Introductory mathematics for Kf & Kb, 2000.

Project 2 - arithmetic

1. Explain *why*, for natural numbers m, n and p,

$$(m \times n) \times p = m \times (n \times p).$$

What is this arithmetic rule called?

2. Discuss the validity of the statement

$$\text{If } a \times b = 0, \text{ then } a = 0 \text{ or } b = 0.$$

What does “or” mean?

3. Give some good reasons why $-1 \times (-1) = 1$.

4. Explain *why* or *why not* for m, n and p, with $p \neq 0$
a)

$$\frac{m+n}{p} = \frac{m}{p} + \frac{n}{p}.$$

b)

$$\frac{p}{m+n} = \frac{p}{m} + \frac{p}{n}.$$

If some of these formulas fail to be valid for *all* m, n and $p \neq 0$, could it be that the formula is valid for *some* such m, n and p?

5. What is meant by $2 + 3 \times 4$? Is it 20 or 14? What would *you* mean?

6. Is the equality in $1 + 1 = 1$ an equality? Is the equation $15x = 10$ an equality? In computer programs you often see equalities of the form $n = n{+}1$. What does this mean?