generation of ideals

Let A be a ring. Given two left ideals $\mathfrak{a}, \mathfrak{b} \subset A$,

$$\mathfrak{a} \cap \mathfrak{b}$$

is also a left ideal.

For any subset $X \subset A$, the family of left ideals of A containing X is non-empty, since A is always a member. The intersection of them is an ideal; the left ideal generated by X.

One can similarly define right and two-sided ideals generated by X.

Let A be a ring. Given two left ideals $\mathfrak{a}, \mathfrak{b} \subset A$, the left ideal generated by $\mathfrak{a}$ and $\mathfrak{b}$ is equal to

$$\mathfrak{a} + \mathfrak{b} = \{a + b \colon a \in \mathfrak{a}, b \in \mathfrak{b}\}.$$

Question

In $\mathbb{Z}$, compute $2\mathbb{Z} + 5\mathbb{Z}$. For positive integers n, m, when is $n\mathbb{Z} + m\mathbb{Z}$ equal to $\mathbb{Z}$?