

So what is long division really?

The long division on the left contains all the info in the right hand column.

It is actually a picture of the RESULTS of the numerical thinking that occurs when performing the operation. It does not include the entire thought process.

A photograph of a handwritten long division problem. The divisor is 31, the dividend is 305753, and the quotient is 9863. The work is shown in red and green ink. The quotient digits are written above the dividend, and the partial products are written below the dividend with horizontal lines. The remainder is 93.

$$305753 = 179000 + 26753$$

$$305753 = 31(9000) + 26753$$

$$305753 = 31(9000) + 24800$$

$$305753 = 31(9000) + 31(800) + 1953$$

$$305753 = 31(9000) + 31(800) + 1860 + 93$$

$$305753 = 31(9000) + 31(800) + 31(60) + 93$$

$$305753 = 31(9000) + 31(800) + 31(60) + 31(3)$$

$$305753 = 31(9000 + 800 + 60 + 3)$$

$$305753 = 31(9863)$$

$$\frac{305753}{31} = 9863$$