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Example: In the ring $(\mathbb{Z},+,\cdot)$ the principle ideals $((n),+,\cdot)$ where n is a non-negative integer the cosets of (n) in $\mathbb{Z}$ are:

$$a+(n)=\{a+kn \mid k\in\mathbb{Z}\}=[a]$$

thus the cosets are just the congruence classes and $(\mathbb{Z}_n,+_n,\cdot_n)=(\mathbb{Z}/(n),+,\cdot)$

Def: Let $(R,+,\cdot)$ and $(R',+',\cdot')$ be two rings and $f:R\longrightarrow R'$ is a function, f is called ring homomorphism if and only if:

$$\left.\begin{aligned} f(a+b)&=f(a)+'f(b)\\ f(a\cdot b)&=f(a)\cdot' f(b)\end{aligned}\right\}\ \forall a,b\in R$$