

## lib/main/integer-plus-group.ath

```

1 load "integer-plus"
2 load "group"
3
4 # In "integer-plus" it is shown that the Group axioms are
5 # satisfied, so we can get additional theorems about Z.+ from Group
6 # theory.
7
8
9 define ZAdditive-Group :=
10   (renaming [Group.+ Z.+ Group.<0> Z.zero Group.U- Z.negate
11             Group.- Z.-])
12
13 (print-instance-check ZAdditive-Group Group.Theory)
14
15 extend-module Z {
16
17   (!property-test Group.Left-Inverse ZAdditive-Group Group.Theory)
18
19   (!property-test Group.Double-Negation ZAdditive-Group Group.Theory)
20
21   (!property-test Group.Unique-Negation ZAdditive-Group Group.Theory)
22
23   (!property-test Group.Neg-Plus ZAdditive-Group Group.Theory)
24
25   # The commutative property is also satisfied, we can get additional
26   # theorems from Abelian Group theory.
27
28   # Actually the first one is one we already have, so we are just trying
29   # out a shorter proof.
30
31   (!property Group.Left-Inverse ZAdditive-Group Abelian-Group.Theory)
32
33   (!property Group.Neg-Plus ZAdditive-Group Abelian-Group.Theory)
34
35 } # close module Z

```