Strength reduction

Computational tasks can be performed in several different ways with varying efficiency. A more efficient version with equivalent functionality is known as a [strength reduction](https://en.wikipedia.org/wiki/Strength_reduction). For example, consider the following [C](https://en.wikipedia.org/wiki/C_(programming_language)) code snippet whose intention is to obtain the sum of all integers from 1 to N:

int i, sum = 0;

**for** (i = 1; i <= N; ++i) {

sum += i;

}

printf("sum: %d**\n**", sum);

This code can (assuming no [arithmetic overflow](https://en.wikipedia.org/wiki/Arithmetic_overflow)) be rewritten using a mathematical formula like:

int sum = N \* (1 + N) / 2;

printf("sum: %d**\n**", sum);