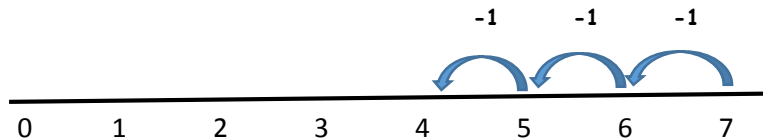SUBTRACTION

Year 1 Procedural Fluency Subtract numbers from up to 20

Children consolidate understanding of subtraction practically, showing subtraction on bead strings, using cubes etc. and in familiar contexts, and are introduced to more formal recording using number lines as below.

Subtract by Taking Away

Count back in ones on a number line to take away numbers up to 20. Also, model practically with a hundred square
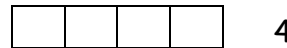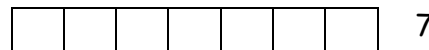
E.g 7 - 4 = 3

Read and write number sentences with - and =

```
        -1    -1    -1

 0   1   2   3   4   5   6   7
```

FIND THE DISTANCE BETWEEN

This will be introduced practically with the language **find the distance between** and **how many more** in a range of familiar contexts.
E.g 7 is 3 more than 4.

7

4

Mental Subtraction: Children should start recalling subtraction facts up to and within 10 and 20 and should be able to subtract to zero.

Key Vocabulary: equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is_?

Key skills for multiplication at Yr 1:

- Given a number, say **one more or one less**.
- Count to and over 100, **forward and back**, from any number.
- Represent and use **subtraction facts to 20 and within 20**.
- Subtract with **one-digit and two-digit** numbers to 20, including zero.
- Solve one-step problems that involve addition and subtraction, using concrete objects (ie bead string, objects, cubes) and pictures, and missing number problems.
- Read and write numbers from 0 to 20 in numerals and words.
- Use **reasoning** skills to solve one step problems and missing number problems: 7 = ▢ - 9
- Use reasoning skills to solve one step subtraction problems in context of money and measures.
- Begin to recognise addition and subtraction are inverse of each other.

**Year 2 Procedural Fluency** Subtract with 2 digit numbers

Subtract on a numberline by counting back aiming to develop mental calculation skills. This strategy is used for:
- **2 digit numbers subtract digits** (by counting back / taking away) 34 – 7
- **2 digit numbers subtract tens** (by counting back / taking away) 34 – 20
- **Subtracting pairs of 2 digit numbers** (See below)

47 – 23 = 24 Partition the smaller number and subtract the tens and units and move to more efficient methods using blank number lines
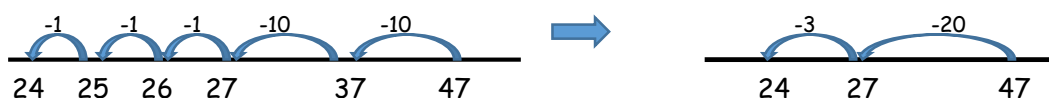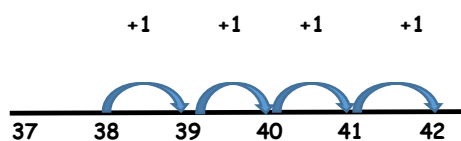

Teaching children to bridge through 10 can help them to be more Efficient. For example 42 – 25
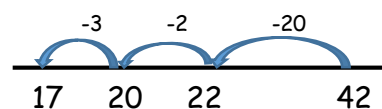
Mental strategy: subtract numbers close together by counting on

Children taught that when numbers are close together it is more efficient to count on the difference. They need to be clear about the difference between addition and subtraction.

42 – 38 = 4

Key Vocabulary: equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is_? difference, count on, tens, units

Key Skills for multiplication:
- Recognise the place value in each digit of a 2 digit number
- Recall and use subtraction facts up to 20 and derive and use related facts up to 100.
- Subtract using concrete objects, pictorial representations, 100 squares and mentally, including: a two digit numbers and ones, a 2 digit number and tens and 2 two digit numbers.
- Show that subtraction of one number from another cannot be done in any order.
- Recognise and use inverse relationship between addition and subtraction, using this to check calculations and missing number problems.
- Read and write numbers up to 100 in numerals and words.
- Use **reasoning skills** to solve simple addition and subtraction problems including measures, using concrete objects, pictorial representation, and also applying their increasing knowledge of mental and written methods.

SUBTRACTION

Year 3 Procedural Fluency Subtracting with 2 and 3 digit numbers

When learning to exchange, explore partitioning in different ways so that pupils understand that when you exchange it is the same:

72 = 70 + 2 = 60 + 12

Step 1: No exchange required

$$80 + 9$$
$$30 + 5$$
$$\overline{50 + 4}$$

Introduce exchanging through practical subtraction. Make larger number with **diennes**. Make smaller number and subtract. Before Subtracting 7 from 72, pupils will need to exchange a 10 for ten units. Once comfortable with this, use **place value counters.**

Step 2: Subtract with exchange

$$_{60}\cancel{70} + {}_1 2$$
$$40 + 7$$
$$\overline{20 + 5}$$

Once pupils are secure with the understanding of "exchanging" they can use the partition method column subtraction for any 2 or 3 digit number. Always teach practically using the **diennes** apparatus or the **place value counters.**

Step 3: Exchanging larger numbers

$$_{100}\cancel{200} + {}_1 30 + 8$$
$$100 + 40 + 6$$
$$\overline{\qquad 90 + 2}$$

Counting on as a mental strategy for subtraction

Continue to reinforce using counting on as a strategy for close numbers and numbers that are nearly multiples of 10, 100, 1000 which make it easier to count on. E.g 102 – 89.
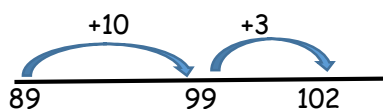
Start at the smaller number and count on in tens first, then count on in units until find the difference.

+10   +3

89   99   102

Key Vocabulary: equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is_? difference, count on, tens, units, exchange, decrease, hundreds, value, digit

Key Skills for multiplication:

- Subtract mentally a: 3-digit number and ones, 3-digit number and tens, 3-digit number and hundreds.
- Estimate answers and use inverse operations to check.
- Solve problems, including missing number problems.
- Find 10 or 100 more or less than a given number.
- Recognise the place value of each digit in a 3-digit number .
- Counting up differences as a mental strategy when numbers are close together or near multiples of 10
- Read and write numbers up to 1000 in numerals and words.
- **Reasoning**: Practise mental subtraction strategies, such as subtracting near multiples of 10 and adjusting (e.g. subtracting 19 or 21), and select most appropriate methods to subtract, explaining why.

Year 4 Procedural Fluency Subtract with up to 4 digit numbers

Partitioned column subtraction with exchange (decomposition)

As introduced in Yr 3 but moving towards complex numbers and values. Use place value counters to reinforce "exchanging".

$$
\begin{array}{rcccccccc}
 & & & \overset{600}{\cancel{700}} & & & & \overset{1}{} & \\
2000 & + & 7\cancel{0}0 & + & 50 & + & 4 \\
1000 & + & 500 & + & 60 & + & 2 \\
\hline
1000 & + & 100 & + & 90 & + & 2 \\
\end{array}
$$

Compact column subtraction

To introduce the compact method, ask children to perform a subtraction calculation with the familiar partitioned column subtraction then display the compact version for the calculation they have done. Ask pupils to consider how it relates to the method they know, what is similar and what is different, to develop an understanding of it. Where appropriate, label the place value columns.

$$
\begin{array}{cccc}
 & \overset{6}{} & \overset{1}{} & \\
2 & \cancel{7} & 5 & 4 \\
1 & 5 & 6 & 2 \\
\hline
1 & 1 & 9 & 2 \\
\end{array}
$$

Mental Strategies

A variety of mental strategies must be taught and practised, including counting on to find the difference where numbers are closer together, or where it is easier to count on. Count from the smaller number to the larger number and count to the next multiple of 10 / 100 first.

E.g 313 - 286 = 27
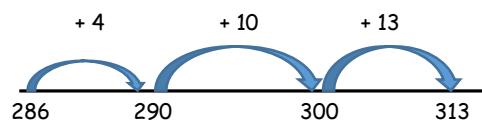
| +4 | +10 | +13 |

| 286 | 290 | 300 | 313 |

Key Vocabulary: equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is_? difference, count on, tens, units, exchange, decrease, hundreds, value, digit, inverse

Key Skills for multiplication:
- Subtract by counting on where numbers are close together or they are near to multiples of 100
- Children select the most appropriate and efficient methods for given subtraction calculations.
- Estimate and use inverse operations to check answers.
- **Reasoning :** Solve addition /subtraction 2-step problems, choosing which operations / methods to use.
- Solve simple measure and money problems involving fractions and decimals to two decimal places.
- Find 1000 more or less than a given number.
- Count backwards through zero, including negative numbers.
- Recognise place value of each digit in a 4-digit number; round any number to the nearest 10, 100 or 1000 and solve number and practical problems that involve the above.

SUBTRACTION

Year 5 Procedural Fluency Subtract with at least 4 digit numbers

This must be taught wherever possible in context with money, measures and decimals

Children who are not secure with number facts and place value will need to remain on the partitioned column subtraction method until they are ready for the compact method.

Compact column subtraction

```
  2  10  1   4
  3   1  0   5  6
      2  1   2  8
  2   8  9   2  8
```

Create lots of opportunities for subtracting and finding differences with money and measures.

When introducing, always teach alongside the partitioned method and use practical apparatus such as diennes and place value counters

Subtracting decimals

Subtract with decimals values, including mixtures of integers and decimals, always making sure the decimal points are aligned.

Add a zero into an empty place to aid understanding of what to subtract in that column

```
  6  10  1   8   1
  7   1  6   9 . 0
      3  7   2 . 5
  6   7  9   6 . 5
```

Key Vocabulary: equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is_? difference, count on, tens, units, exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal, decimal point

Key Skills for multiplication:

- Subtract numbers mentally with increasingly larger numbers.
- Use rounding and estimation to check answers in a range of contexts.
- **Reasoning:** Solve addition and subtraction multi-step problems in a range of contexts deciding which methods to use and why.
- **Reasoning:** Solve problems with decimals up to 3 decimal places.
- **Reasoning:** Solve problems with all four operations in range of contexts and understand meaning of = sign.
- Read, write and compare numbers up to 1,000,000 and know the value of each digit.
- Count forwards and backwards in steps of power 10 for any given number up to 1,000,000
- Interpret negative numbers in context, counting forwards and backwards with positive and negative integers through 0.
- Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000
- Use patterns of similar calculations: 19 – 7 = 12   1.9 - 0.7 = 1.2

SUBTRACTION

Year 6 Procedural Fluency Subtracting with increasingly large and more complex numbers and decimal values

Pupils should be fluent subtracting numbers up to and over 100,000

Using the compact column method to subtract money and measures, including decimals with different numbers of decimal places

```
  0  9  1     3  1
  1  10 5 . 4  1  9
     3  6 . 0  8  0
  6  9 . 3  3  9
```

Empty places can be filled with a zero to show the place value in each column

Pupils should be able to apply their knowledge of a range of subtraction strategies (see mental calculations policy), mental recall skills, and informal and formal written methods when selecting the most efficient and appropriate method to work out subtraction problems.

Key Vocabulary: equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is_? difference, count on, tens, units, exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal, decimal point

Key Skills for multiplication:
- **Reasoning:** Solve addition and subtraction multi-step problems in context, deciding what calculations and methods to use and why.
- Read, write and compare numbers up to 10 million and know the value of each digit.
- Round any whole number with a greater degree of accuracy
- Use negative numbers in context and calculate intervals
- Consider a range of mental strategies, jottings and written methods before choosing how to calculate.