There's no limit to the different types of problems we encounter, so there's no way to list *all* possible strategies you could try in solving them. Below, though, is a list that's comprehensive enough for most elementary/middle school classrooms. The attached descriptions highlight key qualities of problems needing that strategy. I usually say that the descriptions *justify* why you might choose that particular strategy. Make sure you commit the strategy names and key features to memory.

Warning: Some teachers aren't aware that relying on mere "key words" is a weak, unreliable way to choose a strategy. Avoid it; look for and encourage the italicized qualities instead.

1. (*) **Look for a pattern** - The problem's information, predicted work, or possible answers feature some *repetition*.
2. (*) **Make a table or list** - There are several options/lots of information to keep *organized*.
3. (*) **Examine a simpler problem** - The problem's numbers are *too big* or the situation *too complicated*.
4. (*) **Identify a sub-goal** - The problem has some issue or step that must be addressed *before anything else* can be done.
5. (*) **Write an equation/use algebra (note: see below)** - The answer is an unknown *number* **AND** the problem gives enough information to create a *relationship* about it. Another justification is: There is a *commonly known formula* that applies to the situation.
6. (*) **Draw a diagram or picture** - The problem contains information that you need/want to *visualize*.
7. (*) **Guess and check** - There are a *reasonable* number of possible options **AND** the problem gives a value or condition (state what it is) to *check them against*.
8. (*) **Work backward** - The problem gives a clear *story or chain of events* in which you know about the "end" and need to find out about the "beginning."
   Work Backward does NOT apply to situations where info may be written in reverse from what we're used to: $\_\_ = 6 - 2$ is NOT a Work Backward problem!
9. (*) **Use elimination** - The problem or your work involves some possibilities that can/should be *ruled out*.
10. (*) **Use direct arithmetic/reasoning** - The problem requires *straight-forward operations or properties* of numbers with *no additional interpretation*.
11. (*) **Break into cases** - The problem features *totally separate qualities or situations*, like positive/negative, small/medium/large, having different fixed amounts of something (like 1 dime vs. 2 dimes), etc.

Note: An **equation** is not just a string of numbers and symbols that includes an = sign, even though as kids, we tend to overuse that word without being corrected. But in fact, we can't call something an equation unless it has a *variable* in it that we want to *actually solve for*. So for instance $3x - 8 = 2x + 1$ is an equation, but $(2 \cdot 3) + (8 \cdot 4) = 38$ is not. Something involving only numbers and an = sign (like the second example) should be referred to as a computation, equality, or number sentence, NOT an equation. And lack of an equal sign immediately makes something NOT an equation: for instance, we shouldn't call $5 + 8 - 2$ an equation!