MAGIE DER LOGIK

EIN BESONDERES ANGEBOT DER „BEGABUNGSPILOTEN“

Unter Anleitung von Frederic Friedel, einem Philosophen und Wissenschaftsjournalisten, werden in dem Kurs „Magie der Logik“ anspruchsvolle Gedankenspiele durchgeführt und Phänomene des Alltags wie der Wissenschaft skeptisch hinterfragt. Vom Zaubertrick, den es zu entschlüsseln gilt, über verblüffende optische Täuschungen bis hin zu logischen Knobeleien reicht die Palette der intellektuellen Herausforderungen, die Herr Friedel anschaulich präsentiert. So wird kritisches Denken gefördert und gefordert. In seinem Blog berichtete Herr Friedel über die Entstehung dieses Projekts. Einen Auszug drucken wir hier ab. Die schriftlichen Aufgaben werden überwiegend in englischer Sprache gestellt. Wer sich einmal mit „Lügengeschichten“ auseinandersetzten möchte, kann seinen Scharfsinn an Beispielen aus dem letzten Kurs erproben.

Bettina Weber

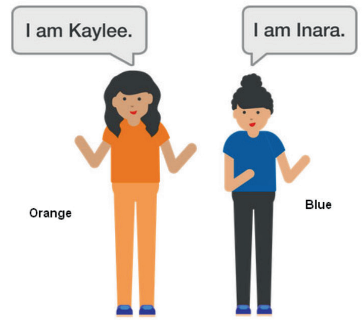
The Magic of Logic

My grandson Enders is a bright boy with extraordinary linguistic skills, and a very astute grasp of things in general. But one thing he had not encountered yet was logical puzzles like the ones I had brought up his father and uncle with. So it was time.
"Enders," I said, "on an island there are three kinds of people: knights, who always tell the truth; knaves, who always lie, and jokers, who sometimes lie and sometimes tell the truth. I met a man there and asked him what he was. 'I'm a knave,' he replied. What was he?"
Enders looked at me in fascination. Clearly I was expecting him to say something, so he did: "So you punched him!" No, no, you must tell me what the man is! It took a while and a little back-and-forth for Enders to understand the concept: he was expecting a story, some continuation of the narrative. "No, he's not a knave," he suddenly blurted out, "because then what he said would be true, and he's a liar. So he must be a knight… Hey, wait a minute, he can't be, because then that would be a lie, and knights always tell the truth." It took him a minute or two after that to come up with the solution: "He's a joker! And he is telling a lie!"
It is not easy to describe how his face lit up, the joy he obviously felt in finding the solution. When his parents got home he rushed over to them and gave them the puzzle. And he asked me for more.
Enders' younger brother Hennes is unable to solve the puzzles I keep giving Enders; but he listens carefully, and understands the logic. And when the parents come home Hennes is the one who can repeat the problem more succinctly. Enders tends to miss some details in his rush to challenge his parents. Hennes, on the other hand, repeats everything with utmost precision – and gives the solution with equal clarity.
I kept bringing more puzzles, and observed a very striking phenomenon: My grandson has become progressively more affectionate towards me. He rushes over when we picked him up from daycare, hugging me and calling me "dear pardner" and things. The point is that nothing had changed between us, except the logical puzzles. Clearly that is causing the steep rise in his affection.
So one day recently I told the above story to Bettina Weber, a neighbour. She is a teacher at a local school. A few weeks later Bettina came over to our place, together with Cornelia Freitag, a colleague at the school. They told me they had a program for exceptionally talented students, and that it was imperative that I start doing a course of logical puzzles with them. Bettina had a title for it: The Magic of Logic - some of my puzzles involve magical tricks. How about four sessions for a start? I agreed, although I am currently in the process of trying to retire after more than twenty years of producing a very extensive news page for my chess software company [www.chessbase.com]. It is really worthwhile - showing children the joys of logical thinking. We will see how the students react.

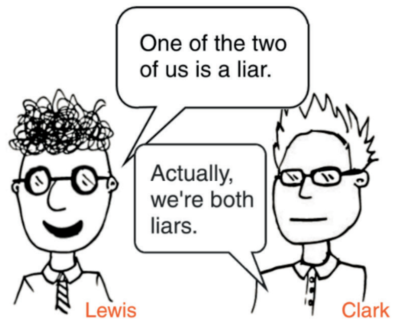
Frederic Friedel

Knights and Knaves – Lügengeschichten

"Knights and Knaves" was the name Raymond Smullyan gave to a logical puzzle form involving liars and truth tellers. Knights always tell the truth, knaves always lie. There is a third group called Jokers. They sometimes lie and sometimes tell the truth. All three live on an island, and they all look alike.
The most elementary puzzle is when you encounter one who says: "I am a knave". What is he?
Solution: he is **a joker.** A knight cannot lie and say he is a knave, and a knave cannot tell the truth and say he is a knave. Only a joker is free to lie and say he is a knave, so the person you met must be a joker.



Here's a slightly more advanced one:
One of these two women is named Kaylee. She is wearing an orange shirt. The other, in a blue shirt, is named Inara. Each make the statement as shown. If we know that at least one of these statements is a lie, what is the colour of the shirt that Inara is wearing?
Solution:



Honest men always tell the truth and liars always lie. What are these two men? Both honest? Both liars? Or one of each, and, in that case, who is who?
Solution:

The periodic liar

John tells the truth on Mondays, Thursdays, and Saturdays, but lies on all the other days of the week. One day he said, "I will tell the truth tomorrow." On which day of the week did he make this statement?
Solution:

True and false statements

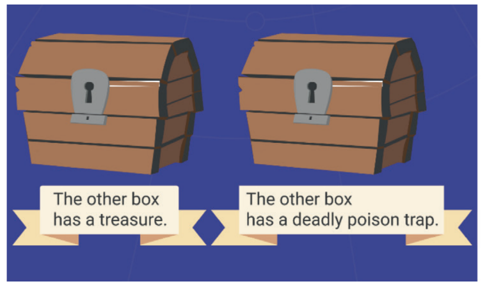
1. There is only 1 false statement in this list.
2. There are only 2 false statements in this list.
3. There are only 3 false statements in this list.

Exactly how many false statements are there in the list above?
Solution:

If exactly one of these statements is false, which statement is it?

A. Statement D is true.
B. Statement A is false.
C. Statement B is false.
D. Statement C is true.
Solution:

"This statement is false!!" Can that be true?



At least one of these messages is false.
Where is the treasure?

Coloured suits

Three friends, Mr. Green, Mr. Red and Mr. Blue, were returning from a party. One man is wearing a green suit, one a red suit, and one a blue suit. The man in the blue suit says to the others: „Have you noticed that none of us is wearing a suit colour that matches his own name?" Mr. Red turns to him and exclaimed „You're absolutely right!" What colour suit was Mr. Green wearing?
Solution:

Assorted problems

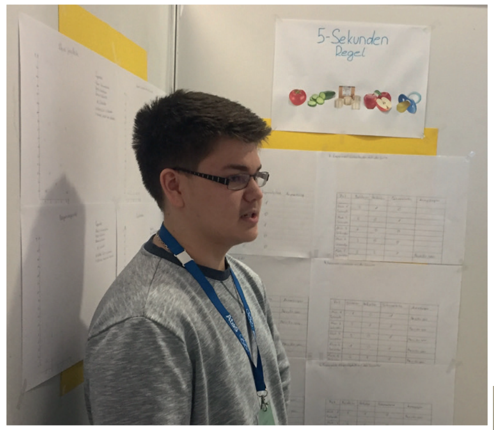
You write down a number between one and three, and I do the same. Can I deduce your number by asking one question, where the answer can only be yes, no, I don't know?
Solution:

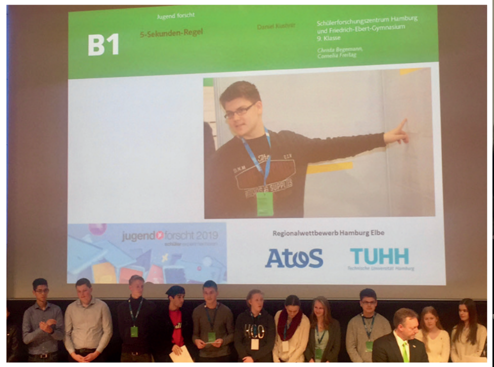
You are condemned to death by a dictator. He asks you to speak your last words and promises that if what you say is true you will be shot, and if it is a lie you will be hanged. How do you save yourself?
Solution:

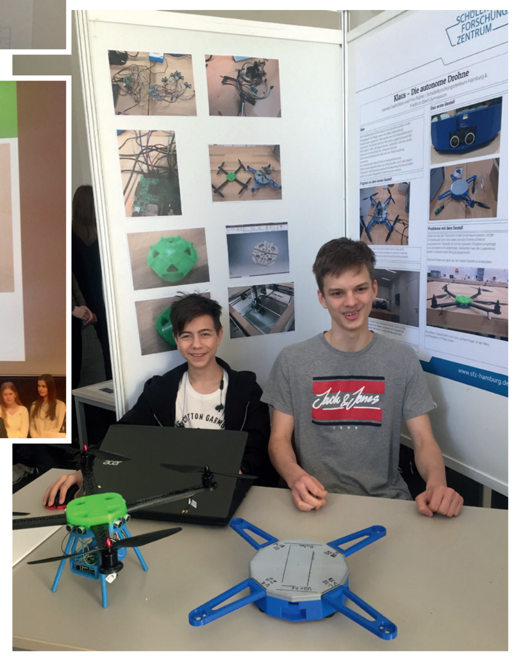
- There are three on/off switches on the ground floor of a house. One is connected to a light bulb on the second floor, the other two are unconnected. The switches are all in the off position. You can switch any position and then climb the stairs to the second floor and examine the bulb. How many times do you need to climb to the second floor to tell which switch is connected to the light bulb?
- You live in an apartment house. One evening all the lights in your flat suddenly go out. Clearly a fuse has blown. You go down to the cellar to replace it, but the cellar door closes after you, and it cannot be opened from inside the cellar. You try banging on the door, but nobody hears. No, you did not take your mobile phone with you. It is late and quite cold – you could have to spend the night in the cellar. What is the best way to get out quickly?
- Ein Mann lebt in einem Haus mit vielen Wohnungen. Eines Tages fällt ihm das Licht plötzlich aus: im Keller ist eine Sicherung durchgebrannt. Also geht er in den Keller, sucht die Sicherung für seine Wohnung und wechselt sie aus. Dann will er wieder nach oben, entdeckt aber, dass die Kellertür zugeschnappt ist und er nicht mehr rauskommt. Er klopft kräftig und ruft, aber niemand kann das hören. Leider hat er auch sein Handy nicht mitgenommen. Es kann viele Stunden -- vielleicht Tage -- dauern, bis jemand zufällig in den Keller kommt und dabei die Tür aufsperrt. Was macht er also?
- Wednesday, February 2nd 2000 was an important day. The date, 02.02.2000, had a special quality that had not occurred for over 1000 years. What is that property? Hint: the answer is very straightforward and can be expressed in five words.

Erfolg bei Jugend forscht!

Frag nicht mich - Finde es selbst heraus! Das war das Motto des diesjährigen Wettbewerbs Jugend forscht, an dem auch drei Gruppen des Friedrich-Ebert-Gymnasiums teilgenommen und im Regionalwettbewerb Hamburg Elbe auch alle Preise erhalten haben. Dabei waren ganz verschiedene Themenbereiche ver-treten: Dass Mikroplastik aus Shampoos das Pflanzenwachstum beeinträchtigt, konnten Jesper Eggers, Nabil Tahiri und Till Meyer-Jark (9T3) nachweisen und erhielten dafür den **2. Preis** in **Biologie**. Sie überzeugten durch eine hochaktuelle Frage-stellung, der sie mit großer Selbstständigkeit nachgegangen sind. Außerdem er-hielten sie den ersten Preis für den besten Stand.







Kann man Lebensmittel, die auf den Boden gefallen sind, innerhalb der ersten 5 Sekunden noch gefahrlos essen? Ob diese sogenannte 5-Sekunden-Regel zu-trifft, hat Daniel Kushnir (9T1) untersucht und dabei festgestellt, dass die Le-bensmittel schon nach kürzester Zeit bakteriell belastet sind. Er erhielt für seine Arbeit einen **Sonderpreis** im **Bereich Biologie**.

Klaus, die autonome Drohne, ist vollständig entworfen und gebaut worden von Finn Rübke und Hannes Diederichsen (9T1). Sie soll einmal ihren Weg zum vorgegebenen Ziel selbstständig finden. Noch ist sie nicht ganz fertig, doch schon jetzt beeindruckte sie die Jury so sehr, dass Finn und Hannes einen **2. Preis** im Bereich Technik erhielten. Wir gratulieren unseren tollen Teilnehmern!

Cornelia Freitag