Solution: From the problem statement, we have

$$n \equiv 3 \pmod 4$$

$$n \equiv 1 \pmod 6$$

$$n \equiv 4 \pmod 9$$

Let $n = 4k + 3$ where $0 \leq k \in \mathbb{Z}$. Then,

$$4k + 3 \equiv 1 \pmod 6$$

$$4k \equiv 4 \pmod 6$$

$$2k \equiv 2 \pmod 3$$

$$\implies k \equiv 1 \pmod 3$$

Let $k = 3m + 1$ where $0 \leq m \in \mathbb{Z}$. Then, $n = 12m + 7$. So,

$$12m + 7 \equiv 4 \pmod 9$$

$$12m \equiv 6 \pmod 9$$

$$4m \equiv 2 \pmod 3$$

$$\implies m \equiv 2 \pmod 3$$

So, let $m = 3s + 2$, where $0 \leq s \in \mathbb{Z}$. Thus, $n = 36s + 31$. The second smallest value of n occurs when $s = 1$, so $\boxed{n = 67}$.