+ <u>Addition at Firbeck Academy</u>
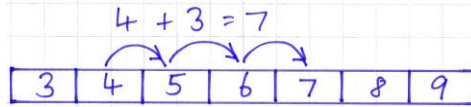
Step 1: 1:1 correspondence, e.g. recognizing that five objects can be represented by the number 5.

Step 2: combining objects practically.

Step 3: pictorial representation with teacher possibly scribing using conventional labels and symbols, e.g.

Step 4: using a marked number track or to count on, e.g.

> It is essential to learn the **number bonds to 10 and 20** to support written methods, e.g. to know that 6 + 4 = 10 and that 16 + 4 = 20.

Step 5: using a hundred square to count on. Don't forget to use two fingers – one to mark the starting place, and the other to count with.

Step 6: addition using a **blank number line**. This method works well for TU+TU and HTU + HTU problems where the numbers are tricky to add mentally.
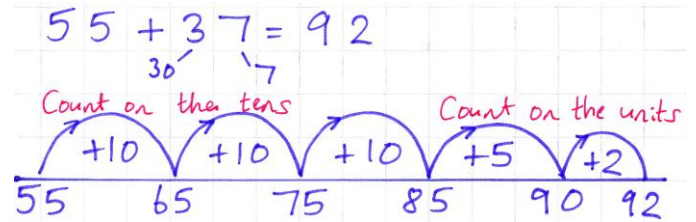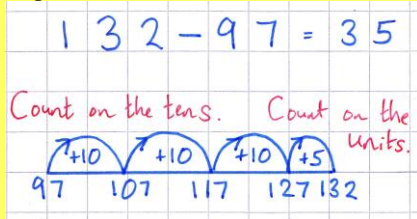
> By this stage you should be able to **partition and recombine** some TU + TU problems mentally, e.g. 24+13 = 20+10+4+3 = 37.
> You should also be able to quickly solve any **number bonds to 100** problems, e.g. 63 + ? = 100.
> You may make some **jottings** to help you with these problems but you should not normally need a number line to solve them.

a) Place the largest number at the start (left) of the number line.
b) Partition the smaller number into tens and units.
c) Count on the tens of the smaller number (it is OK to jump in one large jump if you are confident, e.g. jump 30 rather than 3 jumps of ten.)
d) Now count on the units of the smaller number (in just one or two jumps if possible.)
e) The number you have reached is the answer.

> Remember that addition and subtraction are inverses (opposites) and that sometimes you can use an addition strategy to solve a subtraction problem, e.g. finding the difference between 132 and 97:

> Before you move onto **column addition**, you must be able to quickly and mentally add up any two single-digit numbers, e.g. 6+7=13, 9+6= 15.

Step 7: using the **Column Method** for addition. This method is ideal for adding up two or more large numbers.

a) Line up the digits in the correct columns, i.e. HTU over HTU. Decimal points must also be lined up.
b) Always work from right to left!
c) Add up the digits in each column. If a number comes to more than 9, carry the tens digit to the next column on the left. At Firbeck, we teach that carried numbers are placed *under* the line to avoid confusion.
d) If adding decimals, remember to bring the decimal point straight down into the answer.