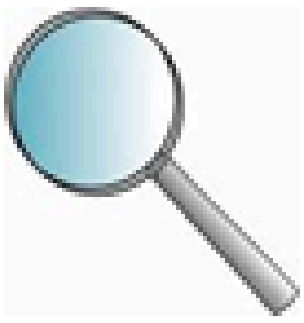
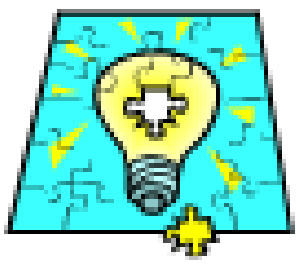
PROBLEM SOLVING



What do I know?
What do I need to find out?

What is my plan?



Solve it!

Answer and Explain

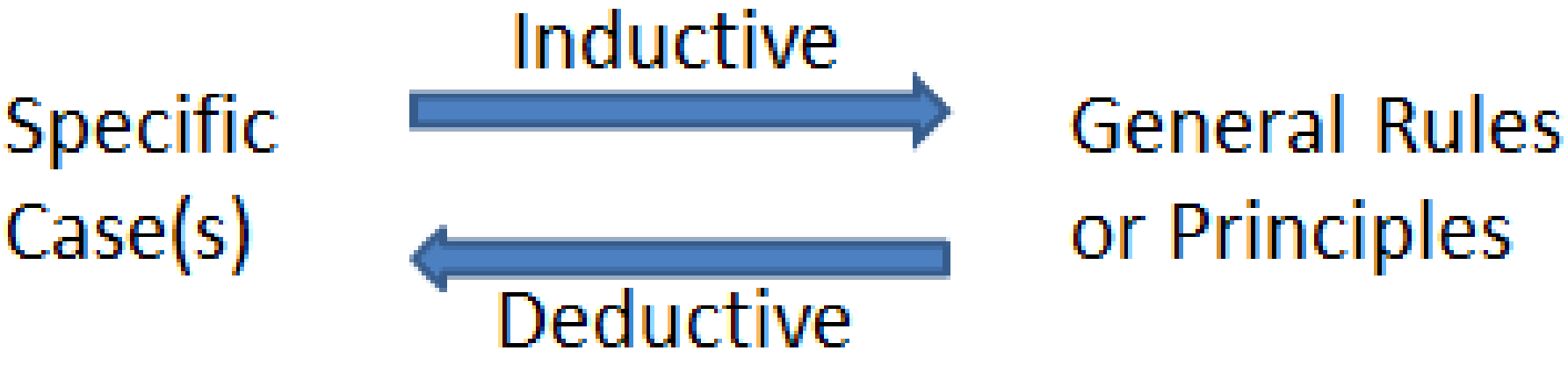
Strategies:

physical model	list
diagram	logical reasoning
pattern	table
guess & check	work backwards
make an assumption	chart

Reasoning & Proving

explore phenomena
develop ideas
make a hypothesis
investigate → generalize
extend the pattern
justify results
formulate a proof

Have you verified your answer?



REFLECTING

- *Is your answer reasonable? How do you know?*
- *How close was your estimate?*
- *Is there another way of solving?*
- *Which method is most effective/efficient?*
- *What did you find easy/hard?*
- *Did you make any errors in calculation or thinking?*
- *How would your answer change if . . . ?*

Selecting Tools & Computational Strategies

Tools:

- Calculator
- Graphing calculator or software (e.g. Desmos)
- Databases & statistical programs (e.g. Excel)
- Dynamic geometry software (e.g. Geogebra)
- Manipulatives (e.g. algebra tiles, linking cubes)

Computational Strategies:

- Mental math
- Estimation
- Algorithms (+, -, x, ÷, ...)

Which one(s) did you use? Why?

Connecting

- *Describe a similar/simpler problem you've solved before & how you solved it.*

- *What prior knowledge do you have that can help help you solve this problem?*

- *How do the different representations I used connect with each other?*

- *Which math concepts or procedures are related to this problem?*

- *When/How would we use this math in daily life?*

Representing

concrete	algebraic
materials	geometric
pictures	dynamic
diagrams	software
graphs	charts
tables	words
numbers	symbols

- *Have you used as many representations as you can?*

- *Which representation seems best? Why?*

Communicating

Explanations Conventions
Notations Terminology

- *Can you explain this another way?*
- *Have you organized your work step by step?*
  Are the steps numbered?
  Did you label each step?
- *Did you explain your thinking along the way?*
- *Have you used symbols, keywords & formatting that everyone in your class would understand?*