Big O is a set, i.e. a category. $10n = O(n)$ is a shortcut for $10n \in O(n)$. We know that $10n$ is in the category of functions shaped like n.

Likewise, $10n^3 + 75n^2 - 5200n + 1000007$ is in the category of functions shaped like n^3, so it is $O(n^3)$.

Formally:

$$O(g(n)) = \{f(n) | \exists c, n_0 > 0 \wedge f(n) \leq c \bullet g(n), \forall n > n_0\}$$