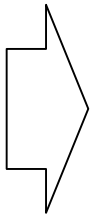
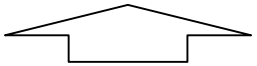
Understand the problem

- Do you understand all the words used in stating the problem ? Do you have all definitions ?
- Can you restate the problem in your own words ?
- What is the unknown you are asked to show ?
- Can you think of a picture or a diagram that might help you understand the problem ?
- What are the relations, conditions and givens ?
- Is there enough information to find a solution ?
- Do you need to ask a question to get (closer to) the answer ?



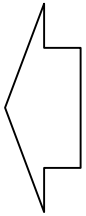
Devise a strategy and make a plan

- Guess and check
- Draw a picture
- Make an orderly list
- Eliminate possibilities
- Use direct reasoning
- Use special cases or symmetry or analogy
- Consider induction
- Consider a mindmap
- Look for a pattern
- Solve a simpler problem
- Use a model, with variable and formula
- Solve an equation
- Be creative
- Work backward
- Use your head



Look back

- Take time to look back
- Did you solve it ? What did you actually do ?
- What questions can you ask to check answers ?
- What worked and what didn't, and why ?
- Did you use all information ?
- Did you look at all angles: text, formula, graph, numerical table, dynamic simulation ?
- Did you recognise sufficient, necessary, redundant, or contradictory conditions ?



Carry out the plan

- Care and patience
- Persistence
- Use all steps in the plan, check each step
- Be flexible: if it doesn't work, switch

George Polya (1945) "How to Solve It", https://en.wikipedia.org/wiki/How_to_Solve_It and https://math.berkeley.edu/~gmelvin/polya.pdf. Clip-art: https://openclipart.org/detail/96217/question-mark-orange-button, https://openclipart.org/detail/1220/exclamacao, https://openclipart.org/detail/197468/mono-key-enter, https://openclipart.org/detail/26193/button-green.
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