Since $\phi(n)$ is multiplicative, if p is a prime greater than 3, and k divides p:

$$\phi(pn) \mid \phi(k) \tag{1}$$

$$\phi(pn) = (p-1) \cdot \phi(n), \tag{2}$$

so $\phi(n) = 1$, and $n = 1$ or 2! So, only numbers of the form 2^n, or p, or $2p$ with p prime could be valid. If p is a prime greater than 5, since p is odd, $p-1$ is not prime, so $\phi(p)$ and $\phi(2p)$ are not prime. For 2^n, we have $\phi(2^n) = 2^{n-1}$ which isn't prime for $n \geq 3$. So, $p = 3$ for p and $2p$ and $k = 2$ for 2^k are the only contenders left.

These all work:

x	$\phi(x)$
3	2
4	2
6	2