Part I

Numbers Specified *Directly*, and *Indirectly* By Equations

ARITHMETIC seems to have originated some four or five thousands years ago when, one may imagine, Sumerian merchants were faced with the problem of **accounting** for more *goods* and *money* than they could handle personally. The solution was to **represent** the *goods* in the warehouse and the *money* in the safe by various *scratches* on clay tablets so that they could see the situation their business was in without the inconvenience of having to go to the warehouse and/or to open the safe.

As time went by and businesses grew more and more intricate, the book-keeping system had to become powerful enough to accommodate the new needs. Eventually, about six hundred years ago, DOUBLE-ENTRY ACCOUNTING was invented, part of which amounted to dealing with *signed*-numbers. At about the same time, ALGEBRA also developed *signed*-numbers but as an attempt at systematically *undoing* what we do in ARITHMETIC.

We shall thus recreate, with a bit of poetic license but from a *mathematical* point of view, the way "accounting" might have evolved over the centuries and, more or less in that order, we shall account for:

- Money *on* the counter,
- Money *changing hands over* the counter,
- Goods in the warehouse,
- Goods changing hands over a counter,
- Goods exchanged for money (namely buying and selling).