lib/main/integral-domain.ath

```
1   # Integral domain theory
2
3   load "ring"
4
5   module No-Zero-Divisors {
6    define [<0> *] := [Identity.<0> MSG.*]
7    define no-zero-divisors :=
8      (forall x y . x * y = <0> ==> x = <0> | y = <0>)
9    define theory := (make-theory [] [no-zero-divisors])
10  }
11
12  module Ring-With-No-Zero-Divisors {
13   define [+ * <0> U- - <1>] :=
14         [Semigroup.+ MSG.* Identity.<0> Group.U- Group.- MM.<1>]
15   define theory :=
16     (make-theory [Ring.theory No-Zero-Divisors.theory] [])
17  }
18
19  module Integral-Domain {
20   define [+ * <0> U- - <1>] :=
21         [Semigroup.+ MSG.* Identity.<0> Group.U- Group.- MM.<1>]
22   define theory :=
23     (make-theory [Commutative-Ring-With-Identity.theory
24                   No-Zero-Divisors.theory] [])
25  }
```