



For any ring  $A$ , any set  $S \subset A$  and any element  $x \in A$ , we use the notation

$$(S : x) := \{a \in A \mid ax \in S\}$$

Let  $A$  be a commutative ring with unity, and let  $\mathcal{I}(A)$  be the set of all ideals of  $A$ .

- A *Multiplicative Filter* of  $A$  is a filter  $\mathcal{F}$  on  $\mathcal{I}(A)$  such that  $I, J \in \mathcal{F} \Rightarrow IJ \in \mathcal{F}$ .
- A *Gabriel Filter* of  $A$  is a filter  $\mathcal{F}$  on  $\mathcal{I}(A)$  such that

$$[I \in \mathcal{F}, J \in \mathcal{I}(A) \text{ and } \forall x \in I, (J : x) \in \mathcal{F}] \Rightarrow J \in \mathcal{F}$$

Note that Gabriel Filters are also Multiplicative Filters.