
# Addition

## adding and subtracting vertically (and trading)

**When children are learning to add and subtract larger numbers they can use what is called a vertical algorithm.**

One number is placed above the other number according to its value (hundreds, tens and ones). In this step-by-step method the numbers are added or subtracted vertically in the **ONES**, then **TENS**, then **HUNDREDS** columns. A place value chart is used to show this process.

It may require trading. **Trading** is changing a quantity into smaller or bigger parts, without changing its value.

### Using the vertical algorithm without trading

**Addition 135 + 54 = ?**

| Hundreds | Tens | Ones |
|---|---|---|
| 1 | 3 | 5 |
| + | 5 | 4 |
| **1** | **8** | **9** |

+

The sum of these digits is less than 10 so no trading to the TENS is needed.

**Subtraction 257 – 43 = ?**

| Hundreds | Tens | Ones |
|---|---|---|
| 2 | 5 | 7 |
| - | 4 | 3 |
| **2** | **1** | **4** |

–

Less TENS are being taken away, so no trading is needed.

## Using the vertical algorithm with trading

### Addition 234 + 58 = ?

Addition problems will involve trading when you add digits in a column and they make more than 10.

| | Hundreds | Tens | Ones |
|---|---|---|---|
| 1 | | | |
| | 2 | 3 | 4 |
| | + | 5 | 8 |
| | **2** | **9** | **2** |

4 ones + 8 ones = 12 ones.

We don't put more than 9 in a column.

12 = 1 TEN and 2 ONES so we trade 10 ONES for 1 TEN.

The 1 TEN goes to the TENS column and the 2 remaining ONES stay in their column.

All the TENS in the column are now added together.

### Subtraction 245 – 28 = ?

Subtraction problems will involve trading if there are more ONES, TENS, HUNDREDS in the number being taken away.

This means the children will have to trade some from the larger column, ie ONES will trade with TENS, TENS will trade with HUNDREDS etc.

| Hundreds | Tens | Ones |
|---|---|---|
| 2 | 3 ~~4~~ | 1 5 |
| – | 2 | 8 |
| **2** | **1** | **7** |

We can't take 8 away from 5.

There are more ONES in the number being taken away, so we need to trade 1 TEN into the ONES column to give us 15 ONES.
15 ONES – 8 ONES = 7 ONES

Now we only have 1 TEN left.