

Week 1 (16 Feb, 2005): Warming Up

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1 Hanno's Bad Mood

It's the day of your "deeltentamen" on propositional logic. Hanno wakes up in a really bad mood. He decides to ask just one question. And he tells the class, "You must answer *yes* or *no* to this question. If you answer correctly, you will receive an *A*. Otherwise, you will fail."

Here is the question.

Will you answer no to this question?

What is your answer?

2 Muddy Children

Three children come home after playing in mud. Two of them have mud on their faces and one doesn't. They can each see if the others have mud on their faces, but they don't know about themselves. The father looks at them and says, "at least one of you have mud on his face."

Then father asks, "do you know if you have mud on your face?" What will each child answer?

After all of them give their answers, father asks again, "*now* do you know if you have mud on your face?" What are their answers this time? Should the father ask again?

3 Natural Numbers

We all have an idea about what the natural numbers are.

$$\mathbb{N} = \{0, 1, 2, 3, \dots\}$$

Can you give an informal description of the set of natural numbers *without* using " \dots " or terms like "and so forth"?

Hint: How can we express the idea that "the natural numbers never stop"?