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Long Addition
Study Development Factsheet

Long addition is a method for adding numbers together. It is designed to make adding large numbers together quicker and easier. The only required skill is that you are able to add together numbers which are less than ten.

Method

When asked an addition question, such as 'what is 1251 + 365?', you can use this method to calculate the answer.

1. Write the numbers in a column. This means that you will write each of the numbers in their own row, with their units, tens, hundreds, etc lined up in columns. For example, we would write the earlier question as:

$$
\begin{array}{r}
1\ 2\ 5\ 1 \\
+\ 3\ 6\ 5 \\
\hline
\\
\hline
\end{array}
$$

2. Begin in the column that is the furthest to the right. Add all of the numbers in that column. If the resulting value is less than 10, write the number in between the two lines in the same column.

   For example:

$$
\begin{array}{r}
1\ 2\ 5\ 1 \\
+\ 3\ 6\ 5 \\
\hline
6 \\
\hline
\end{array}
$$

If the resulting value is more than 10, then write just the units value in between the lines, and place the tens value underneath the line in the column to the left.

For example:

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

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3. Repeat this on the next column in from the right. If you have written a value underneath the bottom line, remember to add this in as well.

```
    2  3  2  9
+   1  4  7
───────────
          7  6
───────────
          1
```

4. Continue repeating this process with each column, moving from right to left. If you add up the final column and get a value that is greater than ten, write the full number underneath. For example:

```
       9  6  2  5
+   1  7  2  9
───────────────
1  1  3  5  4
───────────────
      1     1
```

5. The number that is written between the two lines is the answer to the calculation.

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Example

What is 5239 + 1248?

Answer

We begin by writing the question in the format for long addition:

```
    5  2  3  9
+   1  2  4  8
_____
```

Starting at the right, we add the numbers in each column:

```
    5  2  3  9
+   1  2  4  8
_____
             7
_____
          1
```

Moving to the next column:

```
    5  2  3  9
+   1  2  4  8
_____
          8  7
_____
       1
```

Moving to the next column:

```
    5  2  3  9
+   1  2  4  8
_____
       4  8  7
_____
    1
```

Moving to the final column:

```
    5  2  3  9
+   1  2  4  8
_____
    6  4  8  7
_____
    1
```

Therefore, we have found that 5239 + 1248 = 6487.

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More than two numbers

You can use the long addition method to add any amount of numbers together. Simply write all of the numbers in line with each other, and make sure to add everything in each column.

Example with more numbers

What is 126 + 337 + 1458 + 42?

Answer

Firstly, we write the numbers so that their units, tens, hundreds and thousands columns line up:

```
        1   2   6
        3   3   7
    1   4   5   8
+           4   2
_____
```

Then, we add the numbers in the units column:

```
        1   2   6
        3   3   7
    1   4   5   8
+           4   2
_____
                3
_____
            2
```

We repeat this process, moving from right to left:

```
        1   2   6
        3   3   7
    1   4   5   8
+           4   2
_____
            6   3
_____
        1   2
```

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Then the hundreds:

```
          1   2   6
          3   3   7
      1   4   5   8
  +           4   2
      _____
          9   6   3
      _____
          1   2
```

Finally, add up the thousands column:

```
          1   2   6
          3   3   7
      1   4   5   8
  +           4   2
      _____
      1   9   6   3
      _____
          1   2
```