



Polya-Questions

Polya: *Schule des Denkens*, inner book cover

1. Understanding the task

- What is unknown? What is given? What is the condition?
- Is it possible to satisfy the condition? Is the condition sufficient to determine the unknown? Or is it insufficient? Or overdetermined? Or contradictory?
- Draw a figure! Insert a suitable name!
- Separate the different parts of the condition! Can you write them down?

2. Coming up with a plan

- Have you seen the task before?
- Do you know a related task? Do you know a theorem, that might be necessary?
- Consider the unknown! And try to think about a task that you know and that has a similar unknown.
- Here is a task that is related to yours and is already solved. Can you use it? Can you use its result? Can you use its method?
- Can you express the task differently? ... Go back to the definition!
- Can you solve part of the problem?
 - Keep only one part of the conditions and drop the other. how far is the unknown then determined, how can I change it?
 - Can you think of any other data that would be suitable to determine the unknown?
 - Can you change the unknown or the data or, if necessary both, so that the new unknown and the new data are closer to each other?
- Did you use all the data? Did you use the whole condition? Did you take into account all the essential terms contained in the task?
- **Geometry:** Can you draw helping lines? Could a model help? Can you find congruent triangles?

3. Executing the plan

- When you carry out your plan of solution, check each step. Can you clearly see that the step is correct?

4. Review

- Can you check the result? Can you verify the proof?
- Can you derive the result in different ways? Can you see it at first sight?
- Can you use the result or method for any other task?