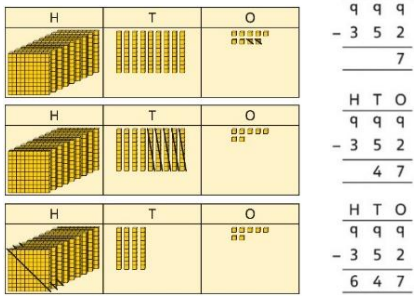
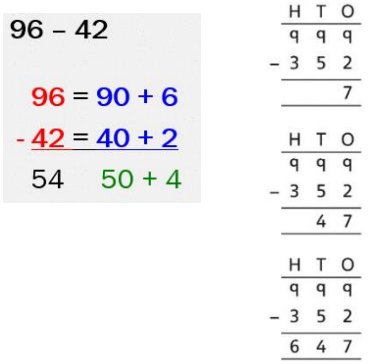
Year 1	Subtraction within 20	Use practical equipment such as a bead string to subtract 1s efficiently. 	Use pictorial representations such as tens frames to subtract 1s efficiently. 	Use knowledge of bonds within 10 to subtract efficiently. **6 – 4 = 2** **16 – 4 = 12**
Year 1	Subtracting 10s and 1s	Use practical equipment to rehearse subtracting the tens first then the ones. For example, subtract 12 by first subtracting the 10, then the remaining 2. 	Use ten frames to efficiently subtract the 10s first then the 1s.  E.g. 14 – 12. Subtract 10 first then subtract 2.	Use a part-whole model to support the calculation.  19 – 13 = ? 19 – 10 = 9 9 – 3 = 6 So, 19 – 13 = 6
Year 1	Subtraction involving bridging 10 using number bonds	For example: 12 – 5. Arrange objects into a 10 and some 1s, then decide on how to split the 5.  5 is 2 and 3, so I take away the 2 and then the 3.	Represent the use of bonds using ten frames.  For 14 – 6, I take away 4 to make 10, then take away 2 to make 8.	Use a number line and a part-whole model to support the method. For example, 13 – 5 = 8 

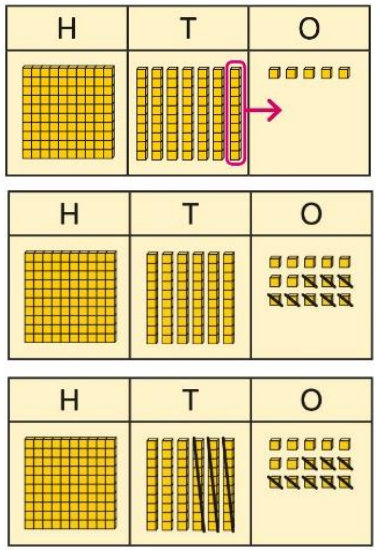
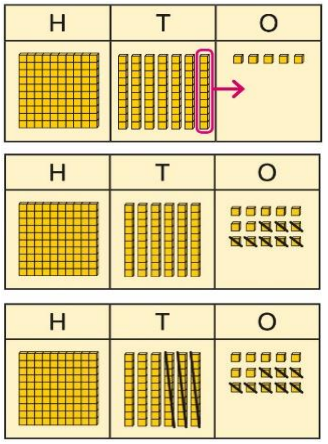
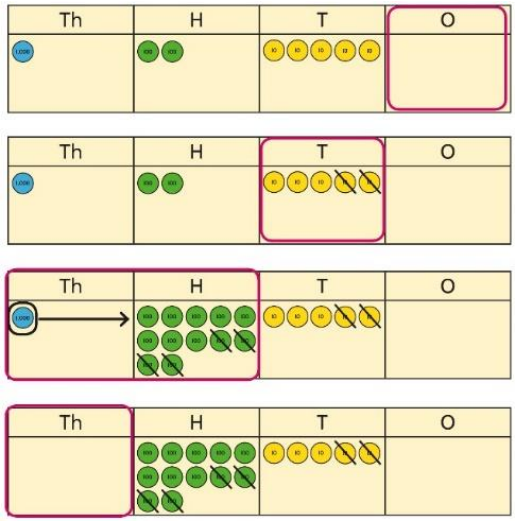
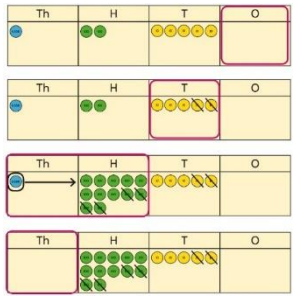
Year 2	Subtracting multiples of 10	Use known number bonds to apply to subtracting tens.  7 - 3 = 4. So, 7 tens take away 3 tens must be 4 tens which is 40.	Use part-whole models or tens frames to support subtracting multiples of 10.  100 - 20 = 80	Use known number bonds to apply to adding tens. **9 - 2 = 7** **So, 90 - 20 = 70**
Year 2	Subtracting a single-digit number from a 2-digit number *(starting with higher numbers than Year 1)*	Use the equipment to physically subtract the 1s. This may be done in or out of a place value grid. 	Drawing their own pictorial version of the tens and ones and then subtracting.  **E.g. 48 – 6 = 42**	Subtract the 1s. Understand the link between counting back and subtracting the 1s using known bonds.  **9 – 3 = 6** **39 – 3 = 36** Introducing the use of columns for subtraction. T O 3 9 – 3 3 6
Year 2	Subtracting a single-digit number bridging 10 *(starting with higher numbers than Year 1)*	Making numbers using counters and tens frames then bridging 10 by using known bonds.  **E.g. 35 – 8** **I took away 5 counters, then 3 more.**	Pictorial representations rather than counters.  **E.g. 35 – 8** **I took away 5 counters, then 3 more.**	Bridge the 10 by using known bonds.  **24 – 6 = ?** **24 – 4 – 2 = ?**

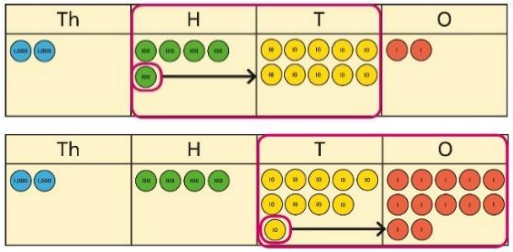
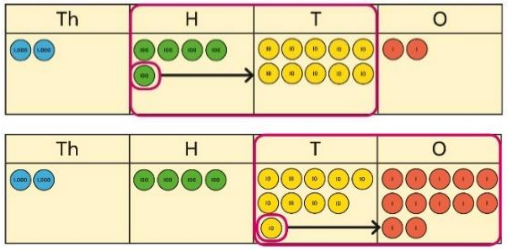
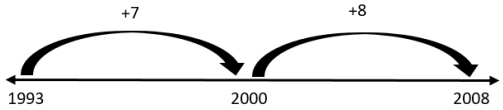
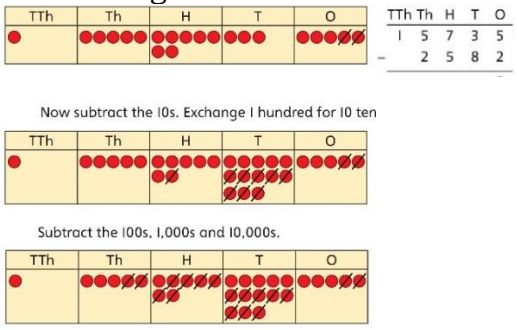
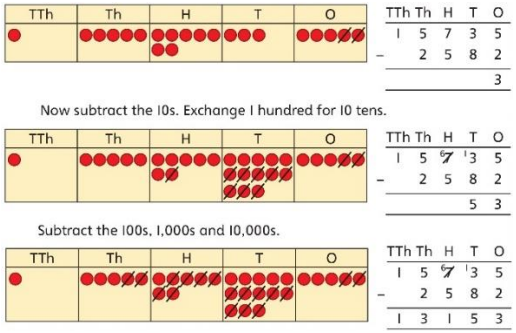
Year 2	Introducing columns: Subtracting a 1-digit or 2-digit number using place value and columns. No exchanging required.	Using Base-10 or place value counters set out in columns.  **48 – 6 = 42**  **56 – 24 = 32**	Pictorial representations instead of actual apparatus or use of practical apparatus alongside column method.  **45 – 12 = 33**	Using column subtraction, subtract the 1s. Then subtract the 10s. 
Year 2	Subtracting a 1-digit number with exchange required	Exchange 1 ten for 10 ones. This may be done in or out of a place value grid.  **25 – 7 = 18**	Pictorial representations instead of actual apparatus or use of practical apparatus alongside column method.  	Using digits set out vertically in columns. 

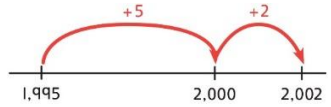
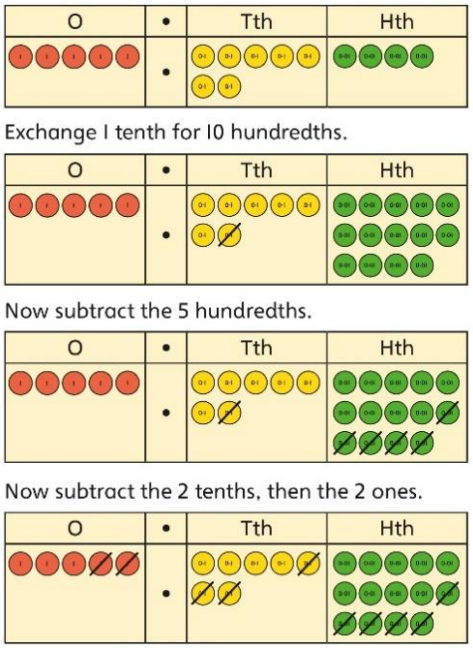
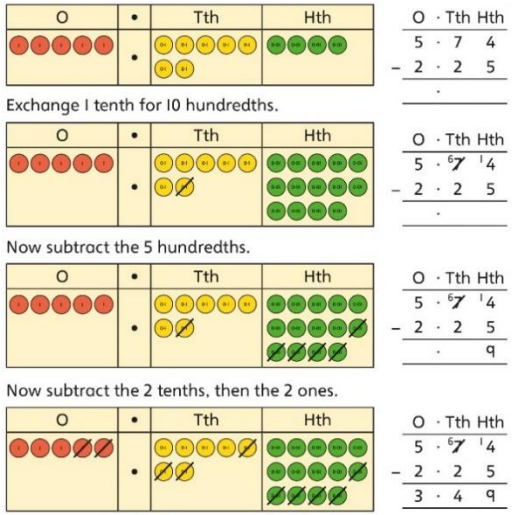
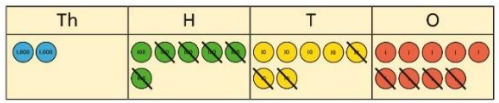
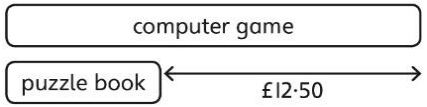
Year 2	Subtracting a 2-digit number with exchange required	Exchange 1 ten for 10 ones. Then subtract the 1s. Then subtract the 10s. **45 – 27 = 18** 	Pictorial representations or use of practical apparatus alongside column method. **45 – 27 = 18**  T O 4 5 – 2 7 T O 3 15 – 2 7 T O 3 15 – 2 7 8 T O 3 15 – 2 7 1 8	Using column subtraction, exchange 1 ten for 10 ones. Then subtract the ones. Then subtract the tens. T O 4 5 – 2 7 T O 3 15 – 2 7 T O 3 15 – 2 7 8 T O 3 15 – 2 7 1 8
Year 3	Subtracting hundreds	Use known facts to aid subtracting multiples of 100.  **4 – 2 = 2** **So, 400 – 200 = 200**	Pictorial representations used to help to become more efficient.  **5 – 2 = 3** **So, 500 – 200 = 300**	Use known facts and unitising to complete calculations mentally or with jottings. **I know that 7 – 4 = 3. Therefore, I know that 700 – 400 = 300.**

Year 3	3-digit number subtract ones (no exchange)	Use number bonds to subtract the ones.  **319 – 4 = ?** **9 – 4 = 5** **319 – 4 = 315**	Pictorial representations used to help to become more efficient.  **537 – 4 = ?** **7 – 4 = 3** **537 – 4 = 533**	Use known number bonds to calculate mentally. Use part-whole models to support if required. **476 – 4 = ?**  **6 – 4 = 2** **476 – 4 = 472**
Year 3	3-digit number subtract ones (bridging or exchanging required)	Represent the required exchange on a place value grid.  **151 – 6 = ?** **1 – 6 does not work so we need to exchange one of the tens for 10 ones first.**	Pictorial representations used to help to become more efficient.  **532 – 7 = ?** **2 - 7 does not work so we need to exchange one of the tens for 10 ones first.**	Calculate mentally by using known number bonds. **e.g. 151 – 6 = ?** **151 – 1 – 5 = 145**
Year 3	3-digit number subtract tens (no exchange)	Subtract the tens using known bonds.  **8 tens – 1 ten = 7 tens** **381 – 10 = 371**	Pictorial representations used to help to become more efficient.  **60 – 30 = 30** **So, 467 – 30 = 437**	Use known bonds to subtract the 10s mentally. **392 – 50 = ?** **90 – 50 = 40** **So, 392 – 50 = 342** Use the more formal column method if required.

Year 3	3-digit number subtract tens (bridging or exchanging required)	Use equipment to understand the exchange of 1 hundred for 10 tens.    **210 – 20 = ?** **10 – 20 does not work so we need to exchange one of the hundreds for 10 tens first.**	Pictorial representations used to help to become more efficient.  **447 – 60 = ?**  **40 - 60 does not work so we need to exchange one of the hundreds for 10 tens first.**	Use flexible partitioning to support the calculation. **235 – 60 = ?** *30 – 60 is not possible so we need to find another way to partition it. Exchange one of the hundreds to give 130 instead.*  **235 = 100 + 130 + 5** **235 – 60 = 100 + 70 + 5** **= 175** Alternatively, begin to introduce the more formal column method alongside practical work through the use of the expanded partitioning method. 
Year 3	3-digit number subtract up to a 3-digit number (no exchange)	Represent the calculation on a place value grid.  	Pictorial representations instead of actual apparatus or use of practical apparatus alongside column method.  	Use expanded partitioning or column subtraction for efficiency. 

Year 3	3-digit number subtract up to a 3-digit number (exchange required)	Model the required exchange on a place value grid.  **175 – 38 = ?** **I need to subtract 8 ones, so I will exchange a ten for 10 ones.**	Pictorial representations instead of actual apparatus or use of practical apparatus alongside column method.  H T O 1 6 15 – 3 8 1 3 7 175 – 38 = 137	Use expanded partitioning or column subtraction for efficiency. 80 193 = 100 + ~~90~~ + 13 - 66 = 0 + 60 + 6 127 100 + 20 + 7 H T O 1 6 15 – 3 8 1 3 7 175 – 38 = 137
Year 4	Column subtraction (for up to 4-digits) with exchange	Use a place value grid to aid subtracting. Physically exchange where needed.  **1250 – 420 = ?**	Pictorial representations instead of actual apparatus or use of practical apparatus alongside column method.  Th H T O 1 2 5 0 – 4 2 0 0 Th H T O 1 2 5 0 – 4 2 0 3 0 Th H T O ~~1~~ 2 5 0 – 4 2 0 8 3 0 Th H T O ~~1~~ 2 5 0 – 4 2 0 8 3 0	Use expanded partitioning or column subtraction for efficiency including exchanging where required. Th H T O 1 2 5 0 – 4 2 0 0 Th H T O ~~1~~ 2 5 0 – 4 2 0 8 3 0 Th H T O 1 2 5 0 – 4 2 0 3 0 Th H T O ~~1~~ 2 5 0 – 4 2 0 8 3 0

Year 4	Column subtraction with exchange across more than one column (up to 4-digit numbers)	Make exchanges across more than one column where there is a zero as a place holder.  **2,502 – 243 = ?**	Pictorial representations instead of actual apparatus or use of practical apparatus alongside column method.  Th H T O 2 4Ø 10 2 – 2 4 3 Th H T O 2 4Ø 9 10 12 – 2 4 3 Th H T O 2 4Ø 9 10 12 – 2 4 3 2 2 5 9	Use expanded partitioning or column subtraction for efficiency including exchanging where required. Th H T O 2 4Ø 10 2 – 2 4 3 Th H T O 2 4Ø 9 10 12 – 2 4 3 2 2 5 9 Th H T O 2 4Ø 9 10 12 – 2 4 3 **Note:** Ask children to consider whether there is another method which may be more effective e.g. a number line for questions involving too much exchanging or where the numbers are close together and so finding the difference is easier.  **2008 – 1993 = 15**
Year 5	Column subtraction (for up to 5-digits) with exchange	Use a place value grid to aid subtracting.  	Pictorial representations alongside column method if required.  	Use the formal column subtraction method with exchange where required. TTh Th H T O 5Ø 11Z 10 9 7 – 1 8 5 3 4 4 3 5 6 3

				Note: Ask children to consider whether there is another method which may be more effective e.g. a number line for questions involving too much exchanging or where the numbers are close together and so finding the difference is easier.  **2,002 – 1,995 = 7**
Year 5 and 6	Subtracting decimal numbers	Adapt previously learnt column subtraction methods to include decimal place value.  **5·74 – 2·25 = ?**	Pictorial representations alongside column method if required.  	Use column subtraction including subtracting numbers with different numbers of decimal places and using a zero as a place holder where needed. **3·921 – 3·75 = ?** O · Tth Hth Thth 3 · 9 2 1 – 3 · 7 5 0 .
Year 6	Choosing efficient methods and combining for multi-step problems	Use apparatus as required to help solve problems.  	Use a bar model to represent calculations.  	Compare and select appropriate methods. Use column subtraction only when mental methods are not efficient. Use two different methods for one calculation as a checking strategy.