Problem 7): We start with values for N and $\phi(N)$. For clarity, we will denote the numerical value for $\phi(N)$ by the symbol Φ_N. Further, we know both that $N = pq$ and

$$\begin{aligned} \phi(N) &= \phi(p)\,\phi(q) \\ &= (p-1)(q-1) \\ &= pq - p - q + 1 = \Phi_N \end{aligned} \tag{7.1}$$

Additionally, note that the result in 7.1 was obtained using the relations $\phi(p) = p - 1$ and $\phi(q) = q - 1$. The result in 7.1, along with $N = pq$, means that we have the system of equations

$$\Phi_N = pq - p - q + 1 \tag{7.1}$$

and

$$N = p\,q \tag{7.2}$$

Rewriting the expression in 7.2 as $N = p\,q \;\Rightarrow\; q = N/p$ and applying the result, along with $N = p\,q$ to the expression in 7.1, we have

$$\begin{aligned} \Phi_N &= N - p - \frac{N}{p} + 1 \\ p\,\Phi_N &= p\,N - p^2 - N + p \\ 0 &= p^2 + (\Phi_N - N - 1)\,p + N \end{aligned} \tag{7.3}$$

which is solvable for p in polynomial time (using the quadratic formula). Applying the result from solving 7.3 for p to the expression in 7.2 yields a value for q in polynomial time as well.