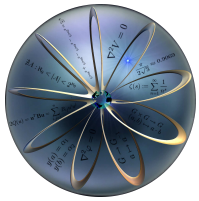

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George Pólya

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1 George Pólya

American mathematician, Born: György Pólya in Budapest, Hungary in 1887, (*d.* 1985 in Palo Alto, USA)

An excellent problem solver. He designed a complete strategy for problem solving that can help both the beginner and the advanced mathematician to solve both mathematical and physical problems.

"*His first job was to tutor the young son, Gregor, of a Hungarian baron. Gregor struggled due to his lack of problem solving skills.*" Thus, according to Long ([**?**]), Polya insisted that the skill of "*solving problems was not an inborn quality but, something that could be taught*".

In 1940, George Polya and his wife, Stella, (the only daughter of Swiss Dr. Weber, in Zurich) moved to the United States because of their justified fear of Nazism in Germany ([**?**]).

He taught at first, at Brown University, and then he moved permanently with his wife to Stanford University. Became Professor Emeritus at Stanford in 1953. He also taught many classes to elementary and secondary classroom teachers, inspiring them how to motivate and teach their students how to solve problems. His research was in several mathematical areas: functional analysis, probability, number theory, algebra, combinatorics and geometry. Recieved The Mathematical Association of America Award "for articles of expository excellence published in the College Mathematics Journal". He published in 1945 the book "*How to Solve It*" that sold in more than one million copies in 18 languages. Although an appropriate strategy can be learned by solving many problems, it is learned much faster if several, similar examples are worked out first with a teacher on an one–on–one basis. Here are some of the highlights of his simple strategies for problem solving:

1. **Understand the Problem**
2. Devise a Plan on how to approach the Problem; such a plan may include one or several of the following:
3. Make a first guess to begin with, and then verify the answer
4. Solve a simpler problem
5. Consider special cases that are much easier to solve
6. Look for a pattern
7. Draw a picture
8. Use a model
9. Use direct reasoning but double-check your results
10. Use a formula that you fully understand and have used before
11. Eliminate possibilities
12. Carry out the Plan, as modified by partial solutions

13. If plan doesn't work, make an improved plan but do not give up

14. Last-but-not-least, look back and examine critically your solution(s):

15. Does the solution make sense? Does it check out in particular cases?

16. Make sure there are no gaps and no steps missing.

He published also a two-volume book, "*Mathematics and Plausible Reasoning*" in 1954, and *Mathematical Discovery* in 1962.

References

[1] Long, C. T., & DeTemple, D. W., *Mathematical reasoning for elementary teachers.* (1996). Reading MA: Addison-Wesley

[2] Reimer, L., & Reimer, W. *Mathematicians are people too.* (Volume 2). (1995) Dale Seymour Publications

[3] Polya, G. *How to solve it.* (1957) Garden City, NY: Doubleday and Co., Inc.

[4] A. Motter,, `http://www.math.wichita.edu/history/men/polya.html`"A Biography of George Polya"